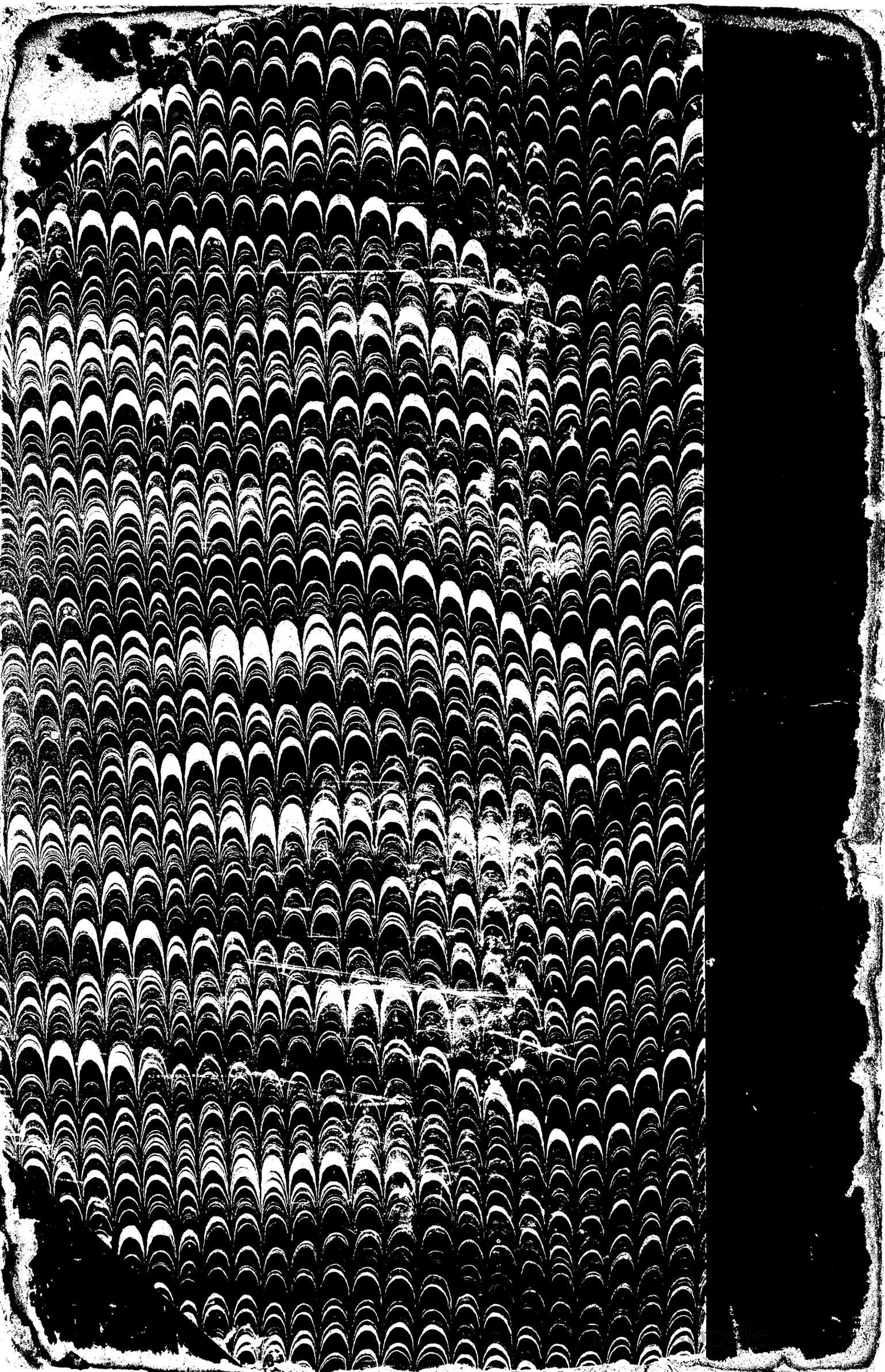


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THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

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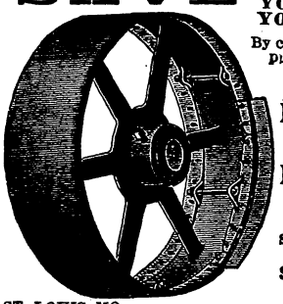
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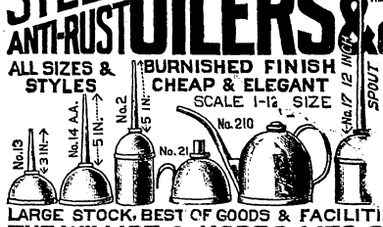
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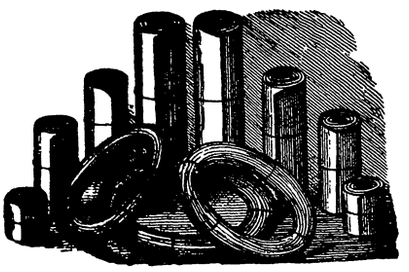
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THE IRON AGE

THURSDAY, OCTOBER 12, 1893.

The Bristol Recording Voltmeter for Alternating and Direct Current.

For some time there has been a demand in electric light and power stations for a voltmeter which would make a continuous record day and night of all changes of voltage. It has been shown by tests that the life and efficiency of incandescent lamps are greatest when the voltage is evenly maintained. When it rises above that for which the lamps were designed, even though the lamps may not be burnt out, they are liable to be seriously injured. If voltage falls below the normal, the result is deficient illumination and dissatisfaction of consumer.

In the accompanying engravings we illustrate a new recording voltmeter which is being manufactured by the Bristols' Mfg. Company of Waterbury, Conn. This instrument has been designed with a special view to being fundamentally simple in construction, extremely sensitive and accurate in its operation.

Fig. 1 represents the voltmeter ready for connection. Fig. 2 shows the interior construction. The coil A is mounted on the spring knife edge supports D and E, and is free to move toward the parallel and stationary coil B when they are mutually attracted to each other by a current passing in series. The current is conducted to the movable coil A through the supporting springs D and E, and this, together with the special feature of the moving coil being mounted on frictionless spring knife edges, renders the instrument extremely sensitive to the smallest changes of voltage. The marking arm F is attached directly to the spring E, and partakes of its motion, recording the changes of voltage on a uniformly revolving chart. It will be observed that the instrument is constructed on the electric balance principle without permanent magnets.

The divisions on the chart are on an increased scale in the vicinity of the voltage to be maintained, thereby making it possible to note the variation of one volt. The chart shown in Fig. 1 is intended for a 110-volt circuit, but the instrument is equally well adapted to any other desired range of voltage, as, for instance, one of 600 volts for electric railway work. The coil C is an auxiliary resistance. With the alternating current voltmeter the auxiliary resistance is furnished in a separate rheostat, which may be adjusted to suit the rate of alternations of the current to be measured. Several of these voltmeters have been in use in large electric light stations for the past three months, and are giving the highest satisfaction. At the World's Columbian Exhibition the company have one of the instruments in operation at their exhibit in Machinery Hall and one in Electricity Building. Two of the voltmeters are being used by the Committee on Awards in connection with the life tests of incandescent lamps.

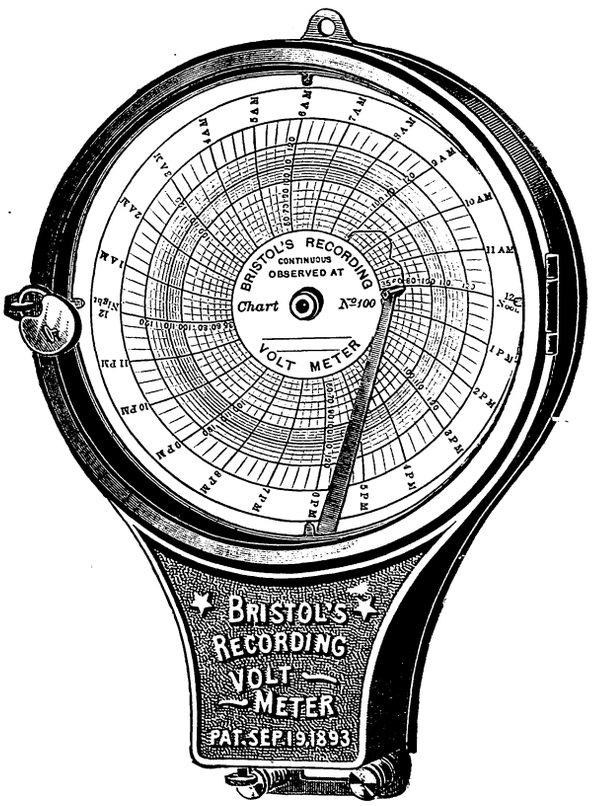


Fig. 1.

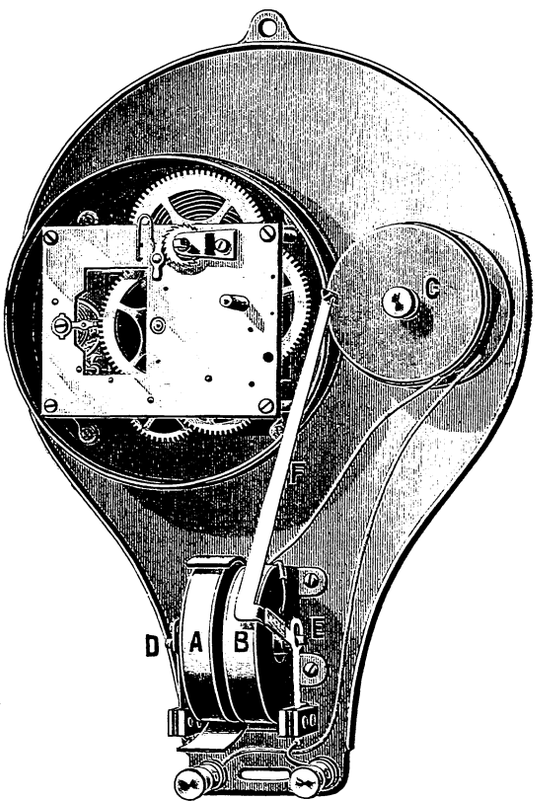


Fig. 2.

THE BRISTOL RECORDING VOLTMETER FOR ALTERNATING AND DIRECT CURRENTS.

Combustion at the Tuyere Level.

W. Van Vloten has discussed in *Stahl und Eisen* the way in which the combustion proceeds immediately in front of the tuyeres in a blast furnace. Many points, he observes, are in doubt. For instance, it is not known how far the oxygen of the blast penetrates into the furnace, whether the carbon of the fuel is at once completely converted into carbonic anhydride, or whether it is carbonic oxide that is produced. Then, again, the influence exerted by the different temperatures of blast and by varying conditions in the nature of the fuel are still matters of doubt. With a view to elucidate this question, the author withdrew, by means of a cooled copper tube, portions of the gas both from the immediate vicinity of the tuyere nozzle and from various parts of the crucible portion of the furnace, both above and between the tuyeres. A drawing of the fusion zone of the furnace in which these tests were made accompanies the description. Most of the tests were made during the normal working of the furnace, which ran on basic Bessemer iron, the furnace having a daily out turn of about 130 tons. For every 1000 parts of pig iron made there was charged on an average 929 to 940 parts of coke, containing 9 5 to 10 per cent. of ash, 600 parts of bull-dog and scale, 1780 parts of ore and 620 parts of flux. The blast was blown at a pressure of 5 pounds through five

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tuyeres 4.72 inches wide in the clear, and at a temperature of from 650° to 750° C. Some of the tests were made when a gray basic Bessemer pig iron was being made which contained 2 per cent. of silicon. Of this metal the furnace made 100 tons a day, with a coke consumption of 20 hundredweight per ton of pig iron made. The tuyeres were in this case 4.32 inches wide; otherwise the conditions were identical with those referred to above. Some other tests were made when the furnace was running on a white iron containing 5 per cent. of manganese. The results of the analyses are tabulated by the author, and they show that while the combustion is very intense it is confined within a very small space. Despite the fact that the blast on entering the furnace had a velocity of 820 feet per second, the maximum distance from the tuyeres at which oxygen could be detected was only 2 feet. Various tests made at a distance of 24.8 inches above the tuyeres in no case showed any free oxygen. The results further showed that even when using blast of a very high temperature the oxygen of the blast was first converted into carbonic anhydride before any carbonic oxide was formed. Oxygen and carbonic oxide together were only found in 3 of the 46 experiments, the results of which are tabulated, and even then only in very small quantities. It is otherwise with hydrogen, the presence of which was observed in every instance, even when much free oxygen was also present. The ratio observed between oxygen and nitrogen was never identical with that existing between these gases in air, the oxygen being always present in smaller quantity, due, no doubt, to the oxidation before the tuyeres of elements other than carbon—such, for instance, as silicon, manganese, iron and phosphorus. Indeed, it may be considered that in the crucible portion of the blast furnace there is an oxidizing zone immediately in front of the tuyeres and a reducing zone directly above this oxidizing one. The author further shows that the sinking of the charge in the blast furnace is probably a very irregular movement, and to this he attributes the hanging of charges.

California Midwinter International Exposition.

The Department of Publicity and Promotion of the California Midwinter International Exposition issue, from the California State Building, World's Fair, Chicago, a circular letter in regard to the exposition to be opened in San Francisco, Cal., on January 1, and to which we referred last week. The directors of the California enterprise believe that its success is assured, and that there is no doubt of a large attendance of visitors from foreign countries and the American States other than those bordering on the Pacific Coast, judging from the interest taken by World's Fair visitors in the proposed undertaking. The railroad companies have promised to make a one-fare rate for the round trip, thus bringing the cost of a visit to the Golden Gate within reasonable reach of many who could not otherwise hope to get so far afield. In reference to the plan and scope of the exhibition, the managers observe that although the California Fair will not be as great in size as the Columbian Exposition it will be thoroughly international in character, and will show all that is best in the art, science and industry of the world. Some of the best and most interesting exhibits in each department of the World's Fair will be removed from Chicago to San Francisco at its termination, in addition to which many novel and original displays will be made. A Midway Plaisance is to be as prominent a feature of the fair as that of Chicago, and many of the best displays from that place will go on to San Francisco, while a number of novelties are to be introduced. Foreign countries have been invited to co-operate through their commissioners, and we understand are entering heartily into the scheme.

The Foundrymen's Association.

The regular monthly meeting of the Foundrymen's Association was held at the Manufacturers' Club, Philadelphia, on Wednesday, October 4. The chair was occupied by Thos. Devlin of Thos. Devlin & Co., Philadelphia. In the absence of the secretary, Howard Evans, the duties of that official devolved upon H. C. Vansant of Morris, Tasker & Co., Incorporated, Philadelphia. The minutes of the last meeting were read and approved. The Executive Committee made no report, as there had been no meeting of that body since the last meeting of the association.

Mr. Vansant read a letter received from Professor MacAlister of the Drexel Institute, Philadelphia, in regard to the arrangement for chemists' services discussed at the last meeting, in which was expressed a belief that arrangements could be made at the institute for the making of determinations on satisfactory terms.

Mr. Vansant also read a letter from Congressman Bingham, acknowledging receipt of a copy of the resolution passed by the association at its July meeting, and stating that he was in full accord with the policy therein expressed in regard to the repeal of the silver purchasing clause of the Sherman act.

L. B. Whitney of A. Whitney & Sons, Philadelphia, representing the car wheel section of the Price Committee, reported that prices were never lower than at present.

There were no reports from the remaining sections of the committee.

Stanley G. Flagg, Jr., of Stanley G. Flagg & Co., Philadelphia, reported that he had had an interview with Professor Spangler of the Mechanical Engineering Department of the University of Pennsylvania, at which the professor stated that, in response to a letter he had received from the secretary of the association, he had taken up with Professor Smith the question of undertaking analytical tests for the members of the association. Professor Smith said that the university would be only too glad to aid the association in any way possible, but at present their laboratories were full, and if an additional force was required extra expense would be incurred. Professor Spangler intimated that, in the event of the work being done at the university, no profit would be expected; but charges, simply sufficient to cover expenses, would be made, and that the association should guarantee the expenses of the work, to the extent of say $650 per year, of which amount $500 would be applied in payment for the services of a man who would be at the disposal of the association at all times, and the remaining $150 would be used for incidental expenses. It was estimated that the entire expense would amount to about $650. He (Mr. Flagg) told Professor Spangler that the association was not yet ready to act in the matter, but that he would report the suggestion to this meeting. As far as mechanical tests were concerned Professor Spangler said that if samples were sent to his department he would willingly make any test required, free of any charge whatever, and that he should consider such calls upon his department favors to himself. The employment of a man especially for the work of making tests was, the professor thought, rendered necessary by the fact that, when samples were sent to the department for analysis, analyses would be required the same day as sent; and in case all the young men in the department were employed on other analytical work, which could not be left, the service would be unsatisfactory. By employing a man exclusively for the work tests could be made promptly. Professor Smith had hoped to be present at this meeting to discuss the matter, but another engagement prevented his attendance.

Upon motion it was resolved that personal invitations be sent to Professors Smith, Spangler and MacAlister to be present at the next meeting of the association for the purpose of further discussing the matter.

Mr. Vansant read a letter from the secretary of the Western Foundrymen's Association, dated September 25, stating that at a meeting of that association held the previous Wednesday it had been decided that if possible and advisable their October meeting would be held in the rooms of the Associated Engineering Societies in the Mining Building at the World's Fair, in which case an effort would be made to have the day of the meeting recognized as an official "Foundrymen's Day" by the exposition, and to have the Mining Building open in the evening; that arrangements would also be made to have one or two important papers read; that invitations would be sent very widely throughout the West, and the Philadelphia organization would be invited to attend, and asking how many founders from the Philadelphia district would attend, and for suggestions regarding the plan.

As Mr. Evans, the secretary of the association, was in Chicago, a motion was made that the matter be referred to him with instructions to do what in his judgment he considered best in the interests of the asssociation; and that Mr. Whitney be directed to write to Mr. Evans informing him of this arrangement.

Dr. Edward Kirk then delivered the following address on "Fluxing:"

Fluxes.

Fluxes is the name or term applied to a substance which imparts igneous fluidity to metals when in a molten state, and has the power to separate metals contained in metallic ores from the non-metallic substance with which they are found in combination, and also to separate from metals, when in a fluid state, any impurities they may contain. Fluxes are also used for the purpose of making a fluid slag in furnaces to absorb the non-metallic residue from metals or ores and ash of the fuel and removing them from the furnace to prevent clogging and keep the furnace in good working order. The materials used as fluxes for the various metals consist of mineral, metallic and chemical substances found suitable for separating metals from their ores and cleansing them of impurities, and are numerous and varied in nature and composition. But this evening we shall only consider those employed in

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the production of iron and the melting of iron for foundry work. The mineral substances employed for this purpose are numerous, but they consist principally of the carbonate of lime in its various forms, the principal one of which is limestone.

Foundrymen long ago conceived the idea of using limestone as a cupola flux. In many foundries it is the practice to use a few shovels or a few riddles of finely broken limestone in the cupola on the last charge of iron, or distributed through the heat a few handfuls to each charge of iron. The object in using limestone in this way is not to produce a slag to be drawn from the cupola, but to make a clean dump and a brittle slag or cinder in the cupola that can be easily broken down and chipped from the lining when making up a cupola for a heat. Limestone used in this way does not produce a sufficient quantity of slag to absorb the dirt from the iron and ash of the fuel and keep the cupola open and working free, but rather tends to cause bridging and to reduce the melting capacity of the cupola. The making of a brittle cinder in a cupola by the use of limestone depends to a great extent upon the quality of the stone. The results obtained from the use of limestone in small quantities in a cupola are so uncertain that I do not think they justify a foundryman in using it.

The tendency of slag or cinder in a cupola is to chill and adhere to the lining just over the tuyeres and prevent the proper working of the furnace. So great is this tendency to bridge that a small cupola will not melt properly for more than two hours and a large one for more than three hours. To overcome this tendency to clog and bridge foundry men in many cases have adopted the blast furnace plan of using a large percentage of limestone as a flux in their cupolas and tapping slag.

When a large percentage of limestone is charged it forms a fluid slag. This slag settles through the stock to the bottom of the cupola, and in its descent absorbs the ash of the fuel and dirt or sand from the iron and carries them to the bottom of the cupola, where the slag and dirt it contains may be drawn off and the cupola kept in good melting order and in blast for days at a time.

The amount of limestone required per ton of iron to produce a fluid slag depends upon the quality of the stone, the ash of the fuel and the condition of the iron to be melted. It is the custom in some foundries where the sprues and gates amount to from 30 to 40 per cent. of the heat to melt them without milling to remove the sand, and to use enough limestone in the cupola to produce a sufficient quantity of slag to absorb and carry out of the cupola the sand adhering to them. In this case a larger percentage of limestone is required than would be required if the sprues and gates were milled and only clean iron melted. Poor fuel also requires a greater amount of slag to absorb the ash than good fuel, and a lean limestone must be used in larger quantities than a stone rich in lime. The quantity required to produce a fluid slag amounts to from 25 to 100 pounds per ton of iron melted. The weight of slag drawn from a cupola when the sprues and gates are not milled and the cupola is kept in blast for a number of hours is about one-third greater than the weight of limestone used. When the sprues and gates are milled the weight of the slag is about equal to the weight of the limestone. When the cupola is only run for a short time and slag only drawn during the latter part of a heat the weight of slag is less than the weight of the limestone. The slag drawn from a cupola has been found by chemical analysis to contain from 4 to 7 per cent. of combined iron and numerous small particles of shot iron mechanically locked up in the slag, which cannot be recovered except at a greater cost than the value of the iron. In a number of tests made in the same cupola to ascertain the percentage of iron lost in melting when the cupola was slagged and when it was not slagged, I found the loss of iron to be from 3 to 4 per cent. greater when the cupola was slagged.

Effect of Flux Upon Iron.—Many of the limestones and other mineral substances employed as cupola fluxes contain more or less finely divided oxides, silicates, &c., in combination with earthy materials. The conjoined effect upon iron of these diffused impurities in a cupola is to prevent the metal from running clean in the mold or making sharp, sound castings, and the tensile and transverse strength is frequently impaired by them. The tendency of the cupola furnace is to clog and bridge over the tuyeres, and concentrate the blast upon the iron through a small opening in the center and injure its quality. If by the free use of limestone we prevent bridging and keep the furnace working open and free we avoid injuring the iron in melting by the concentration of a strong blast upon it. The effect, therefore, of limestone in a cupola is not to improve the quality of iron, but to prevent its deterioration in melting.

The Action of Fluxes on Linings — Limestone and other minerals employed as fluxes frequently contain impurities which enter into combination with the lining material of a furnace and render it fusible. This fact was fully illustrated at the foundry of John D. Johnson & Co., Hainesport, N. J., a few weeks ago. The cupola front had been put in with new molding sand for a long time and no flux used in the cupola. The sand made an excellent front that resisted the action of the heat and molten iron upon it. As the heats enlarged it became necessary to use flux and top slag to run off the heat. Oyster shells were used and produced a slag that flowed freely from the slag hole and had no effect upon the sand in the front. When the supply of shells became exhausted a limestone was used in place of them. Trouble then began with the front. It was melted by the flux into a thick tough slag that settled down and closed up the tap hole, and the iron could only be drawn by cutting away a large portion of the front to enlarge the tap hole. Mr. Johnson called at my office to learn what could be done to keep the tap hole open. I advised that the front material be changed and a mixture of fire clay and sharp sand be used instead of molding sand. This was done and there was no further trouble in keeping the tap hole open and in good order to run off the heat. This serves to illustrate the effect of fluxes upon lining material.

From the various qualities of cupola brick and lining material now in the market a lining may be selected that will resist the action of almost any flux or slag, and foundrymen may select a flux to suit the lining or a lining to suit the flux, whichever they find it to be the most profitable in their locality.

How to Slag a Cupola.—Foundrymen sometimes experience trouble in slagging their cupolas. This is largely due to lack of knowledge in charging the limestone and drawing the slag, for any cupola can be slagged if properly worked. To draw slag from a cupola a sufficient quantity of limestone or other slag producing material must be charged in the cupola with the iron to make a fluid slag. The exact amount required can only be learned by experimenting with the fluxing material used, but is generally from 50 to 60 pounds of good limestone per ton of iron when the remelt is not milled. The limestone is generally charged on top of the iron, and is put in with each charge after the melter begins using it. No limestone is used with the iron on the bed or first few charges of iron. In small cupolas limestone is generally charged with the second or third charge of iron. In large cupolas, when the charges of iron are light, six or eight charges, or generally about one-sixth of the heat, are charged without limestone. This is the way limestone is used when the cupola is run in the ordinary way for a few hours. When the cupola is run for some special work the limestone is charged in a number of different ways.

The slag is drawn from the cupola through an opening known as the slag hole. This opening is made through the casing and lining under the lower level of the tuyeres, and at a point in the cupola where it will be out of the way in removing iron from the spout and convenient for removing the slag. The hight the slag hole is placed above the sand bottom depends upon how the iron is drawn from the cupola. When it is desired to hold iron in a cupola until a sufficient quantity is melted to fill a large ladle the slag hole is placed high, and when the iron is drawn as fast as melted the slag hole is placed low.

When a slag hole is placed high slag can only be drawn as the cupola fills up with iron and raises it to the slag hole. When the iron is withdrawn from the cupola the slag falls, and the slag hole is closed with a bod to prevent the escape of the blast.

When the iron is withdrawn from a cupola as fast as melted the slag hole is placed low, and when opened it is permitted to remain open through the remainder of the heat. This is the best way of drawing slag from a cupola, for the flow of the slag is regulated by the amount of slag in the cupola, and if the hole is not made too large there is no escape of blast. The slag in the bottom of a cupola takes up impurities from the fuel and iron, and if permitted to remain in the cupola for too long a time it may become so thick that it will not flow from the slag hole; or it may be filled with impurities, become overheated, boil up and fill the tuyeres with slag, and when boiling it will not flow from the cupola through a small slag hole. The time for drawing slag from a cupola is, therefore, a matter of great importance. The slag hole is generally opened in from half an hour to an hour after the cupola begins to melt, and when placed low is permitted to remain open through the remainder of the heat. When placed so high that slag can only be drawn when the cupola fills up with molten iron it should be opened as soon as the slag begins to rise and closed as soon as it falls below the opening.

Does it Pay to Slag a Cupola?—Nothing is gained by slagging a cupola when the sprues and gates are milled and the heat can be melted successfully in the cupola without slagging. But a great saving in labor and wear and tear of machinery can be effected in many foundries by melting

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the sprues and gates with the sand on, and slagging the cupola to carry the sand out and keep the cupola working free. A cupola cannot be made to melt iron faster by slagging than it can without slagging, but it can be kept in blast and in good melting condition for a greater length of time and a much larger amount of iron melted by slagging. Foundrymen who find their cupolas temporarily too small to melt the quantity of iron required for their work can overcome the difficulty by slagging the cupola and keeping it in blast for a greater length of time. In endeavoring to make an estimate of the cost of slagging a cupola I found that the cost of limestone in different localities varied from 50 cents to $3 per ton. The amount used varied from 25 to 100 pounds per ton of iron melted. The amount of slag drawn varied from 25 to 100 pounds of iron. The iron combined with the slag varied from 4 to 7 per cent. With the wide differences in the cost and quality of limestone used and the difference in the quantity of slag drawn and percentage of iron it contained, I found it impossible to make an estimate that would be of any practical value to foundrymen. Such an estimate must be made at each foundry to be of any practical value.

Oyster, clam and other shells are frequently used as a flux in place of limestone in localities where they can be procured at a less cost than limestone. The shells are charged in the same way as limestone and in about the same proportions to the iron. They may be used in place of limestone, either in large or small quantities, and have about the same effect upon the iron and cupola as limestone. When used in large quantities they produce a fluid slag that keeps the cupola working free and flows freely from the slag hole, carrying with it the refuse of melting that clogs a cupola.

Marble is another of the carbonates of lime and the spalls or chippings from marble quarries or works are quite extensively used in some localities as a cupola flux.

There are a number of other minerals such as fluorspar, feldspar, quartz rock and numerous chemical compounds that are used as cupola fluxes, but I will leave these for consideration at some future time.

Upon the conclusion of his address Dr. Kirk was tendered a vote of thanks. Asked whether there was any difference in the amount of fuel required, Dr. Kirk stated that there was no practical difference. The amount of fuel used in a cupola was very uncertain, and it was a hard matter to determine whether more was required or not.

P. D. Wanner of the Mellert Foundry & Machine Company of Reading, Pa., then addressed the meeting at length upon the present condition of the trade and the wages question. In the course of his remarks he said it was well known that for a period of five years, or since 1887, as far as the cast iron pipe trade was concerned, and probably the foundry business generally, there had been a depression, and during these years losses and lack of profits had been suffered by the manufacturers. Every cut on prices had been met until there was nothing left to cut on, but the price of labor had remained the same. Labor had not suffered until within the last four or five months. During the recent financial stringency and panic there had been a reduction in labor at a great many places all over the country. Employers, as a rule, he said, found it a most unpleasant proceeding to reduce wages. It was the feeling he had and it seemed to be shared by all with whom he had spoken on the subject. It was unpleasant to the employer as an individual and disagreeable to the community. Everybody talked about it and sought to hold up the employer as an example of tyranny and an oppressor of the poor, and so forth. But, he said, when times such as experienced during the last few months were met a great many employers had been compelled to reduce wages and the working people had had to submit, and did so cheerfully. Now, after all, it seemed to him a question whether it was good policy to reduce wages or whether there had been a real necessity for it. Unless the reduction was considered necessary in order to prevent importation or competition with foreign labor he doubted very much the policy or necessity of it. He believed that if overproduction was the cause of depression in business it was not good policy to reduce wages, and that it was not the remedy to apply. It would be better to shut down those particular branches of trade where overproduction was present, and let the working people find other avenues of employment. Wages, he was inclined to believe, should be maintained to the last, and he did not think the necessity had arisen for a reduction of wages in this country. After reference to the tariff question, in which he attributed the overstimulation of business to a high tariff, he said in conclusion, that the higher wages could be kept the more prosperous the country would become.

A general discussion followed. The chairman doubted whether if an advantage was gained by a reduction in wages, such advantage would not be given to the customer.

Mr. Whitney thought prices were regulated by the ratio of supply and demand. The chairman said the position of supply and demand was claimed to be an old doctrine, and in Pennsylvania the idea was scouted altogether. As Mr. Wanner had said, he could not see any reason for manufacturers cutting wages to compete with one another. That is what it would amount to, and if an advantage was obtained it would be given to the customer.

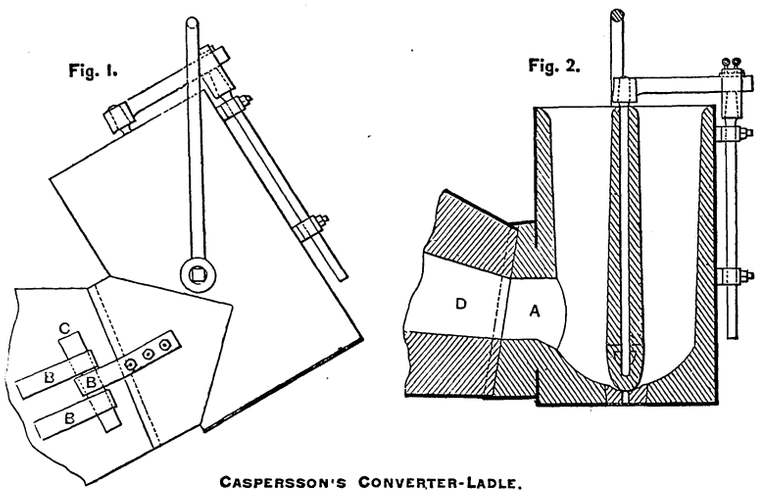
The trend of the discussion was toward a possible arrangement for a uniform scale of wages in the foundry business, and finally, on motion, the matter was referred to the standing committee.

The meeting then adjourned.

The Bessemer Process as Conducted in Sweden.—III.*

BY PROF. RICHARD AKERMAN, STOCKHOLM, SWEDEN.

Besides the actual waste given above, there was, down to 1880, a loss of 2 or more per cent., due to the formation of ladle skulls; but this trouble was luckily obviated by Caspersson's converter ladle,† so-called, which, since the date mentioned, has been used with the greatest success at the majority of the Swedish Bessemer works. This arrangement, illustrated in Figs. 1 and 2, consists of a narrow ladle, which is furnished low down on the side with a lateral opening A, that fits the mouth of the converter D. Immediately after the blow the ladle is brought up to the converter mouth and made fast by means of wedges, C, in the lugs B (see Fig. 1). The converter is then turned down still further, so that its position is as indicated in Fig. 2, and a part of the bath of metal runs into the converter ladle, while most of the metal remains in the converter. It is precisely on this circumstance, coupled with the smaller depth of bath occasioned thereby, that the advantages of the converter ladle depend. A ladle, being never as hot as a converter at the end of a blow, operates, therefore, always to chill; but as the converter ladle is quite small, its power to chill the metal bath, the incomparably larger part of which remains in the converter after it has been turned down, is far less than that of an ordinary ladle, which receives all of the molten mass.



CASPERSSON'S CONVERTER-LADLE.

The result is that the liquid Bessemer metal can be allowed to remain in peace and quiet longer, to permit the gases to escape, and without fear of partial freezing before being tapped into the molds, than before the advent of the converter ladle; at least, longer than was possible with a product only as moderately hot as the Swedish Bessemer metal generally is, especially since the quantity handled in Sweden at each blow, as has been shown, is comparatively very small, and consequently the cooling effect of the ladle

* Read before the American Institute of Mining Engineers. Translated by Philip W. Moen and Emanuel Trotz, Worcester, Mass. Chicago meeting, being part of the International Engineering Congress, August, 1893.

† *Jernkontorets Annaler*, 1880, p. 471, and *The Journal of the Iron and Steel Institute*, 1880, ii, p. 599.

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is proportionally great. By the aid of the converter ladle, ladle skulls, formerly so common here, can be prevented. But to this great advantage may be added another—viz.: That the product is somewhat freer from blow holes, partly because with the converter ladle a longer time is given for the escape of the gases and for the more complete separation of the slag by rising to the surface, and partly on account of the more moderate speed of the stream of metal incident to the smaller depth of bath.

Since the converter ladle, during teeming, is fast and immovably fixed to the converter, it is evident that the former cannot, like an ordinary crane ladle, be carried over the molds, but that the molds must be brought under the converter, either on cars or on a turntable.

As has been mentioned already, the formation of blow holes in ingots stands in the most intimate connection with the temperature that prevails during the blow. If the temperature has been too high, as when temperature No. 2 instead of No. 1 has been employed, and there is reason to fear surface blow holes in the ingots, this serious detriment can be somewhat lessened only by allowing the product so to cool before being tapped that it then has the same heat as that which ordinarily prevails with temperature No. 1. If this is to be attained only by letting the metal stand longer in the ladle before being tapped into the molds, there is danger with use of ladle skulls, and sometimes even of the partial closing up of the nozzle, together with the spurting stream occasioned thereby; and this, in turn, gives ugly and faulty ingots. The danger of these disadvantages is certainly very decidedly diminished by the converter ladle; but even with its assistance one cannot always make use with safety of as warm a blow as would be desirable for the complete prevention of red shortness. To meet this difficulty Mr. Caspersson has complemented his converter ladle with a so-called strainer funnel, illustrated in Figs. 3 and 4.

Fig. 3.

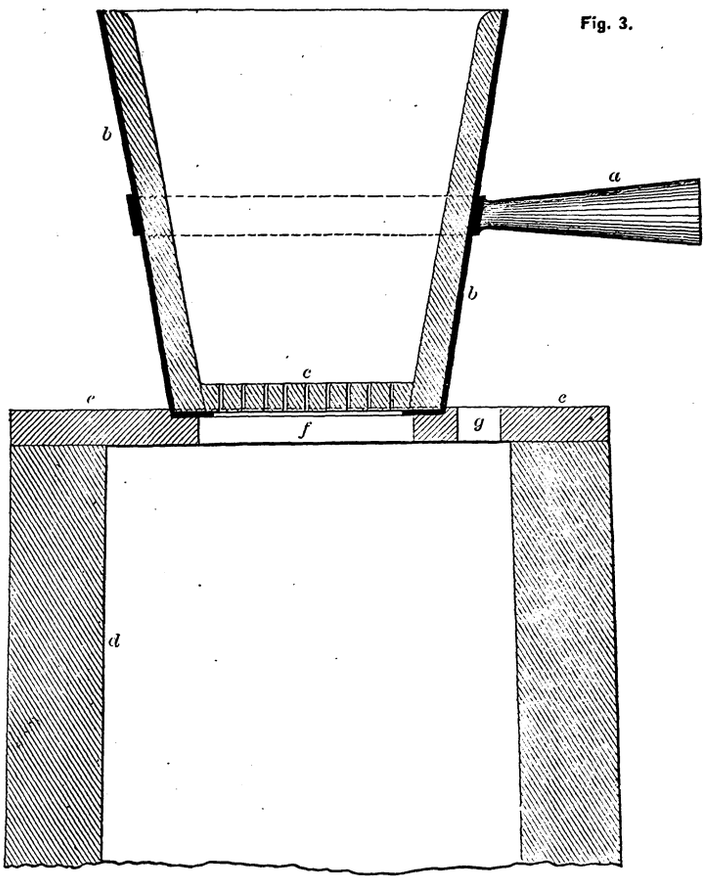
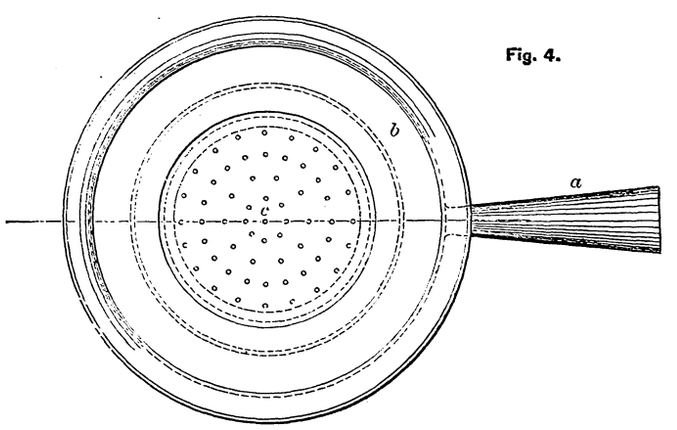


Fig. 4.



CASPERSSON'S STRAINER-FUNNEL.

The plate iron funnel *b*, furnished with the handle *a* and lined with refractory material, has the easily withdrawable chamotte bottom *c*, which is provided with many larger or smaller holes, the number of which is larger in the same degree as their diameter is smaller. When teeming takes place there is first laid upon the mold *d* a cast iron disk, *e*, with an opening in the middle, *f*, corresponding in size to the changeable funnel bottom, and a little side hole, *g*, which affords a chance for the gases separated during teeming to escape, and also for the man who directs the tapping to judge when the molds have been suitably filled. The preheated funnel is placed over the central opening *f*, and the metal, tapped out through the convertor ladle into the strainer funnel, is divided by means of the holes in the bottom into more or less numerous streams of smaller or larger size. This division of the metal occasions during its passing down into the mold both a more complete removal of gases and greater cooling than takes place in the ordinary mode of tapping. The finer the strainer holes, the more effective does its work become. There should be, therefore, at least two different kinds of strainer bottoms at hand, one with larger and the other with smaller holes, and the choice between them can be made according to the temperature of the blow. After an unusually hot blow a bottom with smaller holes is taken; and if the temperature during the blow has been just hot enough no strainer at all is used.

It might be supposed that the division of the metal into many fine streams would be likely to be dangerous by reason of the risk of partial oxidation with accompanying red shortness; but experience shows that this is prevented by the gases which escape from the metal and speedily fill up the mold covered by cap *e*, thus hindering the contact of the streams with the air.

Although too high a temperature produced during the blow can be suitably lowered by means of the converter ladle and the strainer funnel without fear of making scrap, the higher proportion of silicon and manganese in the product incident to an overhot blow cannot be thus remedied. This can be regulated to a certain degree by the practice employed in other countries of adding cold steel scrap during the blow; but the method of Mr. Casperssen in this connection is still more effective—namely, to charge finely crushed rich ore during the blow; for, besides the chilling which the addition of cold ore occasions directly, it causes an indirect cooling through the considerable absorption of heat involved in the reduction of the iron ore.

By a proper use of these aids the blower, if he can judge the temperature accurately enough, can attain surprising uniformity, even in Bessemer products. This is particularly necessary in a country where most of the Bessemer steel made is used for purposes for which crucible steel is usually required elsewhere.

The Swedish plan of not recarburizing to any considerable extent, but of blowing approximately direct, must, of course, be accompanied by difficulties in deciding when the blow should end, which are greater than those attending the usual course of continuing the blow till the metal is fully decarburized and afterward, by means of different additions, recarburizing to the desired hard-

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ness. No skill is needed to end the blow, if it is to be prolonged till the drop of the flame becomes conspicuously evident. Quite different does the problem become when the blow for the production of steel must be interrupted while the carbon flame is still so copious that changes in its size can scarcely be detected.

In these earlier stages no great assistance can be had from the spectroscope, because it is only when carbon is so reduced that one can take note of the diminishing of the flame that the changes in the spectra first become sufficiently apparent to be a sure guide by which to judge of the degree of hardness. Hence, although the spectra of the Bessemer flame were scientifically examined in Sweden as early as the beginning of the decade commencing in 1860, the spectroscope has never come into general use here for this purpose.

That by which the Swedish Bessemer blower most guides himself during the blow in producing steel of the higher carbons is, in reality, the character of the sparks, and many a Bessemer blower has acquired a marvelous skill in this direction, when the great difficulties are taken into account. Nevertheless, with a view to prevent faulty blows it has become more common in the course of time for the blower to turn down the converter immediately before he considers the right point reached, to convince himself by a hasty hammer test whether the degree of refining has been judged correctly or not, and then to continue the blow for a few seconds. In producing ingot iron, on the contrary, no such tests are required, and one judges, as has been said, by the flame.

As the Swedish Bessemer metal contains, in comparison with that made elsewhere, relatively little of any elements other than iron and carbon, it is natural that in this country the degree of hardness should have been determined by the contents of carbon, more especially since the colorimetric method of carbon determination, worked out by Professor Eggertz, furnished so easy a means for a quick and generally satisfactory determination of the carbon in the Bessemer product. But besides the colorimetric determination of carbon, which is never omitted in Sweden, the product of every blow is subjected to a hammer test, to determine not only the degree of hardness, but also how far the product is free from red shortness.

Discussion.

When the metal is intended for purposes of construction (which is not as common in Sweden as it is elsewhere, since a very considerable part of the Swedish Bessemer product is used for tools and the like) it is, of course, subjected to the usual mechanical tests.

In the discussion J. Hartshorne of Stowe, Pa., said: Unfortunately for myself, I can only speak from personal experience upon one part of Professor Akerman's paper—namely, the effect of the temperature at which the molten metal is cast upon the quality of the finished steel.

In a general way I have, of course, known for a long time that the colder the metal was cast, provided it ran cleanly out of the ladle, the better the ingot would be. It has only been, however, since I have been engaged in the manufacture of soft steel by the basic Bessemer process that the extreme importance of temperature in casting has been forced upon me.

As the grade of steel made becomes softer the range of permissible temperature becomes smaller, and the necessity of keeping within it becomes greater. It is very difficult to convey an idea of temperature when there is no means of measuring it, but a rough scale can be formed from the amount of skull left in the ladle.

At Pottstown, our heats generally weigh 24,000 pounds of steel, and are poured either into four ingots of 6000 pounds or six ingots of 4000 pounds each. The time occupied in casting is from 15 to 22 minutes. We use two sizes of nozzles, one of which is 1 inch in diameter and the other is 1¼ inches. In making ordinary soft steel, containing carbon from 0.10 to 0.15 per cent., phosphorus 0.05 to 0.07 per cent., sulphur about 0.05 per cent., and manganese from 0.30 to 0.40 per cent., there is quite a range of temperature throughout which good results can be obtained. This grade of steel we cast through 1¼-inch nozzles in from 15 to 18 minutes. The results seem to be about the same if the steel, during casting, is somewhat hotter than enough to leave the ladle clear of skull or if it is cold enough to leave a skull of from 600 to 800 pounds. There is, however, enough variation to warrant belief that a temperature which leaves about 200 to 400 pounds of skull in the ladle is the best. Of course, it is understood that the casting is done just as slowly as possible in all instances.

In making very soft steel, however, the permissible range is much less. Such steel will contain 0.07 to 0.10 per cent. of carbon, 0.01 to 0.03 of phosphorus, below 0.04 per cent. of sulphur, and from 0.10 to 0.20 manganese. The softest I have seen was C = 0.09, S = 0.031, P = 0.015, Mn = 0.095. For such steel the 1-inch nozzle is the best, provided it can be kept open and clean. The casting through the 1-inch nozzle takes about 20 minutes. The best results are obtained when there remain from 200 to 500 pounds of skull in the ladle.

There is no trouble in making the above steel in the converter, provided the proper temperature be obtained in casting. It will roll perfectly, without the slightest trace of red shortness. It will go through the mechanical tests to which we submit every heat of steel with perfect success. These tests I have described in my paper, read at the Reading meeting of the institute, October, 1892, and it is not necessary to describe them again. It will be remembered that they are very searching for brittleness, red shortness and general soundness.

On the other hand, if the steel be poured when too hot the blooms and billets will have surface cracks and striations, and will have great tendency to open up and tear in rolling. The ingots when investigated have invariably shown the blow holes in great number very near the surface. It has sometimes happened that an ingot from a heat which has been cast too hot has been taken from the heating furnace and has been allowed to cool off. In such cases the surface of the ingot has been deeply pitted all over, showing that the blow holes open through the outer skin.

The mechanical tests of such heats show precisely the same characteristics. Another peculiarity is that the tests show much more brittle steel than when the casting has been done at the proper temperature. When the casting of this dead soft steel has been skillfully done the tests show an absolutely dead soft, homogeneous and solid metal. The surfaces and edges are without cracks, checks or flaws of any kind, and the fractures are perfectly solid and fibrous (so-called).

If the steel has been cast too hot the bending tests will show cracks at the bends, the surfaces will show hair cracks and striations, the edges will show cracks and flaws, and the ear tests will have many of the indications of red shortness, while the fractures will show an open, porous and "stringy" metal. These characteristics show themselves in the finished product, but to a less marked degree.

I have not yet been able to fully satisfy myself as to all the reasons for such different results being obtained from steel of practically identical composition as shown by the analyses. There is no doubt, however, that the surface blow holes described by Mr. Caspersson play the most important part in causing them. Sometimes, though very rarely, the metal contains too much oxide, but this is very easily recognized by the fractures of the tests. In such cases the undue temperature has evidently been caused by overblowing It is evident, therefore, that the temperature plays a very important part in the manfacture of the softest grades of steel, and that the greatest care must be exercised in controlling it.

The same rule applies in the casting of open-hearth steel, but the permissible range of temperature is greater. This, of course, arises from there being less gas contained in steel made in the furnace. It is also true, however, that when proper care is exercised in manipulation just as good steel can be made in the converter as in the furnace. It is impossible to distinguish our softest steels or to tell by any tests, physical or chemical, by which process they have been made. This is, I think, solely due to the care and skill exercised in regulating the temperature in casting. I must also confess that it is only lately that we have convinced ourselves of this truth and have attained such skill.

Prof. Akerman has ascribed the small tendency to red shortness observed in Swedish steel to the fluidity of the slag. In my opinion it is to the same cause that the basic Bessemer process owes its comparative immunity from the same trouble. In all successful basic blows the slag is at least as thin as molasses on a warm day. This undoubtedly helps to wash the metal free from oxides. To this reason must probably be ascribed the fact that but little if any more manganese is now needed to be added in the basic than in the acid process, in order to prevent red shortness. The natural inference from the use of the after blow would be that more manganese would have to be added in the basic process, since more iron is oxidized. This was indeed generally the case in the early days of the process, as is shown by the remarks of Thomas, Holley and others. Probably, also, the dilution of the oxides by the large amount of lime has its influence in the same direction.

The thin slag is also a factor in causing the low loss reported, since less metal will be retained in it in the form of shot. The basic process has the same advantage as to thin slag, but this is more than offset by its greater bulk, which is two and a half or three times greater than in the acid process.

The Caspersson ladle is no doubt a valuable and even a necessary adjunct to the Swedish works, where the charges are small, comparatively cold irons are used, and the rate of production is slow. Most of its advantages can, how-

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ever, be obtained by allowing the metal to remain a few minutes in the vessel after the addition of ferromanganese, and by the use of shallow, dish-shaped ladles, such as those in use at Witkowitz and at Edgar Thomson.

The strainer may be a very good thing, but it strikes me that a man must be very sure of his temperature before he tries many experiments with it. I regret that Professor Akerman did not give dimensions of the two sizes of holes.

Copper Coating the Hulls of Vessels By Means of Electricity.

Those familiar with the subject, and therefore well qualified to express judgment, have frequently and emphatically called attention to the necessity for sheathing the hulls of steel vessels with copper in order to obviate the troubles arising from marine growth, both animal and vegetable, on vessels not sheathed with copper. It has been repeatedly pointed out that the cost of docking the vessels in the new navy will amount to many hundreds of thousands of dollars per annum, the cause for the docking being directly due to the fouling of the bottom. All the vessels should be docked twice a year and in some cases three and four times a year, depending upon the waters upon which they are afloat. Therefore any method which will obviate this difficulty should be received with favor. It is estimated by the officials of the Navy Department that the cost of docking, cleaning and painting the cruiser "Chicago" at suitable intervals during a three years' cruise will require the expenditure of nearly $100,000.

Theodore D. Wilson, late chief constructor of the United States Navy, in his report to the Secretary of the Navy writes as follows: "Thousands of dollars have been expended in the testing of protective and anti-fouling paints and compounds with results which give but very little encouragement to further experiments. We are forced to admit that despite the investigation of noted chemists and the deep study of other professional men there has not yet been discovered an efficient sustitute for copper sheathing."

The method of sheathing steel vessels with wood and afterward applying copper to the wood is extremely clumsy. In order to prevent galvanic action taking place, to the injury of the steel, it is essential to first attach a 2-inch wood sheathing to the steel by means of iron bolts, and on this place a second 2-inch sheathing attached by means of copper bolts, and this finally covered with copper sheets.

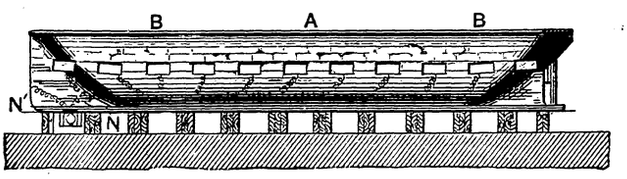


Fig. 1.—Side Elevation, Showing Tanks Applied to Hull.

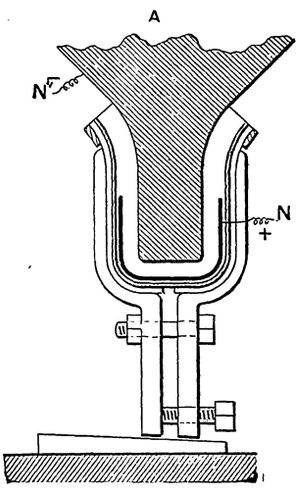


Fig. 2.—Bath for Copper Coating the Keel.

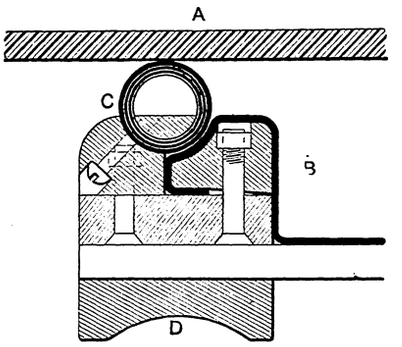


Fig 3.—Section Showing Joint Between Edge of Tank and Hull.

COPPER COATING THE HULLS OF VESSELS BY MEANS OF ELECTRICITY.

It is well known that marine growths take place no matter what the hull of the vessel may be covered with. The advantage of using copper lies in the fact that the growth, instead of being so firmly attached as to require mechanical means for its removal, as in the case of painted and plain hulls, is so weakly adherent that a slight motion of the vessel through the water, or even the ebb and flow of the tide, serves to remove it. Therefore, while a copper coated vessel may under certain conditions of inaction become slightly coated, as soon as the vessel moves through the water this growth falls away. The present Chief of the Bureau of Construction and Repairs in the United States Navy explains this in the following language, referring to copper: "That metal being easily corrodible in sea water, and the resulting verdigris having scarcely any adhesion to its metallic base, falls off with the least possible force, like the wash of the waves or the movement of the vessel through the water, and in falling off carries with it the marine accretions, leaving the metal continuously bright and clean. So continuous is the corrosion of the copper and the falling off of the verdigris that the spores of the marine fauna and flora have no time to develop, and the copper continues clean indefinitely. Experience has shown, however, that the loss of copper from this cause is only 30 per cent. of its thickness in 15 years.

Another vital condition, dependent on the keeping of the hull clean by sending the vessel to dock, is the decrease in speed and consequent increase in coal consumption due directly to the greater power required to drive a hull covered with marine growth through the water. Chief Constructor Philip Hichborn. U. S. Navy, in his report of April, 1889, estimates the resistance of an iron skin as twice that of a smooth copper bottom, increasing to nearly threefold when moderately foul, and to nearly nine times when barnacled, and barnacles and seaweed may collect upon the iron bottom to such an extent as to reduce the speed of the vessel to an almost imperceptible motion.

It is well known that United States vessels in waters far from docking facilities lose sometimes as much as 50 per cent. of their speed efficiency because their hulls cannot be properly cleaned.

Chief Constructor Wilson of the Navy Department, in his argument for copper sheathing, submitted a letter from Commander Philip of the "Ranger," dated June 22, 1892, in which he called attention to the fact that with a clean bottom the ship readily made 7 to 8 knots on 7 tons of coal, while with a foul bottom she only made 6 knots though burning from 12 to 14 tons of coal per day.

We illustrate in a general way a method of copper coating the hulls of steel vessels by means of electricity after patents issued to Thomas S. Crane, and which are controlled by the Ship Copper Plating Company of Newark, N. J. By this method copper is deposited electrically upon the surface of the vessel in successive sections, the joints of the sections being overlapped to unite them. The joints are united so perfectly by the electroplating process that the whole coating of the vessel becomes an unbroken metallic sheet. The plating is done by means of a bath like a rectangular box open at one side and fitted water tight to the skin of the ship.

Fig. 1 shows in side elevation the application of the tanks to be applied to the hull of a vessel; Fig. 2 shows the bath for copper coating the keel, and Fig. 3 a method of forming a water tight joint between the tank and vessel.

In these drawings A is the hull of the vessel, B the baths applied to the side, and N N^1 the electric conductors, C in Fig. 3 being a tubing which forms the water tight joint between the edges of the bath and the side of the ship.

Any form of elastic packing can be used to make the bath water tight where it touches the iron hull of the vessel. The frames of the bath are made flexible, and may thus be bent to suit the curved lines of the ship at various points, and special baths are constructed to embrace the keel, as shown in Fig. 2, and for complex sur-

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faces like the stern bearing and rudder post. It is very evident that the construction here shown may be modified considerably without departing from the principles underlying the system.

Somewhat extended experiments have shown that the copper can be deposited so as to perfectly cover the hull, and that it will cling with such tenacity to the steel as to make its removal impossible without destroying it. Concerning the rate and cost of depositing copper of suitable thickness by this method, it has been calculated that any number of baths 4 x 10 feet may be operated simultaneously in 70 hours' time with an expenditure of 6½ horse-power for each bath. Upon a vessel 400 feet long 60 baths can be operated at once in three rows on one side, with 390 horse-power; or 120 baths, 60 on each side, can be operated at once with 780 horse power, at a cost per day of $150. It is stated that the whole bottom of a ship drawing 20 feet of water can be plated from the water line down complete in eight or nine days by using 60 baths at once on each side, with 780 horse-power, shifting the baths two or three times. The plated surface of such a vessel would aggregate 24,000 square feet and require 55,500 pounds of copper, which, at 12 cents a pound, would cost $6660.

Banka and Billiton Tin Statistics

The Bureau of Statistics has published tables showing the quantities of tin produced in the Dutch East Indies. From the middle of April, 1891, to the middle of March, 1892, and during the years 1886 to 1891, the production of Banka was as follows:

Tin Production of Banka.

Districts.	Gross tons.
Muntok	260
Djeboes	700
Blinjoe	1,021
Soengeiliat	1,030
Merawang	696
Pairg Kalpinang	892
Soengeisleian	670
Koba	208
Toboali	278
Total 1891-92	5,755
1890-91	6,490
1889-90	5,431
1888-89	3,993
1887-88	5,110
1886-87	4,668
1885-86	4,631

The figures for Billiton are as follows:

Districts.	Gross tons.
Tandjong Pandan	355
Manggar	2,518
Linggrang	1,905
Boeding	1,264
Dindang	342
Total year ending April 30, 1892	6,384
1891	5,842
1890	5,825
1889	4,795
1888	4,713
1887	5,400
1886	4,908
1885	3,759
1884	4,297

In the last year reported the number of hands employed in Banka was 7989, while the number was 8690 in the Billiton mines.

The statement in *The Iron Age* last week that serious distress had not yet become apparent in the Youngstown district is followed this week by news to the effect that the patience of storekeepers, harassed by wholesale merchants in need of funds, has become exhausted. Credit has been stopped and the large body of impecunious unemployed workmen are receiving public support for themselves and families.

World's Fair Awards.

Awards were announced last week by the chairman of the Awards Committee, John Boyd Thacher, in Group 77, Department of Machinery, and Group 114 in Manufactures. The machinery awards were for miscellaneous hand tools, machines and apparatus used in various arts and are as follows:

Illinois—Chicago—Tuerk Brothers, medal making machine, Tuerk's hot blast gas burner, time stamp; United States Mangle and Laundry Machine Company, combined mangle, shirt ironer and collar and cuff ironer; Western Steel Protected Glove Mfg. Company, machine for stapling gloves; McCanna Bros., steam cylinder lubricator or oil pump; F. A. Hardy & Co., automatic lens grinding machine; Crown Pen Company, exhibit of tools and machines in operation for making gold pens; P. J. Daemick and John Tobin, molding machine; Covel Mfg. Company, dish washing machine; George S. Blakeslee company, dish washing machine; Electro-Automatic Appliance Company, automatic engine stop; Exhaust Steam Purifying Company, steam separator; Garris Cochrane Dish Washing Machine Company, Shelbyville, dish washing machine; Acme Machine Company, Moline, dish washing machine.

New York—New York City—Troy Laundry Machinery Company, mangles, washing machines, dampening, folding, drying, tumbling, starching and ironing machines, exhibition of model illustrating the construction of drying closets, &c., Duplex mangle machine, double geared brass washing machine; Clough & McConnell, wire corkscrew machine; American Road Machine Company, steel Champion road grader, Champion rock crusher, road roller; Ashcroft Mfg. Company, pressure and vacuum gauges, Bean's standard die stock and Brown's adjustable pipe tongs, Tabor indicator, continuous recorder; Nathan Mfg. Company, injectors, lubricators, oil cups and attachments; Schaffer & Budenberg, pressure gauges, ammonia gauges for ice and refrigerating machines, tachometers for high speed engines, and steam engine indicator, injectors and exhaust injectors; Sherwood Mg. Company, Buffalo, injectors, oil cups, oil pumps, lubricators, flue scrapers, gauge cocks, grease cups and flue blowers; William S. Doig, Brooklyn, box nailing machines.

Pennsylvania—Philadelphia—R. D. Wood, standard apparatus for the manufacture and use of gas; Riehlé Brothers Testing Machine Company, collection of testing machines; Riehlé Brothers Testing Machine Company, measuring instruments; Tinius Olsen & Co., testing machines and micromoters; H. K. Mulford & Co., tablet, lozenge and camphor presses; Consolidated Mfg. Company, brush making machinery; Wm. Sellers & Co., hydraulic testing machine; Delahanty Dyeing Machine Company, machine for coloring raw stock; Harrisburg Foundry & Machine Works, Harrisburg, steam road rollers; Landis Bros., Waynesboro, cylindrical and cutter grinding machine.

Massachusetts—Boston—Crosby Steam Gauge & Valve Company, stationary, marine and locomotive pop safety valves, feed water regulator and revolution counter, steam engine indicator, single spring gauge, double spring gauge and water line syphon valve, pressure gauge tester; McKay Metallic Fastening Association, wire nail making machine; Faneuil Watch Tool Company, bench lathes and attachments, watch makers' lathes and attachments, staking tools and the rivet patent friction clutch, watchmakers' lathes and attachments. Norton Emery Wheel Company, Worcester, emery wheels, tool room grinding machine, twist drill grinding machine. Northampton Emery Wheel Company, Leeds, emery wheels.

Ohio — Cincinnati — Lunkenheimer Company, fittings and appliances for steam engines and machinery, regrinding valves, gate valves, lubricators and steam whistles; J. H. McGowan, & Co., hydraulic tobacco machine. Springfield—Foos Mfg. Company, machinery for crushing, grinding and pulverizing, safety devices, attrition mill; Webster & Perks Tool Company, aluminum reducing wheel. Reliance Gauge Company, Cleveland, solderless copper floats and safety alarm water column; Hospital Supply Company, Sandusky, hospital laundry machinery; Brass & Iron Works Company, Fostoria, well drilling machinery; Buckeye Iron & Brass Works, Dayton, tobacco cutter.

Connecticut—Bristol's Manufacturing Company, Waterbury, recording gauges for pressure, temperature and electricity; Pratt & Whitney Company, Hartford, Thurston torsion machine and Thurston oil tester; Springfield Emery Wheel Company, Bridgeport, stands, safety device for edge grinders, safe chuck for cup wheels, surface and large shear-blade grinding machine, emery wheel.

Michigan—Detroit—Detroit Lubricating Company, sight feed lubricators, low water alarm, oil cups, glass oil cups, valves and other brass work for engines and machinery; Penberthy Injector Company, injectors.

Missouri—Gus V. Brecht Butcher's Supply Company, St. Louis, general display of butchers' supplies.

Rhode Island—Samuel Moore, Providence, automatic machine for making metal beads.

Canada—G. A. Baron, Sherbrooke, clothes drying outfit and machinery for its manufacture; Lent & Coyne, Ridgetown, Ont., washing machine; James Morrison Brass Mfg. Company, Toronto, brass fittings.

Germany—Malmedie & Co., Dusseldorf, wire working machines, machines for making railroad spikes; imperial German Insurance Office, Berlin, appliances for the protection of workingmen; Loeb & Co., Berlin, appliances for the protection of workingmen.

Great Britain—Cress & Co., Limited, Devizes, Wiltshire, dish washing machines; Davies Bros. & Co, Limited, Wolverhampton, improved galvanized iron plates and the exposition of the method of manufacture; John Moncrieff, Perth, Scotland, water boiler gauge glasses; Sidney Smith & Sons, Nottingham, general exhibit of gauges, valves, fittings, &c.; Waterforce Laundry Machine Company, Limited, London, washing machines.

New South Wales—Robert Austin, Sydney, Austin perfect patent washer.

Russia—Prince Gagasene, St. Petersburg, electrical apparatus to the machine for testing the strength of materials.

Wrought Iron and Thin Metal.

The awards in Group 118, Manufactures, are for wrought iron and thin metal exhibit. They follow:

Illinois — Chicago — The Winslow Brothers Company, large hand forged carriage gate, hammered leaf wrought iron work, iron stairs, railings, newels, duplex electroplating on iron, metal mantels and attachments, elevator in-

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closures; Northwestern Horse Nail Mfg. Company, horseshoes and nails; F. W. Hainsworth & Son, bedsteads; Architectural Iron Works, iron forgings, lamps, fire screens, candle, gas brackets iron cross for graves.

New York—New York City—Tiffany Glass & Decorating Company, New York, wrought copper lamps, fire screen, wrought silver lamp; Bayor & Schebner, wrought iron art grille, andirons.

Maryland—William Wedekind, Hagerstown, horseshoes and horseshoe tools.

Michigan—E. T. Barnum, Detroit, bank and office railings.

Massachusetts—Putnam Nail Company, Boston, horseshoe nails.

Indiana—The Central Iron & Steel Works, Brazil, open hexagonal turn buckles.

Connecticut—Caperwel Horse Nail Company, Hartford, horseshoe nails.

Pennsylvania — Cartwright Metal Roofing Company, Philadelphia, metal shingle roofing.

Ohio—William Russell, Centi, horseshoes; the Omniform Mfg. Company, New Brunswick, horseshoe and calk.

Italy—B. Zilaffi, Sienna, art metal; Taeddo Forcla, Bologna, art metal; Cav. E. Viarerago, Milano, safety ladder fire escape (model); Costello Prospero, Florence, wrought iron.

Germany—Berlin—Edward Puls, two gratings of rare metal, large gate; Max Boettcher, wrought ornamental iron work; Max Marcus, wrought iron showcase; P. Marcus, wrought iron. Munich—Robert Smith & Co., candlesticks, hinges, tea stands; Gottfried Stumpf, palm tree of beaten iron, candlestick; Peter Koebbel & Son, wrought iron work, fancy; Joskunst, wrought iron door knockers, clock cases, &c.; Reinhold Rirs, lamp shades, lanterns, lattices, &c.; Joly Eisenwerk, Wittemberg, adjustable supports for lattices; L. Mannstaedt & Co., Kalk, lattice work for ornamental iron; Val. Hammerau, Frankfurt-on-the-Main, wrought iron ornaments for gateways, &c.; Fred. Keyser, Leipsic, flower baskets, tables, jewel caskets, &c; Carl Koeshert, Dessau, fancy wrought iron work; F. K. Buhler, Offenburg, wrought iron gate, embossed patterns in wire screen (wrought iron); Gebr. Armbruster, Frankfurt-on-the-Main, ornaments of wrought iron and ornamental metal work.

Canada—Sedingham Bros., Victoria, B. C., horseshoes.

Mexico—Gran Fundicion de Hierro de Monterey, Monterey, articles in iron.

Austria—Vienna—Alex. Nehr, artistic iron work done by hand; Auter Schwarz, artistic iron work; Ludwig Wilhelm, artistic iron work; Fred. Hubner, artistic forging; Edward Ferkely, Sig Pauditz Establment, ioxidating wrought and cast iron.

Sweden—J. W. Oterly Company, Limited, Dannemora, milling machine, cutters and tools; Uddeholm Company, Limited, Uddeholm, steel springs and horseshoe nails; Degersfors Iron & Steel Works, Degersfors, hammers and stonemason's tools; Fagarsta Iron Works Company, Limited, Ustafors, springs and sundry tools; Finspong Gun Factory Company, Limited, Skon arbo, tools for working stone; E J. Ljunberg, Falun, horseshoe nails; P. Peterson, Surahammar, bowls of pressed steel plates; A. G. Svedelius, Uddeholm Company, Limited, Soderfors, cold rolled steel springs.

Russia—St. Petersburg—P. P. Fon Derlos, horseshoes and nails; V. A. Kondakoff, models of horseshoes; L. Renner, artistic wrought iron ornaments

Spain—Santamaria, Barcelona, corrugated steel gates.

Germany—Moeller & Co., Hagen, rosettes and ornaments; Armbruster Bros., Frankfurt, artistic wrought iron work and gates; Franz Brechenmacher, Frankfurt, wrought iron, park gates, &c.; K. Buchler & Son, Offenburg, modern wrought iron lattice.

Ceylon—Ceylon Government, Colombo, brass art ware, pewter plates.

Belgium—Société Anonyme des Usines et Fonderies de Zincs de la Vielle Montagne, Angleur, samples of roofing.

Denmark—M. Pederson, Brenderslec, brass and tin work.

New South Wales—J. L. McEachern, Albury, horseshoes, jumping, draft, coach, hunting, and racing shoes, set of farrier's tools; William Pitman Sydney, improved horseshoes; John L. McEachern, Albury, horse sling.

A few exhibitors in this group are not yet reported on and will be announced later, approved by the Executive Committee on Awards.

Iron and Steel and Their Products.

In Group 49, Department of Mines and Mining, embracing metallurgy of iron and steel, with the products, the awards follow:

Illinois — Chicago — Cambria Iron Works, four awards, collection of products, washed metal, Kelly steel converter and sections of iron and steel rails, steel axles; Crane Elevator Company, two steam reversing engines; Chicago Fireproof Covering Company, mineral wool, its manufacture and products; Sanderson Bros., tool steel; Illinois Fluor Spar & Lead Company, fluor spar and its processes.

Massachusetts—Washburn & Moen, Worcester, iron and steel bars, rods and wire.

New Jersey—S. J. Meeker, Newark, malleable iron, gray iron and brass castings.

New York—Chrome Steel Works, Brooklyn, collection of products of chrome steel.

Michigan — Elk Rapids Iron Company, Elk Rapids, charcoal pig iron.

Minnesota — Duluth Furnace Company, West Duluth, pig iron.

Missouri—Iron Mountain Company, Iron Mountain, photographs and charts of mills and mines.

Ohio—Otis Steel Company, Cleveland, steel boiler and fire box plate, cast steel rolls; State Board, four awards, Ohio iron shapes, pig iron, collective exhibit of iron ore, cold rolled steel; Youngstown Steel Company, Youngstown, pig iron and washed metal; Columbus & Hocking Valley Coal and Iron Company, Straitsville, pig iron; Briar Hill Iron & Coal Company, Youngstown, pig iron.

Pennsylvania — Pittsburgh — Singer, Nimick & Co., steel; W. Dewees Wood Company, iron and steel sheets and plates; Sterling Steel Company, steel armor projectiles; Crescent Steel Company, three awards, mining drill steel, fractures of steel, steel (die) compressed polished drill rods; Elwood Iron Tube Works, Philadelphia, metal tubing of steel; Alan Wood Company, Philadelphia, sheet iron and steel; Carpenter Steel Company, Reading, steel specimens; Chestnut Hill Iron Company, Columbia, iron furnace charge and products; Pennsylvania Steel Company, Steelton, bridge materials; Bethlehem Iron Company, South Bethlehem, nickel steel; Tyler Tube Company, Washington, charcoal iron tubes; Pottstown Iron Company, Pottstown.

California — Clipper Gap Furnace, Placer County, pig iron.

Ohio—Solid Steel Company, Alliance, collection of castings of open hearth steel.

Germany — Essen — F. Krupp, ten awards, bed plate of molded steel casting, collection of steel casting, collection of steel tires, pressed steel centrifugal vessels, steel cast center for locomotive driving wheel, collection of forging of open hearth steel, steel cast stem for armored vessels, steel cast locomotive frame, collection of products of iron and steel including compound armor plates; Kgl. Friedrich Smelting Works, Tarnowitz, products and ores of zinc; D. C. Olls & Co., Dahlhausen, drawings of a coke oven; G. Luttur, Magdeburg, drawings showing blasting operation at the Ersomic Thee Danube, &c.; Rud. Boecking & Co., Neunkirchen, cast iron pipe, rolled and forged iron bars, wires; Kgl. Friedrichsgrube, Tarnowitz, 26 pieces lead and zinc ores; Hoerde Mining & Steel Company, Hoerde, Westphalia, wheels, axles and iron superstructure for railway; George Mary Mining, Iron & Steel Company, Osnabruck, rail, joints and sleepers, &c.; Union Actiengesellschaft fuer Bergbau Eisen und Stahl Industrie, Dortmund, pressed castings, axles and wheels for locomotives; Union Stock Company for mining iron and steel, Dortmund, products of steel; W. Fitzner, Laurahuette, collection of hand welded objects in wrought iron; Bochumer Verein, Bochum, chime of barge steel cast bells; Hoerde Mining & Steel Company, Hoerde, Westphalia, sections and specimens of materials; Association for Sale of Spiegeleisen, Siegen, spiegeleisen; Deutsch Oesterreichische Mannesmann Works, Berlin, seamless Mannesmann pipes for oil wells; Fried. Krupp Grusonwerk, Madgeburg Buckau, chilled iron; Gute Hoffnungshuette Oberhausen, iron work for exhibition hall of Fr. Krupp; Johann Wolfg, Fuchs, Nuremberg, fine wires of steel, &c.; Stumm Bros. & Rud. Boecking Company, Neunkirchen, articles made of steel rails; Stumm Bros. & Rud. Boecking Company, Neunkirchen, collection of cast iron pipe; Masch Anstalt, Kalk, rolled steel; Phœnix Actiengesellschaft Bergbaur & Huettenbetrieb, Laar near Ruhrort, section of grooved rails; Vander Zypen & Charlies, Cologne, Deutz, solid, pressed parts of steel for passenger and freight cars.

Great Britain—Low Moor Iron Company, Bradford, sea lime, coal and ironstone and refined metal, puddle and finished iron; Jessop & Son, Sheffield, crucible cast steel in bars, sheets and forgings.

Italy—Sagsamoto Vanzette & Co. Milan, steel castings.

Mexico—Ricardo Honey Limapan, Hidalgo, iron rods worked in a cold state.

Russia—Princess Abancleck, Lazarwoa, collection of iron bars and sheets; Votkinsci Iron Works, Votkinsci, three awards, cold and hot test of Martin steel, collection of models and drawings, collection of pig iron and steel; Mountain Blagodat Mine, Peru Blagodat, magnet iron ore and associated rock; Balashoff Bros., Ufa, specimens of pig iron; Huta Bankowa Iron Works, Dombrowa, 24 specimens of steel bars; iron works of Mr. Rastorgwebt, St. Petersburg, 381 specimens of molding of cast iron; Katharine Iron Works, Petrokoff, one roll for mills; Z gazinsky Iron Works of Mr. Shemoff, Ufa, three rings of cast iron; Chubinidge, Kivirili Caucasus, four specimens of manganese ore, pyrolusite; Mining

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Administration of South Russia, manganese ore

Siam—Government of Siam, Bangkok, iron, sulphur and copper ores, &c.

Spain—Altos Hornos, Bilbao, iron and steel ingots.

Sweden—Osterby Iron & Steel Works, Dannermora, collection of charcoal and bar iron; Sandviken Iron Works, Sandviken, bands of steel; Jernkontoret, Stockholm (five awards), collection of charcoal, pig and cast iron, collection of iron ore, collection of Lancashire iron, Bessemer open hearth steel, collection of steel castings, collection of iron and steel in bars, rods, &c.; Uddeholm Company, Uddeholm, collection of iron ores and products of iron and steel.

Venezuela—Government of Venezuela, Caracas, iron ores.

Austria—Crucible Steel Factory, Kladno, steel in all forms; Manufactory of Iron and Steel, St. Egyd, files and scythes; Gartenberg, Lauterbach, Goldhammer & Wagmann, Drohobyer, different kinds of ceresine and osokerite; Establishment for Rolled Tin Plate Rudolfshuette, Teplitz, thin sheet iron.

Brazil—Fabric de Ferro de Zpanoma, St. Paula, bar iron and other products.

Canada—Canada Iron Company, Montreal, ores.

Antimony and Other Metals.

There were a few awards in Group 54, Mineral Department, metallurgy of antimony and other metals not specially classed. The medal winners were:

California—Mathison Smelting Company, San Francisco, Star antimony.

FOREIGN COUNTRIES.

Great Britain—Johnson, Marthey & Co., London, platinum and platinum apparatus and metals.

Japan—Kumasuke Kawabata, Zeuts, stibinites dressed ore; Kudo Yoshimichi Wada Ehime, refined antimony; Fijitagumi, Osaka, pure antimony.

For Tin and Tin Plate.

Awards in Group 52 are for metallurgy of tin, tin plates, &c. They follow:

Ohio—Cincinnati Corrugating Company, Piqua, American terne plate.

South Dakota—Hill City—Harney Peak Company, tin ore treated by concentration and smelting; Mining District of Hill City, tin ore prison rock; Keith & Co., Deadwood, calcium carbonate of lime; Harney Peak Mining Company, concentrates casserite, black tin; Bear Gulch, tin ore casserite.

FOREIGN COUNTRIES.

Japan—Kihachiro Kawamoto, Kyoto, tin foils and papers.

Early Apparatus in Mining.

In Group 68, Mines Department, which includes originals or reproductions of early and notable apparatus used in mining, the following awards were made:

California—California State Mining Bureau, rocker with sieves and pan for washing and testing gold.

Massachusetts—City of Lynn, Mass., first iron casting made in America.

New York—George F. Kunz, Tiffany & Co., New York, historical implements, instruments, medals and relics.

United States Government—Department Mines and Mining, department exhibit of transparencies.

Graphites, Clays, and Asbestos.

Group 46, Department of Mines and Mining, includes graphite and its products, clays and other fictile materials and their direct products, asbestos, &c. The awards were in part as follows:

Colorado—Golden—Golden Pressed Fire Brick Company, collective exhibit of clays and bricks; C. P. Hoyt, clays, Kaolin.

Georgia—Chicago—Salt Mountain Asbestos Company, short fiber asbestos in rock and ground.

Illinois—Chicago—H. W. Johns Mfg. Company, asbestos manufacturing machines and products.

Indiana—Indianapolis—United States Encaustic Tile Works, encaustic tile.

Massachusetts -- Taunton — Phœnix Mfg. Company, graphite crucibles.

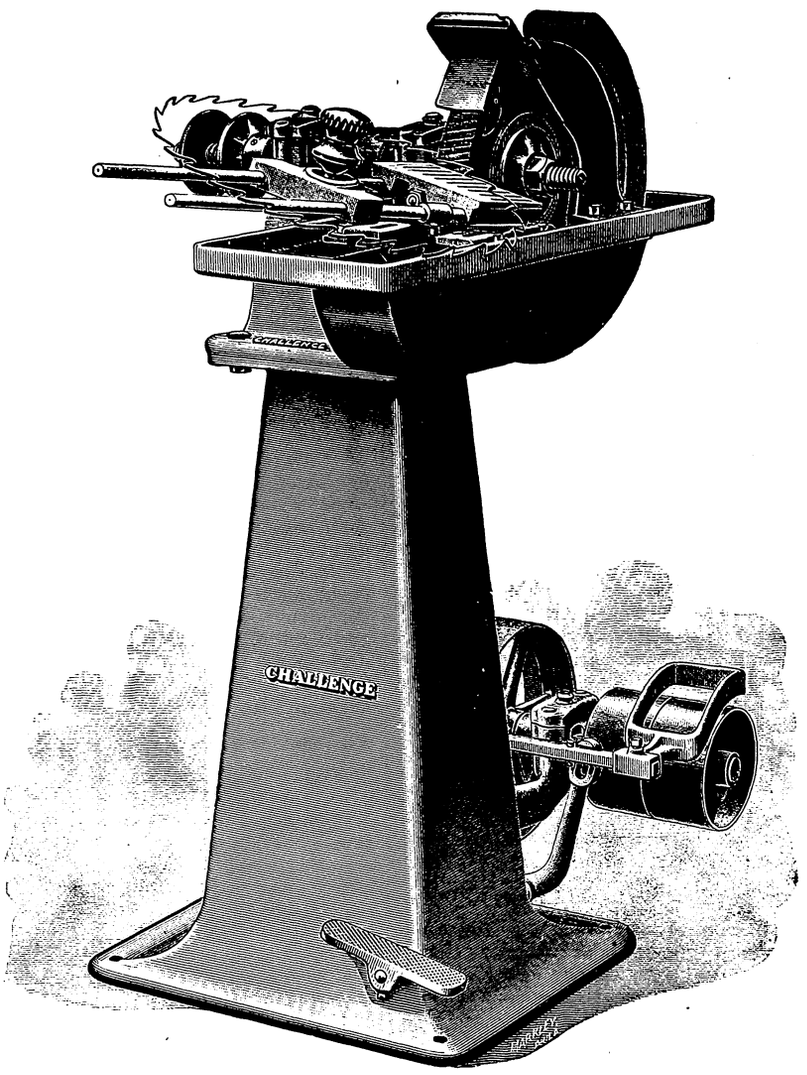
Missouri—St. Louis Hydraulic Brick Company, brick and fire clay.

New York—Glasgow—F. M. Van Dusen and 16 others, Glasgow, tempering of sand, &c. Ticonderoga—Dixon Crucible Company, graphite, crude, in lumps. New York City—H. W. Johns Mfg. Company, technical display of asbestos.

Pennsylvania—Philadelphia—Cyrus Borgner, fire brick and clay retorts; Georgia Beauxite Mineral Company, beauxite mineral ore; Robert Taylor & Son, graphite crucibles, retorts, dipping cups; Star Encaustic Tile Company, floor and hearth tiles, plain and encaustic; Beaver Falls Art Tile Company, Beaver Falls, embossed and enameled tile.

The Challenge Emery Grinder.

We here illustrate a new emery grinder, with saw sharpening attachment, which is so arranged that one of the wheels may be run dry and the other with water. The device incasing the wheel on the right is for wet grinding, water being used to prevent drawing the temper of the saws when being ground; a similar device, not shown in the cut, is also provided when wanted for dry grinding. These wheel guards are so arranged as to catch and retain all the dust and grindings without requiring the employment of exhaust fans, and they also serve as a protection to the workman in case of accident to the wheel. The guard for wet grinding differs from that for dry grinding in having an opening at the back through which the curved piece shown is introduced to control the hight of the water in the tank below, the amount of water thrown upon the work depending upon its hight, or the depth to which the wheel enters it. The piece mentioned is held in place by a spring, and can be instantly adjusted to any desired level. By the form of hood adopted the water picked up by the wheel is thrown directly on to the work, and the hood can, by the arrangement shown, be readily adjusted to suit the wheel as the latter wears down. The guard for dry grinding will also hold water below, which serves



THE CHALLENGE EMERY GRINDER.

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to catch and retain all dust and grindings. Both arrangements are provided with separate pockets in front, this separate pocket being for water in which to dip tools.

The machines are built in seven sizes, suitable for wheels from 10 to 30 inches diameter, the smaller sizes being arranged to place on the bench, belting from above or below, or they are mounted upon a plain base or upon the one shown, which has countershaft attached. In this latter arrangement the driving side of the belt passes through a hole provided for that purpose at the top of the column and down through the hollow column to the driving pulley.

The attachment for sharpening saws is so arranged that circular saws of any shape or pitch for rip or cross cut can be put in perfect round, gummed and ground straight or bevel to any desired degree, the teeth being exactly alike. It will be noted that the face of the wheel shows transverse corrugations, the purpose of which is to prevent glazing and heating and to increase the cutting. This is done by a double dresser furnished with the machine, one end of which forms corrugations, while the other end dresses to a smooth surface for fine grinding. This machine is made by the Appleton Mfg. Company of Thirtieth and Thompson streets, Philadelphia.

WORLD'S FAIR NOTES.

J. G. Hoffman

of Chicago, inventor of the Tornado fan blower, exhibits one at Column L 33, Machinery Hall. A forge of his design, supplied with a trough, is also shown. The Tornado fan blower has a combined crank and lever motion and gives an after blast the same as a bellows. There is no dead center and it can therefore be operated from any point with either a long or short stroke. All parts are interchangeable, and the fan shaft runs on hardened centers with self oiling supplies. These goods are manufactured by the Hurlbut Mfg. Company of Racine, Wis.

The Walworth Mfg. Company

of Boston, Mass., have a large and comprehensive exhibit at Column O 27, Machinery Hall, of the many articles for which they have long been known as manufacturers. In a handsome case of ebony finish, supported by Ionic pillars, displayed against a black background, a beautifully finished assortment of nickel-plated steam and water fittings stands out in strong relief. Two sections of the Mills boiler, which they now manufacture, and the Walworth automatic sprinkler, are conspicuously shown. Cast iron fittings, valves and an extensive variety of expansion joints are displayed. The Ashley and Stillson wrenches, so well known as the product of this company, are tastefully arranged, while an attractive feature is the Hall tapping machine, which is used for tapping street mains of from 4 to 24 inches in diameter while under pressure. A brass railing surrounds the entire exhibit, while on each corner a support for street railway service, either for trolley wires or elevated system, blocks off their large space.

Allington & Curtis Mfg. Company

of East Saginaw, Mich., have one of their dust collectors in full operation at Column E 53, Machinery Hall, in connection with a Sturtevant fan. The efficiency of their collector is made apparent to every one who visits the exhibit.

The U. S. Wind Mill & Pump Company

of Batavia, Ill., have constructed a building in the wind mill section on the exposition grounds, which is in the shape of a wind mill base. It gradually tapers toward the top, where a 30-foot Halladay wheel revolves and transmits power to a number of machines of their manufacture, shown in the 40-foot circular room below. Among these are noticeable an I-X-L feed mill and sheller, saw frame, horse-powers, having tools and pumps. Models of their several wheels are also shown.

E. B. Steele

of Chicago, manufacturer of adjustable window derricks for the hoisting of organs, pianos, safes, &c., has an exhibit in Machinery Hall, at Column M 30. The fastenings of this derrick are positive and rigid. Those shown at the fair have stood a test of 8700 pounds and will safely carry 6500 pounds. They are easily erected and may be quickly taken down for transportation, consisting merely of a frame work to fit in an ordinary window frame, to which it is easily clamped. Attached to the frame work is a projecting piece in inverted V shape, the sheave being fastened in the apex.

The Goodsell Packing Company

of Chicago have an interesting exhibit at Column I 32, Machinery Hall, of their engine packing, showing raw flax and coil after coil of their combination of braided flax, woven duck and rubber cushion for piston rods, pump plungers, &c. Showcases contain the Rubber Back Flax and the Swain Metallic Packing made by them. This packing is in wide use for steam, water, air, ammonia, &c.

The National Machinery Company

of Tiffin, Ohio, exhibit a large line of machinery at Column K 46, Machinery Hall, most of which is shown in operation. The company are extensive builders of bolt and nut machinery; also upsetting, bending, spike, rivet and wire nail machines, &c. The display of bolt and nut machines is an excellent one, the specimens shown demonstrating the perfection achieved in this line of automatic machinery. The bolt cutters comprise a 1½-inch single, 1-inch double, a 1½-inch double, a 2½-inch double, and a double rapid track. For the purpose of giving a correct idea of the dies used in these cutters a head has been separately mounted, which is fitted with four different kinds of dies —flush case, plain, case and hat. The plain die is made of a piece of steel cut off at an angle of 50°. The hat die is made in the same way, but has a milled steel hat or plate fitted close with one screw on top, to prevent it moving endwise. The case die is made of malleable iron; cores are cast and then broached to exact size, grooved on both sides to lift easily in the die ring; has all the back bearing; is grooved in front to throw the chips, and has a sharp edge to remove any grit that may get in the slots of the barrel. The flush die is made by dividing the face plate on the head in four parts and shouldering the case and holding the chaser by means of a shouldered screw. The mechanism for opening and closing the head of these bolt cutters is an important improvement, permitting this to be done either automatically or by hand. Another improvement is a centering device for the jaws. The double rapid track bolt cutter is adapted to the continuous threading of bolts for one or two days without changing dies, as practiced in bolt works. With two spindles 5000 track bolts can be threaded per day, while a three-spindle machine will thread 7000, at a speed of 250 revolutions per minute. The nut tappers shown are of two kinds. One is a six-spindle back geared machine, with the spindles arranged in a straight frame. The power is applied between the bearings on the driven spindles, any one of which can be stopped independently of the others by a treadle immediately underneath. There are six changes of speed. The other style of tapper shown is a rotary. It occupies a conspicuous position in the front of the exhibit, and its unique appearance always attracts a crowd of spectators. This machine has ten spindles arranged in a circle, traveling round a central column. These spindles are driven from a central spur wheel, fixed at the center, and all the spindles having pinions engaging with it. Below the spindles a large pan revolves simultaneously with them containing the holders for the nut blanks. The operator stands in front of a place on the central spur wheel where a worm thread has been fixed which engages with rack teeth on each spindle as it comes round. The spindle thus rises from the completed nut, which is then removed by the operator and a fresh blank is inserted for tapping. It performs its work well and with remarkable rapidity. A bolt heading, forging and upsetting machine is shown, which is one of the most powerful of its class, especially adapted for use in large railroad, forge, bridge and car shops. It has a suspended rocking die attached to a hinge toggle motion and operated by an eccentric face cam on a side shaft. One of these was recently sold to the Eames Vucuum Brake Company of Watertown, N. Y., who have since sent some 800 pounds of forgings to be shown in connection with the National Machinery Company's exhibit. These forgings embrace a number of heavy pieces of rather difficult pattern. Other machines exhibited are a No. 3 bolt heading and upsetting machine, an improved Burdict bolt header, a hot pressed nut machine and a wire nail machine, besides a model of the National rock and ore breaker. A full sized breaker is exhibited in Section X S, Post 9, Transportation Building. Since the exposition opened the company have sold 60 of their wire nail machines to the I. L. Ellwood Mfg. Company of De Kalb, Ill., and ten to the Carnegie Steel Company for their Beaver Falls works. Numerous sales of other machines have also been made through this exhibit to domestic and foreign firms, whose names are conspicuously displayed in connection with prints of the machines on a bulletin board. J. W. Duntley, 1020 Monadnock Block, Chicago, is general sales agent for the company.

The Wm. P. Miller Company

of 100 Greenpoint avenue, Brooklyn, and 212 Washington street, Chicago, make a good display of their lubricating material at Column L 33, Machinery Hall. The columns of their booth are formed of boxes of American and Universal lubricant, Shield cylinder grease and Victory compound, and cans of lubricating compound and Shield cylinder grease, the boxes forming the bases and caps of the columns and the cans forming the center. The roof has a cornice

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of shafting cups. A pyramid is erected in the center of the booth for the display of more shafting cups, while piles of cans of lubricating material are grouped about the space. In connection with this exhibit, a sample is shown of the Wiley safety oil cabinet by R R. Street & Co., 184 and 186 Washington street, Chicago. This is a receptacle for oil, intended for use in stores and factories, having a sink with a hinged lid at the top where oil is drawn and measured, the drippings going back into the cabinet, a hydraulic seal preventing evaporation. It has a wood case and a zinc lining to keep the oil cool in warm weather and prevent the generation of gas. The oil is pumped or syphoned into the cabinet from the original barrel.

Curtis & Curtis

of Bridgeport, Conn., exhibit samples of their specialties in pipe working tools at Column J 38, Machinery Hall. Among these are several power cutting and threading machines, the largest being shown belted up and in practical operation on 8-inch pipe. Half a dozen other sizes of such machines for either hand or power are exhibited, but not in operation. Two of them are mounted on bases with countershaft and driving pulleys attached, but the others consist merely of the cutting head, shown as a portable hand machine. All have samples of threaded pipe attached to show the exact work done on each size of machine. The Forbes die stock used in these machines is a complete tool, being all that is required to thread or cut off pipe, while much lighter than the old style of stock and the vise which must accompany it. With it one man can cut off and thread large pipe up to 8 inches diameter by hand and without assistance, while with the smaller sizes a boy can thread 2 and 3 inch pipe with but one hand on the crank. The bits draw back out of the way when the thread is cut. The parts are shown of an ingenious pipe and bolt threading attachment for lathes. This attachment has been devised to meet the wants of those whose work does not warrant the purchase of a regular power pipe threading machine. It can be fixed to any lathe within certain limits of size. It consists of a die carrying head attached to the spindle like a chuck, an adjustable self-centering vise attached to the carriage, and an adjustable pipe rest attached to the bed of the lathe to support long lengths of pipe. The feeding is done by hand, or an automatic feed can be arranged by setting the lead screw of the lathe to the number of threads corresponding to the standard of thread to be cut. Samples are shown of pipe vises, both hinged and solid frame, also reversible ratchet drills and reversible ratchet die stocks.

The Dake Engine Mfg. Company

of Grand Haven, Mich., exhibit at Column I 37, Machinery Hall, the most singular engine in the exposition, which is known as the Dake square piston double reciprocating engine. The cylinder of this engine is square and only from 2¼ to 5 inches thick for power ranging from 1 to 20 horse. The piston being reciprocating, and taking steam at four different points, all danger of a dead center is avoided, and the engine starts off promptly on the admission of steam. The company make a specialty of small engines of 1 to 20 horse-power for all purposes. They are specially adapted, however, for direct attachments, as, for instance, to fans, blowers, centrifugal pumps, dynamos, &c. Those in operation in this exhibit are driving fans and blowers, running very smoothly and noiselessly at high speed. For the purpose of showing the interior construction, the head has been removed from the cylinder of one engine and replaced by glass, the piston being run by a belt from another engine. Machines of this type have now been in use constantly for two years without perceptible wear. Marine engines are shown, which have been devised for various uses on shipboard, such as hoisting freight, reeling hawsers, &c. The same engines are adapted to use as builders' and contractors' hoists. There are also square piston double reciprocating engines with a reversing lever attached, which simply admits steam from opposite directions according to the position of the lever, and without complicating the engine in the least. Yacht and launch engines are thus easily arranged and take very little space The company make a steam feed engine of the same type for sawmill use. These engines have attracted much attention, especially from foreign visitors.

J. E. Lonergan & Co.

of Philadelphia make a fine exhibit of pop safety valves and oil cups at Column M 27, Machinery Hall. These are shown on a set of pyramidal shelves in the center of the space and in showcases on either side. Safety valves are arranged about the lower part of the pyramid and oil cups on the upper shelves. The showcases contain elegantly finished oil cups. The safety valves are well designed and so constructed as to give prompt and reliable action in service, holding the steam remarkably close to working pressure and not allowing it to rise above the point set, if the valve is of the proper size. Water relief valves are shown, which are designed for use on steam pumps, fire hydrants, steam fire engines, feed water heaters, &c., wherever an automatic valve is needed to relieve overpressure of water and prevent hose or pipe from bursting. These are also used on steam engines to prevent damage caused by water in cylinders. Lock-up valves are also shown for portable farm, fire and hoisting engine boilers. In connection with the foregoing devices an exhibit is made of steam specialties manufactured by Timothy Kiely of New York. These comprise a positive acting pump governor for automatically returning condensation to boilers when a low pressure is carried or the exhaust is used for heating purposes; a Standard steam trap, containing an open float that cannot collapse, and, being hinged to the cover, has three or four times the power of open floats ordinarily used in drain traps; high pressure reducing valves constructed to carry up to 200 pounds on the high pressure side and to reduce to anywhere from 15 to 180 pounds without the slightest variation, pressure regulators, back pressure valves, multitubular oil and steam separators, return traps, &c. This entire display is under the charge of the Chicago Engineer Supply Company, 108 Lake street, Chicago, Western agents for the sale of the goods. They have issued a handsome catalogue, covering these and other steam appliances.

Frequent recent attempts at train wrecking have obliged the Canadian Pacific Railway to patrol its tracks near Quebec with armed men.

Fuel Oil System at the Fair

As is pretty generally known, no coal or other solid fuel is used for steam purposes at the exposition. The large quantity required—about 550 tons per day of twenty-four hours—for firing the immense steam plant would have rendered the problem of providing, storing and preliminary handling a very serious one, to say nothing of the army of firemen and laborers required. The mere matter of collecting and disposing of the 75 or 100 tons of ashes would have involved a considerable amount of trouble and expense, and it would have been impossible to avoid the very objectionable necessity for running railroad trains into the grounds continuously, which, with the attendant switching, would have been highly dangerous to life and limb. In view of these facts, and also that it may be considered as being more in the line of progress, the use of oil fuel was very early decided on, the intention being that the composite system employed should place on exhibition the latest and most improved forms of oil-burning apparatus and appliances relating thereto, as well as the receiving, storage and distribution systems. The exceptional nature of the conditions to be met rendered it necessary to exercise the utmost care in making the plans. Any mistake or oversight which, in case of an ordinary plant would be of little or no importance, might lead to very serious results in this instance.

On the score of magnitude the plant may be considered as unprecedentedly large—not, possibly, as to the steaming capacity, but as an all oil-fired boiler plant. It is, necessarily, somewhat complicated, as, in addition to the boilers in the main battery, there are several isolated steam plants of considerable size throughout the grounds which are operated by this system. In order to obviate the necessity for delivery by tank cars a 6 inch pipe line was laid, connecting the system directly with the Standard Oil Company's refining works at Whiting, Ind., thereby insuring an unfailing supply at all times. The fuel is not crude petroleum, as stated, but "residuum"—a by-product from the refining of illuminating oils—the actual fire test of which is 350° F. As this is very considerably above any probable temperature to which either the main volume of oil in the storage tanks or that in the pipes forming the distribution system can be exposed, it may be considered as absolutely safe from accidental explosion or ignition; as a matter of fact, however, as will be clearly apparent from the accompanying illustrated description, the system now in operation is so perfect in all essential details, and so well provided with safety and precautionary devices, that even were the alleged "crude oil" used, it might be done with perfect safety, notwithstanding the explosive nature of the liquid fuel, due to its large percentage of free hydrogen.

In order as much as possible to isolate the receiving and storage tanks, oil pump house, &c., they were located at the most remote point within the grounds, namely, in the narrow angle formed by the boundary fence and Lake Michigan, at the extreme southeast corner. It is here so far removed from the nearest buildings that even if the entire body of oil stored were ignited, the danger of a general conflagration would be very slight. From the pump house the oil is conveyed to boiler house by a 5 and 6-inch wrought iron pipe laid under-

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ground at a sufficient depth to protect it from all external influences. These pipes are paralleled by 2-inch live steam pipes their entire length to insure fluidity at all times. Within 300 feet of the boiler house an inverted syphon or U is placed, while directly following is a pavilion or valve station, from which the entire distribution system is controlled. In case of fire or danger of any kind, the attendant, who is stationed night and day in the valve house, can within a few seconds not only stop the flow of oil from the pumps, but actually reverse the action of the latter and cause them to draw from and quickly empty the entire line of distributing pipes and return the contents to the main storage tanks from which it was drawn.

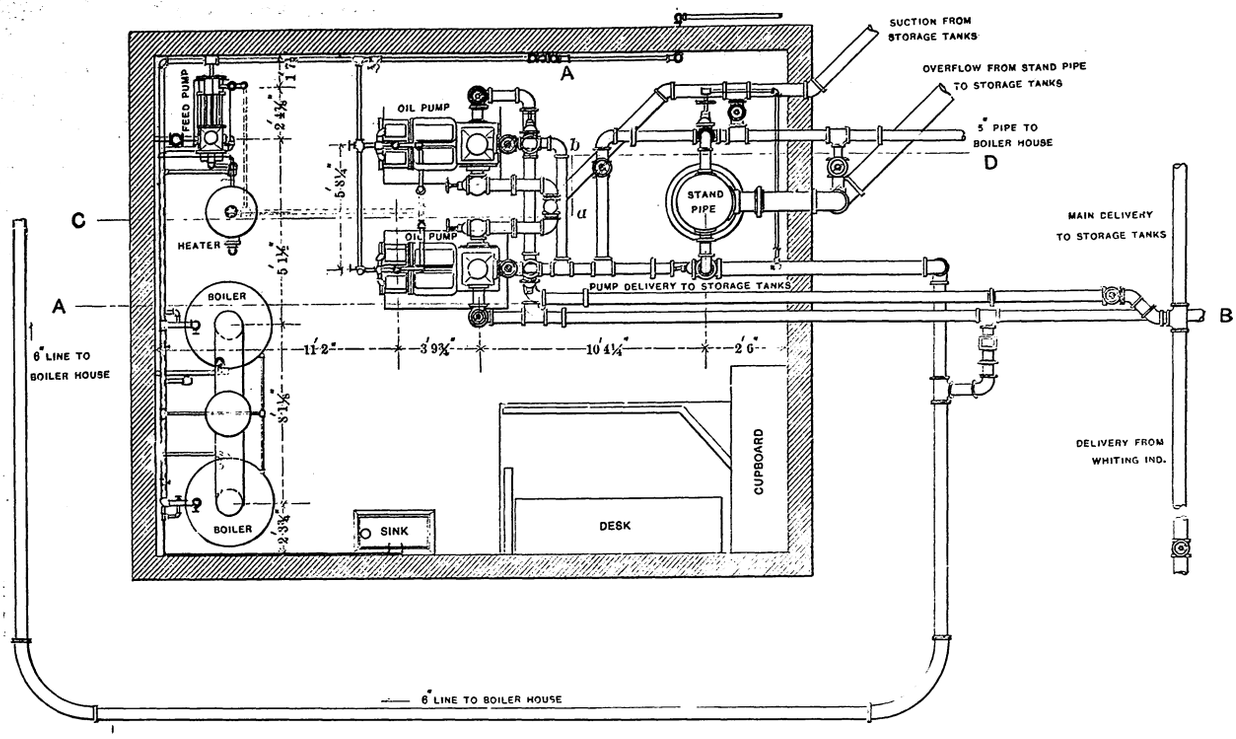


Fig. 1.—Plan Oil Pump House.

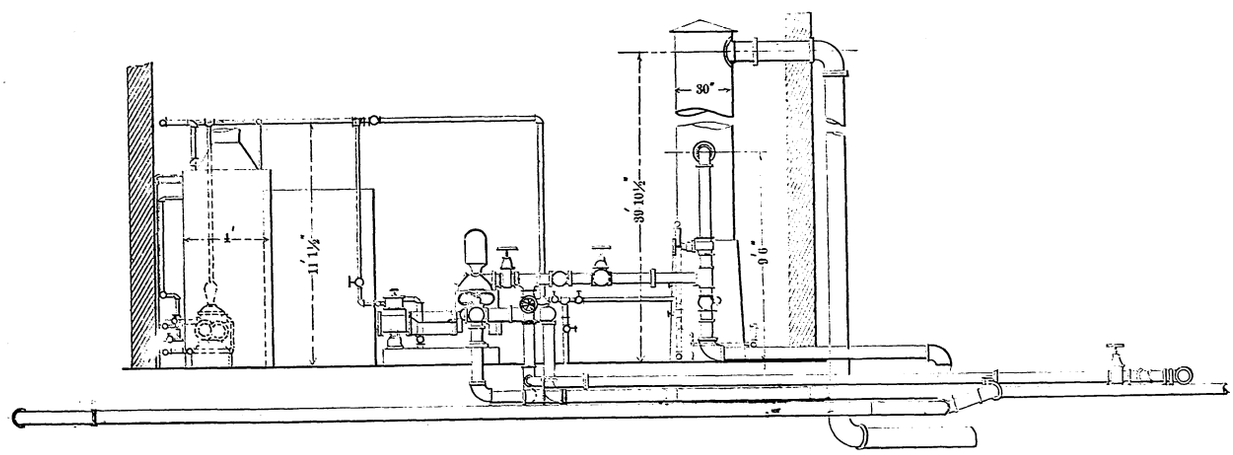


Fig. 2.—Section A B Oil Pump House.

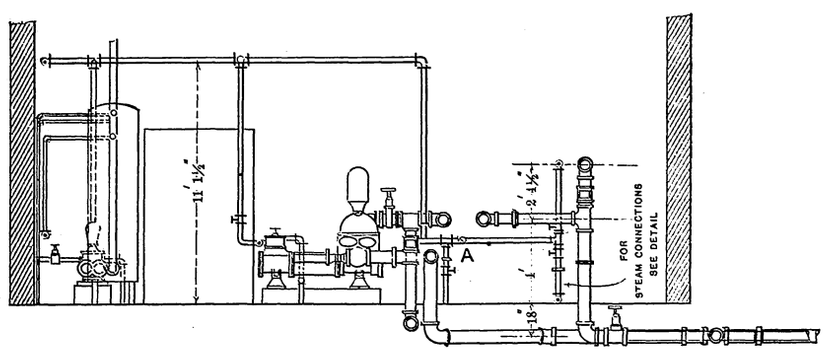


Fig. 3.—Section C D Oil Pump House.

FUEL OIL SYSTEM AT THE FAIR.

Within the fire room, and running the entire length of the battery of boilers, the main supply pipe is laid in a trench close to the foundation of the boiler fronts, and covered by close-fitting cast-iron floor plates. This pipe is wrought iron, 5 inches diameter. From it to each burner is a ½-inch vertical pipe, provided with a globe valve, and above the latter a union for connecting the burner. This valve is used exclusively as a shut-off, and is entirely independent of the regulation, which is effected by means of adjusting valves belonging to the burner itself, and used for no other purpose. The burners may therefore at any time be disconnected and removed for cleaning or inspection, regardless of the flow of oil in the main pipe. The burners used are exhibits,

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and comprise many different makes, as shown by the following list of boilers and their equipments :

Make of Boiler.	Make of Burners.	Number of Burners.
Abendroth & Root	Reid	16
Gill	Armstrong	12
Heine	Greaves	12
Heine	Burton	8
Heine	Reid	12
Heine	Wright	8

particularly advantageous to the use of oil fuel. With the exception of those using the Reid burners, however, the furnaces are of the ordinary standard construction ; while in case of the latter they are modified—or, more correctly, supplemented—by the use of a vertically curved bridge wall, like a side arch, having its concave side toward the burners, which are so placed

portion of the boiler being subjected to the severe temperature of initial combustion. Also, by reason of the very high temperature of the hearth and arch, a large quantity of radiant heat is thrown off to the evaporating surfaces of the boiler.

Referring now to the several drawings, the entire system may be followed, from the main receiving pipes to the

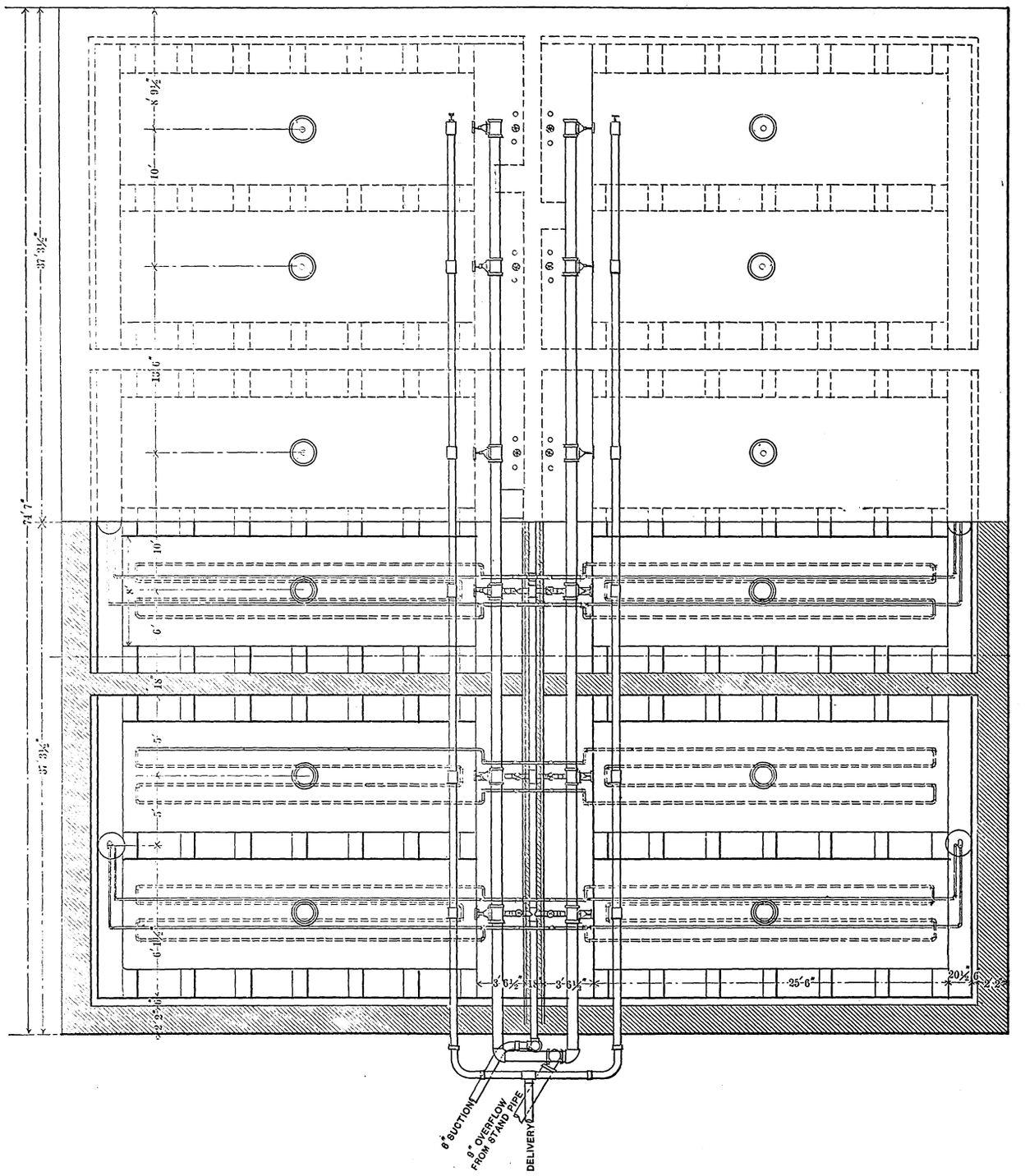


Fig. 4.—Plan Oil Storage Vaults and Tanks.

FUEL OIL SYSTEM AT THE FAIR.

National	Reid	16
Zell	Reid	46
Babcock & Wilcox	Larkin	30
Sterling	Burton	8
Sterling	Locomotive	8
Heine (west fire room)	Greaves	12
Heine	Burton	8
Climax	Larkin	20

As all of the above boilers are of the water-tube type, their settings afford large combustion chambers, which are as to throw the mass of flame at a slight angle toward the hearth. As it impinges at a tangent at all points of hearth and bridge wall with which it comes in contact, the flame is thrown forward and upward without undue frictional resistance, and is thus brought within the influence of the chimney draft at a greatly reduced velocity, and a most perfect diffusion effected without any burners, and it will be readily seen how little foundation there is in fact for the sensational statements made concerning danger from fire from this plant. Figs. 1, 2 and 3 are, respectively, plan and sectional elevations of the oil pump house, showing the arrangement of pumps, stand pipe and suction and discharge pipes, &c. It will be seen that the pumps are in duplicate,

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each having its independent pipe connections, which are similar in all respects and capable of the same manipulations in handling the oil. Each pair is of ample capacity for furnishing the required supply at a low rate of piston speed, and it is the work of but a moment to change from one to the other, in case of necessity. There is but one stand pipe, as there can be no contingency which would render a duplicate either necessary or desirable. Tracing out the system of piping, the 6-inch delivery from Whiting connects directly with the storage tanks. A second 6-inch pipe, at right angles with the first, connects with the main suction pipe of the pumps. This is for pumping the oil from tank cars on the adjacent railroad siding, in case of emergency through any accident or stoppage of main supply by pipe line. By making the necessary setting of the several valves, the pumps draw from the cars and discharge through the main receiving pipe to the storage tanks. This duty may be performed by either pair of pumps, while the other is delivering the oil to the distribution system, and, therefore, there is no danger of interruption of the supply, whatever be the source of delivery.

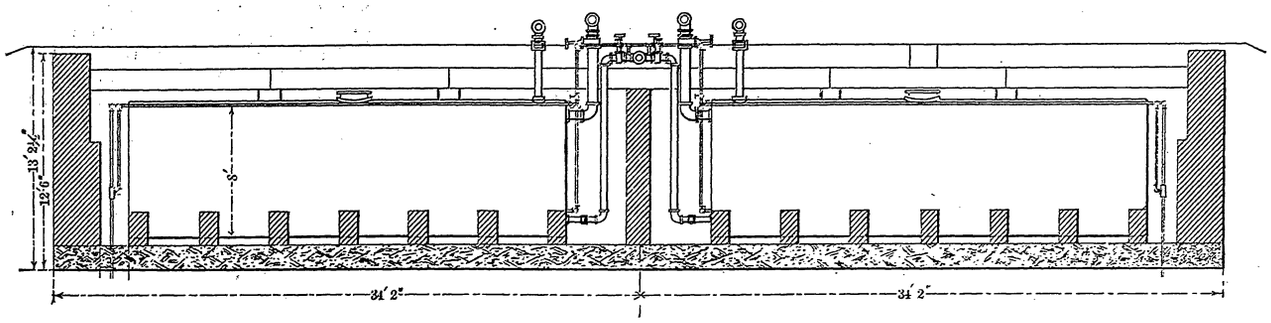


Fig. 5.—Section Oil Storage Vaults and Tanks.

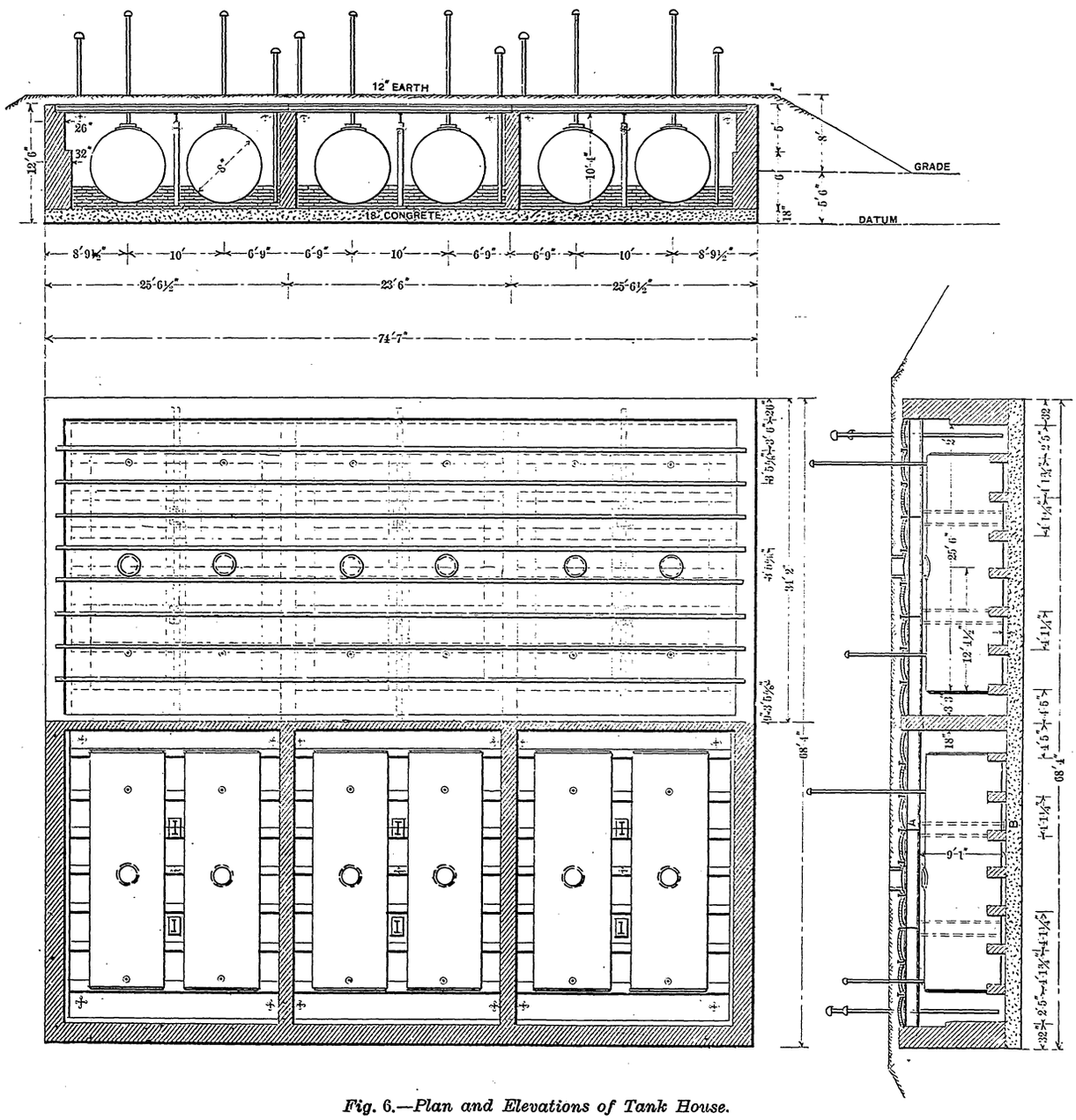


Fig. 6.—Plan and Elevations of Tank House.

FUEL OIL SYSTEM AT THE FAIR.

In case of accident to the storage tanks, although a very remote contingency, the pumps may be made to draw directly from either the main or auxiliary receiving pipes, by simply changing the necessary valves. The oil pumps are 8 x 8½ x 10 inches stroke. They

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are furnished by the Snow Pump Company, and are of the duplex direct-acting type, having suction and discharge chambers common to both cylinders. It will be noticed that there are two independent suction connections, one on each side of the pump, which, by means of their respective valves, determine the source of supply. Those on the inner sides of the two pumps, through the U pipe, connect directly with the storage tanks; and also through valve in T connection and 5-inch pipe with the main discharge pipe and overflow of stand pipe. By this arrangement it is readily seen that in case of accident not only can the delivery of oil to the distribution system be promptly stopped, but that the latter may be quickly emptied by the pumps and the contained oil delivered to the storage tanks. This may be accomplished either through the stand pipe overflow, or directly from the pumps through the discharge connection with main receiving pipe. In the former case the changing of three and in the latter of four valves are all that is necessary; and as these valves are all quick acting, and may be manipulated without stopping the pumps, the operation is under almost instant control. The discharge connections and the two independent delivery pipes are clearly shown in the drawing, and need not be specially referred to.

The stand pipe, Fig. 2, is of the closed top pattern, 30 inches internal diameter, by 39 feet 10½ inches from engine room floor to top. A 9 inch overflow pipe connects directly with storage tanks, the center of opening being 1 foot below the top of the stand pipe, while the connections with the pump discharge are 9 feet 6 inches above the floor line. The hight of oil level is about 37½ feet above that of the burners in the boiler house, and this head gives a pressure of about 13 pounds. It will therefore be seen that instead of the oil being supplied to the burners by gravity pressure there is sufficient fall to the pipes in the other direction to empty them by gravity, and that the direct pressure of the pumps, regulated only by the stand pipe, is employed for the delivery, Figs. 4 and 5 show the details of the storage tanks, which need not be described. All the details of the two systems of piping for oil and steam are clearly indicated; and the necessary manipulations of valves may be readily traced. The drainage of the vaults is collected in a sump, from which it is discharged by a steam syphon ejector by simply opening a steam valve. The arrangement of heater coils in the tanks is shown by dotted lines in Fig. 4, and their connections with the steam main in the vertical section, Fig. 5.

The location of the vaults renders them entirely isolated from any buildings, and they are entirely surrounded by an earth embankment reaching to the top of the retaining walls. This feature, of itself, would render the storage system perfectly safe, as even in the extreme case of all of the tanks being disrupted—say by lightning—and their contents released, the oil would still be confined to the vaults, and if set on fire, by lightning or otherwise, could burn itself out without damage to the surroundings. The two sections, Fig. 6, illustrate this point, and also the method of ventilating the tanks by open pipes.

In Fig. 7 is shown the plan of the system of valves for controlling the distribution at the boiler house end of the line. The 6-inch pipe at the left and the 5-inch at the right hand are continued in a direct course from the pump house, as shown in Fig. 1. They join in a common 8-inch pipe, and each is controlled by a valve close to + connection. The syphon is shown in horizontal position for convenience in making the drawing, and will be understood to stand upright. The entire arrangement of valves is extremely simple, and can be manipulated without danger of mistakes, as their locations indicate the portions of the system which each is intended to control.

As to the efficacy of the syphon there is room for question, and it may be mentioned that its use was entirely as a concession to the requirements of the Board of Underwriters.

A pavilion is used as a station for regulating the oil supply and also as a point of observation of the chimneys of the boiler house, to detect any signs of smoking from careless or improper management of the fires. There is at all times, day and night, an attendant stationed in this building whose duties are to control the oil supply and also to act as smoke inspector. In the former capacity he has within easy reach all the necessary valves, as per Fig. 7, by which the flow of oil may be regulated, or, in case of accident, shut off instantly, regardless of the pumps, as the only effect on the latter in such case would be to cause the excess of oil delivered to pass through the overflow of the stand pipe back to the receiving tanks. Electric signals and telephone connections from the boiler house to the station and from the station to the pump house enable the firemen, inspector and pump attendants to communicate promptly with each other, so that no time may be lost in case of emergency requiring speedy action. A thorough and systematic smoke inspection is carried on and a daily report made.

The receipt and consumption of oil by the system described necessitates the use of a very carefully arranged method of measurements and records thereof, as the most convenient—in fact, about the only practicable—means of ascertaining the quantities received and expended is by measuring the hight of oil level in the tanks. An "outage" table was prepared by the National Supply Company, in which is shown the quantity of oil, in gallons, contained in the tank for each ¼ inch in depth up to the full 95 $\frac{8}{16}$ inches, which is the internal diameter of tanks. Each tank is provided with an accurately graduated gauge, from which the oil level may be observed before and after receiving or expending and at periodical intervals. In these measurements it is, of course, very important to note the temperature of the incoming or outgoing oil, and convenient means are provided for the purpose. Reports of receipts and expenditures are taken from the record books and returned daily to the superintendent's office. The forms used are bound in books, and are in duplicate, the writing up being done by the use of the carbon manifold method to prevent discrepancies between original and duplicate, which might occur if any transcription plan were employed. The original is perforated for tearing out, while the duplicate remains in the book as part of the engineer's record. The form for oil received is printed in black ink, while that for consumption is in red. On the former record all settlements with the Standard Oil Company are made, which may be considered a very fair criterion of the accuracy of the system.

On the score of safety the plant certainly appears to meet all possible requirements. Its efficiency is fully demonstrated by five months of continuous

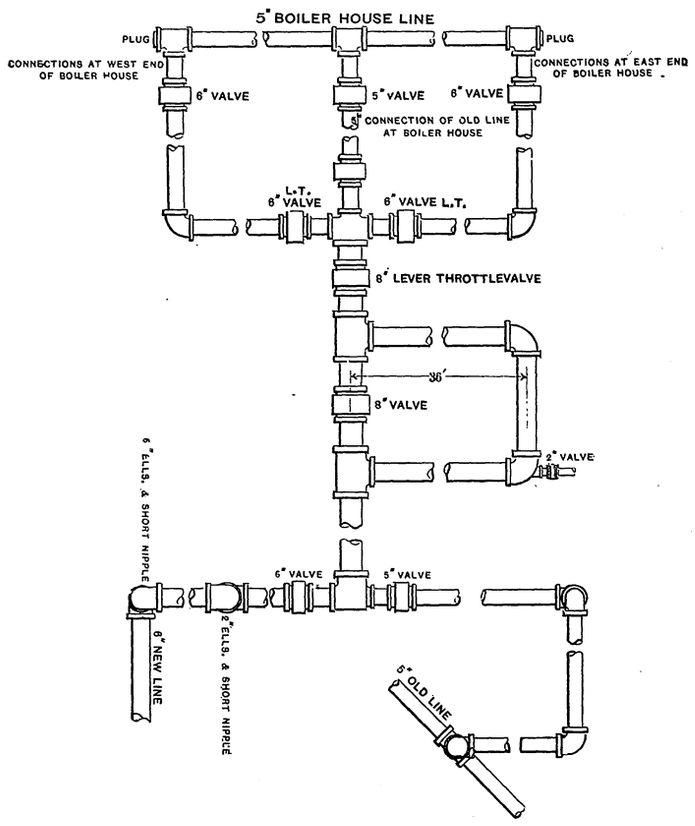


Fig. 7.—Diagram of Oil Pipe Connections in Boiler House.

FUEL OIL SYSTEM AT THE FAIR.

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operation. As regards the question of comparative economy no tests have yet been made, and this point is, therefore, still to be determined. All machinery, material and instruments were furnished under contract by the National Supply Company, the labor by the Exposition Company, under the supervision of the former company. The entire engineering work was done by C. O. Billow, engineer of the National Supply Company, who has had long and extensive experience in the installation of oil fuel plants, and of whose work this is the crowning achievement.

THE WEEK.

The latest Cunarder "Lucania," which on her initial trip from Liverpool to New York beat all previous maiden records by a run of 5 days 15 hours and 37 minutes from Queenstown to Sandy Hook, made her second westward trip last week in 5 days 13 hours and 25 minutes, thus breaking the best former record—that of the American liner "Paris"—by 59 minutes. The chief engineer of the "Lucania" believes that she has not done her best yet, and that she may be relied upon to still further lower the time of transit by several hours.

Cuban papers contain complaints of a great dearth of good field laborers.

The first consignment of corn ever sent from Mexico to Europe will be shipped next week from land adjoining the Monterey & Mexican Gulf Railroad, Mexico.

Some important shipments of anthracite have been recently made to England, and inquiries are noted for quotations on American coal from Mediterranean and other foreign ports, where the difficulty of obtaining adequate shipments from Great Britain since the strike is being severely felt.

Improvements proposed by the Dock Board on the North River front of New York from West Tenth to West Twenty-third streets comprise 19 large piers, 80 feet wide and ranging from 466 to 729 feet in length, with a distance between each pier of 225 feet, thus allowing two steamers to unload at the same time. The inside cost of the undertaking is placed at $11,000,000, but this would probably be materially increased if the whole scheme is carried out.

In the United States Circuit Court of Philadelphia on October 7, an injunction was obtained by the Edison Electric Light Company against the Westinghouse Light, Heat & Power Company for alleged infringement on incandescent lights.

Cuban sugar planters expect that the yield of next season will be a heavy one, and will enable them to retrieve the losses of last season, always provided that no cyclone visits the island during the present month. The appearance of the cane fields throughout the sugar region is described as very promising.

In illustration of the improvement which has developed recently in railroad freight traffic, the Philadelphia *Times* remarks that a few weeks ago the Pennsylvania Railroad had 16,000 idle freight cars standing along its various sidings. Reports received a few days ago showed that the number had been reduced to 6000. What is true of the Pennsylvania is also true of the Lehigh Valley. Hundreds of its freight cars which have been lying idle for months back on the coal region side track are now reported as in demand for Western coal and grain traffic, and all the empties have been ordered for inspection, preparatory to forwarding them West.

Business in Havana is reported as paralyzed, owing to the refusal of the customs authorities to accept bank notes in payment of duties.

The opening of the Manchester ship canal, which is announced for January 1, 1894, will enable cotton steamers to land their cargoes close to the mills, thus saving railway freights and the expense of handling on the other side. The canal is likely to make Manchester a formidable rival to Liverpool as a British port of entry.

Advices from Hazleton, Pa., intimate uninterrupted activity in the coal trade for this season in the Lehigh region.

Owing to the accident to the cruiser "Montgomery," now at New London, Conn., the board of naval officers appointed to witness the trial of the vessel has been dissolved. It is estimated at the Navy Department that the accident and the delay will cost the builders, the Columbia Iron Works of Baltimore, fully $25,000; but this sum, it is said, could be materially reduced if the contractors will allow the trial to take place at once, notwithstanding the damage. Admiral Belknap's official report shows that while the injuries to her hull are serious, they are not such as to disable her. The damage cannot be determined until the ship is put in dry dock, but it is estimated that $10,000 will be necessary to repair her, and that the work will consume a month.

Orders have been sent by the Navy Department to Rear-Admiral Belknap, at New London, Conn., directing him to send out the dynamite cruiser "Vesuvius" on the unique and hazardous duty of blowing up 14 derelict vessels that endanger navigation. All the derelict vessels to which the "Vesuvius" is assigned were wrecked during the recent hurricane on the Atlantic Coast, and nearly all are adjacent to the Jersey shore.

The Bethlehem Iron Company shipped last week 64 tons of plate for the battle ship "Maine" to the national proving grounds at Washington. The plates are 8 x 15 feet, and 12 inches thick. These plates are the first service plates that have been Harveyized, and their trial will consequently be of interest.

Connection was made last week on the longest telephone line in the world except that between New York and Chicago. It stretches from Spokane, Wash., to Portland, Ore., by way of Puget Sound, a distance of nearly 600 miles.

The estimated quantity of gold yielded from the mines of Victoria, Australia, from 1851 to 1892 is 58,101,429 ounces, valued at $1,115,547,437.

A piece of expeditious work is reported from New Jersey in the inauguration of the Newark and South Orange Railroad. After a bitterly contested litigation the company were, last Friday, granted a franchise for the erection of their trolley system by the South Orange Board of Trustees. Fearing an injunction might be obtained, they put 300 men to work on Friday night; poles were erected, wires strung, and electricity turned on at 10.40 a.m. on Saturday, the first car being run over the line in a little over 12 hours from the time the franchise was obtained.

The largest oil tank steamer afloat is now loading in the port of New York. She is the British steamship Batoum, chartered by the Standard Oil Company. The vessel, which was built this year at Sunderland, England, has a capacity of 2,700,000 gallons of oil in bulk, which is fully 800,000 gallons more than any other tank steamer in the world can carry.

Encouraging results are said to be obtained from the exploration of the Piedras Negras coal mines of Mexico, which is being made for the C. P. Huntington interests.

Final estimates of the Kansas Board of Agriculture place the total wheat harvest of that State for the present year at 24,881,448 bushels, an increase of 5,000,000 bushels over the September estimate.

Treasury Decisions.

Wire Cloths and Nettings.

Before the U. S. General Appraisers at New York, September 6, 1893. In the matter of protest, 17,682b–62, of James McQueen, against the decision of the Collector of Customs at Detroit, Mich., as to the rate and amount of duties chargeable on certain wire cloth, imported per Grand Trunk Railway, November 5, 1892. Opinion by Sharretts, General Appraiser.

The merchandise in question is wire cloth and netting for milling purposes. We find as facts regarding the same:

1. The wire in the cloth—weight, 180 pounds—is smaller than No. 26 wire gauge, and costs 6 cents per pound.

2. The wire in the netting—weight, 45 pounds—is smaller than No. 16 and not smaller than No. 26 wire gauge, and costs 3 cents per pound.

3. The specific rate of duty provided in paragraph 148 for wire of the kind in question is greater than 45 per cent. ad valorem.

The Collector classified the merchandise as manufactures of metal, and assessed duty at 45 per cent. on its value in the finished condition. The appellant claims that the wire cloth is dutiable at 5 cents per pound and the wire netting at 4½ cents per pound, in accordance with the provisions of paragraph 148.

In our opinion the claim of the appellant is well founded. The merchandise is denominatively provided for in paragraph 148, and is subject to the specific duties provided therein for wire of corresponding size and value, and, in addition thereto, 2 cents per pound.

The protest is sustained and the Collector's decision is reversed.

From the annual report of the School of Mines, Victoria, Australia, it is learned that in the year 1892 the yield of gold in that colony showed an increase of 78,056 ounces over the output of the previous year, being the highest yield reported since 1886. The number of miners employed in the gold industry is 23,518.

Owing to the prolonged stoppage of operations at the rolling mills and blast furnaces in the Youngstown, Ohio, district, distress among the workmen is now reported, and public subscriptions are being raised for a relief fund. Generous amounts are being contributed.

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The Iron Age

New York, Thursday, October 12, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Sheet Mill Situation.

It is now generally conceded that the situation of affairs between iron and steel sheet mill operators and their employees who still adhere to the rules and agreements of the Amalgamated Association is badly strained, although operations are being continued. In July of this year quite a number of concerns signed the scale agreed upon between manufacturers and the Conference Committee, but trade developments since that time have shown a downward tendency in values, and there is such a marked difference in conditions that concessions on the part of the workmen are asked for. If not granted there will be an effort made to secure them by a forced cessation of work, rendered absolutely necessary in consequence of the inequality between prices now paid for labor and current prices realized for finished product in comparison with last year's figures. It is not easy to determine what the solution of the difficulty is likely to be, for the reason that there is a split in the camp of the manufacturers as well as among the workmen, and it now appears that local circumstances may govern the agreements made between mill owners and their skilled workmen. Notwithstanding the fact that the same scale of wages has for many years past been signed by sheet manufacturers in various producing centers, it can be proved that many mills have had the advantage of concessions made by the workmen which were not in strict accordance with the rules and prices of their signed agreement, but at the same time justifiable, to enable their employers to run their mills at a fair profit on some particular class of work of which they made a specialty.

As the matter now stands only two important moves have been made in the direction of a general breaking up of organization among manufacturers, one being a reduction of 10 per cent. in wages made by the New Philadelphia Iron & Steel Company, New Philadelphia, Ohio, which must necessarily affect other nearby mills, and the withdrawal of the Apollo Iron & Steel Company from the Association of Iron & Steel Sheet Manufacturers. The last named concern have taken a decided stand, and their mills will not be started except upon a non-union basis. Other manufacturers have also indicated that they will withdraw and as a result of the general disruption, the various sheet mill districts may each have a special scale of wages and code of rules. What may be satisfactory in the Wheeling district may be otherwise at Cincinnati, Canal Dover, Niles, New Philadelphia or other Ohio mills, and a difference in the class of work may require special terms with workmen employed in the mills of Western Pennsylvania or Indiana. Local conferences are numerous, but definite understandings are not reached; meanwhile mills are kept running filling special orders of an urgent character, after which they will shut down until wage matters are settled.

Railroad Construction in 1893.

An interesting statement with regard to railroad construction this year is made by the *Railway Age* of Chicago. The total new mileage laid during the first nine months of the year, as obtained from official sources, was 2040.85 miles. Ordinarily, at least 50 per cent. more track would be laid during the remaining three months, but from the present outlook it is regarded as doubtful if the total for the year exceeds 2500 miles. Details of the track laid in each State or Territory for the nine months are as follows:

Track Laid in First Nine Months of 1893.

State.	Lines.	Miles.
Alabama	5	46.
Arizona	1	42.
Arkansas	4	12 75
California	7	64.32
Colorado	2	16.76
Florida	7	103.50
Georgia	6	62.50
Idaho	1	5.57
Illinois	7	64 80
Indiana	5	21.10
Iowa	1	4.
Kansas	1	18.45
Kentucky	5	25.50
Louisiana	3	8.25
Maine	2	71.50
Massachusetts	2	11 13
Michigan	1	0 50
Minnesota	4	42.21
Mississippi	1	3
Missouri	7	139.95
Montana	1	27.
Nebraska	2	32.70
New Hampshire	1	1.
New Jersey	1	2.
New Mexico	1	2.54
New York	6	31.39
North Carolina	8	69.60
North Dakota	2	194.60
Ohio	5	134.70
Oregon	1	11.50
Pennsylvania	43	364.05
Rhode Island	1	5.21
South Carolina	1	14.
South Dakota	2	62.06
Tennessee	3	17.30
Texas	6	140.82
Utah	1	9.
Virginia	5	16.64
Washington	2	41.90
West Virginia	14	76.05
Wisconsin	3	19.
Wyoming	1	4.
Total in 42 States and Territories	182	2040.85

If the estimate for the year proves correct, and the total new track laid does not exceed 2500 miles, the year 1893 will show a retrogression in this respect to the conditions obtaining in the period from 1874 to 1878, when the new track laid ranged annually from 1711 miles to 2712 miles. From present appearances the estimate will not be exceeded, as the rail mills of the country are all idle or running only spasmodically on very small orders, and if there was any considerable length of track to be laid during the fall and early winter this would not be the case. Taking the condition of the country's finances the past summer, it is rather surprising that even this much work has been accomplished in new construction. It would have been in entire harmony with the general wreck of business if all such work had been completely stopped. Its continuance under such discouraging circumstances excites the hope that as soon as the disturbing elements now interfering with commercial interests are out of the way there will be considerable activity in this direction.

Railroad building has not been overdone in recent years, and there are numerous deserving projects for new lines and extensions that are only waiting propitious times to be launched on the financial sea. There was a sudden dip downward in railroad construction in 1885, when the new mileage fell slightly under 3000 miles in consequence of financial disturbance, but it was followed by a quick recovery the next year, when over 8000 miles of new track was laid. While the panic of 1884 which caused that depression in railroad building was by no means so serious as the recent crisis, still the nation's recuperative power at this time ought to be fully as strong if not stronger, should wisdom rule in pending national legislation. The currency and tariff questions should be settled speedily. With these out of the way, no longer menacing business of every description, new enterprises in railroad building as well as in other lines would again be undertaken and new vitality would be imparted to our languid manufacturing interests.

The Success of the American Tin Plate Industry.

The last report of Ira Ayer, Special Agent of the Treasury Department, shows that even at this early date the American manufacturers of tin plate have reached a state of development which brings then very near the attainment of the quantity called for by the tariff act. Even under the strictest interpretation of the law its requirements would now be met, if the financial panic had not interfered. Under the recent Treasury ruling only those tin and terne plates are counted as being American which have been made from black plates rolled in this country. The tariff act provides that the present duty shall stand if it can be shown to the satisfaction of the President of the United States that the American product of plates weighing less than 63 pounds per 100 square feet is equal to one-third of the importations in any one of the fiscal years up to June 30, 1897.

Thus far the year of lightest importations has been the fiscal year ending June 30, 1892. One-third of the net imports thus figure out 79,307,939 pounds. During the quarter ending June 30, 1893, the production of tin and terne plates from American black

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plates was 18,264,225 pounds, of which about 94 per cent. were plates weighing less than 63 pounds per square inch, or say 17,167,000 pounds. To this must be added, according to law, 2,322,455 pounds of tinned or terned articles made from American sheet iron or steel. This carries the total for the quarter, under the narrow lines fixed by the present Treasury officials, to about 19,489,455 pounds. If this rate is kept up for four successive quarters, covering a fiscal year, the American producers will have complied with the provisions of the act, because the product would be close to 79,000,000 pounds, which is the mark to be passed.

We know that full capacity had not been attained in the quarter ending June 30, 1893, although it did show an advance from 14,102,299 pounds to 20,586,680 pounds, comparing it with the preceding quarter. It is quite sure that if general business is in a normal condition the manufacturers of tin plate in this country can make from American black plates a sufficient quantity to meet the requirements of the law. The only point concerning which any doubt might possibly arise is whether our sheet mills are now in a position to readily supply the needed annual quantity of 75,000,000 pounds of plates lighter than 63 pounds per 100 square feet.

We took occasion recently to criticise the tables relating to capacity issued by the Treasury Department and printed in *The Iron Age* of September 14. The table then printed assigned to makers of tin plate from American black plates an annual capacity of about 30,250,000 pounds, based on three and one-half times the product of the quarter ending March 31. At the time of the publication of that article there were in the possession of the Department the sworn returns of the manufacturers for the last quarter of the fiscal year. These show an actual make of over 18,000,000 pounds, or at the same rate of figuring, by multiplying by three and one-half, an annual capacity of about 64,000,000 pounds, or double the estimate of the Treasury officials. We believe that no more evidence than this is required to show what means are resorted to by hostile officials to create impression adverse to a rapidly developing industry. We need hardly add that we do not hold Ira Ayer responsible for work so little worthy of Government officials.

Davies & Co.'s automatic galvanizing machine is rapidly making headway among the manufacturers of galvanized sheet iron in this country. The Whitaker Iron Company of Wheeling are putting in a second machine, and so are the Cambridge Iron & Steel Company of Cambridge, Ohio. The New Philadelphia Iron & Steel Company of New Philadelphia, Ohio, have just put in one machine. The Falcon Iron & Nail Company of Niles, Ohio, are also making arrangements to introduce the process in their works on quite an extended scale.

Supplementing the announcement made in the last issue of *The Iron Age* to the effect that an agreement between the rolling mill operators of the Mahoning Valley and the two associations of workmen was not probable to occur comes the information that the manufacturers have refused flatly to enter into any further negotiations with the men except as individuals. Upon this understanding old employees will be dealt with, but as a body representing any organization they will no longer be recognized.

"Julian Bessemer," an Imposter.

A few weeks since a young Englishman called upon a number of iron and steel manufacturers of the Mahoning Valley, representing himself to be a grandson of Sir Henry Bessemer, and, presenting a card, upon which was printed "Julian Bessemer, Sheffield, England," he claimed to be in need of funds, and endeavored to obtain social recognition. Suspicion was aroused, and J. G. Butler, Jr., president of the Mahoning and Shenango Valley Manufacturers' Association, communicated with Sir Henry Bessemer, from whom the following reply was received:

165 DENMARK HILL, SURREY,
September 21, 1893.

JOS. G. BUTLER, JR., ESQ.,

DEAR SIR: I duly received your favor of the 10th inst. and beg to thank you very much for the trouble you have so kindly taken in giving me the information which your letter contains in reference to a person falsely representing himself to be a grandson of mine.

In reply to your letter allow me to inform you that I have only six grandsons, each of whom I am in the habit of seeing or hearing from almost every week. I may add that not one of my grandsons has ever been in the United States, nor is there any such person as "Julian Bessemer" a resident of Sheffield, England, or I must long since have heard of him; nor have I or any of the Bessemer family ever resided in Sheffield, although I had a works there managed by my partner.

The simple fact is that in England there are only nine males living of the name of Bessemer, that is, my two sons, and my six grandsons, and my nephew, a gentleman over 40 years of age.

I am, therefore, forced to conclude that the young man who called on you has simply assumed the name of Bessemer for the purpose of obtaining money from some of the many gentlemen in America who have honored me by taking a deep interest both in me and in the invention which bears my name.

I beg to remain, dear sir,
Yours very sincerely,
HENRY BESSEMER.

The young man is described as 5 feet 7 inches tall, slender, with florid complexion, a smooth face and talkative to a degree beyond garrulity. He described accurately the Liverpool reception of the American engineers in 1889, naming a number of Englishmen who were present.

The description given tallies with that of a young person who some time since victimized Americans as a nephew of Sir Joseph Wentworth, and it is possible that it is the same who assumed the title of a nephew of Sir Lowthian Bell. It is needless to add that American manufacturers and engineers will do well to scrutinize carefully the credentials of any person claiming relationship with leading English manufacturers and inventors. The youthful fraud will probably quickly abandon the business when it ceases to pay.

The setting up of the machinery at the Watervliet, N. Y., Arsenal is progressing rapidly. It is expected that everything will be in readiness to start the new plant by winter. The Pond Tool Company have fulfilled their contract and erected all the lathes and other machines specified. The Niles Tool Company have yet one large turning and boring lathe to put in position. This will be complete in about two weeks. After that all the lathes and smaller machines will be given the finishing touches and the new south wing will be ready for operation. A number of other improvements for general convenience and the comfort of employees are being made about the works.

Engineers Society of Western Pennsylvania, Pittsburgh, Pa.—The regular meeting of the society was held on September 19, thos. H. Johnson in the chair The papers read at the June meeting on "Gas and Gas Producers," by Walter E. Koch, and on the "Effect of Suddenly Applied Loads Upon the Tensile Strength and Other Properties of Iron and Steel" were fully discussed. Charles Hyde gave an interesting discussion on "Water Tube Safety Boilers," illustrating his remarks by a working model of the Hyde water tube safety boiler. On September 22 and 23 the visiting French engineers were entertained by the society. On the 22d an excursion took place by railway to the MacDonald oil and gas field and to the coal mines of the Pittsburgh Consolidated Coal Company. On the 23d a visit was made by steamboat to Homestead, McKeesport and Davis Island Dam. Very many of the largest and most important steel works, electric plants, inclines and street car power houses were also visited. On the evening of the 23d the members of the committee of the Engineers' Society and of the manufacturers of the city were the guests of the French engineers at a dinner at the Monongahela House. At the meeting of the chemical section on September 26 the subject of "Standard Methods for Sampling and Analysis of Iron and Steel" was discussed. Jas O. Handy read a paper on "The Effect of Arsenic on Phosphorus Determinating in Iron and Steel."

Another deflection from the lines of the Amalgamated Association of Iron and Steel Workers has recently been made. The roll turners of the United States were represented at a meeting held in Pittsburgh last week and the initial steps taken to form a separate organization. Roll turners from all important districts were present and agreed unanimously to sever their allegiance from the association of which they had long been members, but which, according to their claims and statements, had never rendered them the practical benefits promised when they joined.

Industrial establishments at Muncie, Ind., including several rolling mills and other important manufactories, are harassed considerably, owing to the town being placed in a state of quarantine on account of smallpox. Whether needed or not no workmen or any other persons are allowed to pass in or out of town, and the relatives of workmen from the East, who are employed there, are seriously worried over the dearth of news in regard to the exact condition of affairs.

Stockholders in the American Steam Boiler Insurance Company have filed a petition that the Attorney-General move for the appointment of a receiver for that concern.

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CORRESPONDENCE.

A Proposed Combination of the Blast Furnace and the Bessemer Converter.

To the Editor: I have for many years considered that the ordinary blast furnace is not absolutely perfect, but is capable of improvement and modification. When I have suggested this to my friends they have been shocked at my audacity and heresy, but have failed to show me that I am in error. Knowing that Americans are not so prejudiced and are more liberal than we English, I venture to ask some of your readers to carefully examine the question and to put me right on this important subject.

My theory is, that by a combination of the Bessemer converter and blast furnace, pure iron can be smelted rapidly (even from phosphoric ores) with less fuel than is now required, and that the escaping gases will contain less nitrogen and more combustible gas than any Siemens gas obtainable from the best known gas producers. I have arrived at this opinion for various reasons, among others because:

1. When iron ore is smelted in the blast furnace a certain proportion of slag is necessary in order to wash down the reduced iron, and also to prevent it being reoxidized by the blast of air which enters at the tuyeres, consequently very rich ores cannot be smelted in the blast furnace without the addition of slag producing materials. Whereas, in the proposed furnace (or in a modification of the Bessemer converter and Siemens regenerative furnace) there would be no free oxygen present to reoxidize the reduced iron, because the oxygen in passing through the molten metal would be converted into carbonic oxide, which would assist in reducing iron, and the fusion of the metal would be completed by contact with the molten bath, thus avoiding any necessity for slag.

2. Rich ores or even the fuel used will contain some silica, and it is therefore necessary to add sufficient basic materials to rather more than neutralize the silica and other acids, so that any phosphoric acid present will be neutralized and retained in the slag, preference being given to alkalies, so as to produce a liquid slag, which is facilitated by the high temperature of the Bessemer as compared with the blast furnace operation.

3. The escaping gases will contain less nitrogen and more carbonic oxide, because only air is introduced in the Bessemer operation and the oxygen from the ores combines with carbon and thus increases the proportion of combustible gas as compared with nitrogen.

4. The reduction of iron in the presence of free carbon takes place at a comparatively low temperature. In 1869, when making metallic coke, part of the oxide was reduced in the coking operation, and afterward, when Thomas Blair used the metallic coke at John Brown & Co.'s Atlas furnaces, Sheffield, reduction took place rapidly, for the metal contained in the coke was smelted in 12 hours instead of 36 hours, the time usually required with the ordinary charge of ore and coke. The metallic coke contained an excess of carbon, and some of the coke, after yielding up its metallic contents, was withdrawn at the tap hole; this leads me to believe that by using a small excess of carbon a zone of carbon would be maintained above the molten bath.

5. The reduction and fusion of the iron must be a very rapid operation if 0.7 ton Fe—say 14 hundredweight—is to be reduced during the short time that would be occupied in oxidizing in the Bessemer portion of the furnace 0.225 carbon from the molten bath, consequently it will be advisable and may be even necessary previously to pulverize the ore, because the smaller the ore the more contact there would be between the oxide of iron and free carbon, and it would be also well and with poor ores necessary to separate from the oxide of iron as much of the extraneous gangue or foreign matter as possible, so as to enrich the ore and reduce the slag producing materials. This can be done by the magnetic separator or by specific gravity aided by water or air or in any way found most convenient. The powdered oxide of iron, small coal and basic materials should be intimately mixed together, and it might be even advantageous to add bitumen and press same into blocks or metalliferous briquettes before introduction into the furnace.

The calculations hereunder are based on the following assumptions: 1. That crude molten iron is Bessemerized in the ordinary way, but that the upper part of the converter is somewhat like a blast furnace, having above the molten bath a zone of carbon, and above that zone carbon and small iron oxide, the latter as free as possible from extraneous matter; sufficient lime or other bases having been added to more than neutralize all the silica present in the charge, so as to produce a sufficiently basic slag—*i. e.*, the oxygen in the bases must be in excess of the oxygen in the silica and other acids present.

2. That the Bessemer converter has a carbonaceous neutral lining, and is so constructed that when the molten bath exceeds, say, 40 tons, and rises above a certain hight, the excess flows off into a Siemens furnace or into another Bessemer converter, where the slag is withdrawn and the crude iron is converted into steel.

3. That the crude iron is introduced at 1650° C., and the excess withdrawn or flows off at the same temperature.

4. That after the crude molten iron is first introduced and until the furnace is white hot, only carbon is added, and free carbon will take up sufficient carbon by impregnation, so that not less than 0.225 carbon is oxidized in the Bessemer operation during the time the 0.7 Fe is being reduced by means of a further quantity of carbon from 1.0 Fe_2O_3—viz., 0.225 C, so that altogether 0.45 C is used to smelt 0.7 Fe_2—*i. e.*, equivalent to about 15 hundredweight coke per ton of iron smelted, or, say, 20 hundredweight bituminous coal. The furnace should be fitted with appliances for collecting the products of distillation, and when coal is used, additional carbon will be required for distilling off the volatile products of decomposition.

6. That the nitrogen, carbonic oxide, hydrocarbons, ammoniacal liquor, &c., pass off at a temperature not exceeding and probably considerably less than 300° C.

7. That only iron is reduced, not silicon, phosphorus, &c., and this should be the case, because the reduction of iron takes place at a comparatively low temperature, and basic materials are present so as to produce a sufficiently basic slag.

8. That the time occupied in reducing 14 cwt.—*i. e.* 0.7—Fe is five minutes, viz.: the time occupied in oxidizing 0.225 carbon in the Bessemer operation. This would be equivalent to the reduction of 200 tons of iron in 24 hours—*i. e.*, 0.7 Fe × 12 × 24 = tons 201.6.

9. That the pressure of blast is 20 pounds per square inch and that 0.3 oxygen × 12 × 24 = 86.4 oxygen + 289.2 nitrogen, *i. e.*, 375.6 tons air are driven through the molten metal in 24 hours, or 0.261 ton of air per minute.

10. That the escaping gases will be composed of about equal quantities of carbonic oxide and nitrogen besides hydrocarbons, &c., viz.: Tons in 24 hours, 289.2 nitrogen, 86.4 oxygen + 86.4 oxygen + 64 8 carbon + 64.8 carbon—*i. e.*, 289.2 nitrogen + 302.2, carbonic oxide + hydrocarbons, &c.

11. That the ore introduced is Fe_2O_3, but if magnetic iron ore, for example Marbella iron sand, is used, the quantity of carbon required for reduction would be proportionately reduced, whereas spathic iron ore would require an additional quantity of fuel to calcine and drive off the carbonic acid from the ore.

In Bessemer Converter. Heat Obtained by Oxidation.

0.225 carbon + 0.3 oxygen = 0 525 carbonic oxide. 0.225 × 5366 (calorific value C + O) =		1,207.35
1 Fe_2O_3 = 0.7 Fe + 0.3 oxygen. 0.3 oxygen × 6216 (calorific value of 1 liter oxygen) / (1 liter of oxygen weighs) 1 4298 grams =		1,304.24
0.225 carbon + 0.3 oxygen = 0.525 carbonic oxide. 0.225C × 5366 (calorific value of C + O) =		1,207.35
Net loss of heat in reduction of iron from Fe_2O_3 =	96.89	
0.7 Fe × 0.114 (specific heat of Fe) × 1650° C. (temperature of bath) =	131.67	
Evaporation of Water:		
0.5 coke × 10 per cent. = 0.05 × 540 heat units =	27.00	
1.0 ore × 0.5 per cent. = 0.05 × 540 heat units =	27.00	
	54.00	
Fusion of slag, 0.1 slag × 550 heat units =	55.00	
Carbon impregnation, 0.225 × 2400 heat units =	540.00	
These 540 heat units should probably be omitted, because the crude iron afterward gives up the carbon when oxidized in the Bessemer converter.		
Transmission of heat through walls, say	30.00	
Escaping Gases:		
0.525 CO + 0.525 CO + 1.05 nitrogen = 2.1 × 0.245 specific heat × 300° C. =	154.35	
Margin to cover sundry minor factors omitted	145.44	
		1,207.35

afterward carbon and iron ore in the proportion of two of oxide of iron to one of carbon.

5. That the partially decarburized iron being constantly in contact with

The advantages may be briefly summarized as follows:

1. Economy of fuel.

In blast furnace practice about 0.6 slag is produced to 1.0 Fe smelted,

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whereas in the proposed furnace the slag will be reduced to a minimum.

0.6 slag to 1.0 Fe in blast furnace practice.
0.15 slag to 1.0 Fe in proposed furnace.

Economy, 0.45 × 540 heat units = 243 heat units.

In the ordinary Bessemer converter the resulting carbonic oxide is wasted, and a large amount of heat is dissipated in the air by the escaping nitrogen and carbonic oxide.

If we take 0.225 carbon thus oxidized we have 0.525 carbonic oxide per ton of iron smelted + 1 05 nitrogen, and assuming in the Bessemer the gases escape at 900° C. instead of 300° C., the difference of temperature is 600° C.—*i.e.*, 1.575 × 0.245 × 600° C. =231 heat units lost.

2. The smelting will be much more rapid than in the blast furnace and would consequently decrease the loss of heat by transmission through the furnace walls, and one of the proposed furnaces will smelt more iron than any ordinary blast furnace.

3. Large quantities of rich gaseous fuel are liberated and afterward utilized, being invaluable for metallurgical purposes where high temperatures are required.

4. As small ore is preferred, poor ores can be crushed and enriched, or metallic sand, "blue billy" and other small ore can be utilized which does not find a ready market with blast furnace proprietors.

5. As iron is reduced at a comparatively low temperature and the fusion takes place at the molten bath, it is possible to use inferior fuel, taking care that same contains sufficient carbon for the operation, including any carbon required for driving off moisture, destructive distillation, &c., as well as for reduction of iron and fusion of iron and slag. For example, where coals are scarce and peat plentiful, the peat could be intimately mixed with the iron oxide and necessary basic fluxes. The alkalies present in the peat would assist to produce a liquid slag and the heat from the escaping gases would be utilized in driving off the moisture from the metaliferous peat briquettes.

For experimental purposes a simple and inexpensive furnace would be one similar to what was used in April, 1879, at John Brown & Co's Atlas Works, Sheffield, *vide* a paper read before the Society of Arts on April 30, 1879, "A New Application of Rapid Oxidation by which Sulphides are Utilized for Fuel," viz.: A cupola fitted with a Bessemer bottom. At the back of the cupola a forepart was built of fire brick connected with the cupola by an aperture in the side of the latter, in order that the molten material undergoing oxidation might freely communicate with a quiescent hearth. A drawing of this furnace will be found in the Society of Arts Magazine, May, 1879.

In the good old times I should not have contented myself with putting my crude ideas into writing, but preferably would have tried to confirm or rectify my opinion by experiments. To-day, unfortunately, I cannot afford to do this. May I hope that some good Samaritan Bessemer manager in the United States or elsewhere may consider it worth while to try the following simple but crucial experiment: Ram an ordinary Bessemer converter with a carbonaceous lining (composed of coal dust, bitumen and clay, coke the lining) and Bessemerize therein a charge of molten non-silicious iron, adding to the bath oxide of iron in small pieces, iron sand or "blue billy," together with an excess of coke. Weigh the iron before and after the operation. If it is found to have lost in weight it would appear as if no reduction had taken place, but if it had gained in weight it would prove that part of the oxide of iron had been reduced, and in that case I feel sure further more important experiments would follow and my theory would have a fair chance of being thoroughly thrashed out.

Apologizing for troubling you with so long a letter, I am, sir,

Yours faithfully.

JOHN HOLLWAY.

LONDON, September 16, 1893.

[We print the above letter as a matter of some interest, without indorsing its theoretical premises or assenting to the conclusions drawn from them.—*Editor The Iron Age.*]

David Bell of Buffalo, N. Y., who for 48 years has carried on a successful iron and steel shipbuilding works, has been forced to make an assignment to Thomas Macnoe. The shop has been reopened and will run full blast under the management of Receiver Macnoe.

OBITUARY.

PHILO BEVIN.

Philo Bevin, treasurer of the Bevin Bros. Mfg. Company, East Hampton, Conn., whose death occurred recently, was one of the pioneers in the manufacture of bells in this country. Mr. Bevin was born August, 1813, at East Hampton, and was thus an octogenarian at the time of his death. With two brothers he began the business in 1838, at East Hampton, the style of the firm having been Bevin Bros. In 1868 the business was incorporated under the name of the Bevin Bros. Mfg. Company. One of Mr. Bevin's brothers died in 1884, while the other brother survives him. The line of goods manufactured at the start consisted of sleigh, hand and house bells. A horse and tread-wheel furnished the power that was needed. In those days the facilities for shipping goods were very unsatisfactory and much energy and indomitable perseverance were essential to business success, qualities which Mr. Bevin possessed to a large degree. For six months in the year or more the goods were taken to a steamboat landing on the Connecticut River, three miles distant, for transportation to market; but when navigation closed a distance of 17 miles, and sometimes 25 miles, had to be traveled to reach a shipping point. Goods were shipped to New York, Boston, Philadelphia and Baltimore.

DELAVEN P. SMILEY.

Delaven P. Smiley, secretary and treasurer of the Michigan Foundry Company, and well known throughout New York and Pennsylvania, died at Battle Creek, Mich., on the 7th inst.

ARTHUR F. WENDT.

Arthur F. Wendt, the mining engineer, who died of disease of the kidneys on October 5, in Berlin, was the son of Charles E. Wendt. He was born in 1852 in Milwaukee. In 1873 he was graduated from the Columbia School of Mines and immediately began his career as an engineer in an iron mine on the Hudson. He was employed in turn at the antimony mines of New Brunswick, at iron and coal mines of Maryland and Pennsylvania, the manufacture of spiegeleisen, and at the copper mines of Tennessee and Arizona. In 1886 he was called to the silver mines of Potosi, and the Huanchaca silver mines of Bolivia. For the latter he designed and built a very large plant, the most prosperous in South America. It was there that he contracted the painful disease from which he died.

Washington News.

(*From our Special Correspondent.*)

WASHINGTON, D. C., October 9, 1893.

The chief constructor of the United States navy, Philip Hichborn, has completed his report on the work of the Bureau of Construction and Repair, of which he is the chief, and has submitted it to the Secretary of the Navy. This is the first annual report of this efficient officer of the navy since his assignment to the head of the Construction Department. He is undoubtedly one of the most accomplished officers in this branch of the service. In 1883 Secretary Chandler assigned him to the responsible duty of visiting the navy and ship yards of England, France, Germany and Russia and obtaining information and plans which might be utilized in the great work of rebuilding the American navy according to the latest methods and of modern designs and material. Mr. Hichborn prepared an elaborate report on the subject, which was really the foundation of the renaissance in American naval architecture. In a conversation with the correspondent of *The Iron Age* the Chief Constructor said:

The past year has been marked by the usual activity in the construction of the new ships. It has also been particularly characterized by visible results, as some of the larger ships which were commenced in 1891 and 1892 have been launched during the year. There are 20 vessels without the monitors undergoing completion, and more than one-half of these are now in the water.

We are constantly studying up new designs, but not with reference to any particular vessels until they are authorized by Congress, then we adapt all the best results of our labors in that direction to the class of vessel to be built. We have always plenty of time from the date of the authorization by Congress until the advertisements for contracts are prepared to make the plans and specifications.

The condition of the unfinished ships shows a satisfactory state of forwardness.

There are being Built in the Government Yards.

Name.	Final delivery of armor.	Date of completion.
At New York—		
Maine	Jan. 1, 1894.	Sept. 1, 1894.
Puritan	Jan. 1, 1894.	July 1, 1894.
Terror	Oct. 13, 1893.	Feb. 15, 1894.
Cincinnati	Oct. 13, 1893.	Jan. 15, 1894.
At Mare Island, Cal.—		
Monadnock	April 1, 1894.	Aug. 1, 1894.
At Norfolk Va.—		
Amphitrite	April 1, 1894.	Aug. 1, 1894.
Texas	Depending on armor.	June 30, 1894.
Raleigh	.....	Nov. 1, 1893.
Gunboats 7, 8 and 9	....	Nov. 1, 1895.

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In Private Shipyards.

Name.	Final delivery of armor.	Date of completion.
At Baltimore—Iron Works:		
Castine	....	Sept. 30, 1893.
Katahdin	July 1, 1894.	April 1, 1895.
At Baltimore—Columbia Iron Works:		
Montgomery	.....	Nov. 1, 1893.
At New York—Quintard's:		
Marblehead	....	Dec. 30, 1893.
At Dubuque—		
Ericsson	.....	June 30, 1894.
At Philadelphia—Cramp's:		
Brooklyn	July 1, 1895	July 1, 1896.
Iowa	July 1, 1896	Oct. 1, 1896.
Columbia	Aug. 1, 1893.	Feb. 1, 1894.
Minneapolis	Oct. 1, 1893.	Aug. 1, 1894.
Indiana	July 1, 1894.	Oct. 1, 1894.
Massachusetts	Jan. 1, 1895.	April 1, 1894.
At San Francisco—Union Iron Works:		
Oregon	July 1, 1895.	Oct. 1, 1895.
Olympia	Oct. 1, 1893.	Dec. 1, 1893.

On the 17th of the present month proposals for the new gunboats will be opened. Two of the gunboats authorized are for Chinese waters and one for general service. Their designs will adapt them to the character of duty they are to perform. This will complete the list of vessels of all types authorized by Congress and uncontracted for. The "Brooklyn" and "Iowa," both armored vessels, have just been commenced and the contract with the Cramps requires their completion by July 1 and October 1, 1896, respectively.

Well, if the present Congress does not authorize more ships the navy yards will have to stop. The last of the large ships being built by the Department will be finished next year, but I have no doubt this Congress will authorize further additions in large and small ships in order to keep the work moving along steadily.

The Columbian Naval Review would have been practically impossible, as far as we were concerned, if we had not commenced when we did to build modern ships. We rather surprised the maritime nations of Europe with what we already had in the way of new, modern ships.

If the review had taken place next year instead of this, we would have surprised them more. Their chief officers, who keep in line with the naval progress of other countries, did not withhold expressing their surprise at what we had done. Less than ten years ago we had practically nothing. In the international review last spring we made a most excellent showing. We were not ashamed by any means of what we had to present.

The best tribute to the success of the United States Navy in marine design and construction in all branches, but particularly in the case I will mention in hull design and construction, was experienced this summer. Captain Wietrich, one of the chief constructors of the German Navy, spent more than a week in this bureau studying up our methods of designing and general administration of the Construction Department of our Navy. He said to me that it was the most perfect system in the world in scientific calculations, excellence of execution in designs, and perfection in methods. He could not adequately express his admiration of the delicate mechanism of detail which we applied. He left us in a most enthusiastic frame of mind over our American methods. Not long after I was astonished to find the German constructor back again. It appears that he had been to Berlin and made his report, which was so surprising to the German marine authorities that the Emperor ordered him back to make further studies of our system.

But this was not the only experience of this character. Among the distinguished foreign expert visitors to our bureau were Captains De Russy and Martine, chief constructors in the French Navy. They were a week with us, and went away full of compliments for the superiority of our system of administration in matters of construction over that of France and, so far as they knew, of other nations. We also had a Spanish naval constructor here, and this very day a Japanese naval officer called upon me with letters of introduction and requested permission to study our system.

These are only recent cases. The tide of inquiry is now coming from Europe to us, instead of our going to Europe. We to-day lead the pace of progress in naval architecture in the world. We will not only keep it, but if Congress authorizes the ships we will still further distance all competition and rivalry.

The explanation of our rapid advance is easy. In European naval establishments everything is secret; in fact, it is considered treason to give out any information. It is the reverse with us. We let the world know what we are doing. We invite criticism, and when they discover anything wrong they are quick to agitate it. We take all the expert journals in the world and have men employed to read them and report. So we have the best of other nations and profit by their criticisms.

I presume the Secretary will confer with the Senate and House committees and ascertain how much they are disposed to grant for new ships next year, and upon that will base his recommendations. This bureau is now equipped for any amount of new work Congress may see fit to authorize.

I am quite sure we can go beyond anything we have yet accomplished in this branch, and further astonish the maritime nations. There is no reason why we should not have within a few years the most formidable naval fleet on the globe. We have the national wealth, resources, materials, experience and expert skill.

Trade Publications.

WE HAVE RECEIVED from E. H. Kinsley & Co. of Cincinnati, Ohio, an illustrated catalogue of their supplies and machinery for railways, mines, machinists, mills, contractors, &c. The book measures 11 x 9½ inches and contains 1168 pages. Some idea of the field covered may be had from the fact that the index alone covers over 14 pages. Heavy, calendered paper is used, and the engravings are sharp and clear and well printed. The catalogue begins with a description of stationary and portable engines and boilers of different types, hoisting engines, ore crushers, rock drills, steam pumps, air compressors, planing and shaping machines, drills, lathes, milling machines, bolt cutters, pipe machines, wire straightening and cutting machines, shears and punches, presses, power hammers, bending rolls, boring machines, riveting machines, grinding machines, metal sawing machines, saw mill machinery, &c. There are also described small tools and fittings of all kinds. Considered as a whole, the catalogue is one of the most complete ever issued by a machinery supply house.

Port Royal, S. C., celebrates this week the introduction of direct steamship communication with Europe.

A Further Decline in Pig Production.

100,000 Tons per Week since June 1.

The general expectation that October 1 would witness an even smaller furnace capacity at work than September 1 has been fully realized, the anthracite furnaces this time being responsible for the greatest decrease. At the beginning of this month we were producing at the rate of say 3 850,000 tons per annum, against a normal rate of output of 9,000,000 gross tons. In other words, we are making considerably less than half the quantity of metal. The most discouraging fact is that consumption does not seem to proceed at a much greater pace, since our stock statistics indicate a slight gain rather than a decrease in accumulated supplies.

On October 1 the active furnace plant, grouped according to fuel used, possessed the following weekly capacity:

Fuel.		
Anthracite	34	15,338
Coke	52	53,061
Charcoal	28	5,496
Total, October 1	114	73,895
Total September 1	125	83,434
Decrease	—11	— 9,539

The weekly product of all the furnaces on October 1 compared as follows with that of preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
October 1, 1893	114	73,895
September 1	125	83,434
August 1	169	107,042
July 1	220	153,762
June 1	244	174,029
May 1	251	181,551
April 1	255	178,858
March 1	255	176,978
February 1	251	171,201
January 1,	246	173,068
December 1, 1892	246	176,271
November 1	244	171,082
October 1	236	158,027
September 1	236	151,648
August 1	238	155,136
July 1	254	169,151
June 1	269	173,674
May 1	268	177,886
April 1	280	185,462
March 1	305	193,902
February 1	308	187,388
January 1	305	188,082
December 1, 1891	298	188,135

The position of the charcoal iron industry is shown in the following table:

Charcoal Furnaces, October 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England	13	5	390	8	570
New York	5	0	0	5	585
Pennsylvania	13	2	154	11	761
Maryland	6	2	125	4	300
Virginia	13	0	0	13	827
Ohio	9	5	407	4	173
Kentucky	3	1	81	2	200
Tennessee	8	2	662	6	396
Georgia	3	1	245	2	230
Alabama	13	4	1,052	9	2,140
Michigan	20	3	1,072	17	5,111
Missouri	2	1	340	1	293
Wisconsin	4	1	743	3	1,127
Texas	4	0	0	4	603
Washington	1	0	0	1	100
Oregon	1	1	225	0	0
Totals	118	28	5,496	90	13,416

As compared with previous months, the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week.
October 1, 1893	28	5,496
September 1	28	5,700
August 1	34	5,563
July 1	35	7,224

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June 1	34	8,034
May 1	38	8,595
April 1	38	8,729
March 1	36	8,623
February 1	37	8,934
January 1	38	8,885
December 1, 1892	41	9,509
November 1	42	9,540
October 1	39	9,174
September 1	42	9,657
August 1	41	8,331
July 1	42	9,964
June 1	48	11,613
May 1	40	10,100
April 1	44	10,359
March 1	50	11,734
February 1	49	10,991
January 1	48	11,164
December 1, 1891	52	11,063

Chatham, in New York, stopped on the 17th ult.; Isabella, in Pennsylvania, resumed on the 23d; Bloom and Mount Vernon, in Ohio, also resumed in September, while Oswego, in Oregon, was also added to the active list. In Alabama Gadsden blew out in September.

The status of the coke furnaces was as follows on the 1st inst.:

Coke Furnaces, October 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	7	0	0	7	5,247
Pennsylvania:					
Pittsburgh district	25	15	24,246	10	16,082
Spiegel	1	0	0	1	1,000
Shenango Val.	16	1	702	15	13,700
Juniata and Conemaugh Valley	16	3	1,588	13	7,074
Spiegel	1	0	0	1	575
Youghiogheny Valley	3	0	0	3	2,215
Miscellaneous.	4	1	650	3	1,850
Maryland	5	2	2,900	3	3,036
West Virginia	1	0	0	1	250
Wheeling District	8	1	1,400	7	6,655
Ohio:					
Mahoning Val.	15	3	4,320	12	10,074
Central and Northern	11	3	2,093	8	6,203
Hocking Val.	14	0	0	14	3,741
Hanging Rock	14	1	94	13	3,068
Indiana	2	0	0	2	412
Illinois	19	0	0	19	26,375
Minnesota	1	0	0	1	629
Wisconsin	5	0	0	5	4,010
Missouri	6	0	0	6	3,572
Colorado	3	0	0	3	1,800
The South:					
Virginia	22	8	4,877	14	7,155
Kentucky	7	0	0	7	3,243
Alabama	38	11	8,453	27	14,390
Tennessee	14	2	1,093	12	5,387
Georgia	2	1	645	1	600
N. Carolina	1	0	0	1	97
Totals	261	52	53,061	209	148,940

As compared with previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
October 1, 1893	52	53,061
September 1	54	56,976
August 1	84	77,907
July 1	122	117,072
June 1	140	132,079
May 1	146	139,788
April 1	145	135,488
March 1	145	133,579
February 1	140	129,396
January 1	138	131,731
December 1, 1892	136	133,160
November 1	133	130,673
October 1	128	118,895
September 1	128	114,538
August 1	131	117,984
July 1	140	127,433
June 1	145	128,852
May 1	147	132,313
April 1	152	138,116
March 1	163	143,490
February 1	167	138,268
January 1	163	138,611
December 1, 1891	162	142,747

Considering the current state of affairs the Pittsburgh district has held its own in an astonishing manner. In fact, nearly one-half of the total production of coke iron in the country comes from Allegheny County. The Wheeling district, the Valleys, other sections of Western Pennsylvania, Northern Ohio, and above all Illinois, have all suffered far more. In Illinois, Wisconsin and Minnesota there was not a single coke furnace in operation on the 1st of the month. In Virginia, Alabama, Tennessee and Georgia, all of whose plants practically work for the open market, the product has dropped to a weekly rate of 15,068 tons in 22 stacks. Since the same section had 38 furnaces at work, with a weekly capacity of 24,142 gross tons, on June 1, 1893, it has not relatively dropped back as seriously.

Among the coke furnaces which have banked or blown out during September are: Niagara, in New York; Stewart, in the Shenango Valley: Rockbridge, in Virginia; two furnaces of the Illinois Steel Company, at South Chicago, and Phœnix, in the Mahoning Valley. There have been blown in during the same month one Maryland, at Sparrow's Point; one Cambria, at Johnstown; Franklin and Mingo, in Ohio, and Spathite, in Alabama.

The status of the anthracite furnaces was as follows:

Anthracite Furnaces, October 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	18	1	559	17	6,094
New Jersey	11	2	956	9	3,841
Spiegel	3	2	137	1	118
Pennsylvania:					
Lehigh Valley	44	11	3,857	33	12,536
Spiegel	1	0	0	1	61
Schuylkill Valley.	27	10	5,138	17	7,210
U. Susquehanna Valley	14	2	712	12	4,275
L. Susquehanna Valley	17	2	1,652	15	5,490
Lebanon Valley	15	4	2,327	11	4,821
Totals	150	34	15,338	116	44,910

For a number of months past our records of active anthracite furnaces show the following:

	Furnaces in blast.	Capacity per week.
October 1, 1893	34	15,338
September 1	43	20,758
August 1	51	23,572
July 1	63	29,268
June 1	70	33,916
May 1	67	33,168
April 1	72	34,641
March 1	74	34,773
February 1	74	32,871
January 1	70	32,772
December 1, 1892	69	33,602
November 1	69	30,869
October 1	69	29,958
September 1	66	27,453
August 1	66	28,821
July 1	72	31,754
June 1	76	33,209
May 1	81	35,473
April 1	84	36,487
March 1	89	38,678
February 1	92	38,124
January 1	94	38,307
December 1, 1891	85	34,905

The number of furnaces at work has been lessened by the stoppage of Anvil and one Brooke in the Schuylkill Valley, one Allentown, two Bethlehem, one Crane and one Thomas in the Lehigh Valley.

Stocks.

The position of stocks, sold and unsold, as reported to us October 1, was as follows, the same furnaces being represented as in former months:

Stocks:	July 1. Tons.	Aug. 1. Tons.	Sept. 1. Tons.	Oct. 1. Tons.
Anthracite pig	114,955	111,468	115,930	121,597
Coke pig	344,138	420,390	513,260	532,157
Charcoal pig	193,629	191,838	197,881	179,908
Totals	652,722	723,696	827,071	833,662

The figures represent an increase in the accumulation of coke pig iron of nearly 19,000 tons during the month of September. Thus while the amount of stock continues to increase it will be seen that the rate of increase is not merely in proportion to that of the last few months. The gain has been general throughout the coke producing districts of the country with the exception of New York and Tennessee, where a decrease has taken place. The charcoal furnaces report a falling off in stocks of nearly 18,000 tons, while the anthracite producers have slightly increased their holdings.

MANUFACTURING.

Iron and Steel.

Several more sheet mills were put in operation last week at the plant of the Ætna-Standard Iron & Steel Company, Bridgeport, Ohio. All the sheet mills formerly included in the Standard plant are running except No. 9. The sheet mills of the Ætna works are not yet in operation. The three-high plate mill differences have been settled and it is now running.

At the works of the Whitaker Iron Company, Wheeling, W. Va., four sheet mills are now in operation. Repairs and alterations are being rapidly made on three others and a new mill is being built. This will make eight sheet mills at this company's plant.

All except two puddling furnaces of the Standard plant at Bridgeport, Ohio, now Ætna-Standard Iron & Steel Company, have been torn down to make room for other improvements.

At the Top Mill, Wheeling, W. Va., operated by the Wheeling Iron & Steel Company, the 52 inch sheet mill is in operation, also one small sheet mill, each running double turn.

The Bessemer steel plant of the Shenango Valley Steel Company, New Castle, Pa., has commenced operations after a prolonged shut down.

The New Philadelphia Iron & Steel Company, New Philadelphia, Ohio, have given notice of a 10 per cent. reduction in wages. All employees whose earnings are governed by the scale of the Amalgamated Association will be affected.

The hammer house of the W. Dewees Wood Company, McKeesport, Pa., which has been idle for several weeks, has resumed in full. The steel mill has also resumed after a week's shut down, so that almost the entire mill is now in operation.

The Chicago Steel Works, at Chicago Heights, Ill., have been purchased by Youngstown capitalists, who propose to complete the plant and have it in readiness for operation in about 60 days. The works have heretofore made a specialty of agricultural shapes, and they will probably continue in that line.

The Midland Steel Company of Muncie, Ind., enjoy the rare distinction of having been one of the few concerns in the entire country whose operations were uninterrupted by the recent panic. Their works are still running on full time in the manufacture of light and heavy steel sheets. The active demand for black sheets for tinning purposes is causing the company to regard that branch of the sheet business with much interest, and the probabilities are that they will shortly put themselves in a position to secure a share of it. Their equipment for this purpose lacks only the polishing rolls.

Trouble between the Indiana Iron Company of Muncie, Ind., and their old employees, whose faith is strong in union on the old scale of wages, has culminated in the importation of other labor. An impassable fence has been erected around the works, and it is stated that an electric current is passed through the wire that binds the fence boards whenever attempts are made to climb the barrier. This mill is outside the quarantined district.

Following the news contained in an item appearing in *The Iron Age* of last week concerning trouble over a reduction in the wages of wire drawers at the Salem, Ohio, works of the Salem Wire Nail Company, comes word that all employees in this department are discharged, and that they are endeavoring, without apparent success, to interest employees of other departments

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with a view of causing a general strike. This company have another large plant at Findlay, Ohio, which they have successfully placed upon a non-union basis.

It has been rumored at Troy, N. Y., that I. Townsend Burden, Chester Griswold and Erastus Corning were to purchase the plant of the Troy Steel & Iron Company and run it. Receiver Kemp says that the syndicate mentioned has not approached him on the subject.

After an idleness of four months the Indiana Iron Company, one of the largest manufacturing concerns of Muncie, Ind., have resumed operation. It is stated that the workmen accepted a reduction in wages of 25 per cent.

On account of the breaking of a large cog wheel, causing a temporary suspension of work, it has been erroneously reported that the Ohio Falls Iron Works, at New Albany, Ind., have been closed down for an indefinite period. As a matter of fact, the works were closed for only one week and are now running to their full capacity. They have been running exclusively on orders for the last three months and have orders on hand sufficient to keep them going for some time to come.

Damage to the extent of $5000 was done to the works of the Windsor Locks Steel Company, at Windsor Locks, Conn., by the bursting of a 14-foot balance wheel weighing about 15 tons. The wheel was a new one and was being tested. The roof was torn off a portion of the works and a 55-foot smokestack knocked down.

At a recent meeting of the stockholders of the Pennsylvania Steel Company, held in the Philadelphia office of the company, the old Board of Directors was re-elected, and the number increased by the election of Effingham B. Morris, president of the Girard Trust Company, which corporation is one of the receivers of the Pennsylvania Steel Company.

The once great Vulcan Iron Works, at St. Louis, Mo., covering 6 acres of ground, are being sold piecemeal as junk. The 8-ton steam hammer was sold to Pittsburgh parties recently for $6000. Even the brickwork is disposed of to wreckers.

The court has granted to H. B. Oliver of Pittsburgh, Pa., the right to enter into an agreement with M. A. Hanna & Co. of Cleveland, Ohio, whereby the Oliver Iron & Steel Company and the Cleveland firm above named are to operate the Rosena Furnace, at New Castle, Pa., jointly. The Rosena has been practically rebuilt, and is now said to be one of the most complete and modern furnaces in the Shenango Valley.

The Philadelphia Bridge Works, at Pottstown, Pa., have started up on double turn, contracts having been received to keep them busy for some time.

The Susquehanna Rolling Mill of Columbia, Pa., has resumed work after a stoppage of some weeks.

Dora Furnace, at Pulaski, Va., has recently made some records that are believed by furnacemen to surpass anything in the South. She made during the month of August 4512 tons of iron on a fuel consumption of 2180 pounds of coke per ton of iron, of which 65 per cent. was foundry iron. Her record for the week ending September 23 was 1128 tons for seven days' work. That was made on a fuel consumption of 2000 pounds of coke per ton of iron, grading 93 per cent. foundry iron. Her best day's record was 206 tons.

After a shut down of several months the Old Dominion Nail Works on Belle Isle, at Richmond, Va., have resumed operations. The nail factory will resume during the week, together with the guide and bar mills.

The Carbon Steel Company of Pittsburgh have recently completed the erection of an electric light plant at their works.

Wm. Swindell & Brother, engineers and contractors, of Pittsburgh, have recentiy received a contract for the erection of a 24-pot crucible melting furnace at the tool steel works of the Collins Steel Company, at Collinsville, Conn. The same firm have also a contract for the erection of two additional Swindell annealing furnaces in the works of the Sterling Steel Company at Demmler, Pa.

A general reduction of wages averaging about 10 per cent. has gone into effect among the employees of Jones & Laughlins, Limited, at Pittsburgh. All classes of labor were affected except those working under the scales of the Amalgamated Association.

At Pittsburgh last week Charles A. O'Brien, acting for Pennock Brothers of Minerva, Ohio, filed in the United States Circuit Court an application for the appointment of a receiver for the Columbia Iron & Steel Company of Pittsburgh, with works at Uniontown, Pa. With the application is a petition asking that the judgments confessed last week to Robert Hogsett and the People's Bank, at Uniontown, be set aside. It is also charged in the bill that the officers of the firm are dissipating the property.

The Union Rolling Mills of Cleveland, Ohio, resumed operations last week to nearly their full capacity. It is stated that operations were resumed with the understanding that wages to be paid would be governed by those paid in same mills in the Mahoning Valley when operations there have been resumed. The number of heats per day to be made by the puddlers will also be regulated by the practice in the Mahoning Valley. For the present five heats in 12 hours will be the rule.

Employees of the Warren, Ohio, Rolling Mills, operated by the Union Iron & Steel Company of Youngstown, have been notified that their services are no longer required and they are advised to seek positions elsewhere. This mill has been ready to start at a day's notice for several weeks past, but failure to make satisfactory terms with the workmen has caused this action.

The Apollo Iron & Steel Company, at Apollo, Pa., have started up in nearly all departments with non-union workmen.

A press dispatch from Muscatine, Iowa, dated the 7th inst., says that on that day, amid the cheers of 3000 spectators the Williams Rolling Mills steamed up and rolled the first piece of iron. The concern will employ 200 to 300 skilled laborers. It was built by citizens of Muscatine through the Improvement Company.

The puddle mill of the Phœnix Iron Company, Phœnixville, Pa., has resumed operations.

The plate mill of the Ellis & Lessig Iron and Steel Company, at Pottstown, Pa., has resumed operations, the employees agreeing after a conference to accept the reduction until the return of better times. They are to work five days a week and three weeks a month. The puddlers have not yet decided to accept the proposed reduction in their wages.

Another of the furnaces connected with the pipe mill of the Reading Iron Company, Reading, Pa., has resumed operations, giving employment to 75 more hands. It is stated that the prospects for an early resumption of the entire mill are excellent.

The puddling and the steel rail departments of the Bethlehem Iron Works, Bethlehem, Pa., will, it is stated, resume work on Monday next. They have been idle several months. Fifteen hundred men will be given work.

After two months of idleness the rolling mill of the Valentine Iron Company, Bellefonte, Pa., has again been put in operation.

In all probability the Clinton Iron & Steel Company will endeavor to start up their Clinton Rolling Mill on the South Side, Pittsburgh, with non-union men during this week. Although the scale of the Amalgamated Association calls for $5 per ton for boiling this firm state that they are unable to pay this price and compete with non-union mills in Pittsburgh, where the price is 50 cents per ton and in some cases $1 per ton less. It is stated that the firm have secured a large force of non-union men, sufficient to start up the puddling department some time during this week.

During this week the Homestead Steel Works, Homestead, Pa., will operate according to this schedule: Armor plate, open hearth, converting mill, 28-inch plate mill and the 10-inch mills will be on double turn. The 23, 32, 35 and 40 inch mills on single turn.

Keystone Furnace, at Chain Dam, Pa., owned by the Thomas Iron Company, was blown out last week.

The Apollo Iron & Steel Company, Pittsburgh, Pa., have withdrawn as members of the Association of Iron and Steel Sheet Manufacturers with headquarters at Pittsburgh. This step was taken for the reason that this firm have decided to employ only non-union labor in the future. When the wage scale governing sheet mills adopted in Pittsburgh in July last was presented to the employees of this firm, some of them refused to be governed by it. In addition to this, when the manufacturers asked that a vote of the lodges of the Amalgamated Association be taken as to whether they would agree to reconsider the wage scale, the request was refused, although it has since been decided to have the different lodges vote on the question. On Monday, the 9th inst., two mills of the above firm at Apollo, Pa., were put in operation, and on the day following another was started up. It is the intention of the firm to operate only such portions of their plant as their trade requires. In the future they will deal with their employees as individuals and no labor organizations of any kind will be recognized.

The Totten & Hogg Iron and Steel Foundry Company, Pittsburgh, Pa., report trade as improving, having recently received a number of orders for rolls and rolling mill machinery. On Monday this firm received an order from one concern for 30 rolls. This would seem to indicate that in some sections, at least, business is improving.

Machinery.

Among orders received by A. L. Ide & Son of Springfield, Ill., during the last ten days are the following: One 100 horse-power Ideal engine for the Ludington Building, second order; one 125 horse power engine for the Hoopeston Canning Company, Hoopeston, Ill.; three 175 horse-power Ideal tandem compound engines for the new Stock Exchange Building, Chicago; two 125 horse-power and one 100 horse-power Ideal engines for the Southern Hotel, St. Louis. The Stock Exchange and the Southern Hotel engines are all to have General Electric Company multipolar armatures directly attached to their crank shafts, the stock Exchange engines driving 100 K. W. machines and the Southern Hotel engines driving 50 K. W. machines. The two 125 horse-power engines each drive in addition one 50 arc light dynamo bolted from its governor pulley.

The newly incorporated firm of Harrington, Son & Co., Philadelphia, will erect a large machine plant.

The Lehigh Valley Railroad shops, at Easton, Pa., are now working full handed on full time.

Frisbie Elevator & Mfg. Company, New Haven, Conn., have recently put in what is said to be one of the largest electric elevators ever built. It is located in the car house of the Consolidated Street Railway Company, Worcester, Mass., and is used for elevating cars. Its capacity is 9 tons, with platform 34 x 10 feet and 15 feet high.

The W. H. Page Boiler Company of Norwich, Conn., have completed plans for a new foundry, which they propose to build in connection with their present plant, to accommodate increasing business.

The machine shops of the Southern Pacific Railroad Company, which for some time past have been working but four days per week and eight hours a day, are now running on full time with a full force.

The Hay Budden Mfg. Company of Brooklyn, N. Y., have been incorporated to manufacture and sell dies and anvils and carry on a general forging and blacksmithing business. The capital is $20,000.

The National Iron Works and the Vulcan Brass Works, at Cleveland, Ohio, have been damaged by fire, the former sustaining a loss of $7000 and the latter $4500.

John Adt & Son, well-known builders of machinery at New Haven, Conn., are operating their plant with about one-quarter of their usual force, eight hours a day and six days a week. While the tone of business with them has considerably improved during the last month, they do not look forward to any considerable improvement in the situation until Congress takes action on the tariff question.

The Birmingham Iron Foundry, founders and machinists, Birmingham, Conn., continues to run six days a week, with nearly a full complement of hands. The company are troubled with slow collections, but otherwise the outlook with them is quite satisfactory under the circumstances.

Thurman & Powell, machinists and foundrymen of Louisville, Ky., have assigned. The assets are $36,468.29, and the liabilities $31,401.49.

The Swamscot Machine Company of South Newmarket, N. H., doing business in Boston under the firm name of George K. Paul & Co., have assigned. It is hoped to pay creditors in full, and to continue the plant in operation, which gives employment to practically the whole town of South

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Newmarket. The company's assets consist of bills receivable and cash amounting to $81,500; real estate, tools, machinery, &c., $110,000; stock in trade in store in Boston, $66,000. The debts amount to $140,000. The directors' object is to realize the best possible price on the stock in the store in Boston, pay up the debts and thus free the corporation at South Newmarket.

The Finance Committee of Montreal, Canada, have recommended to the Council the purchase of a Worthington high duty pumping engine having a capacity of 12,000,000 United States, or 10,000,000 Imperial gallons of water per 24 hours. The Worthington Company offer to deliver and install within 60 days from the closing of the World's Columbian Exposition the pumping engine now on exhibition at the fair for the sum of $55,000. The engine in question is of the same type and capacity as the one already in operation at Montreal, so that the water capacity of that city will be doubled.

The Christopher Double Power Rotary Engine Company have been incorporated at Spartansburg, S. C., by C. E. Christopher, S. Wilson and associates, with a capital stock of $1,000,000, to establish engine works.

The Robingson Mfg. Company, operating a brass foundry at Beaver Falls, Pa., have not gone into a receiver's hands, as stated in recent press dispatches. The report grew out of the fact that a receiver has been appointed for the concern owning the building in which the company carry on their business.

The Kitson Machine Company of Lowell, Mass., have laid off 26 of their employees owing to dull business.

The American Road Machine Works of Kennett Square, Pa., have closed for an indefinite period, throwing out of employment about 200 men. This is the first time in years that the works have been forced to close on account of a lack of orders.

The Northwestern Malleable Iron Works, at Milwaukee, Wis., which closed down about two months ago on account of lack of orders, have resumed with a full force. It is understood that the works have a number of good sized orders on hand.

Hardware.

The cutlers of the Humason & Beckley Mfg. Company, New Britain, Conn., have resumed work.

The nailers and the Laughlin Nail Company, Martin's Ferry, Ohio, have come to an agreement, the former accepting the 15 per cent. reduction in wages proposed by the company. The works are again in operation, giving employment to nearly 700 hands.

The implement works of the Parlin & Orendorff Company, Canton, Ill., have resumed work with 800 employees.

The Parker Mills Nail Works, Wareham, Mass., which have been idle for six weeks, have started up.

The Eaton-Ritchell Company, manufacturers of tinware, Denver, Col., have decided to remove to South Omaha, Neb., and will commence the erection of a plant at that point at once. The building will be 60 x 190 feet and will cost about $6000. The firm will give employment to 50 men.

The American Wringer Company's plant at Woonsocket, R. I., which has been running three days a week during the past two months, will probably start in on full time in a few days.

G. W. Denison & Co., Winthrop, Conn., manufacturers of wood planes, are closing out their business.

The Hatch Cutlery Company, South Milwaukee, Wis, and 97 Chambers street, New York, are congratulating themselves on the amount of Christy knives sold since they undertook to market the entire output in July last. They refer to the aggregate number of sets disposed of since that time as 10,000, and assure us they are making an effort to execute orders promptly.

The new nail factory of the Hollis Tack & Nail Factory, at Scottdale, Pa., was put in operation on September 15, giving employment to about 25 men and boys. The factory is equipped with 30 tack and nail machines, 20 of them being in operation. The firm expect to start up the balance about November 1 next. The concern advise us that they are meeting with a good demand for their nails, and expect to secure a fair share of the trade. The concern have a capital stock of $20,000, with officials as follows: W. A. Kifer, president; F. M. Branthoover, secretary, and John Robertson, treasurer.

TRADE REPORT

The terrific struggle for work continues, and on large orders accompanied by satisfactory terms of payment unprecedented prices are made. The sacrifice of all profits along the whole line, the low cost of raw materials and the reductions in labor have brought down the theoretical cost of manufacture to figures hitherto undreamt of in this country. We say advisedly "theoretical," because it is dependent upon full employment. To reach the condition begotten by a fairly well filled order book is what so many are striving for. Spot cash, too, fetches very low figures. In fact, the terms are so potent a factor now that reports as to prices accepted for prompt settlement are no criterion as to what could be done on transactions on the ordinary basis. This fact must be kept in mind steadily.

If the Rockefeller interest can buy 300,000 tons of Mesaba Ore, delivered at lower Lake ports, at $2.75, cash, it does not follow that contracts can be placed at that figure at other terms. Although a Cleveland mill did buy 12,000 tons of Steel Billets for $17.50, cash, on cars Pittsburgh, a small consumer cannot do better than $18 25, ordinary terms. Coke at $1 ℔ ton at Connellsville, even, might possibly be done under special circumstances, but the open quotation is $1.10. In the same way special prices are being made for Finished Material, as in the case mentioned by our Philadelphia correspondent. But the circumstances surrounding the transactions are such that very few can avail themselves of them, however much many might be willing to do so.

Our monthly Pig Iron statistics reflect as closely as it is possible for any one article in the line of Iron products to do so the volume of current consumption. They show that we are still accumulating a little metal in spite of the fact that current production is only 43 per cent. of the normal output of say 9,000,000 tons per annum.

Bessemer Pig is down to $11.50 in Pittsburgh, and even $11 25 has been done under special circumstances. Costs have changed so much lately that manufacturers are quite at sea concerning the capacity of rivals to live at low figures. There is a good deal of discussion going on whether $6, $6.50, or $7, or $7.50 are a fair representation of cost of converting Pig Iron into Steel Billets. Some very emphatic statements are made concerning the claims of those who assert that the lower figures represent actual practice. In a similar way the controversy is raging over the cost of rolling Billets into Rods, and over other similarly perplexing questions.

In a general way the conclusion is warranted that very few of the works throughout the country can touch the costs proclaimed by some, and that therefore any inferences based upon them as to the permanency of present values are dangerously unsafe to the buyer. That lasting reductions in the cost of producing Iron and Steel have been made no one will deny, but neither labor nor capital can long suffer as they are now doing. The present range of values is abnormal and cannot last long. Even now far more than half of the aggregate manufacturing capacity is helplessly out of the race. When consumers need their product they will have to accord prices which will pay them to start.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, October 11, 1893.

Pig Iron.—The past week has been quiet, with not even a rumor of a large sale. Inquiries have fallen off. The few transactions reported in Coke Iron are principally in Southern brands. Southern manufacturers are, however, quite stubborn about long deliveries, and claim that they will sell only at present rates up to the first of the year. For delivery beyond that time they ask more money. The situation is regarded by prominent dealers as one of waiting on the part of buyers. They believe that nothing favorable or unfavorable can be based on present conditions. Consumers are wholly at sea regarding the future, and not knowing what to do they naturally do nothing. If the Senate soon settles the silver question by the passage of the repeal bill it is expected that there will be some resumption of activity. Meanwhile everything hesitates. Quotations are now as follows for cash:

Lake Superior Charcoal.....	$16.00 @	$16.50
Local Coke Foundry, No. 1...	13.50 @	14.00
Local Coke Foundry, No. 2...	12.75 @	13.00
Local Coke Foundry, No. 3...	12.50 @	12.75
Local Scotch.....	14.00 @	14.50
Ohio Strong Softeners No. 1..	15.50 @	16.00
Southern Silvery, No. 1.	@	14.50
Southern Silvery, No. 2.....	@	14.00
Southern Coke, No. 2..... ...	12.35 @	12.60
Southern Coke, No. 3	11.60 @	11.85
Southern, No. 1, Soft.....	12.35 @	12.60
Southern, No. 2, Soft.....	11.85 @	12.10
Southern Gray Forge	11.10 @	11.35
Tennessee Charcoal, No. 1....	16.00 @	16.50
Alabama Car Wheel.....	18.50 @	18.75
Hocking Valley, No. 1	15 25 @	16.00
Jackson County Silvery.....	16.00 @	17.00

Bars.—Transactions recently have been confined to small quantities of Bar Iron and Soft Steel Bars. The volume of business is, however, a little larger than for some time past, as shown by the ability of local mills to continue in operation. Prices of Bar Iron range from 1.40¢ to 1.45¢, half extras, Chicago delivery. Soft Steel Bars are generally quoted at 1.55¢, Chicago, but good specifications can be placed at a little lower figure. Store prices are unchanged at 1.65¢ @ 1.70¢ for Bar Iron and 1.70¢ @ 1.75¢ for Soft Steel Bars.

Structural Material.—Only sales of small lots are reported. Quotations are maintained at the following prices on mill shipments, Chicago delivery: Beams, 1.75¢ @ 1.90¢; Tees, 1.95¢ @ 2.05¢; Angles and Universal Plates, 1.75¢ @ 1.80¢.

Plates.—Nothing new is to be noted under this head. Only a moderate business is in progress in mill shipments, while store trade is about as reported last week. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.75¢ @ 1.80¢; Shell Steel, 2¢ @ 2.10¢; Flange Steel, 2.15¢ @ 2.30¢; Fire Box, 2.75¢ @ 5¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2.25¢ @ 2.40¢; Tank Steel, 2.10¢ @ 2.20¢; Shell Steel, 2 20¢ @ 2.40¢; Flange Steel, 2.50¢ @ 2.65¢; Boiler Tubes, 67½ %.

Sheets.—The mills manufacturing Black and Galvanized Iron are now a little firmer in their views. This is perhaps owing to the fact that orders are being concentrated with the mills now running. Quite a number of contracts have been canceled with idle mills and replaced with those able to make prompt shipments. The minimum price of mill shipments now seems to be 2 80¢, Chicago, for No. 27 Common Black Sheets and 75 % for Juniata Galvanized, with

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freight added. Small lots from stock are selling at 2.90¢ @ 3¢ for Common No. 27 Sheets and 70% @ 70 and 7½ % off for Galvanized Iron. Sheet Copper continues to be quoted at 30 % @ 35 % off, according to quantity.

Merchant Steel.—Specifications are coming in more freely on season contracts. Orders for prompt shipment, although small, are also better than they have been. General consumers are buying better, showing that their stocks are running out and must be replenished. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel at 1.90¢ @ 2¢; Ordinary Bessemer Machinery, 1.60¢ @ 1 65¢; Ordinary Bessemer Tire, 1.55¢ @ 1.60¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Rails and Track Supplies.—The Steel Rail situation is unchanged, business being light on standard sections, but moderately active on Light Rails. Standard sizes are unchanged at $30 @ $32; and Light Rails $31.50 @ $32. Iron and Steel Splice Bars 1.60¢ @ 1.65¢; Track Bolts with Hexagon Nuts, 2.50¢ @ 2.55¢; Spikes, 1.85¢ @ 1.90¢,

Old Rails and Car Wheels.—Offers are made of $14.50 @ $15 for Old Iron Rails, but the railroads ask $16 and more, so that no trade has resulted. Old Steel Rails are quoted at $8 @ $10, according to length. Old Car Wheels are in no demand, and it is difficult to determine values. Large lots would be taken by some buyers at $10 @ $10.20, who deem Old Wheels at such prices a good speculation. Single carload lots command $13.50 @ $14.

Scrap.—Inquiries are coming in from distant points, but buyers appear to be unwilling to pay Chicago prices. The local demand is light. The demoralization of prices is shown by the amount realized on a carload of low grade Scrap sold under some pressure last week. It netted the seller only 64¢ ℔ ton. Dealers' selling prices, net ton, are as follows: No. 1 Forge, $10; No. 1 Mill, $8; Sheet Iron, $5; Pipes and Flues, $7 50; Axles, $15; Horseshoes, $10; Fish Plates, $12 75; Spikes and Bolts, $10; Cast Borings, $5; Wrought Turnings, $6.50; Axle Turnings, $8; Heavy Cast, $9; Stove Plate, $7.75; Malleable Cast, $8; Mixed Steel, $9, gross ton; Leaf Steel, $16.

Metals.—Carload lots of Lake Copper are quoted at 10⅞¢. Casting brands are still held at 9⅞¢, but trade continues dull. Spelter is lower. It has sold at 3 55¢, but can possibly be bought now a trifle below that. Lead has fallen to 3.45¢ in carload lots. Some sellers have endeavored to force their holdings on the market, while buyers are not disposed to take much at present.

George G. Spencer, 553 The Rookery, Chicago, has been given entire charge of the sales department of the Cambridge Iron & Steel Company, Cambridge, Ohio. The company manufacture light Iron and Steel Sheets exclusively. They have recently added a galvanizing department, and manufacture Galvanized Sheets under two brands, Cambridge and Cambridge Best. Mr. Spencer has had much experience in the Sheet trade, having represented the Ætna Iron & Steel Company for eight years, during which time he built up a large business in that line. In addition to the management of the sales department of the Cambridge Company, Mr. Spencer will continue his connections in other branches of trade.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., October 10, 1893.

The condition of the market is much the same as last week, although there is a more hopeful feeling and a disposition to act on the idea that things are going to be better. Prices are extremely low, and with but few exceptions are lower than they were a week ago, although this is measurably offset by cheaper cost, so that averaging it all around the trade are inclined to accept the situation as giving promise of improvement, especially as there is a better demand and a better outlook generally. Inquiries are more numerous and money is easier, and with a continuance of favorable conditions during the next two or three weeks business ought to resume some of its old time activity. Until that time it is hardly to be supposed that prices will show much change, although they must be pretty well down to bed rock. A few large orders have been taken for Pig Iron, and some good sized lots of Finished Material have also been placed; but nothing encouraging can be said in regard to the prices that were realized. This, indeed, is the most unsatisfactory feature of the market, but for the time being competition is so sharp that anything out of the ordinary run of business is jumped for almost without regard to prices.

Pig Iron—This end of the market is about as dull and uninteresting as it possibly can be. Buyers appear to be utterly indifferent to low prices; if they need Iron they will order just a little; if they do not need it, price is no inducement. Sales therefore are to a great extent carload lots, 50 tons or 100 tons, and occasionally it may be a 200 or 300 ton lot at quoted rates, but on a larger lot special terms must be arranged, either by a concession in price, time for delivery, or in terms of payment. The fact is, buyers have everything their own way, and while there is no undue pressure to sell, all that a buyer needs to do is to signify that he wants Iron, and the supply of all kinds and from all quarters is immediately seen to be abundant. All the same, it is a frequent remark that some of these days—and perhaps very soon, too—there will be a change of tone, but in the meanwhile it is equally true that there is no disposition to anticipate such a contingency, which, however, only serves to make it more of a probability. Sales are usually within the following range of prices, varying according to quantity, brand, delivery, terms of payment, &c.: $12.25 @ $12.75, delivered, for Gray Forge or Plain No. 2; $13.75 @ $14 for No. 2x; $14.25 @ $14.50 for No. 1x.

Steel Billets.—Business is not large, although prices are again lower, $20.75, with a chance that $20.50 or less would be accepted on a firm offer for a round lot, quick delivery and prompt cash settlements. A few small lots have been taken at $21 @ $21 25, but there is not much disposition to do business, although one or two lots of importance are under negotiation and will probably be closed in a day or two at something less than $20.75.

Finished Material.—A more active demand is reported, and of a pretty well distributed character, but with so many mills looking for work, inquiries are in many cases little more than an incentive for manufacturers to name lower prices than ever. The past week has probably seen the lowest figures yet reached, but at this writing there would be no difficulty in duplicating any purchase recently made. Ordinarily prices on small lots are not greatly changed from last week, but on 50-ton orders, or from that up, extraordinarily low figures are named, figures which can hardly be given in print without leading to misapprehension among the smaller class of buyers. The reason given for such tremendous cuts in prices is that the large mills are determined to get all the work possible, so that when the order is large enough to make it worth while, prices are slaughtered most unmercifully. The 3000-ton order taken by the Phœnix Bridge Company last week is a case in point, Pittsburgh furnishing the plates, the Phœnix Iron Company the balance of the material. There are other orders of this class likely to be around soon, particularly for architectural work and shipbuilding, but at best there is not likely to be more that sufficient to maintain the *statu quo*. Still it is something to feel that matters are not likely to be worse, with some chance for a moderate improvement. General quotations are about as follows, with the usual concessions on large lots:

Grooved Skelp, delivered	1.50¢	@	1.55¢
Best Refined Bars	1.55¢	@	1.60¢
At interior points	1.50¢	@	1.55¢
Tank Steel	1.60¢	@	1.65¢
Heavy Plates	1.65¢	@	1.70¢
Shell	1.75¢	@	1.85¢
Flange	2.00¢	@	2.20¢

Old Material.—There is very little disposition to buy, so that prices vary according to the desire of the holder to realize. As a rule asking prices are about as follows:

No. 1 Wrought Scrap, delivered	$12.50	@	$13.50
Machinery Cast, delivered	10.50	@	11.00
Heavy Steel Scrap, delivered	13.00	@	14.00
Old Iron Rails, delivered	15.00	@	16.00
Old Street Rails, delivered	17.00	@	18.00
Wrought Turnings, delivered	10.00	@	11.00
Cast Borings, delivered	6.50	@	7.00
No. 2 Light Scrap, new	8.00	@	8.50
No. 2 Light Scrap, old	6.00	@	7.00

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, October 11, 1893.

The market has been unusually dull for Pig Iron during the past week, even for these dull times. There has been about the usual current consumptive demand in this district for car lots, but they seldom run above 200 tons each; and even the orders from the East have been for reduced quantities, and notwithstanding the comparatively light offerings of Southern Iron there is an ample supply for the wants of the trade. The stove works in this district are buying generally in a small way, and while prices as a rule are sustained there have been concessions made in some instances. 1000 tons Gray Forge was sold on competitive bids which resulted in the price being made of $6.75 ℔ ton, f.o.b. Birmingham, for deliveries running up to March, and while this is considered exceptional it indicates that there are still sellers to be found at low prices. The current demand is mainly for No. 2 Foundry and No. 1 Soft, and for these pretty full quotations are realized. There appears to be no movement in Charcoal Iron. Collections are not improving much, if any; better things are

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expected when the Silver Purchase bill is repealed. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$12.75 @ $13.00
Southern Coke No. 2	10.75 @ 11.00
Southern Coke No. 3	10.25 @ 10.50
Ohio Soft Stone Coal, No. 1	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2	14.50 @ 14.75
Lake Superior Coke No. 1	15.00 @ 15.25
Lake Superior Coke No. 2	14.00 @ 14.25
Hanging Rock Charcoal, No. 1	18.50 @ 19.00
Hanging Rock Charcoal, No. 2	17.50 @ 18.00
Tennessee Charcoal, No. 1	14.00 @ 14.25
Tennessee Charcoal, No. 2	13.00 @ 13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @ 18.00
Lake Superior Car Wheel and Malleable	17.00 @ 17.25

Forge.

Gray Forge	9.75 @ 10.00
Mottled Coke	9.50 @ 9.75

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, October 10, 1893.

As the end of the year approaches the conviction becomes general that no permanent improvement in the Iron and Steel trades can be reasonably expected before next year. While prices on all kinds of material are much lower than ever before, business is confined to sales for immediate requirements, and when a large order is placed, it is for the reason that the buyer is offered an exceptionally low price, at which he feels he can afford to take the risk of further decline in the market before he is ready to enter it again. Going right through the list of Iron and Steel manufactures it would seem that prices cannot reasonably go any lower, and yet, when an attractive order is presented there is such a scramble for it that values are sent a peg lower, and it is a wise man, indeed, who can state at which point the line will be reached and the downward tendency checked. During the past three months Pittsburgh has set the pace in offering attractive prices, and makers both East and West have been compelled to drop out. However, when prices at which certain contracts have been taken are considered, it is evident at once that cost mark has been reached and gone under in many instances. The determination of large concerns to get enough business to keep in operation is, of course, responsible for this state of affairs. For the week under review prices have shown a further decline in some lines. Bessemer Pig has touched $11.50, Pittsburgh, while $18 on Billets, which was an inside price at our last report, has been materially shaded in a large block for balance of the year's delivery. Coke is freely offered at $1.10 in Connellsville region, and the days of dollar Coke are not far off, if they are not already here.

Pig Iron.—The market is about as dull as it is possible for it to get, and with more Iron being made than is being used there does not seem to be any hope of improvement for some time. At furnaces in the Pittsburgh district, and in the valleys as well, large stocks of Iron are piled up, and these are being depleted very slowly, owing to the light demand. At no time in the Iron business have makers been able to turn out product as cheaply as at the present time, but in spite of this it is somewhat doubtful if Bessemer Iron can be made at a cost of $11.25 ₱ ton at furnace, at which price a transaction is reported to have been made last week. For ordinary lots ranging from 100 to 500 tons the following figures prevail, but on good sized blocks, with favorable time of payment, it is altogether probable that concessions would be offered. We quote as follows:

Neutral Gray Forge	$10.75 @	$11.00,	cash
All-Ore Mill	11.00 @	11.25	"
Bessemer Pig	11.50 @	11.75	"
No. 1 Foundry	12.75 @	13.00	"
No. 2 Foundry	11.75 @	12 00	"
Charcoal Foundry No. 1	14.00 @	15 00	"
Charcoal Foundry No. 2	13.00 @	14.00	"

We note a sale of 500 tons of All-Ore Mill Iron for October delivery at $11, Pittsburgh; also a sale of 2000 tons of Bessemer, for October and November delivery, at a price equal to $11.60, Pittsburgh.

Billets.—Within the past week Steel has been sold at $18.25 at maker's mill, and it would no doubt require a very desirable order to shade $18 at mill. As to whether the price referred to above would be duplicated for a similar order is also uncertain. For ordinary business the market is represented by the quotation of $18 @ $18.25 at maker's mill.

Muck Iron—There is very little demand and offers to sell on the basis of $20.50 at buyer's mill have been declined. However, it is believed that it would require a very desirable order to shade this price.

Wire Rods.—Rod mills for October are pretty well fixed for business, and for delivery this month Rods are held at about $27.50 at maker's mill. For delivery in November and December $26 at maker's mill has been asked.

Ferromanganese.—We make nominal quotation of $55 @ $56 at maker's mill for domestic. We have not been advised of any sales for some time.

Finished Material.—New business being offered continues small, and the outlook for improvement is not bright. Pittsburgh is credited with taking an Eastern order for Flange Steel at a price considerably lower than has yet been touched. There is a fair inquiry for Beams in small lots, but no large orders have been placed for some time. For ordinary lots prices quoted last week continue to rule, but, as stated before, for desirable business our lowest quotations continue to be shaded to a considerable extent. We quote as follows: Beams up to 15-inch, 1.60¢ at maker's mill; Angles and Universal Plates, 1.60¢ @ 1.65¢; Tees, 1.65¢; Tank, 1.55¢ @ 1.65¢; Flange, 1.80¢ @ 1.90¢; Shell, 1.65¢ @ 1.75¢; Fire Box, 2.50¢ @ 5¢, according to quality; Machinery Straightened Tire Steel, 1.75¢ @ 1.85¢; Toe Calk, 2¢ @ 2.10¢; Open Hearth Spring, 1.90¢ @ 2¢; Bessemer Machinery, 1.75¢; Steel Bars, 1.35¢ @ 1.40¢ at mill, with Bar Iron extras. Bars in the Mahoning Valley are held at 1.35¢ @ 1.40¢, half extras, according to order. Sheets are ruling as follows: Soft Steel Sheets, No. 24, 2.45¢; No. 26, 2.55¢, and No. 27, 2 65¢.

Barb Wire.—The demand continues light, and this, in connection with the decline in Steel and the desire of the makers to push sales, has weakened prices to some extent. We quote Four Point Galvanized at $2.25 at maker's mill in carload lots, while jobbers are charging $2.35 @ $2.40 for lesser quantities. Painted we quote at 40¢ less than above prices. Plain Wire is also quiet, and we quote at $1.50 at mill for fair sized orders.

Wire and Cut Nails.—Both Wire and Cut Nails are in better demand, and mills are fairly busy. The outlook for the future is bright, as it is claimed that never before in the history of the trade have stocks been as low as now. We quote Wire Nails at $1.25 @ $1.30 for carload lots, while jobbers are getting $1.35 @ $1 40 from the smaller trade. We quote Cut Nails at $1 for carload lots at mill. For an order with good average this price would probably be slightly shaded.

Coke.—Prices of Connellsville Furnace Coke have further weakened and it is now being offered at $1 10 at ovens. For the week ending Saturday, September 30, there were 5397 ovens in blast and 11,993 idle, with a total estimated production of 48,060 tons. We quote Furnace Coke at $1.10 in tons of 2000 lb, f.o.b. cars in Connellsville region. Foundry Coke we quote at $1.50 to dealers and $1.65 to consumers.

St. Louis.

(By Telegraph.)

Office of *The Iron Age*, Bank of Commerce Building, ST. LOUIS, October 11, 1893.

Pig Iron.—A report of the Iron market for the past week is necessarily a repetition of the week preceding. Sales are limited to carload quantities, and prices, while unchanged, are inclined to weakness. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	$13.25 @ $13.50
Southern Coke, No. 2 Foundry	11.75 @ 12.00
Southern Coke, No. 3 Foundry	11.00 @ 11.20
Southern Gray Forge	10.50 @ 10.75
Southern Car Wheel	17.50 @ 18.00
Lake Superior Car Wheel	16.75 @ 17.25
Ohio Softeners	16.00 @ 16.50
Missouri Charcoal, No. 1 Foundry	13.00 @ 13 50

Bar Iron.—The demand fails to show any material improvement and is largely spasmodic in its character. Jobbers are also feeling the dullness. Mills quote 1.50¢, half extras, f.o.b. cars East St. Louis. Jobbers ask 1.65¢ @ 1.70¢ for lots from store.

Barb Wire.—Mills are running full and report a steady trade. Jobbers are also in receipt of some good sized orders. Mills quote $2 for carload lots of Painted to jobbers, and Galvanized at $2 40. Jobbers ask $2.10 @ $2.15 for Painted, and Galvanized at the usual advance.

Wire Nails.—There is an increased inquiry for Wire Nails, and both mills and jobbers are having a good run of trade. Prices seem to be a trifle heavy and, while not quotably lower, are not held quite so firm as last reported. Mills quote $1 55 in carload lots to jobbers, and store price is $1.60 @ $1.65.

Rails and Track Supplies.—A slight improvement is noticeable in Track Supplies. Splice Bars are quoted 1.65¢ @ 1.70¢; Spikes, 1.95¢ @ $2; Bolts, Square Nuts, 2.50¢; with Hexagon Nuts, 2.60¢. Steel Rails are nominally $30 @ $31. Old Iron Rails are quoted at $15, a 100-ton lot changing hands yesterday at that price.

Pig Lead.—Continued weakness is noted in this metal, which is now quoted at 3 35¢, with moderate offerings and practically no sales.

Spelter.—There are no buyers in the market and Spelter is nominally quoted at 3.40¢. The consumptive demand has dwindled down to almost nothing, and with the exception of an occasional carload business is practically dead.

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Metal Market.

Copper.—There has been freer offering of Lake Superior Ingot by some of the smaller producers and by dealers, the outcome of which is reflected in a decline to 9¾¢ as common selling price. Some of the larger producers claim to be sold ahead, and therefore place their quotations at 9⅞¢ @ 10¢, but it is an open secret that at least 250,000 pounds have been sold at 9¾¢, regular terms, and that offers were made openly at 9.70¢ on the Metal Exchange for deliveries running through the balance of the year. The cheaper varieties have fared no better. Electrolytic may easily be secured at 9⅝¢ @ 9⅞¢, and sales of common casting stock at above 9¾¢ are the exception at present. In fact, it is intimated that those figures have been shaded, and that the general market is weaker below than above the sarface, despite quite free movement of stock from this to European points of late.

Pig Tin.—There has been a reverse movement in the price of this metal, the outcome of pressure by operators who have latterly figured with more or less prominence as "bears" in the speculative line and lack of support from the opposing interest. Comparatively little Tin has changed hands in a speculative way, however, except perhaps on old contracts, but the movement of stock into the channels of consumption has continued nearly up to the average for the season and the statistical position is stronger, if anything, at the present time, than it was prior to the reaction. However, the "bear" interest forced a decline of about 0.35¢ @ 0 40¢ in prices, carrying Straits to 20 65¢, regular terms, and 20.50¢ for immediate cash payment. At the close of the week under review the market was a trifle firmer, with 20.70¢ bid for current month delivery.

Pig Lead.—Prices have undergone a sharp decline, and the market at this writing is in somewhat unsettled condition. Common Western Lead has been sold at from 3 70¢ down to 3.50¢. Between that range about 500 tons changed hands. Forced realization on speculative holdings is partly accountable for the decline, but there was some evidence of artificial pressure by a few local operators. At the close the market was about 3.45¢ bid, 3.55¢ asked.

Spelter.—The market has been unsettled and irregular, with comparatively little business in this quarter and no sign of livelier demand from dealers or consumers at the decline. Ordinary Western brands have been secured at 3.65¢ @ 3.70¢, and the latter is at present a common selling price. Special brands bring about the usual premium.

Antimony.—About the ordinary busines has been effected and prices remain practically unchanged. We quote at 9⅛¢ @ 9¼¢ for Hallett's, 10¢ @ 10⅛¢ for L. X., and 10⅛¢ @ 10¼¢ for Cookson's, in round lots.

Tin Plates.—A good business has been done in ordinary Cokes for prompt delivery. Somewhat livelier interest in future deliveries has also been manifested. Otherwise the market has shown little spirit, and prices remain without radical change. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $5 30; J. B. grade, do., $5.45 @ $5.50; Bessemer full weight, $5.40; light weights, $4.95 @ $5 for 100 lb, $4.85 @ $4.90 for 95 lb, $4.70 @ $4.75 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60; Siemens Steel, IC basis, $5.65; IX basis, $6.75 @ $7. Charcoals—Melyn grade, IC, $6.35 @ $6.37½; Crosses, $8; Allaway grade, IC, $5.60; Crosses, $6.75; Grange grade, IC. $5.75; Crosses, $6 85. Charcoal Ternes—Worcester, 14 x 20, scarce; do., 20 x 28, $11.35; M. F., 14 x 20, $7.50; do., 20 x 28, $15; Dean grade, 14 x 20, $5.30 @ $5.37½; do., 20 x 28, $10.50 @ $10.60; D. R. D. grade, 14 x 20, $5.15; do., 20 x 28, $10.10; Alyn, 14 x 20, $5.32½ @ $5.35; do., 20 x 28, $10.40; Wasters—S. T. P. grade, 14 x 20, $4.75; do., 20 x 28, $8.90; Abercarne grade, 14 x 20, $4.60; do., 20 x 28, $8.80.

Financial.

Nothing has occurred during the past week to produce any sensible improvement in the general business situation. The condition of things has changed little or not at all from that recorded in our last report. The Fabian policy of delay still prevails in the Senate, and although rumors of more decided action by the repeal majority in that body prevailed toward the close of last week, imparting a rather more hopeful tone to Wall street, no indication has yet appeared of any really effective means being adopted to that end. Meanwhile it is becoming plainer every day that until the present suspense is ended there can be no general and permanent revival of business.

Rumors of compromise by the Senatorial advocates of repeal are still persistently floated, and though probably without any basis, these rumors have a considerable effect in repressing confidence at home in the ultimate triumph of the repeal bill. They have, moreover, a disturbing effect on American credit in Europe. In view of the fact that the balance now outstanding of temporary loans made by foreign bankers during the late stringency, amounting, it is estimated, to over $20,000,000, will fall due at latest before the end of next month, it becomes a question of importance how this indebtedness is to be liquidated should the present unsatisfactory conditions be prolonged to that time. In addition to this contingency, European investors may be expected to retire much of their capital invested in this country, and to return their American securities in large amounts. These considerations do not offer a cheerful prospect for the monetary situation of the near future should the delay and uncertainty now existing be much further protracted.

The accumulation of money at this and other financial centers is, meanwhile, progressing rapidly, and this circumstance, in conjunction with an extensive retirement of Clearing House loan certificates, has caused considerable easiness in the money market. Last Saturday's weekly statement of the New York Associated Banks showed an increase in deposits of nearly $9,250,000 and in loans of $847,400. In cash the banks gained over $6,750,000 during the week, bringing the surplus in reserves up to over $28,500,000. The banks are, consequently, in a good position to extend ample accommodation to the commercial community, but they are not anxious to do much in this line while the outcome of silver legislation is still in the balance. A larger movement of currency to the South has been noted during the week, counterbalancing to some extent the movement of currency to New York.

The week has seen a further large contraction in the amount of outstanding Clearing House loan certificates. New York banks are retiring theirs at the rate of nearly $1,000,000 a day, and they are rapidly melting away. The amount of such certificates now outstanding here has shrunk to $13,210,000 from a maximum issue of $38,280,000; while Boston has reduced hers to $425,000 from a maximum issue of $11,045,000 a month ago.

Money on call continues in abundant supply, and offerings from banks and trust companies are large. Rates have been quoted as low as 1½ % and up to 3½ % since last Thursday. The last loans reported ruled at 2 % @ 2½ %, with renewals generally at 2½ % @ 3 %. Owing to the dullness in stocks comparatively little business is doing, however, in the loan market. Time money is inactive, rates being quoted at 4 % for 60 days and 5 % for four months on mixed collateral, with but little demand for this accommodation. Commercial paper is quiet, and purchases are mainly confined to interior banks. Choice indorsed receivables are quoted at 6½ % @ 7½ %, and other receivables and single names 7½ % @ 10 %. There is a good assortment of names in the market.

Foreign exchange up to the beginging of the current week showed a marked tendency to lower rates, with a good supply of commercial bills offering in consequence of increased exports of cotton. On Tuesday, however, the market for sterling stiffened, cotton bills having been absorbed and importers buying freely. Rates were consequently advanced; actual business being done at the close on the following basis: 60 days, 4 83 @ 4 83¼; demand, 4.85; cables 4.85¼ @ 4.85⅓; commercial, 4.81¾ @ 4.82. Domestic exchange on New York is quoted as follows: New Orleans, commercial 150 discount, bank par; Charleston, buying ⅛ @ 3/16 discount, selling par @ 1/16 discount; San Francisco, sight 20, telegraph 30 premium; Savannah, buying ¼ discount, selling ⅛ discount @ par; Chicago, par; St. Louis, 90 premium; Boston, 17¢ @ 12½¢ discount.

Operations on the Stock Exchange made an unusually small showing up to the beginning of this week. Interest in the international yacht race, and a legal holiday in Chicago on Monday, interfered with business on more than one day. The general tone of the market for securities has been unsettled and feverish. Although Wall street still takes a hopeful view of the outcome of the repeal struggle, the moral influence of continued delay has been marked in the transactions in stocks of late. The principal feature of Friday's speculation was an extraordinary advance of 10 points in Lackawannas, which also exerted a favorable influence on the other "coalers." Reading advanced on the payment of the October interest on some of its bonds, and an assurance that foreclosure would not be resorted to. Industrials were active and strong on Monday in a generally dull market, and material advances were made on small sales of several securities. Louisville, as an exception, fell 3 points on that day on selling of its stock by London, and the same stock experienced a further fall of 3 points on the following day. Trade in other railroad issues was feverish and irregular, owing to rumors of impending receiverships for certain roads. The following list shows the fluctuations

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of some of the active stocks since October 5:

	Highest.	Lowest.	Closing, Oct. 11.
Am. Sugar Ref.....	92¼	89	91⅜
Atchison, T. & S. Fé....	20	18⅞	19⅛
Balt. & Ohio.....	69	68¼	69
Chicago Gas.....	61⅞	59⅛	60⅝
Chic., B. & Q.....	83½	81⅝	80¾
Chic., Mil. & St. Paul...	60⅝	59⅝	59½
Chic., Rock Isl. & Pac..	66	64⅝	64¼
Del., Lack & Western...	157	146½	151¾
Gen. Electric.....	46¼	43½	44½
Lake Shore.....	123½	122	123⅜
Louisville & Nashville...	50¾	43⅜	44⅞
Manhattan	126	124¾	126
Missouri Pacific.....	25¾	21⅜	22¾
Mnnesota Iron, asked...	....	....	60
National Lead, Common.	27	25¼	26⅛
New York Central.....	103	101¾	102½
N. Y., L. E. & Western.	14½	13⅞	13⅞
Northern Pacific, Pfd. .	21¼	20⅛	20⅛
Philadelphia & Reading..	19¼	16⅞	17⅛
Richmond & West Pt., Terml.....	3¼	3	2⅞
St. Paul & Omaha.....	35¼	35	35¼
Union Pacific.....	19⅛	16	17¾
Western Union.....	83	80¾	81⅛

Government bonds are strong, registered 4s having advanced ¼, and coupon 4s ½. A sale of $10,000 of the latter was noted on Tuesday at 111½ The closing quotations were:

	Bid.	Asked.
2s, 1891, registered.....	98	...
4s, registered.....	111	112
4s, coupon.....	111	112

Railway and miscellaneous bonds were fairly active and strong at the end of last week, but relapsed into inactivity during the early part of the present week.

Bar silver closed in London on Wednesday at 33¾ pence ℔ ounce, and in New York at 74¢ ℔ ounce. The Treasury Department on Tuesday purchased 115,000 ounces of silver at its counter offer of $0.7360 an ounce. The purchases thus far this month aggregate 495,000 ounces.

Exports of grain have fallen off during the week under review, but the outward movement of cotton has set in with some activity, and the total exports of merchandise show a satisfactory increase over those of the corresponding period of last year, while the imports are steadily decreasing.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, October 11, 1893.

The Pig Tin market has been dull and prices have averaged lower. The only new feature was quiet buying of stock for shipment to America to remain in bond pending action upon the proposed repeal of the duty. The demand for this account was readily met by some prominent dealers, and that fact, in connection with absence of other speculative interest and slow demand from consumers, caused weakness. Sales have been made at as low as £78 for prompts. At the close the market was steadier, with Straits quoted at £78. 5/ for prompt delivery and £78. 15/ for three months' futures.

The Copper market has been very quiet and without new feature. Some operators are still working to depress prices, particularly a few identified with the American market, but sales are not pressed as vigorously at the present time as they were a short time ago. Home consumers are reported to be well supplied and the same is said of Continental consumers. There has been some improvement in the inquiry from India. At the close the market was quiet. Quotations were £41. 12/6 for Merchant Bars, prompt delivery, £42 for three months' futures and £46 for Best Selected English.

Aside from a few purchases of large lines of Oil sizes of Cokes there has been little movement in the Tin Plate market beyond very fair purchases of Charcoals for Canadian account in anticipation of closing of the season for shipping to that point. The Morlais and the Carmarthen works have been closed down owing to the depressed condition of the market. Exports last month were 25,000 tons, against 30,000 tons in September, 1892. The United States took 13,000 tons, against 22,000 tons last year. Stocks at Swansea are estimated at 239,000 boxes. Liverpool quotations are as follows:

IC Charcoal, Alloway grade.....12/9 @ 13/3
IC Bessemer Steel, Coke finish. ....11/6 @ 11/9
IC Siemens " " " .....11/9 @ 12/
IC Coke, B V. grade, 14 x 20.....11/6 @ 11/9
Charcoal Terne, Dean grade.....11,6 @ ..

Spelter is weaker with sales at as low as £16. 17/6 for ordinary Silesian and the demand slow.

Pig Lead has remained almost stationary at £9. 10/ for Soft Spanisb, with business moderate and the demand quiet.

There has been some improvement in the demand for Old Iron, but not enough to affect prices a great deal. Pig Iron, Manufactured Iron and Steel generally remain quiet. Exports of Pig Iron in September were 77,000 tons, against 80,000 tons during the corresponding month last year. Last dealings in warrants were at 42/3 @ 42/4 for Scotch. 34/9 @ 34/10½ for Cleveland, and 44/7½ for Hematite.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, October 11, 1893.

Pig Iron.—Buying continues on a moderate scale. Sellers, notably of Southern Iron, are inclined to some firmness. An offer to take 15,000 tons of warrant Iron, which was widely circulated in this market during the past ten days, did not lead to any business, because no seller could be found to meet the buyer's views. We quote Northern brands $14 @ $15 for No. 1: $13 @ $14.25 for No. 2; $12.25 @ $12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, $13.25 @ $14.25 for No. 1; $12.25 @ $13.25 for No. 2; $11.50 @ $12.25 for No. 3; $11 75 @ $12.25 for No. 2 Soft, and $12.25 @ $12.50 for No. 1 Soft. Gray Forge is $11.25 @ $12.

Billets and Rods.—Some of the buyers of Steel Billets in this section have been tempted to purchase cash Steel by the low offers of Pittsburgh makers. What little export Wire trade is being done is based upon domestic Steel Billets. We quote nominally: Domestic Billets, $20.75 @ $23, and foreign Billets, $28 @ $28 50, tidewater; domestic Wire Rods, $29.25 @ $30, and foreign Rods, $39 50 @ $40.

Steel Rails.—The only order of consequence placed was a lot of 1500 tons for the Manhattan Elevated at private terms. A meeting of the Rail Manufacturers' Association is now in session in this city. It is believed possible that a lower range of prices may follow this conference. At this writing the meeting is still in session.

Track Material.—Small lots are selling at the following prices: Spikes, 1.80¢ @ 1.90¢; Fish Plates, 1.45¢ @ 1.60¢; Track Bolts, Square Nuts, 2.25¢ @ 2.40¢, and Hexagon Nuts, 2.40¢ @ 2.50¢, delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—Very little new business is coming up and 100-ton orders have become events. We quote nominally: Beams up to 15 inch, 1.75¢ @ 2¢; 20-inch, 2.10¢ @ 2.25¢, for round lots; Angles, 1.75¢ @ 1.90¢; Universal Mill Plates, 1.70¢ @ 1.90¢; Tees, 2¢ @ 2.15¢; Channels, 1.80¢ @ 2¢, on dock. Steel Plates are 1.65¢ @ 1.90¢ for Tank; 1.90¢ @ 2.10¢ for Shell; 2¢ @ 2.15¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.55¢ @ 1.9¢, on dock, and Common, 1.45¢ @ 1.55¢; Soft Steel Bars are 1.50¢ @ 1.70¢; Scrap Axles are quotable at 1.75¢ @ 2.10¢, delivered; Steel Axles, 1.70¢ @ 2¢, and Links and Pins, 1.70¢ @ 1.80¢; Steel Hoops, 1.75¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ ℔ 45 ℔ bundle, at mill.

Old Material.—We quote: Old Iron Rails, $13 @ $14; Old Steel Rails, $8 @ $9, and Wrought Scrap $9 @ $11.

A very striking illustration of the curious manner in which reports concerning industrial establishments are developed is furnished by an item which appeared in a Philadelphia paper. A report from Chester announced that H. C. Frick of the Carnegie Steel Company had been in Chester, Pa., and had come to purchase the Wellman plant, at Thurlow, near Chester. The additional comment was made that the Carnegie interest was anxious to get a foothold near Philadelphia, where a good market for the product could be secured. We need hardly point out the fact that the Pittsburgh mills do not find it necessary to come nearer to Philadelphia than they are in their raids upon its markets. So far as the history of the item is concerned, we are informed that it grew out of a visit to S. T. Wellman from an old friend, John Fritz of Bethlehem. In some way the name of the latter was twisted into Frick, and on that slender basis the imagination of the local reporter built the superstructure of guessing to which we have referred.

The following dispatch from Altoona has been published in the daily newspapers: "The employees of the Portage Iron Company, at Duncansville, on the 8-inch and bar mill trains were notified a few weeks ago of a proposed reduction in their wages, ranging from 23 to 33 per cent. As those portions of the mills in this district have been paid the Pittsburgh rate of wages for more than 25 years, and the reduction there has been but 10 per cent., the men have quit work and demanded a continuance of the established basis." The facts are that there is no strike at the works of the Portage Iron Company, Limited. The men have been paid off and discharged and the finishing mills have been closed down, because the owners found it impossible to compete with mills in the district and pay the Western scale of wages.

The department of geology at Colorado College has been placed in charge of Joseph K. Surls.

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HARDWARE.

Condition of Trade.

SINCE the opening of October there has been a perceptible increase in the volume of business, but orders for the most part are small and jobbers report those received by them as very carefully assorted, covering a considerable range of goods in small quantities. As customary at this season, seasonable goods constitute a considerable portion of the business, but they are not moving in the usual quantities. Skates are referred to as in especially good demand, owing to the fact that stocks in dealers' hands were pretty generally cleared out last winter. In Builders' Hardware the demand is only moderate and limited principally to goods required to finish buildings in course of construction. Very little building is in progress, a fact which also accounts for the limited demand for Nails. A good deal of complaint is made in regard to Mechanics' Tools, of which much less than the usual quantity are being sold. In manufacturers' supplies also the volume of business is comparatively small and houses dealing in these lines of goods complain much more than those who handle or manufacture articles which go directly to the trade. A fair business is reported by dealers in Tin Plate, most of whose orders are referred to as coming from retailers and in comparatively small parcels. There are few quotable changes in price, but the market has rather a weak tone, the tendency being toward lower values. Collections on the whole are fair, but some houses refer to them as being difficult and unsatisfactory.

Chicago.

(*By Telegraph.*)

Shelf Hardware jobbers were agreeably surprised the past week by a decided increase in their business. The character of the orders received, however, was about the same as previously, regular Hardware not constituting more than the recent proportion. The large numbers of very small orders sent in entailed an unusual amount of work. The packing force in several establishments was obliged to work for several nights in order to make prompt shipments, owing to the necessity of handling so many broken packages. It is an annoying feature of the present condition of the Hardware business. In ordinary time, with the demand running on full packages, there would have been no necessity whatever for night work in handling as large a volume of business as that of the past week. Quite a large number of Hardwaremen from the West have visited Chicago within the past few days in attendance at the fair. They report that business with them is not likely to be of a more than hand to mouth character this fall, because farmers are disposed to hold on to the bulk of their crops. The quantity so held is very large, but the means of providing better business is thus seen to be in hand whenever the farmers decide to sell. Heavy Hardware jobbers report a somewhat larger volume of business, but their trade is also running in the direction of very small orders requiring more than usual work to fill them. Collections are good; no complaint is heard on this score.

St. Louis.

(*By Telegraph.*)

The month is a third over and at this writing compares favorably with the corresponding period of last year. Retailers are sending in fair sized orders and show more disposition to buy freely than for some months past. Jobbers are not pressing sales, however, and continue to watch credits pretty closely. A good, cold snap would help things wonderfully, as the movement of cold weather goods has been exceedingly small. The shipments of cotton throughout the South have stimulated trade from that section, but it is still lighter than it should be at this season. Barb Wire and Wire Nails are inclined to weakness, particularly the latter.

Notes on Prices.

Wire Nails.—The Wire Nail market continues in substantially the same condition as at our last report, and $1.30 may be named as a general price for carload lots at mill. Some of the manufacturers have endeavored to obtain a slightly higher figure, but on especially large or attractive orders it is understood that this price has been shaded. The volume of business is moderate, and none of the mills are running to their full capacity. They are careful to avoid an accumulation of stock, and in some cases have not been able to ship goods as fast as required, their orders being for the most part for immediate shipment. The tone of the market is not at all strong.

Chicago, by Telegraph.—Wire Nail manufacturers report inquiries only moderate. Buyers who placed orders at very low prices some time since are complaining of trouble in getting delivery on such contracts and threats are made that the Nails will be bought elsewhere and the difference charged to the delinquent manufacturers unless they more speedily comply with their agreements. Prices on factory lots continue at $1.40 to $1.45, Chicago. Small lots are selling at $1.55 from stock.

Cut Nails.—Notwithstanding the fact that the demand is moderate, the market for Cut Nails seems this week to be in a slightly better condition than last week, and the quotation of $1 for carload lots at mill is quite generally adhered to, concessions being made in special cases. The market, however, is not strong, and it is not unlikely that a large order for a desirable assortment would secure relatively low figures. Small lots from store in New York are quoted at $1.25 to $1 30.

Chicago, by Telegraph.—Cut Steel Nails are in the same condition as previously reported. Orders are not large but are moderately numerous. Manufacturers are still quoting carload lots at $1.20 to $1.25, and jobbers quote $1.30 for small lots from stock.

Barb Wire.—The market for Barb Wire is not in a very satisfactory condition, and somewhat lower prices have been developed. The quotation of $2.25 to $2.30 for Four-Point Galvanized at mill fairly represents the market, but a concession on the lower of these figures is made by some leading manufacturers. Painted is held regularly at 40 cents less. The volume of business is moderate, but it is understood that a good many small orders have been secured. Lower prices for export are also quoted, the regular price now being $2.45, f.o.b. vessel New York, but it is understood that a somewhat lower figure is sometimes made.

Chicago, by Telegraph.—Manufacturers are doing a large business in Barb Wire. They have made decided inroads on the trade of jobbers, who report that for the past couple of weeks their business in this branch has been exceedingly light, while manufacturers talk much more cheerfully on the condition of the trade from their point of view. Carload lots of ordinary Galvanized Barb Wire are selling at $2.40, while Glidden is quoted at $2.50.

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The jobbing price for small lots of ordinary Galvanized Barb Wire from stock is $2.55.

Lawn Mowers.—The volume of business during the last season is referred to by the manufacturers as having been exceptionally heavy, the fact being that the low prices which have ruled have induced a very large sale of the goods, the season on this line having practically closed so far as the manufacturers are concerned before the financial disturbance of the summer. The outlook for next year is regarded by the manufacturers as promising, provided general business conditions are reasonably favorable. An announcement in regard to the coming season is made by Dille & McGuire Mfg. Company, Richmond, Ind., for whom S. A. Haines, Indianapolis, Ind., is manager of sales department. Their catalogue, to which we have already referred, contains the following revised list of their Mowers, which is subject to a discount of 70 per cent.

Inch.	McGuire's Diamond. Style D.	Diamond High Grass. Style L.	Western. Style U.	Magic. Style W.	Crown. Style K.
8	.....	.....	.....	.....	$12.00
10	$13.00	.....	$10.50	$9 50	13 00
12	14.00	.....	11.25	10.50	14.00
14	15 00	$22.00	12.00	11.25	15.00
16	16 00	23 00	13.00	12.00	16.00
18	17.00	25.00	14.00	13.00	17.00
20	.....	28 00	.....	.....	.....
24	.....	31.00	.....	.....	.....

Pony Lawn Mower, each.....$100

Oil and Gas Heaters.—The Oil and Gas Heaters put on the market by the Manhattan Brass Company, 44 Murray street, New York, and 506 Masonic Temple Building, Chicago, and illustrated in this issue, are sold at a discount of 25 per cent. from the following list:

Star Heaters.

	Each.
No. 40, Brass finish	$7.00
No. 40, Nickel "	7.75
No. 40, All Brass, including Cylinder	7.50
No. 44, Brass finish	8.00
No. 44, Nickel "	8.75
No. 44, All Brass, including Cylinder	8.50
No. 46, Brass finish	10.75
No. 46, Nickel "	12.00
No 46, All Brass, including Cylinder	11.25
No. 45, Brass finish	9 75
No. 45, Nickel "	10.75
No. 45, All Brass, including Cylinder	10.25

Hygienic Heaters.

	Each.
No. 48, Brass finish	11 00
No. 48, Nickel "	12.50
No. 49, Brass "	13 00
No. 49, Nickel "	14.50
No. 50, Brass "	14.50
No. 50, Nickel "	16.00
Gas Heater	5.00

Cordage.—Cordage at present is probably lower in price than for a long time. During the past few weeks, while there has been little quotable change, prices have been tending downward and are now slightly lower. Manila is maintained pretty firmly at 8 cents basis for large lots, f.o.b. factory or New York; but it is understood that in some special cases this quotation has been slightly shaded. Sisal and New Zealand are about ¼ cent lower than a few weeks ago. The volume of business is comparatively small and there is a good deal of competition among the manufacturers. The following are the present quotations for large lots, f.o.b. factory or New York, which are shaded in exceptional cases and are subject to a discount of 1½ per cent. for cash in ten days:

Manila, 7-16 in. diam. and larger	@ ℔ 8 ¢
" ⅜ in	@ ℔ 8½¢
" ¼ and 5-16 in	@ ℔ 9 ¢
" Tarred Rope	@ ℔ 7½¢
" Hay Rope, Medium	@ ℔ 8 ¢
Sisal, 7-16 in. and larger	@ ℔ 6¼¢
" ⅜ in	@ ℔ 6¾¢
" ¼ and 5-16 in	@ ℔ 7¼¢
" Hay Rope	@ ℔ 6¼¢
" Tarred Rope	@ ℔ 5¾¢
" Medium Lath Yarn	@ ℔ 6 ¢
New Zealand, 7-16 in. and larger	@ ℔ 6 ¢
" ⅜ in	@ ℔ 6¼¢
" ¼ and 5-16 in	@ ℔ 6¾¢
" Hay Rope	@ ℔ 6 ¢
" Tarred Rope	@ ℔ 5½¢

Stove Boards.—While as seasonable goods there has been a fair demand for Stove Boards, the volume of business is referred to as considerably less than usual. In the matter of prices there has been comparatively little irregularity, as the leading makers agree pretty well in quotations. There is, however, some difference in the prices quoted, and careful buyers usually find it worth their while to look into the market before placing orders.

Glass.—Manufacturers of Glass evidently consider that the condition of trade does not justify them in starting up their factories. This apparently has more to do with the lack of interest which they take in an adjustment of the wage scale than because an agreement could not be reached. If there was a prospect of making money if the manufacture of Glass was begun and continued the fires would be started even if last season's wages had to be paid. It is reported that the low prices at which Glass has been sold to the jobbers who are members of the National Window Glass Association has left no profits for the manufacturers, and that they now feel that it would have been better if jobbers had not been admitted as members. The situation is intensified by the announcement of a further reduction in the price of foreign Glass on the other side. Quotations on all kinds of Glass remain unchanged.

Hardware Boxes.

A. H GREEN, 22 Park place, New York, is in a position to supply from stock dovetailed white pine boxes, suitable for shelves in retail Hardware stores. This provides a receptacle for the contents of paper or pasteboard boxes, and uniformity is preserved. Enterprising merchants are more and more availing themselves of this method, and with the addition of two coats of shellac and one of hard oil finish a light and attractive appearance is obtained and a suitable background afforded on which to place numbers, samples, labels, &c. There are ten regular sizes, all 10½ inches long, varying in width from 3 to 18 inches and either 3½ or 7 inches high. Mr. Green also makes a Screw case of chestnut with knobs of like material, the whole front varnished. The case is 29½ inches high, 25½ inches wide and 8¼ inches from front to back, containing 80 boxes of five different sizes, each with a capacity of not less than one gross of Screws. Special sizes of boxes are made to order in lots of 50 and upward of each size.

National Retail Hardware Dealers' Association.

WE ARE IN RECEIPT from the secretary of the National Retail Hardware Dealers' Association of the following communication explaining the scope and objects of the organization and directing the attention of the trade to the work it is undertaking. We take pleasure in giving it place in our columns:

NATIONAL RETAIL HARDWARE DEALERS' ASSOCIATION,
OFFICE OF THE SECRETARY,
9 DOCK SQUARE,
BOSTON, MASS., October 4, 1893.

During the past few months, much has been written in the columns of your valuable paper in reference to the need of organization on the part of the Hardware trade. Many suggestions of practical value have been presented, and several local associations have been established, but in the opinion of the writer the most important step that has yet been taken, and one that will prove most beneficial to the trade in its entirety, manufacturers, jobbers and retailers included, and that will also in the end secure to the consumer a far better return for the money invested in purchasing than heretofore, is the action taken on September 20 at Chicago in the formation of the National Retail Hardware Dealers' Association.

So much has been written as to need of organization and the method by which it can best be accomplished, that I shall say but little on these questions, but shall endeavor to show in what manner the different departments of the business are to be benefited.

1. As to the manufacturer: It is my opinion that but few, if any, really desire to do a retail business, but they have been driven to it by the force of circumstances, and in many cases have been led to take the first step by the action of dealers, who, not having sufficient stock or samples of fine goods, or from a feeling of their inability from one or another cause to handle a job satisfactorily, have called in the services of some manufacturer. Such cases have very readily led the manufacturer to believe that he could well dispense with the services of the retailer. Other

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manufacturers, learning of this action on the part of a competitor have felt that, as the saying is, they would "get left" if they did not do the same thing, have therefore been drawn into this competition, and the competition has been so sharp and the profits so much reduced that it seems to the writer they will hail with joy the formation of an association whose objects, if attained, will put an end to all such competition.

The same argument will apply as well in the case of the jobbers as the manufacturers, although they have not the same excuse for seeking this retail business, as it is doubtful f any jobber has ever been called upon by a retailer in the way above stated. Yet the result has been the same; competition has been sharp, profits reduced; and, as a certain prominent member of the jobbing trade remarked to the writer a short time since, "We should be glad to stop it if our competitors would also do it."

The consumer, as he often learns to his cost, can only get well served through the attention of some one who has not only learned how to sell goods, but how to apply them, and such knowledge can only be acquired after years of experience, and such service can only be secured through a representative retail house. The experience of many years has demonstrated that none other than the retail Hardware dealer can trim a building in a manner that will be at all satisfactory, and the customer who profits by this experience is rarely called upon to pay more than a fair interest on the investment.

Having thus, as it seems to me, demonstrated that it is for the interest of all classes to make this National Association a success, let us consider a little the methods to be pursued to accomplish this end.

In this connection, and to set at rest any doubts that may arise, I will state that it is not intended to be anything but national in its character.

Nothing approaching the nature of a trust or combination for advancing prices is intended.

The objects are simply to protect us in what we consider to be our rights—viz.: the handling of legitimate retail trade, without having to contend with both manufacturers and jobbers, and the consideration of any and all questions of importance, and last but not least, the establishment of a brotherly feeling throughout the trade of the entire country.

I would suggest, in furtherance of these objects, that every retail dealer who shall read this article would at once send to the writer a request for an application.

The membership fee has been fixed at $5, a sum so small that no one can but acknowledge that it will be more than repaid in the benefits derived.

I would also suggest the formation of local organizations as adjuncts of and in support of the National Association, and shall be pleased to correspond with dealers from any State in the Union, to receive any information or advice and to give such as may be required of me.

HIRAM G. JANVRIN, Secretary.

Arrangement of Stores.

SEATTLE HARDWARE COMPANY.

THE BUILDING occupied by the Seattle Hardware Company, Seattle, Wash., for their wholesale and retail business was built especially for the firm. The store, a ground plan of which is shown in Fig. 790, is 54 x 108 feet, in the Colman Building, corner of Front and Marion streets. Under the main store are two basements, each 27 x 108 feet. Across Post street in the rear is the warehouse, 108 x 117 feet in size, facing on West street; this is connected with the wholesale department by a bridge. The establishment is considered exceptionally complete; especially the retail department, to which the following illustrations and descriptions relate:

As shown in Fig. 790, two large show windows, each having a space of 20 x 6 feet, divided by a column, take up the front center of the store, with entrance doors on both sides. The windows are not incased at the back, but are divided from the store room by heavy curtains hung on silvered poles, 3 feet above the floor of the show windows. Back of these windows is a platform 2 feet wide for sampling Coal Hods, Water Coolers, &c. The arrangement of showcases, counters and shelving is shown in the ground plan, these being of polished ash, fitted up at a cost of $9000. Fig. 791 gives a view of the shelving on the right side of the store, showing the counters and showcases through the center and the offices in the rear. On entering the store, to the right is an upright wall case, a portion of which is seen in Fig. 791. The case is 9 feet high and 15 feet long, having five large plate-glass doors mounted on patent sheaves. The interior of the case is lined with red

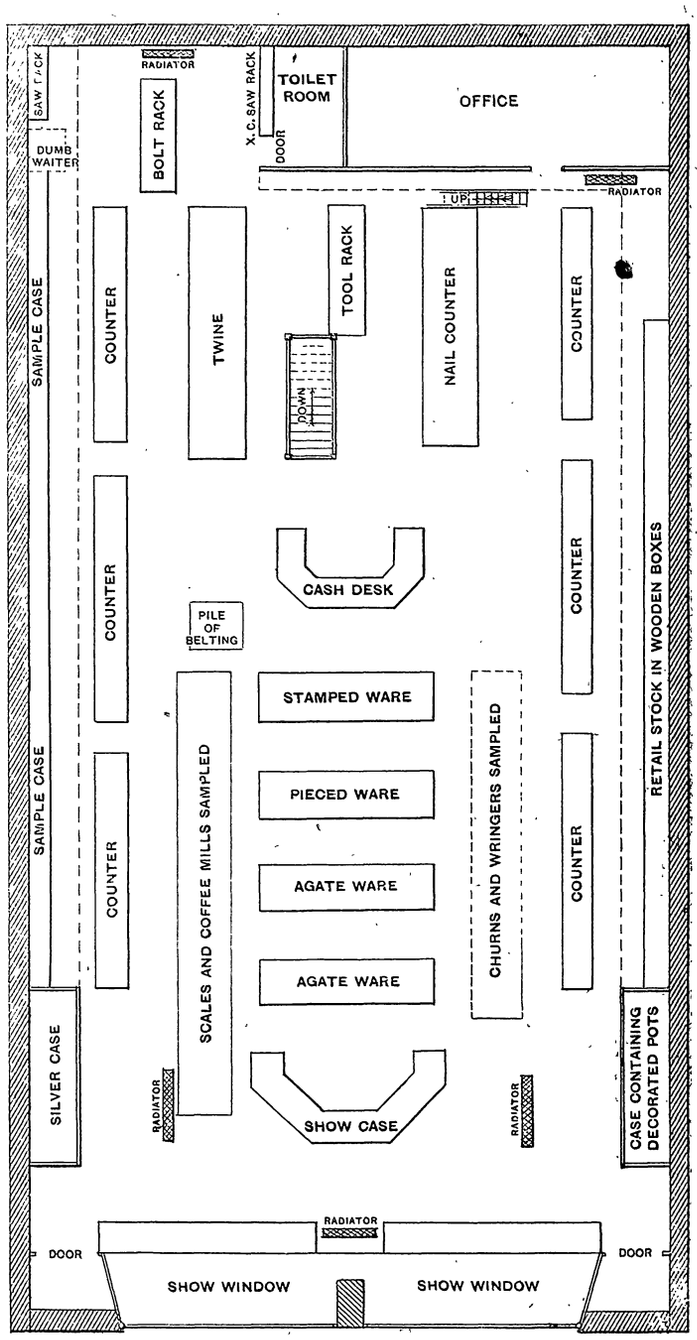


Fig. 790.—Plan of First Floor.

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cloth, and contains a fine display of Manning, Bowman & Co.'s, decorated Tea and Coffee Pots. Following this case is the retail stock of shelf goods and tools of various kinds, kept in small boxes of the proper size, neatly covered with green paper and sampled; price cards being pasted on the side of each box.

Fig. 792 shows the arrangement and sampling of Shelf Hardware, and also the cupboards under the ledge. These cupboards are 3 feet deep by 2 feet 8 inches high, and extend to the rear of the store, containing long tools, such as Planes, Saws, &c. The dotted lines in Fig. 790 represent an elevated platform above the shelf boxes, which is also seen in Fig. 791. This platform is 4 feet wide, and extends along both walls, and the rear of the room. The shelving on the platform is 2 feet deep, extending to the ceiling, and is used for wholesale stock of light shelf goods. Tinware, Agate Ware, &c., are sampled on counters through the center of the room, making an attractive display. For all goods not contained in sampled boxes on the shelves, Root's Nos. 32 and 33 price cards are used, except the retail stock of Tinware and Agate Ware, this having the retail price marked on each article. The cash desk is located in the center of the store, back of these counters, Fig. 790, and is fitted up with Lampson's cash carrier system.

An ingenious arrangement is provided for hand saws in the original packages, as shown in Fig. 793. It will be seen that the shelving is cut out so that a firm grip may be had on the boxes in drawing them out. On entering the store to the left is a case like the one on the opposite side of the store, lined with red cloth, which is used for silverware, Fig. 794. Next to this is a long case with plate-glass lifting sash, the case being 9 feet high by 69 feet long. It has a green back ground, and contains all kinds of Hardware nicely sampled, for the use of the salesmen in the wholesale department. A section of this case, with samples, is shown in Fig. 795. Above these cases is the platform and shelving, as described above.

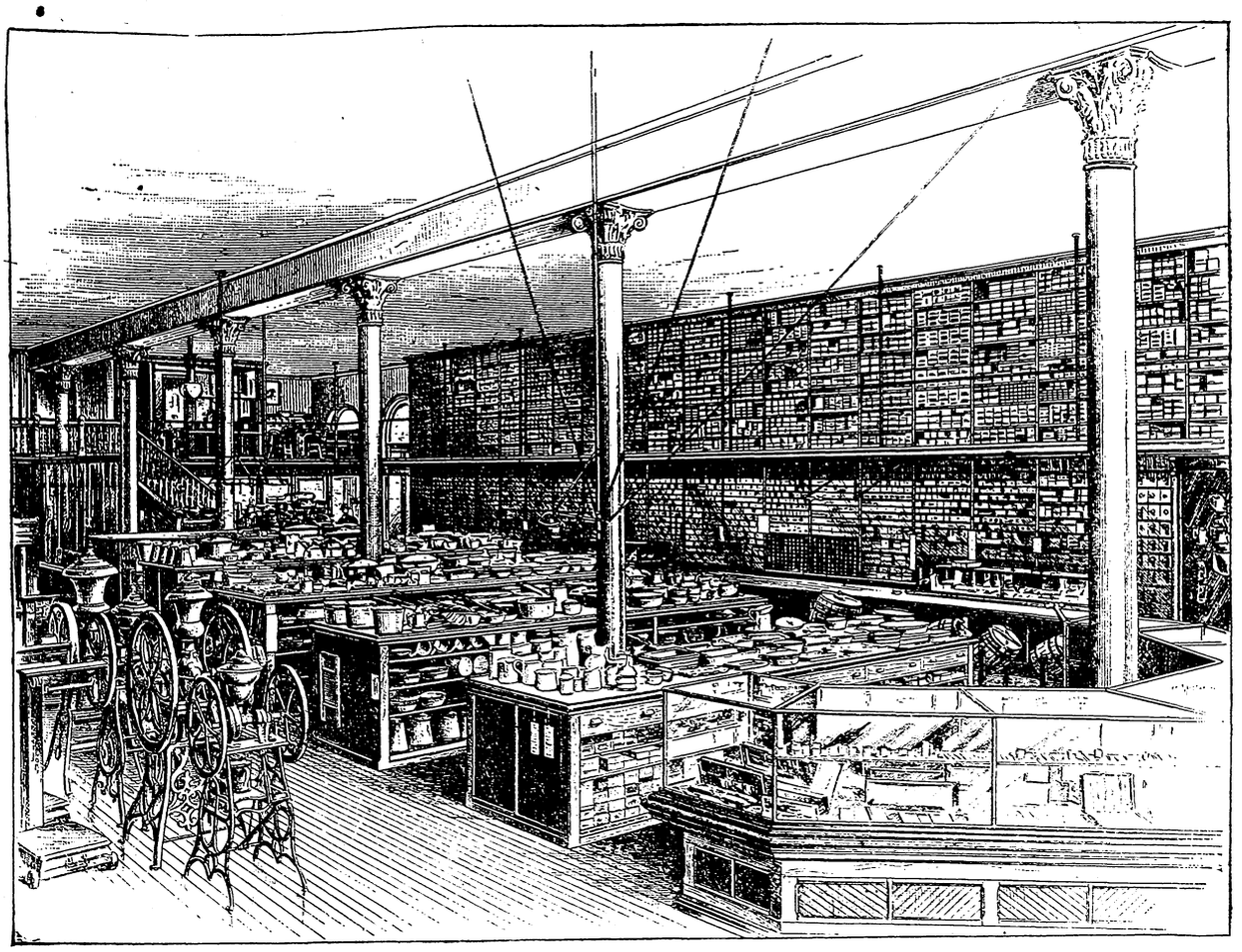


Fig. 791.—*General View of Salesroom.*

The Nail counter shown in Fig. 796, with Scales sampled above, contains an equal number of Nail bins on each side, the total number of which is 102. This being situated on the main floor makes it very convenient, besides giving ample room for a large retail stock of all kinds of Nails. The upper tier of bins project over the lower tier, thus allowing Nails to drop on the floor instead of into the lower bins.

Fig. 797 gives a view of upper and lower offices with stairway, the location of which is seen in Fig. 791. The platform upon which the upper offices rest is the same as mentioned before, except that it is 15 feet wide instead of 4 feet as the side platforms are. At the right hand of this platform, Fig. 791, is a room for the use of salesmen, for writing letters, &c. To the left of this room comes the treasurer's office; then the Cutlery room, this being 6 x 10 feet with shelving for Cutlery, Revolvers, &c. Next to this room is the office of the wholesale department, then the manager's office and purchasing department. The rooms below, on the main floor, are the general offices. Under the stairway to the upper offices are tiers of drawers to accommodate Horseshoe Nails, Bulk Tacks, Brads, &c. Since moving into their present quarters, the firm have added several lines of goods to their already large stock of Hardware, and are reaching out in every direction, increasing their jobbing trade, which now includes a large territory east of the Cascade Mountains, and an increasing trade in British Columbia, and as far north as Alaska, where a large trade is already established. The Seattle Hardware Company commenced business in 1885, the successors of Ballard & Sox, the Burwell Brothers entering the firm with Messrs. Ballard & Sox at that time. In the spring of 1890, shortly after the great fire, the members of the Black Hardware Company of Detroit, Mich., came into the firm, and its present officers are as follows: President, C. A. Black; vice-president and manager, A. S. Burwell; secretary, C. H. Black; treasurer, A. P. Burwell. The following are also stockholders in the firm: M. D. Ballard, F. D. Black, John L. Simpson and E. B. Burwell. The retail department is in charge of E. B. Bur-

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well, and the wholesale department of John L. Simpson and C. H Black. The firm employ 30 men.

How to Treat Clerks.

FIRST ARTICLE.

By Fred Macey.

IT IS A NOTABLE FACT that almost every man who has made a marked success of his business has possessed and exercised the ability to gather and keep about him good assistants. To be able to do this is one of the richest faculties a business man can possess. A man's start and early growth in business depends entirely upon himself; but as business extends duties multiply, and he is forced sooner or later to divide his duties and intrust some of them to hired help. To know just the right kind of help to select, what duties to place upon it and how to treat it to secure his best services, is something that every business man must possess.

HUMAN NATURE.

A careful study of this subject forces upon one the fact that, while all men have their own peculiarities, which must always be taken into consideration with them as individuals, yet there is a certain likeness in human nature that makes it possible and necessary to take a certain position regarding the treatment of those in the employ of another; *e. g.*, it would not be practical for an employer to insist upon his bookkeeper using some set rule to calculate the correctness of an invoice—how he does it is a part of his education—but it is perfectly right for an employer to insist that it shall be calculated correctly. Neither would it be policy to set up certain rules as to how a salesman shall make a sale of goods, but it is entirely correct to require that if he sells he must do so at a certain price. How he does it is characteristic to himself and must be left very largely to him, but that it shall be done, and with certain results, is something that an employer has a perfect right to require.

HIS EMPLOYER'S INTEREST.

All men are engaged in business to make money, and the sooner an employer balances everything with this final end in view the better it will be for his best interests. Clerks should not be an exception to this rule, and no business man should keep in his employ any clerk that does not earn more than he receives, and it should be the aim of every clerk to serve the best interests of his employer, and the best service can only be given when a clerk works as if his employer's interests were his own. Few clerks work from this standpoint, but it is the only true one to work from. The rapid promotion of the clerk who is not afraid to work, who is constantly suggesting where small leaks may be stopped, expenses lessened, trade improved, business extended, is ample testimony to prove the truth of this rule—a clerk of this stamp is worth a dozen of those whose main aim seems to end in putting in so many hours for so many dollars.

PROMOTION.

While it is true that the value of a clerk to his employer lies mainly in himself, yet very often the employer himself is very largely to blame for the lack of results from his help. Instances come to mind of a young man who has left the service of one employer for that of a competitor. With one he could make but little progress, with the other his promotion has not only been rapid, but well founded. Why should this be so? The only answer that seems reasonable is, The one did not appreciate his ability and study to draw out his good qualities, whereas the other did.

INSIST UPON RESULTS.

Perhaps one of the most important points in dealing with a clerk is to have a definite understanding at the outset of just what is expected from him. Give him a definite field to work in and then insist upon results. Give him all the encouragement possible, but do not lose sight of results. They alone count in business. By giving him a definite field to work in the main cause for jealousies among clerks has been removed. Yet these outlines must be elastic enough to permit of suggestions that will be to the interest of the business. Throw the responsibility of a certain department upon a clerk. Hold him accountable for its success, and then, and not until then, can his ability be fully measured. No business man can hope to achieve success without some definite end in view. Neither can a clerk.

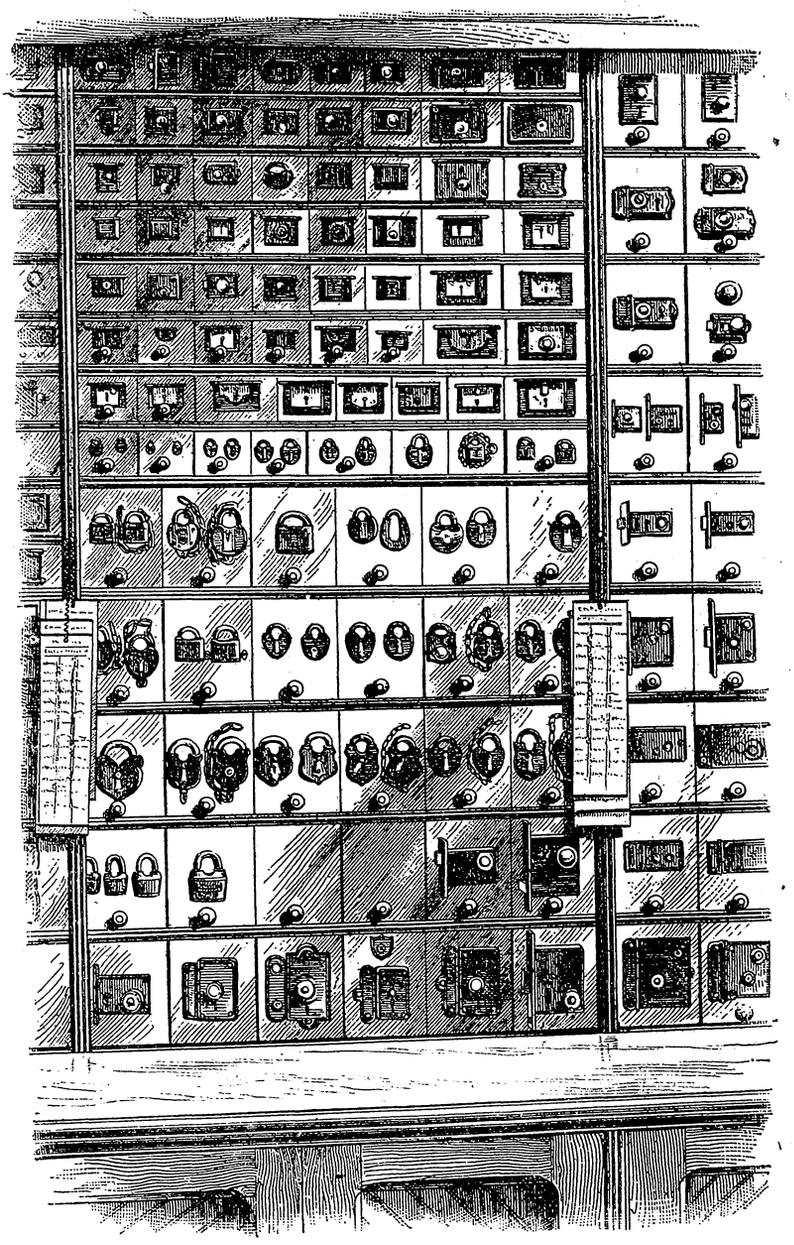


Fig. 792.—Arrangement and Sampling of Shelf Hardware.

BEING SOCIAL AND FAMILIAR.

A business man should command the respect of his employees. It is much pleasanter to receive a word of encouragement from an employer who is thoughtful in his suggestions, sincere in his actions, thorough in his work

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and careful of his character, than from one who is not. A cold shoulder should be turned to all familiarities from clerks. They should cease at once. They never are productive of any good and certainly do harm. Do not confound being social and being familiar. It is an employer's duty to be social toward his employees, but familiar, never. An employer who is familiar with his clerks is generally not their best friend and seldom commands their respect.

MONTHLY WRITTEN REPORTS.

Clerks should feel that their efforts are appreciated, and it is an employer's duty to know what they are doing. Many a faithful clerk has been wronged by an employer not making it his business to know for himself, and know beyond a doubt, where to place the credit for a valuable suggestion. Many times a trusted clerk is less competent than some of his assistants. Many times he takes credit of merits that belong to another, and in return receives the advancement that rightly belongs to an assistant.

Compensation of employees is one of the vexed questions that a business man must contend with. While it is unquestionably an employer's right to say what he can and cannot afford to pay for a service rendered, yet it is his moral duty to allow himself to be influenced in these matters by a strict sense of justice, and justice only. Relationships, friendships, favoritism or sentiment should find no consideration whatever in these matters. When a young man feels that nothing stands between him and promotion except merit, he then has an incentive to push to the front, and it is an employer's duty to see that he has credit for what rightly belongs to him. Perhaps there is no more practical way to solve this question than to have each clerk make a monthly written report of what he has done. Knowing that a report of this kind must be presented to his employer, a clerk's pride and ambition will lead him to make a good record. He becomes careful, thoughtful, ever on the alert to make a suggestion that will help the business, ambitious to produce good results. There is an incentive in these reports to a clerk to do his best. And not only this, the employer also gets better work, gets a better idea of what is being done, and knows where to place the credit. An employer who will use these reports, verify them and adopt good suggestions from them, places himself both in a position to compensate his help justly, and to adopt improved methods for his business.

UNRELIABILITY OF HELP.

Honesty in a clerk is a quality that cannot be too fully appreciated, but the multitude of cash registers and similar devices in constant daily use testify to the unreliability of help. It is an employer's duty to insure

HONESTY

as far as possible, but just how to do it each employer must decide for himself.

Confidential clerks are an absolute necessity in every business, yet how difficult it is to find them—somebody who can be trusted, who is not afraid to work, who watches his employer's interests as if they were his, who has good habits, some one who can be relied upon at any time, who never says a thing is so unless it is so.

GOING TO A COMPETITOR.

The extent to which a business man takes a clerk into his confidence must be decided by himself. There is always the liability of a man's help becoming dissatisfied and going with a competitor. This cannot always be avoided, and it is poor policy to let him know more than is necessary to the proper discharge of his duties. Unnecessary knowledge can do a clerk no good and may do an employer great harm.

CONFIDENCE.

In selling goods, clerks should be furnished with a complete list of the prices at which they should be sold. These are the selling prices, and if any special occasion seems to warrant a special concession it should come from the management. What a dealer pays for an article should be kept a matter of confidence to himself and his buyers. This information in the hands of indiscreet clerks would do more harm than good.

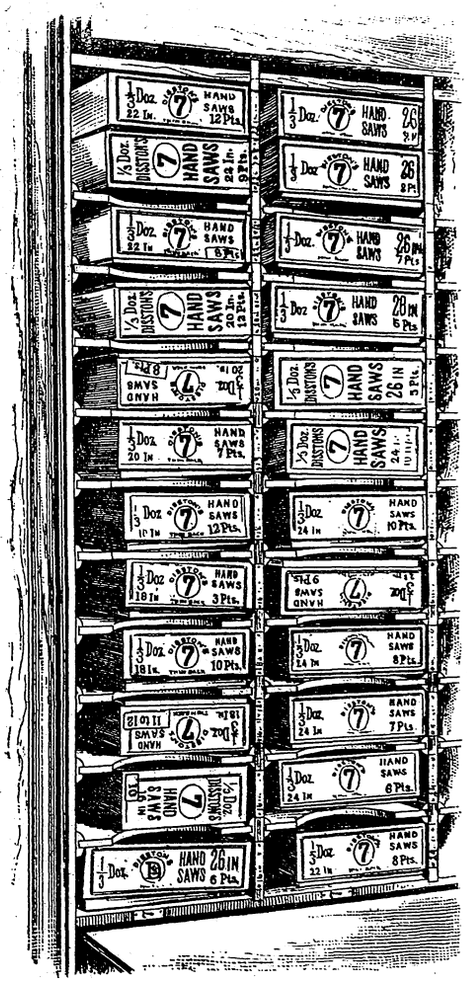


Fig. 793.—Shelving for Saws.

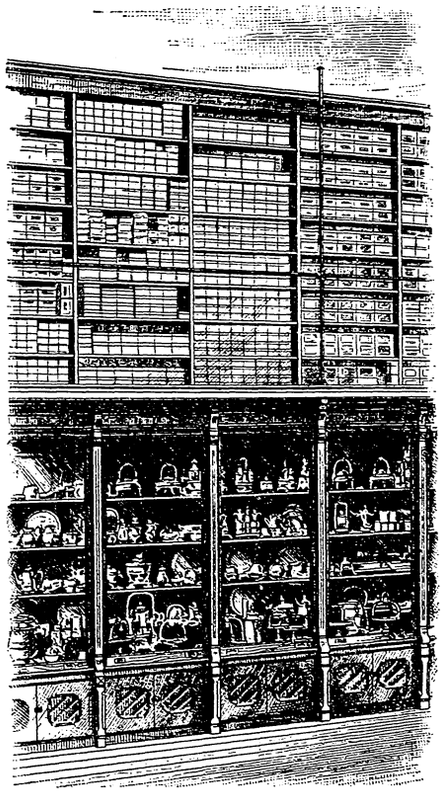


Fig. 794.—Silver-Ware Case.

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LET THEM GO.

When an employer engages a clerk, he agrees to give in exchange for certain services a certain salary. If a clerk insists on his salary the employer has the same right to insist on his services. Punctuality in commencing work should be insisted upon. Many an order is lost for no other reason than tardiness in opening up. Better be half an hour too early than three minutes too late. Dissatisfied clerks will appear in every business. There is only one of two things to do. Satisfy them or let them go. It never pays a clerk to stay after he becomes dissatisfied—much less does it pay his employers.

MISTAKES.

Don't expect too much from clerks. Don't expect that they will not make mistakes. They certainly will, all men do. When they make a mistake, don't forget all their good qualities; these very often more than offset the other. An employer should never lose control of his temper. Good seldom comes of it—but harm, invariably. A business man cannot afford to give way to his passion. As soon as he does, he loses the mastery of the situation. An employer cannot afford to employ uncivil clerks; he should insist on neatness, pleasant address; should discourage profanity, lounging, use of tobacco, drinking, gambling, gossiping. The absence of these qualities, gives character to a house, draws a better class of trade than where they are permitted. A customer never objects to good character, but very often finds fault with the opposite.

PERSONAL INTEREST.

An employer should always manifest a personal interest in the private life of his help. It somehow seems to bind the interests of employer and employee more than anything else. An employer who can command both the love and the respect of his clerks can always get better service, more of it, and at less cost than one who fails in this respect.

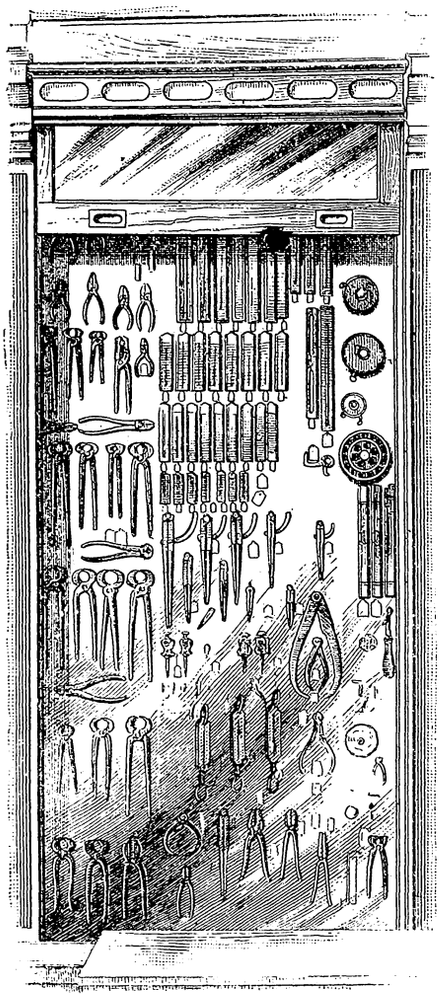


Fig. 795.—Sample Wall Case.

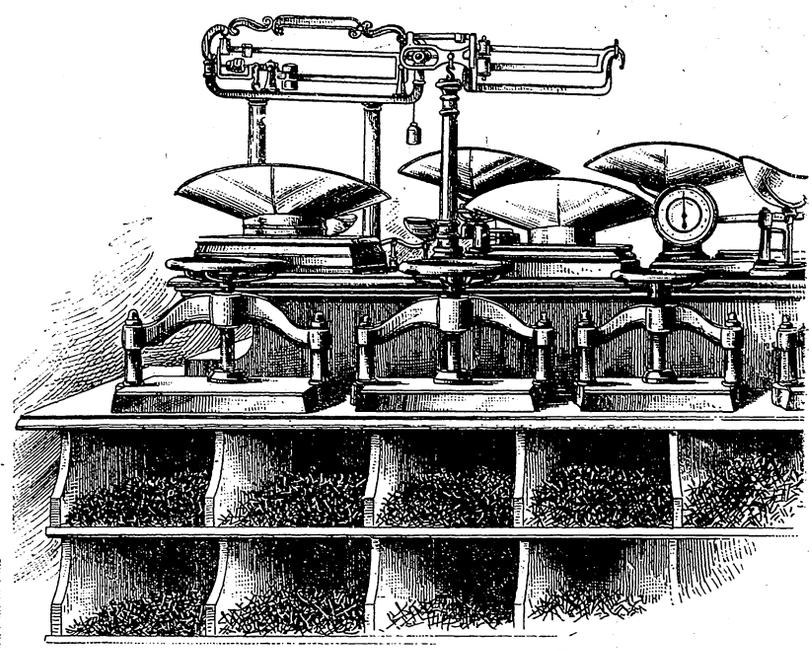


Fig. 796.—Nail and Scale Counter.

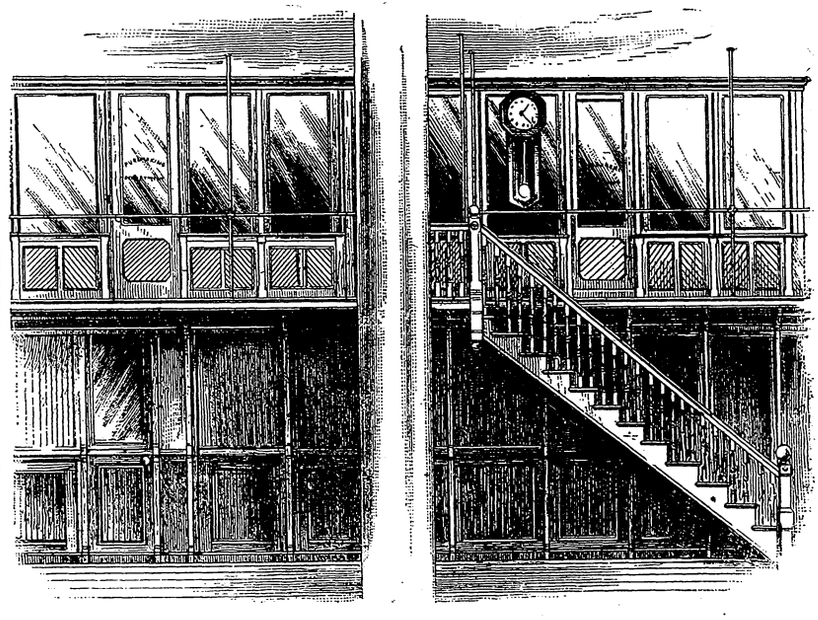


Fig. 797.—Stairway and Offices.

Trade Items.

THE CHICAGO HARDWARE TRADE very generally observed Monday, the 9th inst., as a holiday, it having been designated "Chicago Day" by the World's Fair management. The Yale & Towne Mfg. Company closed their branch house in that city, and at the suggestion of President Henry R. Towne every employee was presented with a souvenir ticket of admission to the exposition.

GRISWOLD MFG. COMPANY, Erie, Pa., issue a circular under date September 25, in which they refer to a marked increase in their orders for the past three weeks, and suggest to their customers the desirability of early securing a supply of their goods, so that they may not

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be taken short when the demand fully sets in. The company state that they are now prepared to fill all orders promptly, but it will not be possible to do this if orders are held back until the last moment. In addition to their regular line of Hollow Ware, American Dampers, &c., they call special attention to their line of Model or Toy Ware for holiday trade; also to their New American Waffle Iron with improved hinge and handle, Post Boxes, Cuspidors, Letter Presses, Tobacco Cutters with name plates, French Waffle Irons, &c.

CHAS. CROISSANT AND JOHN CROISSANT issue a card to the trade announcing that the business of Martin Croissant, Albany, N. Y., whose death has been noted in these columns, will be continued by them under the same name as heretofore.

LEGGETT & BRO., 301 Pearl street, New York, have recently secured a patent on the combination of prepared cork, brush and paper seal, used in connection with their new Glue brought out not long since. The cork is so prepared that it does not stick to the bottle, no matter how often removed and replaced, or how much the brush comes in contact with the neck of the bottle. The paper strap or seal is to keep the package intact until placed in the user's hands.

TAUNTON WIRE NAIL COMPANY, Taunton, Mass., are making special Box Nails, cut with a box or blunt point, so that if they strike a knot they will penetrate it, or else they will double up if the knot is too hard. The manufacturers remark that if a longer pointed Nail strikes a knot it will glance off one side and come out through the side of the box, which not only spoils that part of the box but necessitates taking the box to pieces in order to get that part out, or else throwing the box away altogether.

THE LENOX SHEAR COMPANY, Brookfield, Conn., are marketing a steel laid tempered straight Trimmer, both in full nickel and japanned handles, with jointed and unjointed blades. One of their brands is now made with a brass oval head screw and hexagon nut, with a washer under the head for a pivot on which the blade moves.

WILMOT & HOBBS MFG. COMPANY, 20 Murray street, New York, refer to the success so far achieved by their copperized steel anti-rust Oiler, recently put on the market, as evidenced by the quantities ordered. One of the principal objections to steel Oilers heretofore has been their liability to corrode. The company to prevent this are copper plating their Oilers both inside and outside. The outside is burnished to improve their appearance and render them more salable. The inside copper plating is to prevent rust and keep the oil from becoming gritty. The company refer to the fact that they are not in a combination on these goods and do not propose to be.

W. R. WALKLEY of the Peck, Stow & Wilcox Company has accepted an invitation to address the Hardware trade of Boston at a dinner to be given October 11.

THE HATCH CUTLERY COMPANY, South Milwaukee, Wis., and 97 Chambers street, New York, we are advised have been awarded first premium at the World's Columbian Exposition on all their goods, which include their patent bolt Shears and Scissors, Tinners' Snips, Automatic Knives, Razors, &c. The committee making the award refer to the exceptional merit of the Hatch patent Bolt and Washer, which is applied to the company's Shears, especially on account of its simplicity and practicability.

SHOENBERGER & Co., Juniata Iron & Steel Works, Pittsburgh, Pa., report that they are meeting with a good demand for their Extra Swaged, Roadster and Government Pattern Horse and Mule Shoes. We are advised that these Shoes are made from a special quality of soft homogeneous steel made by this firm, and that it is especially adapted for the manufacture of Horse and Mule Shoes, its present high quality being attained only after numerous and costly experiments had been made, with this object in view. New and improved machinery has also been recently introduced into their new factory, by which the capacity has been largely increased. The firm are sending out to the trade a catalogue descriptive of their different kinds of Horseshoes, giving full information in regard to their line.

Price-Lists, Circulars, &c.

C. SIDNEY SHEPARD & CO., 23 and 25 Randolph street, Chicago: Fall circular, under date of October 2. This is a 24-page catalogue of seasonable and other goods, comprising Common, Planished, Russia and Wood's Smooth Sheet Irons, Galvanized Iron, Soft Sheet Steel, Tin and Terne Plates, Metals, Wire, Rivets, Stove Bolts, Mica, Stove Boards, Fire Backs, Coal Hods, Coal and Fire Shovels, Stove Lifters, Pokers, Coal Tongs, Fry Pans and Skillets, Elbows, Oil Stoves, Roasting Pans, Dripping Pans, Tinners' Tools, &c. This firm have adopted the method of illustrating the different styles of Sheet Iron bundles in their circulars, as well as boxes of Tin and Terne Plates. It this way the appearance of the catalogue is relieved by the insertion of cuts in the usually monotonous array of tables of sizes and prices. With regard to Coal Hods the statement is made that all their Hods are now made with stamped bottoms.

MILLER WIRE SPRING COMPANY, Bridgeport, Conn.: Regular and special furniture Springs, pillow and bed Springs. The foregoing are tempered japanned Springs carried in stock; the same Springs will be made at short notice of coppered Spring wire. They also make to order special shapes, styles, sizes, &c, in either copered Spring or tempered japanned wire. The makers claim that as the result of their special method of tempering and japanning, all Springs run uniform in temper, size, shape, &c.

WILLIAM T. WOOD & Co., Arlington, Mass., Joseph A. Bogardus, 167 Chambers street, New York, agent: Ice Tools. Their fifty-ninth annual catalogue for 1893-94 illustrates Ice Elevators, Markers and Plows, Snow Ice Plane, Ice Chisels, Bars, Ice Adze, Ice Saws, Grapples, Forks, Sieve Shovels, Scoop Net, Ice Auger, Hoops, Tongs, Ice Axes, Scales, Hoisting Gins, &c.

THE DELAWARE HARD FIBER COMPANY, Wilmington, Del.: Hard Fiber Goods. It is stated that hard fiber is made from specially prepared vegetable fibers by subjecting them to the action of powerful chemicals and a vulcanizing process which, together with heavy rolling and pressing, completely changes the nature of the fibers, the product closely resembling horn, Goods, which are illustrated, made from hard fiber, include Rods, Washers, Disks, Fittings, Tubular Fuse Blocks, Insulating Flanges, Gear Wheels, Track Washers, Warehouse Cars, Boxes, Baskets, Oil Proof Gaskets, Carriage Axle Washers, &c.

FARWELL, OZMUN, KIRK & Co., St. Paul, Minn.: Catalogue of fall and winter goods. Illustrations are given of Axes, Handles, Wedges, Saw Sets, Cross Cut Saws, Wood Saws, Coffee Mills, Lanterns, Lamps and Lamp Stoves, Oil Cans, Hollow Ware, Meat Cutters, Stove Pipe, Elbows, Coal Hods Stove Boards, Shovels, Tongs, Chains, Registers, Scoops, Snow Shovels, Sleigh Bells, Sleds, Skates, silver plated Flat Ware, Table Cutlery, Carvers, Pocket Cutlery, &c.

JAMES A. TAYLOR & Co., Wilmington, Del.: Measuring Instruments of precision, also Adjustable Blade, Shell and Rose Chucking Reamers, Special Tools and Machinery. Illustrations are given of Measuring Machine, Calipering Machine, Correction Gauge Standards, Standard Reference Disks, Fixed Caliper Gauges, Adjustable Blade Reamers, Hardened Steel Mandrels, Adjustable Blade Shell Reamers, &c.

JOHN PRITZLAFF HARDWARE COMPANY, Milwaukee, Wis.: Price current of fall and winter goods. Among the goods to which attention is called in their 48-page illustrated catalogue are Axes, Saws, Meat Choppers, Snow Shovels, Stove Boards, Fire Backs, Oilcloth, Hay Knives, Corn Huskers, Lanterns, Oil Cans, Sleigh Bells, Lumbermen's Supplies, Saw Tools, Chains, Axe Handles, Loading Blocks, Wedges, Builders' Hardware, Cow Ties, Mauls, Skates, Cutlery, &c.

COATES CLIPPER MFG. COMPANY, Worcester, Mass.: Toilet Clippers. Advance sheets from their forthcoming complete catalogue, with artistic covers, are fastened together with colored cord. These few leaves represent their present series of Toilet Clippers, and are now issued that those in need of these goods may make selection.

THE NUBIAN IRON ENAMEL COMPANY of Cragin, Ill.: Circulars. One gives a partial list of jobbers handling Nubian in ½-pint Cans, also prints of cuts which the company furnish the trade for catalogue, circular or advertising purposes. Another is a testimonial from the World's Fair mechanical department stating that Nubian had been adopted for the boiler stacks after a thorough test.

It Is Reported—

That the Hardware firm of Lefavour & Lamson, Beverly, Mass., have dissolved. F. G. Lefavour will continue the business under his own name.

That the Hardware store of Graves & Tabor, East Aurora, N. Y., was entered by burglars a short time since and Cutlery and other goods stolen to the value of $200.

That Sterling & Leece have succeeded E. H. Sterling in the Hardware business at Bishop, Cal.

That F. Haffele & Co., Fonda, Iowa, Hardware and Stove merchants, have sold out to S. A. Stevens & Co.

That Richardson & Imhoff is the style of a Hardware firm recently starting in business at Van Wert, Iowa.

That Leroy Yates has succeeded M. P. Elwell in the Stove business at Portland, Maine.

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Brad Brackett.

Brad Brackett kept a wholesale store
Under the Spring hoe-tel;
And though his ware was in demand
It was hard ware to sell.

His stock of staple goods was on
A scale you seldom find;
Including pokers, shovels, tongs,
Andirons of that kind.

Although a skillful financier,
He would not gouge in trade;
Nor chisel any one a bit,
If ne'er a cent he made.

A plane and quiet man, he ne'er
Was known to stirrup strife;
A firmer friend one never saw
En-gauge in business life.

Possessed of hinge-enuity,
That compasses one's ends,
He did his business on the square,
And had a host of friends.

'Twas not by any ax-ident
He rose above the rest;
The key to his success was that
He did his level best.

Nobody had a stronger faith
In printers' ink than Brad's;
He used to say he carved his way
To fortune with his adz.

He always paddled his own can-oe,
And, pulley as he might
Against the stream or with the stream,
Was sure to come out right.

Of being a strong partisan
He had the reputation;
But, rather than support bad men,
He'd bolt a nomination.

As a tack-tician he excelled—
In auger-nizing led—
Though screw-pulous, was sure to hit
The nail upon the head.

He deprecated rings and frauds,
And scorned a party tool;
In politics, religion, trade,
He observed the golden rule.

He was no misanthrope, but took
A file-anthro-pick view
Of life, with its vice-cissitudes,
As all of us should do.

A splendid "catch," he lived a bach,
Anvil-age belles were told,
They tried in vain his heart to gain
With beauty or with gold.

Though a teetotaler, he kept
The best of bars, 'tis true,
Where one could get his "nippers" and
All kinds of punches, too.

But fickle fortune chain-ged at last,
And caster threatening pall
O'er him, and with one fatal wrench
Deprived him of his awl.

His locks by sorrow's weight were turned
To silver, and were long;
He fell before the scythe of Time
To join Death's mighty throng.

—*Detroit Free Press.*

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

There is still an element of uncertainty in the position of dry White Lead that has more or less restraining influence upon operations of large dealers in the lines of goods into which that pigment enters as a prominent ingredient. The irregularity in Linseed Oil is less pronounced, and figures in smaller degree among the influences that gauge the operations of careful buyers. But more potent than either of these is the fact that buyers, large and small, continue to show decided partiality to pronounced conservative line of action. Grinders are taking bulk goods only as immediate wants dictate. Jobbers' purchases are gauged almost wholly by running count of stock. Retailers are quite as careful, and buyers of specialties manifest hardly the degree of interest that is shown at this season of the year.

White Lead.—The old list prices are kept in force by the National Lead Company and the sales agents identified with the combine state positively that no concessions are being made in this city or vicinity. From outside sources the information comes that the official quotations are shaded in other territory in order to meet the low quotations made by a few "outside" corroders. In this respect Dry White Lead figures most conspicuously, with carload lots reported sold at as low as 5½¢, net cash, or ¼¢ below the combine price for similar quantities, exclusive of regular discounts. In remote instances similar concessions, it is said, have been made on Lead in Oil. That jobbers are still selling on a very narrow margin over cost is the fact and the surface indications are that the market has more weak features than strong ones at the present time. The item of cost and peculiarities of the trade are, at all events, being carefully followed in all directions.

Red Lead.—Purchases of foreign brands have been on a smaller scale, and it is plain that large consumers are well satisfied with looking after stock that will be due shortly on recent contracts. Prices have not weakened perceptibly, but seem to be rather soft. In domestic brands there has been little movement, but, to all accounts, the business effected was at former prices.

Litharge.—Fairly good orders have been placed by glass and rubber manufacturers for low grade product used in the respective lines, but the higher grades used in the Paint trade have met with merely routine sale. Prices are still somewhat variable, but no weaker than they were ten days or a fortnight ago. The demand for French and German brands has moderated and is now of very ordinary character. As natural under such conditions it is easier to buy at prices that looked very cheap a short time ago. To that extent the market is easier. There has been no change in quotations for domestic stock and the demand for the same continues slow.

Zincs.—Deliveries of domestic Oxide in this vicinity have been hardly up to the full average for this season of the year, although on a somewhat larger scale. New business has been uneven and only fair in the aggregate amount. There is still some irregularity in prices on actual sale, but no change in quotations. Former list prices and terms are quoted for foreign brands, but the regular rates are being "cut" more or less in a quiet way, and cash buyers receive more than ordinary favors.

Colors, &c.—In the leading lines of Dry Colors there has been no decided change. The same may be said of Oil Colors. Specialties in the respective lines have fared somewhat better in point of sales, but in no other particular. The prompt payer or cash buyer, in fact, receives special favors. The volume of business is only fair for the season.

Oils and Turpentine.

The movements in prices have been on a narrow scale during the past week and transactions have continued on conservative lines of the most pronounced type. In the latter connection a few exceptions may be noted, but even there the difference from the general movement was in closing deals that have been under negotiation for some little time past, rather than in the nature of strictly new business. It is especially remarkable that fluctuations in prices have not only been few but slight, and it is impossible to point out where either buyer or seller has made more than shadowy gain.

Linseed Oil.—The margin between prices for Western and New York City brands is about the same as it was last week, and the general condition of the market is very similar as well. City brands are still quoted at 40¢, with usual allowance for packages. Western brands are about 2¢ less, without as liberal allowance, and the contest in the West that has a certain amount of influence here continues. It would seem proper to remark, however, that the Western conflict is mostly local and that Eastern buyers would have to take carloads of Oil to secure stock at the extremely low figures quoted there. Meanwhile, distribution at this point is hardly up to the early October average, and the demand is slow as well.

Cotton Seed Oils.—There have been acres of writing and a certain amount of calm consideration regarding the market for this line of Oils, but the finest theories advanced have failed to connect. The market thus remains in a state of irritating uncertainty and dependent largely upon export purchases that fail to materialize. Still, prices are fairly maintained at 34¢ @ 36¢ for prime crude, 39¢ @ 40¢ for prime Summer Yellow, and corresponding figures for other varieties.

Lard Oil.—There has been no further advance in prices, but the market is very firm, since the movement in cost of raw material has not favored venturing with sales on a lower basis. Hence prices for prime present make Oil stand at 75¢ ℔ gallon, while the low grades are relatively as high in the face of merely ordinary demand.

Fish Oils.—Upward of 800 barrels of crude Sperm Oil have been sold at 65¢ ℔ gallon, including about 300 barrels for export. This reduces the supply in first hands to about 8500 barrels. In crude Whale Oil there has been hardly anything doing, and the market is still enigmatical, but apparently steady. There have been a few sales of crude Menhaden Oil at the combine prices, and the market is unchanged. Bleached and pressed Oils move rather slowly, but chiefly at the prices that have ruled for some time past. Cod Oil is selling at former prices, but in a moderate way only.

Miscellaneous. — Cocoanut Oils are firmly held at the higher prices established last week, but the buying has been slow and the market is under speculative influence in some degree. Common Olive Oil in barrels is held firmly at full former prices for spot stock and lots in transit, say 58¢ @ 60¢ ℔ gallon; but the fact that forward shipments are offered at 55¢ @ 56¢ holds business in abeyance. Red Oils find merely routine sale at about former prices.

Spirits Turpentine.—In the face of quite large stocks here the average of prices has been somewhat higher, but the market shows weakness toward the close, with sellers at 28½¢ @ 28¾¢, ex-dock, according to style of package.

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Oil and Gas Heaters.

The accompanying cuts represent three styles of a line of oil and gas heaters manufactured by the Manhattan Brass Company, 44 Murray street, New York, and 506 Masonic Temple Building, Chicago. Fig. 1 shows the No. 40 Star heater, which is made entirely of brass, with the exception of a Russia iron drum and aluminum top or cover. The base is nickel plated, of attractive design, with central draft burner and large wick. The wicking arrangement is simple, the wick being slipped over a cylinder, which expands at the top as the cylinder is turned down, and is thus held in place by teeth, without the aid of bands or tying. The wick is raised or lowered by turning the thumb screw either above or below the base. By turning the small projecting knob in the oil reservoir funnel, which is opposite the wick raiser, a register is opened, and into this funnel the oil is poured when filling. An indicator in the center of the funnel shows the amount of oil in the reservoir, whether full, half full or empty, enabling one to see at a glance when the reservoir needs replenishing with oil. The drum is held in position on the rim by a loose hinge and spring; in lighting the heater the spring is pulled back and the drum is tipped backward. The rim is perforated at the bottom, and the drum has perforations at the top as well as in the sides. When it is desired to heat anything at the top of the drum, or to have the heat ascend, the aluminum top is taken off, leaving a flat surface. The point is made that the movable top, being made of aluminum, will not discolor. The manufacturers claim that there is no disagreeable odor from these brass heaters, that 1 gallon of kerosene will heat a room 8 to 12 hours, and that the heaters may conveniently be carried from place to place. The heater is made with three other styles of bases besides the one shown, one of these bases being square. Bases are furnished in brass finish, nickel and all brass; also with brass drum. The Hygienic heater, shown in Fig. 2, besides embodying the advantages of the Star heater, has a water tank to moisten the atmosphere. The tank surrounds the burner and is designed to hold enough water to keep up evaporation until the oil tank needs replenishing. The deflector, which in Fig. 2 is being held in the hand, has perforations at the inner edge through which the vapor passes as it rises from the heated water. Thus rising close to the flame, the moisture is thrown out into the room. The No. 48 heater weighs 12 pounds, is 33 inches high and has a drum 9 inches in diameter. The drum and movable top of the gas heater in Fig. 4 are the same as used on the oil heaters. It is claimed that the gas burner is so constructed that the gas is superheated before being burned, in this way utilizing the gas to better advantage than in the ordinary burner.

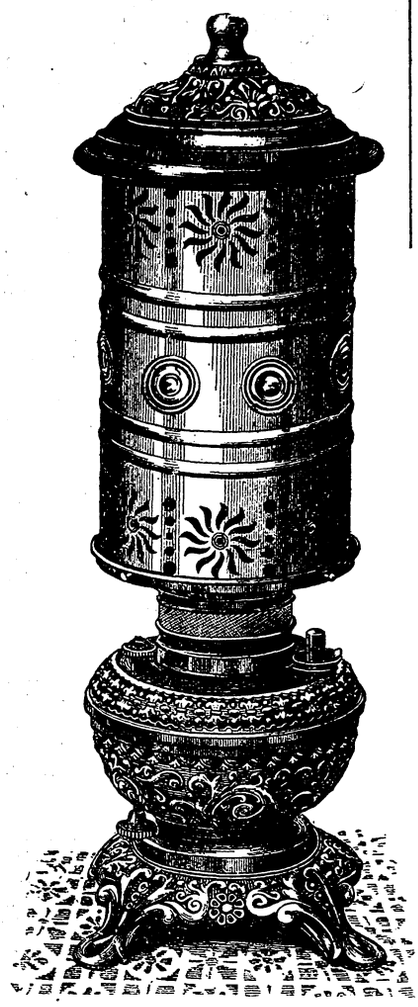


Fig. 1.—No. 40 Star Heater.



Fig. 2.—No. 48 Hygienic Heater.



Fig. 3.—Drum for Hygienic Heater.

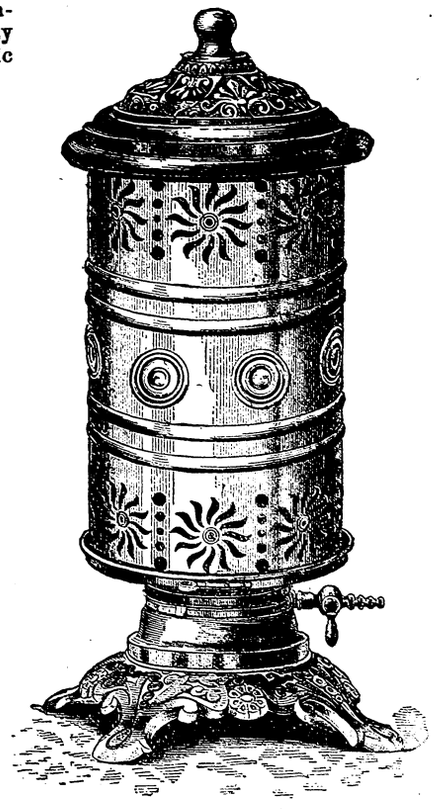


Fig. 4.—Gas Heater.

The following order, which betrays its German origin in every line and nearly every word, says a correspondent of (London) *Ironmongery*, is the most remarkable compound of mixed Ger-

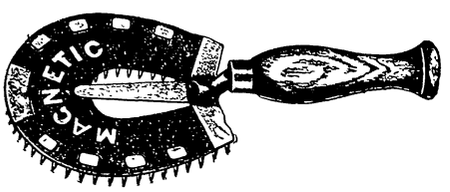
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man and English that ever came under my notice: "Mr. Glark blees sent me one of jur 7.9 jene revolvers und on box of cardridges as juick ju cann i will sent the mony on as sohn i resiev it tbe revolver und cardridges blees obleidg as juick ju cann send to" &c. The address on the envelope is a curiosity indeed. Substituting English letters for the German script where employed, it runs:

"Mr. Glark
for Street Exeter
Nearle obosite
Market Plaz
Tule Shopp."

Magnetic Curry Comb.

The Ives Mfg. Company, North Granville, N. Y., are introducing the magnetic curry comb illustrated herewith.



Magnetic Curry Comb.

The comb consists of a plate of magnetic metal, about $\frac{1}{16}$ inch thick, on the under side of which are cone shaped teeth, about $\frac{1}{4}$ inch long, cast on the plate. The comb is provided with a neat wooden handle, and the metal parts of the comb are nickel plated. The manufacturers claim that the comb is absolutely self-cleaning, no dirt or dust adhering to the comb; that it penetrates to the roots of the hair and brings the dirt to the surface; that in connection with a good brush a horse is well cleaned and will thrive on less feed; that it will not cut the hide or skin of an animal, and that should the comb come in contact with the mane or tail it will not pull or draw the hair.

The Cream City Flour Bin and Sifter.

Geuder & Paeschke Mfg. Company, Milwaukee, Wis., are offering a flour bin and sifter, as herewith shown. The



The Cream City Flour Bin and Sifter.

bins are made of tin on improved machinery especially built for their production, handsomely ornamented to make them attractive as well as useful, and each is packed in a separate package, strong enough, it is stated, to insure safe delivery at any distance from the factory. Notable among the features of the bin is a detachable shield, designed to protect the sifter from pressure by the weight of the flour, but to allow a sufficient quantity to pass through to insure quick and easy sifting, at the same time to obviate all grinding through of foreign substances. The bins are recommended by the makers as of more than ordinary merit, the sale of which will be found satisfactory and profitable.

Gersdorff's Improved Standard Funnel.

J. Hall Rohrman & Co., Philadelphia, Pa., are putting on the market Gersdorff's Standard funnel in an improved form. The improvement consists in the overflow ring, which is now spun on to the top of the funnel, instead of being soldered on, as in the old style. The funnel is made of three pieces of sheet copper or tin, seamed from the top to the center, and soldered from the center to the nozzle, with an overflow ring at the top. The nozzle is shaped triangularly, so that when in use the funnel rests firmly in the neck of a receptacle and makes three perfect vents for the escape of air during the process of filling. The funnel has a strainer so arranged as to be readily removed when required. The makers claim that they can now produce it at a price not exceeding that of an ordinary first-class funnel.

Self Cleaning Filter.

Henry S. Smith, Chadwick, Ill., is offering a self cleaning filter for cisterns, which obviates the use of charcoal and gravel. The filter consists of a rectangular tin box, within which is a cut off, and three wire screens one above the other, the top one coarse, the next one finer and the lower one finer still. At one side of the filter is a conductor pipe, open on the side next the filter, and so arranged that the water can be turned, by the use of the cut off, into the conductor, or caused to pass through the screens into a separate outlet to the cistern. The screens slope somewhat toward the conductor at the side of the filter, to allow the accumulated filth to wash off and be carried to the ground. The cap covering the filter and conductor can be slid up to allow the screens to be removed. On the top of the cap is a collar corresponding in size with the down spout to which the filter is to be connected.

The works of the Morewood Tin Plate Mfg. Company, at Elizabethport, N. J., have been closed down indefinitely, and the workmen discharged. The owners have not yet decided whether the cessation of work in this establishment will be permanent or not. Meanwhile the tin plate works of the Morewood firm at Gas City, Ind., are being actively operated. J. H. Rogers, the head of the Morewood interests, arrived from England last week, and remained in New York for a few days, when he left for Gas City.

Eight of the 12 great 13-inch naval guns destined for the armament of the "Indiana," "Oregon" and "Massachusetts" are completed and awaiting the tests at the Washington ordnance shops, and the remaining four will soon be delivered. These are the largest guns yet made for the navy. None of them have as yet been tested at the proving grounds, owing to delay in obtaining a trial carriage for such large pieces of ordnance; but the mount will be completed in a few weeks, when the guns will be discharged.

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Current Hardware Prices.

OCTOBER 11, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—
Domestic.....₩ doz $3.00, 33⅓@33⅓&10%
Excelsior....₩ doz $10.00.....50&10&2%
North's .....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—
Eagle Anvils, ₩ ℔ 9¢.....15@15&5%
Peter Wright's.....11@11½%
Armitage's Mouse Hole.....10½@11¢
Am. Wrought, Horse shoe brand.11@11½%
Trenton .....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise $3.00.....40&10%
Star .....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—
Common Augers and Bits.....70@70&10%
Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....50%
Russell Jennings' Augers and Bits.25&10%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
Snell's Bits.....60&5%
C. E. Jennings' & Co., No. 10, extension lip 40%
C. E. Jenning' & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32½ quarters, No. 5, $5; No. 30, $3.50.25%
Lewis' Patent Single twist.....45%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
L'Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....15%
Cincinnati Bell-Hangers' Bits.....30&10

Bit Stock Drills—
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30&30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal .....45&10%

Expansive Bits—
Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Swan's 40%
Steer's, No. 1, $26; No. 2, $18.....35@40%
Stearn's No. 2, $48.....20%

Gimlet Bits—
Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25.....40&10%
Bee .....25@25&5%
Double Cut:
Shepardson's.....45@45&10%
Ct. Valley Mfg. Co.....30&10%
Hartwell's.....₩ gro. $10.00..40&10%
Douglass'.....40&10%
Ives.....60@60&10%

Hollow Augers—
Ives' .....
French, Swift & Co. (Beecher) } 33⅓@33⅓ &10%
Douglass' .....
Bonney's Adjustable, ₩ doz $48.....50%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood s .....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—
L'Hommedieu's.....15&10@15&10&5%
Watrous'.....25@25&10%
Snell's .....25@25&10%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%

Awl Hafts—See *Hafts, Awl.*

Awls—
Awls, sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@1.40
Awls, Handled Brad....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands.	$7.00	$7.50
First qual., other brands	6.50 to 6.75	7.00
Second quality.....	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—
No. 1 .3½¢@4½¢, No. 2, 5¢@6¢ } 3% cash
Nos 7 to 14.....60&10%
Nos. 15 to 28.....47½%
Nos. 19 to 22 .....70%
Concord Axles, loose collar.....4½¢@6¢
Concord Axles, solid collar.....5½¢@7¢
National Tubular Self Oiling .....
33⅓%@33⅓&5%

Bag Holders—See *Holders, Bag.*

Balances—
Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz.....	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—
Crow—
Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—
Standard Fiberware, No. 1, 10½-in., $1.80; 12-inch, $2.00; 13½-inch, $2.50; 15-inch, $3.00.

Beams, Scale—
Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—
Egg—
Dover.....₩ doz $1.00@$1.20
Duplex (Standard Co.).....₩ doz $1.00
Dover (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)... ₩ doz. $3.50
Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ $4.50
Improved Acme (H. & R. Mfg. Co.).... ₩ gro. $9.00
Silver & Co.....₩ doz $5.50

Culinary—
Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2 .....20%

Bells—
Cow—
Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10%
Dodge, Genuine Kentucky.... 70@70&10%
Texas Star.....50&10@50&10&5%

Door—
Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. & E. Mfg. Co.'s.. .....50&10&2%
Pull, Brook's.....50&10&2%

Electric—
Wollensak's.....20%
Bigelow & Dowse.....20%

Hand—
Light Brass.....70&10@70&10&5%
Extra Heavy.....70%
White.....70%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Miscellaneous—
Call.....45@50%
Farm Bells.....₩ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Bellows—
Blacksmiths'.....60&10&5@60&10&10%
Molders'.....40&10@50%
Hand Bellows.....40&10@50%

Belting, Rubber—
Common Standard.....75@75&10%
Standard.....70&5@70&10%
Extra.....60&10@60&10&10%
N.Y.B.&P. Co., Carbon.....60@60&5%
N.Y.B.&P.Co., Diamond..... 50@50&5%
N.Y.B.&P.Co., Para.....40@40&5%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—
Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—
Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—
Cleveland Block Co., Mal. Iron.60@60&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%
See also *Machines, Hoisting.*

Bolts—
Carriage, Machine, &c.—
Com. list June 10, '84.....80@80&5%
Genuine Eagle, Norway, list Oct. '84.... 80&5@80&10%
Eagle, Norway, list Oct. '84 80&10@80&15
Phila. pattern, list Oct. 7, '84..... 80%
R. B. & W., old list.....70%
Machine, list Jan. 1, 1890.....80&10%
Bolt Ends, list Jan. 1, 1890.....80&10%

Door and Shutter—
Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wrought Square.....70&10@75%
Wr't Shutter, all Iron, Stanley's..... 60&10@60&10&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%
Wr't B. K. Flush, Common.....55&10%

Stove and Plow—
Stove.....60&10@60&10&10%
Plow.....60&10&50@60&10&10%
R. B. & W., Plow.....55%

Tire—
Common, list Feb. 28, '83.....65@65&5%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16 '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—
Common and Ring.....20&10%
Ives' Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20%
Clark's.....33⅓&10&5%

Borax—
Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—
Per ℔.....2¾¢

Boxes, Miter.
Spliker's Excelsior, 3 in. $7.50, 4 in $8 50, 5 in. $13.00, 6 in. $15.00.....20%

Braces—
American Bit Brace and Tool Co.,
Nos. 10, 12, 20..... .....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber s.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew s,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford s..50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Davis Patent.....50&10%

Brackets—
Shelf, plain,
Regular, list..... .....65@70%
Sargent's list.....60&10@70&10%
Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—
Henis' Self-Basting. { Inch..... 9 10 9x11 / Per doz...$4.50 5.50 6.50
New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....₩ doz. $12, 50%
Queen City.....33⅓%

Buckets, Well—
Galvanized—
Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers.*

Butts—
Brass—
Wrought Brass.....80@80&10%
Cast Brass, Tiebout's..... 50%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—
Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts.....
Mayer's Hinges..... 75@75 &10%
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....

Wrought Steel—
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad..... List Jan. 2, 1893, 40@40&10%
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Indide Blind, Light..... .....
Loose Pin.....
Bronzed Wrought Butts.....50@50&10

Cages, Bird—
Hendryx, Brass or Enameled..... 50&10%
Hendryx, Wood..... .....40&10%

Callipers—See *Compasses.*

Calks, Toe—
Gautier, One Prong, Blunt.....5½@6¢
Burke's One Prong, Blunt.....5½@6¢
Burke's, Two Prong, Blunt..... 7½@8¢
Burke's, Wide Prong, Sharp... . 6½@7¢

Can Openers—See *Openers. Can.*

Cans, Milk—
S S. & Co.: 5-gal., $3.00; 8-gal., $4 40; 10-gal., $4.75 each.....40&10

Cans, Oil—
Galvanized Blue Band, 5 gal., Tip-Top, ₩ doz, $12.00
Galvanized Blue Band, 5 gal, Faucet, ₩ doz., $8.00
Galvanized Blue Band, 1 gal., ₩ doz. $2.25
Glass Oil, Friend.....₩ doz. $2.75

Caps—
Percussion—
Hicks & Goldmark's and Union Metalic Cartridge Co. ₩ 100¢
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's..... 47@50¢
Musket. Waterproof, 1-10's..... 50@53¢
G. D. .....27@30¢
S. B. Genuine Imported..... 45¢
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire. $1.60

Primers—
Berdan Primers, $1.0(..... 2%
B. L. Caps (Sturtevant Shells) $1 00... 2%
All other Primers, $1.20..... 2%

Cards—
Watson's Cotton, Wool, Horse and File, list January 28, 1891.. ... . 25%

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—
Rim Fire Cartridges .....50@5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle..... 25&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—
Bed..... } Brass.....55@55&10%
Plate..... } Others....60@60&10%
Shallow Socket...
Deep Socket.....40&10%
Martin's Patent (Phœnix).45&10@50&10%
Tucker's Patent, low list..... 45%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Yale Casters, low list.....45%
Yale, Gem..... 70%
Giant Truck Casters..... 35%
Stationary Truck Casters..... 50&10%
Socket Truck Casters.....50@50&10%
Gwinner's Common Sense.....45%
Gwinner's Hercules..... 45%

Cattle Leaders—See *Leaders, Cattle.*

Cement—
Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—
Trace, Wagon and Fancy Chains, List revised May, 1893..... .60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.50	3 40	3.25

Less than cask lots, add½¢@¼¢ ₩ ℔
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12. 1892. 60@60&10%
Covert Halter.....60&2%
Cover t Traces..... 35&2%
Cover t Heel Chain..... 50&2%
Galvanized Pump Chain.
5 ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.75
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔ .....₩ 100 ℔ $7.00
Oneida Halter Chain.....60@60&5%
Jack Chain, Iron and Brass, list July 10, 1893..... 6%&10%
Barnes' Reinforced Sash .... 60&10¢
Barnes' Victor Sash.....65¢

Chalk—
See also Crayons.
White, case lots, ₩ gr 50¢; small lots, 52¢
Red, case lots...₩ gr 67¢; small lots, 72¢
Blue, case lots...₩ gr 75¢; mall ots 80¢

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Chalk Lines—See *Lines.*

Checks, Door—
Unity 50%

Chisels—
Socket Framing and Firmer
P. S. & W
New Haven
Witherby
Mix } 75&10@75&10&10%
Ohio Tool Co.
Douglass ..... 75@75&5%
Buck Bros 30%
Merrill ..... 60&10@60&10&5%
L. & I. J. White ..... 30@30&5%

Tanged and Miscellaneous.
Tanged Firmers ..... 50@50&10%
Butchers' ..... $4.75@$5.00 to 2
Spear & Jacksons' ..... $5 to 2
Buck Bros 30%
Cold Chisels, fair quality, ℔ ... 14@16¢

Chucks—
Beach Pat ..... each, $8.00 ..... 20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury ..... each, $6.00, 30@30&5%
Syracuse, Balz Pat 25%
Graham Patent 33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.
Victor $8.50, 25%
Combination 40%
Vniversal 40%
Independent 40%

Churns—
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.

Clamps—
R. I. Tool Co.'s Wrought Iron 25%
Adjustable, Cincinnati ..... 15&10%
Adjustable, Hammers ..... 15@15&5%
Adjustable, Stearn's ..... 30@30&10%
Stearn's Adjustable Cabinet and Corner ..... 30@30&10%
Cabinet, Sargent's ..... 70&10%
Carriage Makers', Sargent's ... 75@75&5%
Carriage Makers', P., S. & W Co. .. 40&10%
Eberhard Mfg. Co. ..... 40&5@40&10%
Warner's ..... 40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenter's, Cincinnati ..... 25&10%
Barnes' Machinists' Clamps 33⅓%

Cleavers, Butchers'—
Bradley's ..... 25@30%
L. & I. J. White ..... 20&5%
Beatty's ..... 40@40&5%
New Haven Edge Tool Co.'s 40%
P., S. & W ..... 33⅓&5@33⅓&10%
Foster Bros 30%
Schulte, Lohoff & Co ..... 40@40&5%

Clips—
Norway, Axle, ¼ & 5-16 ..... 55&5&5%
2d grade Norway Axle, ¼ & 5-16 ... 65&5%
Superior Axle Clips ..... 66⅔&5&70%
Norway Spring Bar Clips, 5-16 .. 60&5&5%
Wrought Iron Felloe Clips ..... ℔ 5½¢
Steel Felloe Clips ..... ℔ 8¢
Baker Axle Clips 25%

Cloth and Netting, Wire—See *Wire, &c.*

Cockeyes 50%

Cocks Brass—
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.) .... 60&2@60&10

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Chapman Mfg. Company, new list 40%
Medford Fancy Goods Co. .... 40&10@50%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list 40%
Brass, Pope & Steven's list 40%

Combs, Curry—
Fitch's ..... 50&10@50&10&10%
Rubber, per doz., $10.00 ..... 25%
American Curry Comb Co. .... 33⅓&40%
Kohler's Magic Oscillating ... ℔ doz., $2.00
Kohler's Humane ..... ℔ doz., $1.75

Compasses, Dividers, &c.
Compasses, Calipers, Dividers. 70@70&10%
Bemis & Call Co.'s
Dividers 65%
Compasses ..... 50&5%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Calipers, Double 65%
Calipers, Call's Patent Inside 55%
Excelsior 50%
Stevens & Co.'s ..... 25&10%
Starrett's
Spring Calipers and Dividers .... 25&10%
Lock Calipers and Dividers 25%
Combination Dividers 25%

Coolers, Water—
S. S. & Co.: 2-gal., $2.00; 3-gal., $2.50; 4-gal., $2.75, 6-gal., $3.40 each 33⅓%

Coopers' Tools—
See *Tools, Coopers'.*

Cord—
Sash—
Common ..... ℔ 8½@9¢
Patent, good quality ..... ℔ 10@11¢
White Cotton Braided, fair .. ℔ 23@24¢
Common Russia Sash ..... ℔ 12½@13¢
Patent Russia Sash ..... ℔ 13½@ 14¢
Cable Laid Italian Sash ..... ℔ 19@20¢
India Cable Laid Sash ..... ℔ 11½@12¢
Silver Lake—
A quality, White, 50¢ 25%
A quality, Drab, 55¢ 25%
B quality, White, 30¢ 10%
B quality, Drab, 35¢ 10%
Sylvan Spring, Extra Braided, White .34¢
Sylvan Spring, Extra Braided, Drab .. 39¢
Semper Idem, Braided, White .... 27@28¢
Egyptian, India Hemp, Braided ..... 26¢
Massachusetts, White ..... 29¢
Samson—
Braided, White Cotton ..... ℔ 35, 37¢
Braided, Drab Cotton ..... ℔ 35, 42¢
Braided, Italian Hemp ..... ℔ 35, 40¢
Braided, Linen ..... ℔ 35, 56¢
Tate's Solid Braided—
Hercules, White ..... ℔ 35, 25¢
Hercules, Drab ..... ℔ 35, 30¢
Economy, Drab ..... ℔ 35, 27¢
Economy, White ..... ℔ 35 22¢
Ossawan Mills—
Braided, Giant, White, ℔ 35 30¢ ... 20%
Braided, Giant, Drab and Fancy, ℔ 35¢ ..... 10¢
Braided, Crown White, ℔ 35, 50¢ ... 50%
Braided, Crown Drab and Fancy, ℔ 35¢ 30%

Wire Picture—
Braided or Twisted ..... 80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters—See *Knives, Corn.*

Crackers Nut—
Table (H. & B. Mfg. Co) 40%
Blake's Pattern, ℔ doz., $2.00 ..... 10%
Turner & Seymour Mfg. Co. 50%
Acme.
Japanned, ℔ gro., $30 ..... 50%
Nickel Plated, ℔ gro. $30 ..... 10%

Cradles—
Grain ..... 50&2@50&5&2%

Crayons—
White Crayons, ℔ gross ..... 7@8¢
D. M. Stewart Mfg. Co.:
Metal Workers', ℔ gross, $1.75 ..... 25%
Rolling Mill, ℔ gross, 2.50 ..... 25%
Railroad, ℔ gross, 2.00 ..... 25%
Soapstone Pencils, ℔ gross, 1.00 ..... 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—See *Combs, Curry.*

Curtain Pins—See *Pins, Curtain.*

Cutters—
Meat—
Dixon's, ℔ doz. ..... 40@40&5%
Nos. 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Woodruff's, ℔ doz. ..... 40@40&5%
Nos. 100 150
$15.00 $18.00
Hale's, ℔ doz. 70%
Nos. 11 12 13
$27.00 $33.00 $45.00
American 30%
Nos. ..... 1 2 3 4 B 5
Each $5 $7 $10 $25 $50 $60
Enterprise 25%
Nos. 10 12 22 32 42
Each $3 $2.50 $4 $6 $15
Little Giant, ℔ doz. ..... 40&10@50%
Nos. 305 310 312 320 322
$35.00 $48.00 $44.00 $72.00 $68.00
Triumph No. 505, ℔ doz., $21.00 .. 25@30%
Miles' Challenge, ℔ doz. ..... 45@45&10%
Nos. 1 2 3
$22.00 $30.00 $40.00
Home No. 1, ℔ doz., $26.00 ..... 55&10%
Draw Cut, each:
Nos. 5 2 6 8
$50 $75 $80 $225 ..... 20@25%
Beef Shavers (Enterprise) 20%
Chadborn's Smoked Beef Cutter, ℔ doz., $66.00

Slaw and Kraut—
Tucker & Dorsey Mfg. Co.:
Slaw Cutters, 1 Knife, ℔ gross ... $21.00
Slaw Cutters, 2 Knife, ℔ gross ... 30.00
Kraut Cutters 40%

Tobacco—
Champion ..... 20&10@30%
All Iron ..... ℔ doz., $4.25
Nashua Lock Co.'s .. ℔ doz., $18.00, 50@55%
Wilson's 55%
Sargent's ..... ℔ doz., $24.00, 55&10
Acme ..... ℔ doz., $20.00, 40%

Washer—
Smith's Pat .... ℔ doz., $12.00, 20&10&10%
Johnson's ..... ℔ doz., $11.00, 33⅓%
Penny's .. ℔ doz.,, Pol. $14; Jap'd, $16, 55%
Appleton's ..... ℔ doz., $16.00, 60&10%
Bonney's ..... 30&10%
Cincinnati ..... 25&10%

Diggers, Post Hole, &c.—
Samson, ℔ doz., $34.00 ..... 25@25&10%
Fletcher Post Hole Augers, ℔ doz., $36.00, 20@20&10%
Eureka Diggers ..... ℔ doz. $12.00@$13.00
Vaughan's Post Hole Auger, ℔ doz., $8.50@$9.50
Kohler's Little Giant ..... ℔ doz., $18.00
Kohler's Hercules ..... ℔ doz., $14.00
Kohler's Invincible ..... ℔ doz., $12.00
Kohler's New Champion .... ℔ doz., $8.00
Scheidler ..... ℔ doz., $18.00
Cronk's Post Bars, ℔ doz., $60.00, 50&5@50&10%
Gibb's Post Hole Digger ..... ℔ doz., $15.00
Gibbs' National ..... ℔ doz., $12.00
Gibbs' Columbia ..... ℔ doz., $13.00
Gibbs' Imperial ..... ℔ doz., $7.50
Shimer's Hollow Handle .. ℔ doz., $24.00, 50%
Gem, Improved ℔ doz.,. $9.00@$10.00 net

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers.
Money, ℔ doz ..... $18@$20
Waddel's Improved, ℔ doz $15.00

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Blacksmiths' ..... each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Breast, P. S. & W ..... 40&10%
Breast, Wilson's ..... 30&5%
Breast, Millers Falls ..... each $3.00, 25%
Breast, Bartholomew's .... each $2.50 25&10@40%
Ratchet, Merrill's ..... 20@20&5%
Ratchet, Ingersoll's 25%
Ratchet, Parker's ..... 20@20&5%
Ratchet, Whitney's ..... 20&10%
Ratchet, Weston's ..... 20@25%
Ratchet, Moore's Tripie Action .... 25@30%
Ratchet, Curtis & Curtis 30%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00 ..... 20&10%
Automatic Boring Tools ..... $1.75@$1.85
Chicopee Automatic Drill ..... 20&10%
Goodell Automatic Drills ..... 40&5%

Twist Drills—
Cleveland ..... 50&10&10%
Diamond, W. & B ..... 50&10&10%
Graham's Pat. Groove Shank .. 50&10&10%
Morse ..... 50&10&10%
New Process ..... 50&10&10%
Standard ..... 50&10&10%
Syracuse (Metal list) ... 50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Douglass Mfg. Co. ..... 20@20&10%
Disston's 50%
Buck Bros 30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles ..... 65&10%
No. 86 ..... 70&10%
Sargent & Co.'s
No. 1, Forged Blade ..... 60&10&10%
Nos. 20, 40 and 60 ..... 66⅔&10&10%
P. S. & W 70%
Knapp & Cowles
No. 1 ..... 60&20@70%
No. 2 ..... 60&10&10@70&5%
No. 3 ..... 60&5@60&10%
Nos. 4 and 00, Acme and Ideal .. 50&5@50&10&5%
Stearns' ..... 25&10&5%
Gay & Parsons 35%
Champion ..... 25&10%
Clark's Pat ..... 30@33⅓%
Ellrich's Socket and Ratchet .. 25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense .. ℔ doz., $6.00, 25&10%
Syracuse Screw-Driver Bits .... 30&30&5%
Screw Driver Bits ..... ℔ doz., 50@75¢
Screw Driver Bits, Parr's .. ℔ gross, $6.25
Fray's Hol. H dle Sets ... No. 3, $12.00, 45%
Cincinnati ..... 25&10%
Brace Screw Drivers ..... 25&10%
Buck Bros.' Screw Driver Bits .... 27½&5%
Goodell's Automatic 50%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
C. T. Williamson Wire Novelty Co. 50%

Egg Beaters—See *Beaters, Egg*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF.

	46 gr.	150 gr.	F.FF.
Kegs, ℔	4½¢	5 ¢	2½¢
½ kegs, ℔	4¾¢	5¼¢	2¾¢
¼ kegs, ℔	5 ¢	5¾¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6¼¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—
Door Lock ... Same dis. as Door Locks.
Brass Thread ..... 60@60&10%
Wood 25%

Expanded Metal—
List No. 5.
Lathing 10%
Fencing, Painted Sheets 20%
Netting, Painted Sheets 20%
Door Mats, Galvanized 25%
Window Guards, Paneled 15%
Tree Guards, Paneled 15%

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—
Mackrell's, ℔ doz., $1.00 ..... 20@20&10%
Van Sand's Screw Pat, $15 ℔ gr.. 60&10%
Van Sand's Old Pat., $15 ℔ gr. .. 55&10%
Austin & Eddy No. 2008 ..... ℔ gr., $9.00
Security Gravity ..... ℔ gr., $9.00
Zimmerman's ..... 50&10%

Faucets—
Fenn's 40%
Fenn's Cork Stops 33⅓%
Star 60%
Frary's Pat. Petroleum 60%
B. & L. B. Co.
West's Lock, Open and Shut Key .. 50%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list. 60%
Metallic Key, Leather Lined .... 60&10@60&10&10%
Cork Lined ..... 70&5@70&10%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots .... 50&10%
John Sommers'
Peerless Best Block Tin Key 40%
IXL, 1st quality, Cork Lined 50%
Diamond Lock 40%
Perfection, Fla. Red Cedar (in boxes) 40%
Boss Metallic Key 50%
Reliable Cork Lined 60%
O. K. Western Pattern Cork Lined .. 50%
No Brand, Red Cedar (in bbls.) .. 50&10%
Western Pattern Metal Key 40%
No Brand Metal Key 60%
Self Measuring
Enterprise, ℔ doz., $36.00 ..... 20%
Lane's ℔ doz., $36.00 ..... 25&10%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—
Derby and Cincinnati ..... 45&5%
Brewster ..... 50&5%

Files—
Domestic—
Nicholson Files, Rasps, &c. 60&10&5@60&10&10%
Nicholson (X.F.) Files 25%
Nicholson's Royal Files (Seconds) 75%
(extra prices on certain sizes.)
American ..... 66⅔&10@66⅔&10&5%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Arcade ..... 60&10&10@70%
Eagle ..... 60&10&10@70%
Other makers, best brands .. 60&10&5@70%
Fair brands ..... 70&10@70&10&10%
Second quality ..... 80@80&5%
Heller's Horse Rasps ..... 50&10@60%
McCaffrey's Horse Rasps ..... 50&10%
Chelsea Horse Rasps, Hand Cut .. 50&10%
Arcade Horse Rasps .... 60&10@60&10&5%
Trojan Horse Rasps ..... 60&10&5%

Imported—
Butcher ..... Butcher's list, 20%
Stubs ..... Stubb's list 25&30%

Fixtures Grindstone—
Sargent's Patent ..... 70&10%
Reading Hardware Co. ..... 80&10%
P., S. & W. Co. ..... 50&10%
Moore's 55%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Hay, Manure, &c. Asso. List. 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—
Saw—
White Vermont ..... ℔ gro.. $9.00@$10.00
Red, Polished and Varnished .... ℔ doz., $1.50, 25%

Screen, Window and Door—
Perter's Pat. Window and Door Frame, 33⅓&10%
Warner's Screen Corner Irons .. 33⅓&10%
33⅓&10%
Stearns' Frames and Corners. 25@25&10%
Cortland ..... 40@40&5%
Phillips' Window Screen Frames .... 50@50&5%
Bonanza Window Screens .. 50&5@50&10%
Empire Fancy Screen Doors, ℔ doz . $12

Freezers Ice Cream—
White Mountain ..... 60@60&5%
Granite State ..... 65@65&5%
Arctic ..... 70@70&5%
American 60%
Buffalo Champion ..... 65@65&5%
Shepard's Lightning ..... 65@65&5%
Gem 65%
Blizzard 70%
Double Action Crown 60%
Crown 60%
Star 60%
Peerless ..... 60&10%
Giant 60%
Zero 70%
Boss and Pet ..... 60&10&10&10%
Keystone, P., D. & Co., each, $1.50 .... 20%
Standard ..... 60@60&5%
Standard Double Action ..... 60@60&5%
Good Luck ..... 65@65&5%
Model ..... 60@60&5%
Confectioners' Machine 50%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fruit Pickers—
See *Pickers, Fruit.*

Fry Pans—See *Pans, Fry.*

Funnels—
Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro. 30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz. 25%

Furnaces, Soldering—
Burgess No. 3 Gem tin reservoir .. $7 00
Burgess No. 3 Gem, Copper reservoir, $8.50
Clayton & Lambert No. 1 Fire-Pot, complete $6.00

Fuse—Dis. 12½&15%. ℔ 1000 ft
Common Hemp Fuse, for dry ground. $2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr.. 4.80
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water 7.50
Large Gutta Percha Fuse, for water 12.00

Gates Molasses—
Stebbin's Pattern ..... 80&10@80&10&5%
Stebbin's Genuine ..... 60&10&10%
Stebbin's Tinned Ends ..... 40&10%
Lincoln's Pattern ..... 70@70&10%
Weed's ..... 20&10%
Boss, ℔ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 ..... 60&10&10%

Gauges—
Marking, Mortise, &c ..... 60&10%
Starrett's Surface, Center and Scratch, 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 20&10%
Barrett's Comb. Roller Gauge ... ℔ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale ..... ℔ doz. $5.00
Without Scale ..... ℔ doz., $4.00
Wire, Wheeler, Madden & Co. 10%
Wire, Morse's 25%
Wire, Brown & Sharpe's ..... 10@20%
Wire, P., S. & W. Co. ..... 10&10%

Gimlets—
Nail and Spike ..... 50&10&5%
Eureka Gimlets ..... 60&10%
Diamond Gimlets ..... ℔ gr $5.00
Double Cut, Shepardson's .... 45@45&5%
Doub e Cut, Ives' ..... 60@60&5%
Double Cut, Douglass' ..... 40&10%

Glue—
Le Page's Liquid ..... 25@25&5%
Upton's Liquid 35%
Improved Process ..... 25@25&5%
Dodd's Liquid Glue ..... 25@25&5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Fraser's ..... Keg ℔ 4¢, Pail ℔ 5¢
Fraser's, in boxes ..... ℔ gr $9.50
Dixon's Everlasting, in bxs. ℔ doz 1 ℔ $1.20; 2 ℔ $2 00
Dixon's Everlasting ... 10-℔ pails, ea. 85¢
Lower grades, special brands ... ℔ gr $5.50@$7 00
Axleine, tin boxes ..... ℔ gross $12.00
English Coach, wooden boxes ..... ℔ gross $8.50
English Coach, 5-℔ tin pails. ℔ doz, $3.50
Tiger, wooden boxes ..... ℔ gross $7.00
Tiger, 5-℔ tin pails ..... ℔ doz $2.85

Grindstones—
Family, regular list 60%
Family, Cleveland Stone Co. 20%

Grindstone Fixtures—See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
Sewing, Brass Fer. ℔ gr $1.75
Pat. Sewing, Short. ℔ doz ..... 45@50%
Pat. Sewing, Long ..... ℔ doz $1.20
Pat. Peg, Plain Top. ℔ doz ..... 40@45%
Pat Peg Leather Top. ℔ doz ..... 45@50%

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Halters—

Covert's Rope, Jute.....60&10&10&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ¼-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Saddlery Works Halters...33⅓%
Covert's Saddlery Works Horse and Cattle Ties 33⅓%
Covert's Saddlery Works Handy Web Halters.....33⅓%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.
Humason & Beckley.
Atha Tool Co. } ....50&10%
Verree
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular V. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75 .....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles, new list.....25&10
Peck, Stow & Wilcox.....35&40%
Sargent's.....40@40&10%

Heavy Hammers and Sledges—

3 ℔ and under...₱ ℔ 40¢ } 75&10@75&10 &5%
3 to 5 ℔..... ₱ ℔ 36¢ }
Over 5 ℔..... ₱ ℔ 30¢ }
Wilkinson's Smiths.....10½¢@11¢₱ ℔

Handcuffs and Leg Irons

—See *Police Goods.*

Handles—

Cross-Cut Saw Handles—

Atkins' new list.....40%
Champion.....15%
Ely's Perfection.....₱ doz., $3.00
Sensible.....40%

Iron, Wrought or Cast—

Door or Thumb.

Nos	0	1	2	3	4
Per doz...	$0.90	1.00	1.08	1.35	1.50

60&10&10%
Roggin's Latches.....₱ doz 30¢@35¢
Bronze Iron Drop Latches..₱ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Barn Door, ₱ doz $1.40.....10&10%
Chest and Lifting.....70@70&10%

Wood—

Saw and Plane.....40&10@50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd. ₱ gr 4.50
Hickory Firmer Chisel, large. ₱ gr 5.00
Apple Firmer Chisel, ass'd... ₱ gr 5.00
Apple Firmer Chisel, large... ₱ gr 6.00
Socket Firmer Chisel, ass'd.. ₱ gr 3.00
Socket Framing Chisel, ass'd. ₱ gr 5.00
} 40&10@50%
J. B. Smith & Co.'s Pat File.....50%
File, assorted..... ₱ gr 2.75 }
Auger, assorted..... ₱ gr 5.00 } 50%
Auger, large..... ₱ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....₱ set $1.25
Pat. Auger, Swan's.....₱ set $1.00
Hoe, Rake, Shovel, &c.....60@60&5%

Hangers—

Barn Door, old patterns.....70@70&5%
Barn Door, New England.....70@70&5%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Steel Track.....55%
Champion.....60&10%
Climax Anti-Friction.....55%
Zenith for Wood Track.....55%
Sterling.....50&10@60%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Kidder's.....50@50&10%
Boss .....60&10@60&10&5%
Best Anti-Friction.....60&10@60&10&5%
Duplex (Wood Track).....60&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Ideal.....50&10@50&10&5%
Terry's Solid.....50&10@60%
Terry's Shield .....50&10@60%
Terry's Wrought Single Strap.....50&10%
Cronk's Patent, Steel Covered.....50&10%
Carrier Steel Anti-Friction.....50&10%
Richards'.....30@30&10%
Lane's New Standard.....50@50&5%
Lane's Standard.....50&5@50&10%
Lane's Parlor.....40%
Warner's Pat.....20&10&10%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Cincinnati Nos. 1, $2.25; 3, $2.50; 4, $2.50.
Paragon Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15. 40&10@50%
Chicago Anti-Friction.....30&10%
Star .....40&10@40&10&5%
Barry 50%
Interstate.....50&10@60%
Pendulum, Payson's.....40@40&10%
Moody 45%
Economy, $6.00.....50&10%
Perfection .....50&10@50&10&5%
Lundy, Steel Parlor.....40%
Matchless .....50&10%
Magic .....45&10%
Wild West.....45&10%
Moore's Elevator.....33⅓%
Moore's Baggage Car Door 33⅓%
Moore's Railroad.....55%

Harness Snaps—See *Snaps.*

Hatchets—

American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's ..... } 40 & 10 @ &5%
Mann's.....
Peck's ..... } 40 & 10 @ &5%
Underhill's.....
Fayette R. Plumb.....
C. Hammond & Son.....
Kelly's .....
Buffalo Hammer Co.....
Sargent's & Co .....
P. S. & W Co ..... } 50 @ 50 &10%
Schulte, Lohoff & Co.....
Ten Eyck Edge Tool Co.....
Collins..... 10%

Hay and Straw Knives

See *Knives.*

Hinges—

Blind Hinges—

Parker..... 75@75&10%
Huffer..... 60%
Clark's Nos. 1, 3, 5, 40 and 50 80&5@80&10%
Clark's Mortise Gravity.....60%
Sargent's, Nos. 1, 3, 5, 11, 12, 13.75@75&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's.
Noiseless..... .....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's, Lull & Porter, Nos. 0, 1, 1¼, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₱ doz $4.20, 60@60&10%
N. E.....₱ doz $7.80, 60@60&10%
N. E. Reversible ₱ doz..$5.60, 6(@60&10%
Clark's, Nos. 1 2, 3.....60&10&5%
N. Y. State... .....₱ doz $4.90,60@60&10%
Automatic.....₱ doz $12.50, 50%
Shepard's.. .....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts....40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's Japanned.....35%
Bommer's All other Kinds.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent Checking 15%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....65%
American, Gem and Star.....20%
Oxford.....20%
Royal.....66⅔%
Reliable.....60%
Champion.....60%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ₱ gro., $30.....50&5%
Samson.....60@60&7½%
Wiles', No. 1, ₱ gro., $16; No. 2.....$13
Devore, No. 1.....₱ gro , $13.00
Rex.....₱ gro., $13.00
Freeport.....₱ gro., $12.00
New Idea Nos. 1 and 10....₱ gross $13.00
New Idea Dbl. Acting.....45%
Ideal No. 3.....₱ gross $10.00
Stearns' Noiseless Floor Hinge, ₱ set, $5.00.....20&10@30%

Extra 5@10% often given.

Wrought Iron Hinges—

List February 14, 1891.
Strap and T.....50&10@50&10&10%
Corrugated Strap and T.....50&10&5%
Screw Hook and Strap..... { 6 to 12 in., ₱ ℔.. 4¢ 14 to 20 in., ₱ ℔..3½¢ 22 to 36 in., ₱ ℔.. 3¢
Screw Hook and Eye.... { ⅜ in., ₱ ℔ 7½¢ ½ in., ₱ ℔ 5½¢ ⅝ in., ₱ ℔ 4½¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 252 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10¢
Plate Hinges { 8, 10 & 12 in., ₱ ℔.....5¢
"Providence" { over 12 in. ₱ ℔.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat } 60&5
Am. Axe and Tool Co., S. & O. Pat... } @60&10%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c... .....70@70&5&2%
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%
Magic .....₱ doz $4.00

Hog Rings and Ringers—

See *Rings and Ringers—*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow-Ware—

See *Ware, Hollow.*

Holders—

Bag—

Sprengle's Pat.....₱ doz $18....60%

Bit—

Extension.
Barber's, ₱ doz $15.00.....40@40&10%
Ives, ₱ doz $20.00.....60&5@60&10%
Diagonal.....₱ doz $24.00, 40%
Angular.....₱ doz $24.00, 40&5%

File and Tool—

Balz Pat.....₱ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—

Motley's Adj. Sash, Medium Size..... ₱ doz $1.20, 40%

Hooks—

Cast Iron—

Bird Cage, Sargent's List ... } 60&10&10%
Bird Cage, Reading ..... }
Clothes Line, Sargent's list.. }
Clothes Line Moore's..... .....70%

Line, Reading list. 60&10@60&10&10%
Ceiling, Sargent's list..... ...55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading. 50&10@50&10&10%
Coat and Hat, Moore's.....70%

Wrought Iron—

Cotton.....₱ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg. Co....50%
Wrought Staples Hooks, &c. See Wrought Goods

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt .....80&15@80&20%
Atlas, Coat and Hat.....65%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Bright Wire Goods—See Wire.

Miscellaneous—

Grass, No. 2, $2.00; No. 3, $2.10; No. 4, $2.25
Nolin's Grass..... ₱ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—

See *Shoes, Horse.*

Hose, Rubber—

Competition, Fair quality.....75@75&10%
Competition, Low Grade .....80@80&10
Standard.....70&10&70@10&5%
Extra.....60&10@60&10&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40&5@50%
N. Y. B. & P. Co., Dundee.....60@60&5%
Cotton Garden, ¾ in., coupled: Fair Quality, ₱ ℔.....7¢ Good Quality, ₱ ℔.....8½¢

Huskers—

Blair's Adjustable.....₱ gr $8.00
Blair's Adjustable Clipper. ....₱ gr 7.00
Hubbard's Solid Steel.....₱ gr 4.50

Indurated Fiber Ware—

See *Ware, Indurated Fiber.*

Irons.

Sad—

From 4 to 10, at factory....₱ 100 ℔, $2.30@$2.40
Self-Heating.....₱ doz $8.00
Self-Heating Tailors'.....₱ doz $18.00
Mrs. Potts' Sad Irons, per set:

No.	50	55	60	65
Small lots.....	.90	.85	1.05	.95

Crown Improved.....60&10%
Ideal Irons, new list...50&10@50&10&10%
Salamander Irons.....25%
B. B. Sad Irons, ₱ ℔.....3@3½¢
Chinese Laundry (N.E.Butt Co.).8½¢, 15%
New England.....5¢, 20@20&5%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%
National Self-Heating..... .....30%

Soldering—

Soldering Coppers .....₱ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886, 35&2%
Tinker's Dread..₱ doz $1.75; ₱ gro. $18

Pinking—

Pinking Irons, ₱ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—

Daisy.....33⅓%
Victor.....33⅓%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Stamped Brass Kettles.. .....₱ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—

Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c..... .....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.

Wilson's Butcher Knives, List Dec 8, 1890.....25%
Ame's Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AA A1 Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in. $3.80, &c.
Ames' Shoe Knives, ...25@30%
Ames' Bread Knives, ₱ doz $1.50, 15@20%
Moran's Shoe and Bread.....20@20&10%
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—

Bradley's.....10%
Wadsworth's .....25@25&10%

Drawing—

Witherby..... } ...75@75&10&5%
P. S. & W..... }
Mix..... }
New Haven..... }
Merrill.....60&10@60&10&5%
Douglass..... 75&75&5%
Watrous .....15&10@25%
L & L J. White.....20&5%
Bradley's.....35%
Adjustable Handle..... 25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, from jobbers....$8.00@$9.00
Wadsworth's.....40&½@40&10%
Carter's Needle...₱ doz. $11.00@$11.50
Heath's.....₱ doz. $13.00@$ 3.50
Nolin's Hay.. .....₱ doz. $7.00@$8.00

Mincing—

Am. (2d quality), ₱ gr., 1 blade, $7 2 blades, $12; 3 blades, $18..... net
Lothrop's..... 20&10%
Smith's, ₱ doz., Single, $2; Double $3 45@50%
Knapp & Cowles..... 50&10@60%
Buffalo Adjustable....₱ doz. $3.00, 33⅓%

Knobs—

Door, Mineral..... .....60@65%
Door, Por. Jap'd..... 70@75%
Door, Por. Nickel..... $2.00@$2.25
Door, Por. Plated Nicke..l... $2.00@$2.25
Drawer, Porcelain... .60&10@60&10& 0%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885 ..40%
Base, Rubber Tip..... 70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's..... 70&10%
Picture, Hemacite..... 35&5%
Shutter, Porcelain..... 65&10%
Carriage, Jap..... .....₱ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladders.

Davies Extension and Single..... 20&5%

Ladies—

Melting, Sargents'..... .....60@60&5%
Melting, Reading..... 35&10%
Melting, P., S. & W..... 35&10@40%
Melting, Warner's..... 30%

Lanterns—

Tubular—

Regular, with Guard.....₱ doz $3.50
O. K., with Guard.....₱ doz $3.75
Side Lift, with Guard.....₱ doz $4.00
Square Lift, with Guard.....₱ doz $4.25
Anti-Friction, with Guard.....₱ doz $4.5
Brass Plated, Sq. Lift, Guard.₱ doz $5.5
Cop. Plated, Sq. Lift, Guard..₱ doz $ 5.

Bull's Eye Police—

2¾-inch regular.....₱ doz $3.60
3-inch regular.....₱ doz $3.90
2¾-inch flash light.....₱ doz $4.00
3-inch flash light..... .....₱ doz $4.50

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Humason, Beckley & Co.'s.....70%
Sargent's..... .....70&10@70&10&10%
Hotchkiss..... .... 30%
Peck, Stow & W. Co..... 60&10%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Wollensak's:
Class 3 and 4, Bronzed Iron..... . 60%
Class 3 and 4, Bronze Metal..... 50%
Class 3 and 4, Brass..... 50%
Skylight Lifters..... 35%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods..... 60@60&10%
Brass, Real Bronze or Nickel Plate..30%
Excelsior..... .....50&10&2%
Shaw's..... 50&10%
Payson's:
Universal..... 60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—

Cotton and Linen Fish..... 50%
Chalk..... 60%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25..... 25%
Cotton Chalk 55%
Samson Cotton, No. 4, $2; No. 4½, $2.50; No. 5, $3.00..... 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro..... 25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes..Nos. 18 19 20
100 ft..... $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..₱ doz $7.50..20%
Ossawan Mills, Chalk, Twisted, 60%; Chalk, Soft Braided, 50% Chalk, Braided, 25%.

Links, Open—

Terry's—per gro.:

Nos.....	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List, March '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39... ..... 40%
Deitz, Nos. 51 to 63..... .....40&10%
Deitz, Nos. 87 to 96.... .. 30%
Champion Night Latches..... .. 40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk..... 25&10%
Champion Cab. and Combin. . 33⅓%
Yale..... net prices
Romer's..... 25%

Door, Locks, Latches, &c

R. & E. Mfg. Co., list Mar.20, 1889..... } 60&10@70% Much lower net prices often made
Mallory, Wheeler & Co., list July, '88..... }
Sargent & Co., List Aug. 1, '88 }

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Britain, Graham & Mathes, list Jan. 1890.....60&10&10%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Warner's Burglar Proof, ₩ doz. $8.00, 50%

Elevator—

Moore's.....33⅓%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list....50&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505.....15%
A. E. Deitz.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₩ doz $9, 50@50&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Scandinavian.....90&40%
E. T. Fralm's Keystone Scandinavian, 1010 line.....90&40%
120 line.....90&25%
109 line.....65%
510 line.....70&10%
225, 610 and 209 lines.....70%
All other numbers.....50&5%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker, Barry & Co.
No. 1010 line.....90&5%
No. 41 line.....50%
No. 61 line.....60%
No. 21 line.....80%

Sash, &c.—

Clark's No. 1, $10; No. 2, $8 ₩ gr.....33⅓%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₩ gr $4.00
Common Sense, Nickel Plated, ₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Ives' Patent.....60&10&5@60&10&10%
Fish (Liesche's pat.), No. 100, ₩ gr., $8; No. 105, ₩ gr., $10.....50%
Davis Bronze. Barnes Mfg. Co.....60%
Champion Safety list January, 1893.70&5%
Security.....70%
Giant, list Jan., 1892.....70&5%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—

See *Tools, Lumber.*

Lustro—

Four-ounce bottles.....₩ doz, $1.75; ₩ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.
Douglas		$5.50	$6.75.....50%
Snell's, Rice's Pat...	5.50	6.75.	40&10&10%
Jennings'	5.50	6.75.	50@50&5%
Other Machines..	2.25	2 50	
Phillip's Patent with Augur	7.00	7.50	
Millers Falls		7.50	.....25%
Boss, Carpenters'	3.60		
Boss, Ship Bidrs'.	3.85		

Fluting—

Knox, 4½-inch Rolls.....$3.25 each
Knox, 6-inch Rolls.....$3.60 each } 35%
Eagle, 3½-inch Rolls, $2.15.....35%
Eagle, 5½-inch Rolls, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6 50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal, ₩ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25.....30%
Shepard Hand Fluter, No. 85, per doz $15.50.....40%
Shepard Hand Fluter, No. 110, ₩ doz $11.00.....40%
Shepard Hand Fluter No. 95, ₩ doz $3.00.....40%
Combined Fluter and Sad Iron, ₩ doz $15.00.....30%

Hoisting—

Moore's Hand Hoist, with Lock Brake.20%
Moore's Anti-Friction Differential Pulley Block.....20%
Moore's Rope Differential Pulley Block.....60%
Energy Mfg. Co.'s.....25%
See also *Blocks.*

Washing—

Anthony Wayne, ₩ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American.....₩ doz $36.00
Western Star ₩ doz, No. 2, $36; No. 3 $30
Weisell.....₩ doz $54.00
Fair and Square.....₩ doz $42.00

Mallets—

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks—Regular list. 60&10@60&10&5%

Measures—

Standard Fibreware, No. 1, peck ₩ dozen, $3.50; ½-peck, $3.00

Meat Cutters—

See *Cutters, Meat.*

Menders, Harness—

Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—

Box and Side, List Jan. 1, 1888..60@60&5%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%
Waddel's New Box Mills, Ideal Brand, New List.....60%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Best Machines: 10-in., $4; 12-in., $4.50; 14-in., $5; 16-in., $5.50; 18-in., $6.
Low-Grade Machines: 10-in. $3; 12-in., $3.25 14-in., $3.50 each

Muzzles—

Safety.....₩ doz, $3.00, 25%

Nails.—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92.....85&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

	Nos. 6	7	8	9	10	
American	9½	9½	9½	9½	9½	net
Ausable	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	.30&5%
Essex	28¢	2¢	25¢	24¢	23¢	40&10@50%
Lyra	9½			9½	9½	net
Snowden	9½		½	9½	9½	net
Standard	23¢	21¢	20¢	19¢	18¢	.35%
Vulcan	23¢	21¢	20¢	19¢	18¢	.25%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	40%
A. C.	25¢	23¢	22¢	21¢	21¢	40&10%
Maud S.	25¢	23¢	22¢	21¢	21¢	50&10&5%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&2%
Champion	25¢	23¢	22¢	21¢	20¢	10&10&10%
Capewell.	19¢	18¢	17¢	16¢	16¢	..10&5%
Anchor	23¢	21¢	20¢	19¢	18¢	.35%
Western	23¢	21¢	20¢	19¢	18¢	.50%
Empire Bronzed					13@14	₩ ℔

Picture—

Brass Head, Sargent's list.....60@60&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.	
Hot Pressed	5.80¢	6.50¢	off list
Cold Punched	5.00¢	5.10¢	off list

In packages of 100 ℔, add 1-10¢ ₩ ℔, net; in packages less than 100 ℔, add ½¢ ₩ ℔, net.

Oakum—

Best or Government.....₩ ℔ 6¾@7¼¢
U. S. Navy.....₩ ℔ 5¾@6¢
Navy.....₩ ℔ 5¢@5¼¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Steel, Draper & Williams.....50%

Openers, Can—

Messenger's Comet.....₩ doz $3.00, 25%
American.....₩ gross $2.75@$3.00
Duplex.....₩ doz 25¢, 15@20%
Lyman's.....₩ doz $3.75, 20%
No. 4, French.....₩ doz $2.25, 55@60%
No. 5, Iron Handle.....₩ gr $6.00, 45@50%
Eureka.....₩ doz $2.50, 10%
Sardine Scissors.....₩ doz $2.75@3.00
Star.....₩ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 66⅔@70%
Excelsior, No. 1 $2.50; No. 2, $1.50....40%
World's Best ₩ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₩ doz $3.00.....55&5%
Domestic, ₩ doz $2.00.....45%
Champion, ₩ doz $2.00.....50%
Moore's.....70%

Packing, Steam—

Rubber—

Standard, fair quality.....70@70&10%
Inferior quality.....75@80%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₩ ℔ 80¢.....25@25&5%

Miscellaneous—

American Packing.....10¢@11¢ ₩ ℔
Russia Packing.....14¢ ₩ ℔
Italian Packing.....13¢@14¢ ₩ ℔
Cotton Packing.....15¢@17¢ ₩ ℔
Jute.....7¢@8¢ ₩ ℔

Palls—

Creamery—

S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 ₩ doz.....5%

Galvanized—

	Quarts	10	12	14	
Hill's Light Weight, ₩ doz.		$2.75	3.00	3.25	
Hill's Heavy Weight, ₩ dz.		3.00	3.25	3.75	
Heiwig's		2.50	2.75	3.00	
Sidney Shepard & Co.		2.50	2.75	3.00	
Iron Clad		2.50	2.75	3.00	
Fire Buckets		2.75	3.25	3.50	

Buckets—See Well Buckets.

Indurated Fiber Ware

Star Pails, 12 qt.....₩ doz $4.20
Milk, 14 qt.....₩ doz $5.40
Stable, 14 qu.....₩ doz $6.00
Fire Pails, deep.....₩ doz $4.80
Fire Pails, round bottom, ₩ doz $5.40
} 25%

Standard Fiber Ware—

	Plain.	Decr'd
Water Pails, 12 qt., ₩ doz.	$3.15	$3.75
Dairy Pails, 14 qt., ₩ doz.	3.75	4.25
Fire Pails, No. 1, 12 qt., ₩ doz	3.75	
Fire Pails, No. 2, 14 qt., ₩ doz	4.25	
Sugar Pails	5.50	6.00
Horse Pails	4.50	
Buggy Pails	3.50	
Slop Jars (bal. trap)	7.50	8.50
Chamber Pails, 14 qt.	6.00	7.00

Pans—

Dripping—

Small sizes.....₩ ℔ 5½¢
Large sizes.....₩ ℔ 5¢
Silver & Co. (Covered).....40%

Fry—

Standard List:

No.	0	1	2	3	4
₩ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
₩ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....66⅔%

Dust—

Steel Edge, No. 1.....₩ doz $1.75

Roasting and Baking—

Columbian, S. S. & Co.: Nos. 10, $2: 20, $2.25; 30, $2.50 each.....60&10%

Paper and Cloth—

Sand and Emery—

List April 19, 1886.... 50&10@50&10&10%
Sibley's Emery and Crocus Cloth.....30%

Parers—

Apple—

Advance.....₩ doz $4.75
Baldwin.....₩ doz 5.25
Bonanza.....each 5.00
Daisy.....₩ doz 4.00
Dandy.....each 7.50
Eclipse.....₩ doz 4.00
Eureka, 1888.....each 16.00
Family Bay State.....₩ doz 12.00
Favorite.....₩ doz 5.00
Gold Medal.....₩ doz 4.00
Ideal.....₩ doz 4.00
Improved Bay State....₩ doz 27.00@30.00
Little Star.....₩ doz 4.50
Monarch.....₩ doz 13.50
New Lightning.....₩ doz 5.50
Oriole.....₩ doz 4.00
Penn.....₩ doz 3.00
Perfection.....₩ doz 4.00
Pomona.....₩ doz 4.00
Rocking Table.....₩ doz 6.00
Turn Table.....₩ doz 4.50
Victor.....₩ doz 13.50
Waverly.....₩ doz 4.00
White Mountain.....₩ doz 4.00
Reading 72.....₩ doz 4.25
Reading 78.....₩ doz 7.00

Potato—

White Mountain.....₩ doz $4.50
Antrim Combination.....₩ doz $5.50
Hoosier.....₩ doz $13.50
Saratoga.....₩ doz $5.50

Pencils—

Faber's Carpenters'.....high list 50%
Faber's Rorad Gilt.....₩ gro $5.25
Dixon's Lead.....₩ gro $4.50
Dixon's Lumber.....₩ gro $6.75
Dixon's Carpenters'.....10%

Pencils, Soapstone—

See *Crayons.*

Pickers, Fruit—

Prize Fruit Pickers.....50%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10&5@60&10&10&5%

Picture Nails—

See *Nails, Picture.*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co.'s, $17 and $18.....60&10%
Peck, Stow & W. Co....50&10@50&10&5%

Curtain—

Silvered Glass.....net
White Enamel.....net

Escutcheon—

Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List April 13, 1893.

1¼ and under, Plain.....57½&10%
1¼ and under, Galv.....50&10%
1½ and over, Plain.....67½&10%
1½ and over, Galv.....57½&10%
Boiler Tubes, list Oct. 24, 1892.....65&10%
Casing, list Nov. 16, 1892.....52½&10%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%
Cold Drawn Seamless Steel Tubing...50%

Planes and Plane Irons—

Wood Planes—

Molding.....40&10%
Bench, First quality.....45&10%
Bench, Second quality.....50&10%
Bailey's (Stanley R. & L. Co.) ..50&10%

Iron Planes

Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steers' Iron Planes.....50@50&5%
Meriden Mal. Iron Co.'s.....50@50&5%
Davis' Iron Planes.....50@50&5%
Birmingham Plane Co.....60@60&5%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....50@50&5%
Sargent's.....60@60&10%
Standard Tool Co.....50@50&5%

Plane Irons—

Butcher's.....$5.00@$5.25 to 2
Buck Bros.....80%
Auburn Thistle.... } .30&10@30&10&10%
Ohio.... }
Sandusky.....
L. & I. J. White.....25%
Stanley R. & L. Co.....50&10%

Plates—

Felloe.....₩ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent.....60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in, $21.00 ₩ doz.....40%
Humason & Beckley Mfg. Co. 50@50&10%
Lindsay's Giant.....33⅓%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated. 60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P., S. & W. Cast Steel.....50%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₩ doz, $12.00... 30&5%
Cronk's 8 in., $15.00; 10 in.....$20
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels

Regular List.....75&10@75&10&10%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Cook's.....40&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis Inclinometers.....10&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₩ doz. No. 1, $6.00; No. 2, $9.00.....33⅓%
Silver & Co., 6-Ring, ₩ doz, $4.00; 3-Ring.....$2.00

Pokes, Animal—

Bishop s I. X. L.....₩ doz $6.00
Bishop's Monarch.....₩ doz $4.50
Bishop's Pioneer.....₩ doz $4.00
Bishop's American.....₩ doz $3.00
Eagle, Double Stale.....₩ doz $5.75
Eagle, Single Stale.....₩ doz $3.75
Buckeye, Single Stale.....₩ doz $2.75
Bolding.....₩ doz $6.00
Metallic Horse Poke.....₩ doz $6.00

Police Goods—

R. I. Tool Co., Handcuffs, $15.00 ₩ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₩ doz 10%
Tower's.....25%
Daley's Improved Handcuffs; 2 Hands, Polished, ₩ doz, $48.00: Nickeled, $57.00: 3 hands, Polished, ₩ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish—

Metal—

Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Stove—

Joseph Dixon's.....₩ gro, $6.00, 10%
Gem.....₩ gro, $4.50, 10%
Gold Medal.....₩ gro, $6.00, 25%
Lustro.....₩ gro, $4.75
Ruby.....₩ gro, $3.75
Rising Sun, 5 gro lots.....₩ gro, $5.50
Dixon's Plumbago.....₩ ℔ 8¢
Boynton's Noon Day.....₩ gro, $13.00
Parlor Pride Stove Enamel, ₩ gro,
Yates' Liquid, 2 3 5 10 gal
₩ gal. .$0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ₩ ℔ 12½¢
Jet Black.....₩ gro $3.50
Japanese.....₩ gro $3.50
Fireside.....₩ gro $2.50
Diamond O. K. Enamel.....₩ gro $19.00
Bonnell's Liquid Stove Polish, ₩ gro $9.00
Bonnell's Paste Stove Polish ₩ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₩ gro $6.00
Crown Paste.....₩ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ₩ ℔ 12¢
Black Flag.....₩ gro $7.20
Black Flag, 5 and 10 ℔ pails.. ₩ ℔ 12¢
Black Flag, liquid, in bottles, ₩ gro $8.00
Diamond Rock Nickel Cleaner ₩ gro $10 20
Raven Liquid, 6 oz. bottles.. ₩ gro $8.00
Raven Liquid, 8 oz. bottles.. ₩ gro $9.00
Raven Water Polish, large boxes.... ₩ gro $7.20
Raven Paste in 5 lb. pails (cases of 6 pails), ₩ ℔ 10¢

Poppers, Corn—

Round or Square,
1 qt.....₩ doz $1.00: ₩ gr $8.00
1½ qt.....₩ doz $1.00: ₩ gr $9 00
2 qt.....₩ doz $1.50: ₩ gr $14.00

Post Hole and Tree Augers and Diggers—

See *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Powder—

In Canisters—

Fine Sporting, 1 ℔ each.....$0.90
Duck, 1 ℔ each.....60
Rifle, 1 ℔ each.....3
Rifle, ¼ ℔ each.....18

In Kegs—

Rifle, 25-℔ kegs.....$3.50
Rifle, 12½-℔ kegs.....2.00
Rifle, 6¼-℔ kegs.....1.15
Duck, 25-℔ kegs.....11.00
Duck, 12½-℔ kegs.....5.75
Duck, 6¼ ℔ kegs.....3.00

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....25%
Lenis.....₩ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....₩ doz $2.75

Pruning Hooks and Shears—See *Shears.*

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Pullers Nail—
Scranton.. ..... ₩ doz., $18.00, 33⅓%
Giant, No. 1..... ₩ doz., $18.00, 10%
Giant, No. 2..... ₩ doz., $15.00, 10%
Pelican..... ₩ doz., $9.00, 25%
Eclipse..... ₩ doz., $24.00, 40%
Economy..... ₩ doz., $6.00

Pulleys—
Hot House, Awning, &c.....66⅔@70%
Japanned Screw.....60&10&10%
Brass Screw.....70%
Japanned Side.....60&10&10%
Moore's Side, Anti Friction.....50%
Moore's Ceiling or End, Anti-Friction 40%
Moore's Dumb Waiter, Anti-Friction 50%
Moore's Electric Light 33⅓%
Japanned Clothes Line.....60&10%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5.70.....50%
Hay Fork, "F" Common and Patent Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating....60%
Hay Fork, Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00.....40%
Shade Rack.....45%
Tackle Blocks—See Blocks.
Shepard's Niagara, No. 25..₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense.....60%
Empire.....60%
Ideal, Nos. 2, 4, 10 & 15 } 60% less 1¢ ₩
Acme } doz net.
Star.....
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. ..₩ doz. 22¢ net.

Pumps—
Cistern, Best Makers..... .60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddler's or Drive, good..₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Springfield Socket..65%
Spring, good quality..₩ doz., $2.50@$2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Check.....55%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44.....55%
Tinners' Hollow Punches, P., S. & W. Co.....20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches.....20&2%
Niagara Solid Punches.....55%

Rail—
Sliding Door, Wr't Brass....₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron..₩ ft., 7¢
Sliding Door, Iron, Painted..₩ ft., 4¢, 40%
Barn Door, Light..In. ¾ ⅝ ½
Per 100 feet.....$2.00 2.50 3.10, 10%
B.D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet.....$3.15 2.70 3.25 Net
Terry's Steel Rail.....₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot.....50&2%
Carrier, double braced, Steel Rail, ₩ foot.....3½@4¢
Lundy Parlor Door, Planed Edge, ₩ ft.7¢
Moore's Steel Rail.....25&10%
Moody Steel Rail ₩ ft., 5¢.....45%

Rakes—
Cast Steel, Association g'ds..70@70&5&2%
Cast Steel, outside g'ds,.....70@70&5&2%
Malleable.....70@70&5%
Gibbs' Lawn Rake.....₩ doz., $4.90
Gibbs' Canton Lawn Rake...₩ doz., $3.75
Gibbs' Acme Lawn Rake....₩ doz., $4.75
Gibbs' Favorite Lawn Rake. ₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1..... ₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake.....₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless.....65%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—
J. R. Torrey Razor Co.....20%
Wostenholm and Butcher, $10 to $....10%
Jordan's AAAI, new list.....Net
Jordan's Old Faithful, new list.....Net
Galvanic..... ₩ doz., $15.00
Electric Cutlery Co..... .....Net
Campbell Cutlery Co..... .....50%

Razor Strops—
See *Strops, Razor.*

Registers —
Moore's Japanned.....75%
Moore's Electroplated..... .....75%
Moore's Bronze Finishes.....70%
Moore's Solid Bronze.....65%
Moore's Stove Pipe... .....33⅓%

Rings and Ringers—
Bull Rings—
Union Nut Co.....55%
Sargent's.....75&10%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%
Hog—
Top of the Hill Ringers.....₩ doz $2.00
Top of the Hill Rings.....₩ doz $1.25
Hill's Improved Ringers.....₩ doz $1.25
Hill's Old Style Ringers.....₩ doz $1.12½
Hill's Tongs.....₩ doz $3.00
Hill's Rings.....₩ doz bxs $1.00
Perfect Rings.....₩ doz bxs $1.50
Perfect Ringers.....₩ doz $2.15@$2.25
Blair's Hog Ringers.....₩ doz $2.00
Blair's Hog Rings.....₩ doz 90¢@$1.00
Champion Ringers.....₩ doz $2.00
Champion Rings, Double.....₩ doz $2.25
Brown's Ringers.....₩ doz $2.00
Brown's Rings.....₩ doz $1.15@$1.25
Electric Hog Rings.....₩ doz boxes $1.50
Electric Hog Ringers.....₩ doz $2.00
Major Rings.....₩ doz $1.25
Major Ringers.....₩ doz $2.00

Rivets and Burrs—
Norway Iron, list Nov. 17, '87....60&10%
Second quality.....70%
Copper .....60@60&10%
Coppered Iron, Betina Brand.....50&5%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—
Stair, Brass.....25@30%
Stair, Black Walnut..... ₩ doz 40¢

Rollers—
Barn Door, Sargent's list. ....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.... . .....70%
Moore's Barn Door Stay.....50%
Thompson Mfg. Co.'s Lawn Rollers ..30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ¼¢@½¢ on large lots; terms, 1½% for cash.
Manila, 7-16 in. diam. and larger ₩ ℔ 8½¢
Manila.....½ in. ₩ ℔ 9 ¢
Manila.....¼ and 5-16 in. ₩ ℔ 9½¢
Manila, Tarred Rope..... ₩ ℔ 8 ¢
Manila, Hay Rope, Medium.... ₩ ℔ 8¼¢
Sisal.....7-16 inch and larger ₩ ℔ 6¾¢
Sisal.....⅜ in. ₩ ℔ 7¼¢
Sisal.....¼ and 5-16 in. ₩ ℔ 7¾¢
Sisal, Hay Rope..... ₩ ℔ 6¾¢
Sisal, Tarred Rope..... ₩ ℔ 6¼¢
Sisal, Medium Lath Yarn..... ₩ ℔ 6½¢
New Zealand..7-16 in. & larger ₩ ℔ 6½¢
New Zealand.....⅜ inch, ₩ ℔ 6¾¢
New Zealand..¼ and 5-16 inch, ₩ ℔ 7¼¢
New Zealand, Hay Rope..... ₩ ℔ 6½¢
New Zealand, Tarred Rope..... ₩ ℔ 6 ¢
Cotton Rope..... ₩ ℔ 13½@16¢
Jute Rope..... ₩ ℔ 6½@7¢

Wire—
List February, 1892. All kinds.....45%

Rules—
Boxwood.. .....80&10&10@80&10&10&10%
Ivory.....50&10%
Starrett's Steel Rules and Straight Edges.....25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—
See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—*See Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*
Note.—Extra 5@10% often given.

Saws—
Disston's Circular.....45@45&5%
Disston's Cross Cut, list Jan. 1,'93.40&10%
Disston's Hand.....25%
Woodrough & McParlin.
Hand, Panel and Rip.....25&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....30&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Atkins' Circular..... .....50&10%
Atkins' Cross Cuts, new list. 40%
Atkins' Mulay, Mill and Drag.....50&10%
Atkins' One-Man Saw.....40%
Atkins' Wood Saws.....40%
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip.....25@25&5%
Peace Cross Cuts, list Jan. 1,'93...45&10%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts, list Jan. 1,'93.45&10%
Richardson's Hand, &c..... .25@25&5%
C E. Jennings & Co.'s 25%

Hack Saws—
Griffin's, complete.....40&10@50
Griffin's Hack Saw Blades.....40&10@50
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—
Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab Makers'$15,25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—
Hatch, Counter, No. 171, good quality ₩ doz $18.00@$19.00
Hatch, Tea, No. 161....₩ doz $6.50@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales.....50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10
Riehle Bros.' Platform.....40%

Scale Beams—
See *Beams, Scale.*

Scissors, Fluting.....45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.00..... .....30&10%
Box, 1 Handle.....₩ doz $2.25@$2.50
Box, 2 Handle.....₩ doz $2.75@$3.00
Defiance Box and Ship..... .....20&10%
Foot..... .....50&10&60%
Ship, Common..... ....₩ doz $3.50 net
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—
See *Drivers, Screw.*

Screws—
Bench and Hand—
Bench, Iron..... ....55&10@55&10&10%
Bench, Wood, Beech.... .....₩ doz $2.25
Bench, Wood, Hickory..... .....20&10%
Hand, Wood..... .....25&10@25&10&5%
Hand, Grand Rapids, list..... .....35%
Coach, Lag and Hand-Rail—
Lag, Blunt Point, list Jan. 1, 1890..... 80@80&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890..... .....80@80&5%
Hand Rail, Sargent's... .....70&10%
Hand Rail, H. & B. Mfg o....70&10@75%
Hand Rail, Am. Screw o.....75%
Jack Screws—
Jack Screws, Millers Falls list.50@50&10%
Jack Screws, P., S. & W.....35%
Jack Screws, Sargent.....70%
Jack Screws, Stearns'.....40@40&10%
Cork—
Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Williamson's Forged Worm, Applewood Handle, ₩ doz., $5.00; Rosewood, $5.50 .....40%
Detroit Cork Screw Co.....33⅓%
Machine—
Flat Head Iron.....65%
Round Head Iron.....60%
Wood—
List January 1, 1891.
Flat Head Iron.....70%
Round Head Iron.....65%
Flat Head Brass.....70%
Round Head Brass.....65%
Flat Head Bronze.....70%
Round Head, Bronze: ...65%
Extra 10& 10% often given.
Rogers' Drive Screws.....82½%
Scroll Saws—See *Saws, Scroll.*
Scythes—
Grain.....40&5@40&10%
Grass.....40&10&50%
Scythe Snaths—
See *Snaths, Scythe.*
Sets—
Awl and Tool—
Aiken's Sets, Awls and Tools, No. 20, ₩ doz$10.00..... .....60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....45%
Millers Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50...70&10&5%
Nail—
Square.....₩ gr. $4.00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr. $12, 20%
Rivet—
Regular list..... .....70%
Saw—
Stillman's Genuine....₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $6.50.....55@55&10%
Common Lever.....₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00.....40&20%
No. 11, $16.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00..40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
Leach's..No. 0, $8.00; No. 1, $15...15@20%
Nash's.....20&10@20&10&10
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat.45%
Bemis & Call Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Co.'s Cross Cut.....30&5%
Aiken's Genuine.....$13.00, 60@60&10%
Aiken's Imitation.....₩ doz $3.00@$3.25
Hart's Pat. Lever.....20%
Disston's Star..... .....25%
Leopold..... .....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10@50%
Avery's Saw Set and Punch.....50%
Kohler's Royal.....₩ doz $7.00
Kohler's Giant Royal.....₩ doz $12.00
Crescent..... ₩ doz $3.00
Lloyd's Acme.....₩ doz $15, 40&10%
Taintor Positive.....₩ doz $18, 50%
Sharpeners, Knife—
Larkins'.
Applewood Handles...₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%
Shaves, Spoke—
Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's ₩ doz. $9.00.....25%
Shears—
American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers..₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality.....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper..... .....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Hatch Cutlery Co., Solid Steel Forged.60%
Davenport Cutlery Co.....60@60&10%
Clauss brand, Japanned.....70%
Clauss brand, Nickeled, same list.....60%
Galvanic 3½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co .....Net
Campbell Cutlery Co., Jap'd.....75%
Nickel Plated..... .....65%
Tinners' Snips—
Wrt. Handles, Steel Blades. ..20@20&10%
Niagara Snips and Shears. ...20&10%
Cast Handles, Laid with Steel 40%

Pruning Shears and Hooks—
Disston's Combined Pruning Hook and Saw..... ₩ doz. $18.00, 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 20&10%
E.S.Lee & Co.'s Pruning Tools.50&10@70%
Pruning Shears, Henry's Pat. ₩ doz. $3.75@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₩ doz $12.00
Dunlap's Saw and Chisel, ₩ doz $8.50,30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co..... 60%
Levin Pruner No. 1, $15.00 ₩ doz 40&3%
Levin Pruner No. 2, $21.00 ₩ doz.. 40&3%
Tinners', &c.—
Shears and Snips (P. S. & W.)... 20@25%
Snips, J. Mallinson & Co..... . 33⅓%
Sheaves—
Sliding Door—
M. W. Co., list July, 1888....50&10@60&5%
R. & E., list Dec. 18, 1885..... 55&20%
Corbin's list..... 60&10&2%
Patent Roller..... 60&10&2%
Patent Roller, Hatfield's..... 75%
Russell's Anti-Friction, list Dec. 18, 1885..... 60&2%
Moore's Anti-Friction..... 50%
Sliding Shutter—
R. & E., list Dec. 18, 1885..... 60&10&2%
Sargent's list..... 70%
Reading list..... 60&10&10%
Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list)..... .20&10&2%
Prize..... 40&2%
Star, Club, Rival and Climax Brands... 33⅓ &10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge..33⅓&10&2%
Seibold's Comb. Shot Shells.... . 15&2%
Brass Shot Shells, 1st quality... 60&2%
Brass Shot Shells, Club, Rival, Climax 65&2%
Shells, Loaded—
Standard List, July 19, 1890..... 40&10&10@40&10 &10&5% 7% cash, 10 days.
Ship Tools—
L. & L. J. White..... 20&5%
Shoes, Horse, Mule, &c.
Horse—
Burden's, Perkins', Phœnix, Standard, Diamond State, Bryden's Boss and Crescent, at factory..... $4.00
Bryden's Frog Pressure, at factory .$5.00
Mule—
Add $1 ₩ keg to above prices.
Ox Wrought—
Ton lots..... ₩ ℔ 9¢
1000 ℔ lots..... ₩ ℔ 9½¢
500 ℔ lots..... ₩ ℔ 10¢
Shot—
Small lots.
Drop, up to B, 25-℔ bag....$1.45
Drop, up to B, 5-℔ bag.... .35
Drop, B and larger, 25-℔ bag..... 1.70
Drop, B and larger, 5-℔ bag..... .40
Buck and Chilled, 25-℔ bag..... 1.70
Buck and Chilled, 5-℔ bag .40
Dust Shot, 25-℔ bag..... 2.00
Dust Shot 5-℔ bag..... .45
In ton lots a discount of 6¢ ₩ bag (25 ℔) is made, and 2½¢ for cash.
Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885..... 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron..... 50&10%
Griffith's C. S..... 60@60&5%
Griffith's Solid C. S. R. R. Goods. 20%
St. Louis Shovel Co..... 20@20&7½%
Hussey, Binns & Co..... 15@25%
Hubbard & Co..... 20@20&7½%
Lehigh Mfg. Co..... 50&10%
H. M. Myers Co..... 30%
Payne Pettebone & Son..... 33⅓ &5%
Remington's (Lowman's Pat.)40&10@50%
Rowland's Black Iron.. 60&10@60&10&5%
Rowland's Steel..... 60&5@60&10%
Terra Haute Shovel & 25%
Shovels and Tongs—
Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%
Sieves and Sifters—
Mann's Tin Rim..... 50&25%
Buffalo Metallic, S. S. & Co...50&25&20%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $21 00
Electric Light..₩ doz $1.50; ₩ gro $15 00
A. & W. Sifters..... ₩ gr $15 00
Hunter's Genuine. ₩ doz $1.75, ₩ gr $16.50
Hunter's Imitation..... ₩ doz $1.75; ₩ gr $15.00
Sieves, Wooden Rim—
	Iron	Plated
Mesh 18, Nested, ₩ doz....	$0.80	$1.00
Mesh 20, Nested, ₩ doz....	.95	1.10
Mesh 24, Nested, ₩ doz..	1.15	1.25

Sinks, Wrought Steel—
Columbus, Painted or Unpainted.. 30@30&10%
Columbus, Galvanized and Enameled. 50@50 &10%
New Era, Painted..... 40&10@50&5%
New Era Galvanized and Enameled.. 60&10&10@70&5%
Skeins, Thimble—
Western list..... 7½&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co..... 60%
Seneca Falls Pattern..... 60%
Utica P. S. T. Skeins..... 60%
Utica Turned and Fitted..... 60%
Slates—
School, by case..... 40@40&10%
Large lots..... 40&10&5@50%
Slaw Cutters—See *Cutters.*
Sleds Hand—
Tubular Steel .....₩ doz. $24&50%.00, 40 (Lots of 6 doz. 50%)

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Snaps, Harness, &c.

Anchor (T. & S. Mfg. Co.)..... 60%
Fitch's Bristol)..... 50&10%
Hotchkiss 10%
Andrews 50%
Sargent's Patent Guarded.....70&10&10%
German, new list ..... 40&10%
Covert ..... 50&10&5&2%
Covert, New Patent..... 50&10&5&2%
Covert, New R. E..... 60&10&5&2%
Covered Spring..... 60&10&10%
Covert's Saddlery Works' Triumph 33⅓&%
John Trots Snaps..... 75&75&5%
Kelley & Woolworth's Steel Harness... 50&10@60%

Snaths—

Scythe ..... 50&2@50&5&2%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₱ doz., No. 5, $8; No. 5X, $9
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list.....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list ..... 70&10%
Buffalo, S. S. & Co..... 33⅓&2%

Silver Plated—

4 months or 5% cash 30 days:
Meriden Brit. Co., Rogers..... 40&15%
C. Rogers & Bros ..... 40&15%
Rogers & Bros..... 40&15%
Reed & Barton..... 40@40&5%
Wm. Rogers Mfg. Co..... 40, 15&5%
Simpson, Hall, Miller & Co..... 40, 15&5%
Holmes & Edwards Silver Co.... 40, 15&5%
L. Boardman & Son..... 50&12½&%

Miscellaneous—

Holmes & Edwards Silver Co.:
No 97 Mexican Silver.....50&10&5%
No 80 Silver Metal.....50&10&5%
No 24 German Silver..... 50&10&5%
No 50 Nickel Silver.....50&5%
No 40 Nickel Silver.....50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal.....50&10&5%
18% Rogers' German Silver.....60&5%
22% Rogers' Nickel Silver.....50&5%
German Silver.....50@50&5%
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Brittannia ..... 60@60&5%
Boardman's Nickel Silver, list July 1, 1891 ..... 60&7½&5%
Boardman's Brittannia Spoons, case lots ..... 60&5% cash

Springs—

Door—

Torrey's Rod, 39 in.....₱ doz $1.20@1.2
Warner's No. 1, ₱ doz $1.50; No. 2, $3.40 ..... 55@55&10%
Gem (Coil), list April 19, 1886..... 20%
Star (Coil), list April 19, 1886..... 20&10%
Victor (Coil)..... 60&10@60&10&5%
Champion (Coil)..... 60&10@60&10&10%
Cowell's, No. 1, ₱ doz $18.00; No. 2, $15.00 ..... 50@50&10%
Rubber, complete, ₱ doz $4.50.....55&10%
Hercules ..... 50@50&10%
Phœnix ..... 33⅓&%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll ..... 60&10@60&10&10&10 or net prices
Cliff's Bolster Springs..... 25%

Squares—

Steel and Iron.....
Nickel-Plated.....} ..80&10&10@80&25%
Try Square and T Bevels.....60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares, 25%
Avery's Flush Bevel Squares..... 40%
Avery's Bevel Protractor..... 50%

Squeezers—

Fodder—

Blair's ..... ₱ doz $2.00
Blair's "Climax"..... ₱ doz $1.25

Lemon—

Porcelain Lined, No. 1....₱ doz $6.00 ..... 25&30%
Wood, No. 2..... ₱ doz $3.00, 35%
Wood, Common..... ₱ doz $1.70@1.75
Duniap's Improved .....₱ doz $3.75, 20%
Sammis No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz ..... 25&10%
Jennings' Star..... ₱ doz $2.50
The Boss ..... ₱ doz $2.50
Dean's..No. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant ..... 50@50&5%
King ..... 40&5%
Hotchkiss Straight Flash....₱ doz $12.00
Silver & Co..Glass ..... ₱ gro. $9.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Barbed Blind, ½ in. and larger. ₱ ℔ 7@7½¢
Barbed Blind, ¼ in..... ₱ ℔ 8@8½¢
Fence Staples, Galvanized. } Same price
Fence Staples, Plain..... } as B'rb Wire
Grand Crossing Tack Co.'s list....75&10%

Steelyards 40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods 35%
Butterfield's Goods 35%
Lightning Screw Plate ..... 25@30%
Reece's New Screw Plates ..... 25@30%
Reversible Ratchet 30%
Gardner 25%
Green River ..... 25@30%

Stoves, Bench—

Morrill's, ₱ doz, No. 1, $10.00; No. 2, $11.00 ..... 40&20%
Hotchkiss'..... ₱ doz, $5, 10@10&10%
Weston's, No. 1, $10, No. 2, $9, 25&10&5%
McGill's, ₱ doz $3..... 10%
Cincinnati..... 25&10%
Terrell's Nos. 1 and 2, ₱ doz., $3; No. 3, $3.60..... 30%
Millers Falls..... 25%
Stearns' ..... 20&10%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892..... 33⅓%
Cleveland Stone Co., list Nov. 1892..33⅓%

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₱ ℔....8¢
Sand Stone..... 5¢ } 40 @ 40&
Turkey Oil Stone, 4 to 8 in ..... 80¢ } 10%
Turkey Slips..... $2.00
Lily White Washita..... 60¢
Rosy Red Washita..... 60¢
Washita Stone, Extra..... 50¢
Washita Stone, No. 1 ..... 40¢
Washita Stone, No. 2 ..... 30¢
Lily White Slips..... 90¢
Rosy Red Slips..... 90¢
Washita Slips, Extra..... 80¢
Washita Slips, No. 1..... 70¢
Arkansas Stone, No. 1, 3 to 5¼ in., $2.80
Arkansas Stone, No. 1 5¼ to 8 in., $3.50
Lake Superior..... ₱ ℔ 12¢
Lake Superior Slips..... ₱ ℔ 20¢

(33⅓@33⅓&10%)

Stove Polish—

See *Polish, Stove.*

Stretchers Carpet—

Cast Steel, Polished ..... ₱ doz $2.2
Cast Iron, Steel Points..... ₱ doz 75@80¢
Socket..... ₱ doz $1.75
Bullard's..... 25@25&10%

Strops, Razor—

Genuine Emerson..... 60@60&5%
Imitation " ..₱ doz $2.00, 20&10&5%
Torrey's..... 20%
Badger's Belt and Com..... ₱ doz $2.00
Lamont Combination..... ₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50%
Electric Cutlery Co ..... Net
Campbell Cutlery Co..... Net

Stuffer, Sausage—

Miles' Challenge, ₱ doz $20.....50@50&5%
Perry....₱ doz, No. 1, $15.00; No. 0, $21.00..... 50&5@50&10%
Draw Cut No. 4, each $30.00..... 20%
Enterprise Mfg. Co., list Jan 17, '93..25%
Silver's..... 40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5..... ₱ doz $17.00
Bissell No. 8..... ₱ doz $20.00
Bissell, Grand..... ₱ doz $36.00
Standard..... ₱ doz $24.00
Domestic..... ₱ doz $21.00
Domestic, No. 2..... ₱ doz $22.00
Grand Rapids..... ₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic..... ₱ doz $15.00
Improved Parlor Queen, Nickeled..... ₱ doz $27.00
Japanned..... ₱ doz $24.00
Excelsior..... ₱ doz $22.00
Garland..... ₱ doz $18.00
Parlor Queen..... ₱ doz $24.00
Housewife's Delight..... ₱ doz $15.00
Ladies' Friend..... ₱ doz $15.00
Ladies' Friend No. 2..... ₱ doz $16.00
Advance..... ₱ doz $18.00
Our Leader..... ₱ doz $19.00
Triumph..... ₱ doz $20.00
Supreme ..... ₱ doz $22.00
Easy..Jap'd, ₱ doz $22.00; Nickel, $24.00
Gilt Edge..... ₱ doz $24.00
Acme ..... ₱ doz $26.00
Imperial..... ₱ doz $26.00
Grand Republic..... Jap'd, ₱ doz $30.00; Nickel, $33.00
Banner..... Jap'd, ₱ doz, $22.00; Nickel, $24.00
The Star..... ₱ doz $21.00
Reliable..... ₱ doz $22.00
Rapid..Jap'd, ₱ doz, $22.00; Nickel, $24.00
Our Own..... ₱ doz $27.00
Model..... ₱ doz $27.00

Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months..... ₱ doz $1.00
10 dozen in 6 months..... ₱ doz $2.00
Except on L.F., when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co..... 30%

Swings—

Davies Lawn..... 25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued..... 66⅔%
American, Tin'd and Cop'd..... 70%
Steel, Bright and Blued..... 66⅔%
Steel, Tinned and Coppered..... 70%
Swedes Iron, Blued..... 72½%
Swedes Iron, Tinned..... 75%
American Iron Tacks, Domestic.66⅔%
Swedes Iron Tacks—
S. S., Blued..... 66⅔%
S. S., Tinned..... 70%
Lanc., Blued..... 55%
Lanc., Tinned..... 60%
Gimp and Lace Tacks—
S. S., Blued..... 62½%
S. S., Tinned..... 66⅔%
Lanc., Blued..... 55%
Lanc., Tinned..... 60%
Basket and Trimmers' Tacks—
Lanc..... 52½%
S. S..... 55%
Hungarian Nails..... 60%
Common and Patent Brads..... 55%
Leathered Tacks..... 10%
Brush Tacks, S. S..... 60%
Looking Glass Tacks, S. S..... 35%
Picture-Frame Points, S. S..... 35%
Finishing Nails..... 60%
Trunk and Clout Nails—
Blacked..... 65%
Tinned or Coppered..... 67½%
Basket Nails..... 60%
Chair Nails..... 52½%
Cigar Box Nails..... 45%
Tin Capped Nails..... 50%

Extra discount 25&2%

Miscellaneous—

Double Point ..... 90&10@90&10&10%
Wire Carpet Nails ..... 50&10%
Claw Handle Carpet..... ₱ gross $4.00
Bonnie Blue ..... ₱ box $1.50
Bill Nye Brad Box..... 4 00
Parisian Gilt Nails, cartoon 50
Home Tacks, No. 50 ₱ case (12 cartons), $36.00; No. 100, ₱ case (12 cartons), $72.00.
Home Nails, No. 200, ₱ case (12 cartons), $30.00; No. 400, ₱ case (12 cartons), $60 00.
Upholsterers' Nails..... 50&10%

50&2%

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list 50&10%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each..... 50&10&5%

Tapes, Measuring—

American..... 40@40&10%
Spring..... 40%
Chesterman's, Regular list..... 25@30%

Thermometers—

Tin Case..... 80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list..... 50&10&5%

Tinners' Shears, &c.—

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887.....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's..... 20%
Barton's..... 20@20&5%
L. & I. J. White ..... 20&5%
Albertson Mfg. Co..... 25%
Beatty's..... 30%
Sandusky Tool Co..... 30@30&5%
Shaves Cincinnati Tool Co..... 20%

Lumber—

Ring Peavies, "Blue Line"..₱ doz $20.00
Ring Peavies, Common..... ₱ doz $18.00
Steel Socket Peavies..... ₱ doz $21.00
Mall. Iron Socket Peavies...₱ doz $19.00
Cant Hooks, "blue Line"....₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish $16.00
Cant Hooks, Mall. Socket Clasp, Common Finish..... ₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish..... ₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish..... ₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks..... ₱ doz $18.00

Saw—

Atkins', new list..... 40%

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse..... 40@40&5%
Oneida Pattern..... 75@75&10%
Game, Blake's Patent..... 40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₱ doz holes, 9@10¢
Mouse, Round Wire.....₱ doz $1.50 10%
Mouse, Cage, Wire.....₱ doz $2.50 10%
Mouse, Catch-'em-alive..₱ doz $2.50 15%
Mouse, Bonanza..... ₱ doz 0.90@$1.00
Rat, Decoy..... ₱ gr $10.00, 10%
Ideal..... ₱ gr $10.00
Cyclone ..... ₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 75¢; in full cases, ₱ doz.60@65¢
Hotchkiss Imp. Rat Killer...₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer..... ₱ gro $15.00
Dandy..... ₱ doz., $1.75
Waddell's Go Bang, ₱ gro..... $12.50

Fly—

Harper, Champion or Paragon ..... ₱ doz. $1.75, ₱ gro. $16.50
Balloon, Globe or Acme ..... ₱ doz. $1.50, ₱ gro. $13.50

Triers—

Butter and Cheese..... 25%

Trimmers, Spoke—

Bonney's..... ₱ doz $10.00, 50%
Stearns'..... 20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'..... ₱ doz $9.00, 20%
Cincinnati 25%

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering..... 15%
Disston's Br'k and Plastering.25@25&10%
Peace's Plastering..... 25@25&5%
Clement & Maynard's..... 20@20&5%
Rose's Brick..... 15@20%
Brade's Brick..... 25%
Worrall's Brick and Plastering..... 20%
Garden..... 70%
Cleves' Angle Trowel, ₱ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list..... 40%
Thompson Mfg. Co..... 40%
Barnes' Barrel Trucks..... 40%
Daisy Stove Trucks, Improved pattern, ₱ doz. $18.00

Tubes. Boiler—

See Pipe.

Twine—

Flax Twine—

	BC.	B.
No. 9, ¼ and ½ ℔ Balls.....	25¢	31¢
No. 12, ½ and ½ ℔ Balls.....	22¢	30¢
No. 18, ½ and ½ ℔ Balls.....	20¢	29¢
No. 24, ½ and ½ ℔ Balls.....	20¢	20¢
No. 36, ½ and ½ ℔ Balls.....	18¢	28¢

No. 264 Mattrass, ¼ and ½ ℔ Balls, 52@54¢
Chalk Line, Cotton, ½ ℔ Balls ..... 25¢
Mason Line, Linen, ½ ℔ Balls ..... 55¢
2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine)..... 15½¢
3-Ply Hemp, 1 ℔ Balls..... 16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls..... 15¢@15½¢
Cotton Wrapping, 5 Balls to ℔..15¢@16¢
2, 3, 4 and 5 Ply Jute, ½ ℔ Balls ..... 10¢
Wool..... 6½¢@6¾¢
Paper..... 13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz. 18¢

Vises—

Solid Box ..... 50&10@60%

Parallel—

Fisher & Norris Double Screw.... 15&10%
Stephens'..... 25@30%
Parker's..... 20@25%
Wilson's..... 55%
Howard's..... 40%
Bonney's..... 50%
Millers' Falls..... 40@40&10%
Trenton..... 40&5@40&10%
Merrill's..... 15@20%
Hollands'..... 35@40%
Sargent's..... 70&10%
Backus and Union..... 40%
Double Screw Leg..... 15&10%
Prentiss..... 20@25%
Simpson's Adjustable..... 40%
Moore's..... 20%
Massey Quick Action..... 20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00....40&10@50%
Stearn's..... 33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises ..... 33⅓@35%
Hopkins'..... ₱ doz $17.50, 10%
Reading ..... 40&10%
Wentworth..... 20&10%
Economy, ₱ doz., Nos. 110, $10.00; 120, $15.00..... 50&10&10&5%

Miscellaneous—

Phœnix Vises..... 33⅓%
Phœnix Hand Vises....₱ doz $3.60, 33⅓%
Cowell Hand Vises..... 20%
Bauer's Pipe Vises..... 10%
Cincinnati..... 25&10%
Enterprise Pipe Vises.....each $3.00, 40%
Massey Combination Pipe Vise 40%

Wads—Price Per M.

U.M.C.&W.R.A.—B. E., 11 up.. 68¢
U.M.C.&W.R.A.—B. E., 9&10.. 82¢
U.M.C.&W.R.A.—B. E., 8..... 96¢
U.M.C.&W.R.A.—B. E., 7..... $1.10
U.M.C.&W.R.A.—P. E., 11 up 1.15
U.M.C.&W.R.A.—P. E., 9&10.. 1.50
U.M.C.&W.R.A.—P. E., 8..... 1.70
U.M.C.&W.R.A.—P. E., 7..... 1.80
Eley's B. E., 11 and larger.... $1.70@$1.75
Eley's P. E., 12 to 20..... $3.00@$3.25

Dis 20&2%

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow-Ware—
Ground..... 60&10@60&10&10%
Unground..... 65&10@70&5%
White Enameled Ware—
Maslin Kettles..... 70&10@75%
Boilers and Saucepans..... 60@60&5%
Tinned Boilers and S'pans..... 60@60&5%
Rustless Hollow Ware..... 50@50&5%
Gray Enameled Ware—
Stove..... 50%
Maslin Kettles..... 60@60&10%
Boilers and Saucepans..... 40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889.....33⅓% } Extra 10% on some leading articles.
Ironclad Enameled Ware.....dis 33⅓&10% }

Kettles—

Galvanized Tea-Kettles—

Inch.....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber—

	Per Doz. Plain.	Decorated
Wash-Basins, 10½ in.....	$1.80	$2.00
Wash-Basins, 12 in.....	2.00	2.50
Keelers, 11¼ in.....		3.50
Cuspidors.....		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure.....	3.50	
Half-peck Measure.....	3.00	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₱ doz $3.00
Basins, Ringed, ₱ doz., No. 2 ..... 2.80
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), ₱ nest..... $5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest..... $2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest..... $1.50
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), ₱ set..... $1.20

25%

See also Pails.

Silver Plated, Hollow

4 mo. or 5% cash in 30 days

Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....} 40&5%
Rogers & Brother.....
Hartford Silver Plate Co.....
William Rogers Mfg. Co..... } 40&5&5%

Washers—

Size hole..... 5-16 ⅜ ½ ⅝ to 1¾
Washers..... 5½ 4½ 3½ 2¾
In lots less than 200 ℔, ₱ ℔, add ½¢, 5-℔ boxes 1¢ to list.

Washer Cutters—

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Iron..... ₱ ℔ 3½¢
Steel..... ₱ ℔ 3½¢

Weights, Sash—

Solid Eyes..... ₱ ton, $18.00@19.00

Well Buckets Galvanized—See *Buckets, Well Galvanized.*

Wheels, Well—

8 in., $2.00; 10 in $2.50 12 in., $2.75

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Whips

Per dozen.

	Length.	4½	5	5½	6	6½	7	7½	8 ft.
X. L. Whalebone Driving		$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone.		....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whale bone		....	....	11.00	12.00	13.00	15.00	....	....
American Standard		8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center		6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors		....	....	....	6.00	....	....	....	....
Americus, 93 Pen Whip		....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111		....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106		....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No. 108		....	....	3.75	4.00	....	....	....	....

A large variety of cheaper grades.....50¢@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....₩ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Wire and Wire Goods—

Iron—

Market,

Br. & Ann., Nos. 0 to 18. 75&10@75&10&5%
Cop'd, Nos. 0 to 18. 75&5@75&10&5%
Galv., Nos. 0 to 18. 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18 .70@70&10%

Extra 5@10% often given and net prices often made on large lots.

Stone,
Br. and Ann'd,
Nos. 16 to 18.....80%
Nos. 19 to 26.....80&5%
Nos. 27 to 36....82½&5%
} Extra 10% often given.

Tinned Broom Wire, 18 to 21, ₩ ℔....4½¢
Galvanized Fence.....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Ossawan Mills, An'ld and Tinned on Spools.....60&10%
Ossawan Mills, Brass and Copper on Spools.....50&10%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported.....60@70¢ ₩ ℔

Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....85&10@85&10&10%

Wire Cloth and Netting—

Painted Screen Cloth ₩ 100 ft.....$1.75
Galvanized Wire Netting.....75@75&10%

Wire Barb—

See Trade Report.

Wire Rope—See *Rope, Wire.*

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50@50&10%
Coes' "Mechanics'".....50&10&5%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
W. & B. Diamond.....
} 75&10@80%

Bemis & Call's:
Pat. Combination Bright.....40&5%
Pat. Combination Black.....40&10%
Merrick's Pattern.....45%
Brigg's Pattern.....30&10%
Cylinder or Gas Pipe.....45&5%
No. 3 Pipe.....55%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz., $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....30%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Eagle.....50&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70@70 &5%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes

Am. Wringer Co.'s list, July 1, '93..2% cash
Colby WringerCo., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list July 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1890..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	47
Linseed, City, boiled	..	@	43
Linseed, Western, raw	38	@	40
Lard, City, Extra Winter	75	@	77
Lard, City Prime	..	@	75
Lard, City, Extra No. 1	..	@	50
Lard, City, No. 1	..	@	45
Lard, Western, prime	..	@	75
Cotton-seed, Crude, prime..	34	@	36
Cotton-seed, Crude, off grades	32	@	34
Cotton-seed, Summer Yellow, prime	39	@	40
Cotton-seed, Summer Yellow, off grades	36	@	37
Sperm, Crude	70	@	..
Sperm, Natural Spring	75	@	77
Sperm, Bleached Spring	80	@	82
Sperm, Natural Winter	81	@	82
Sperm, Bleached Winter	86	@	88
Whale, Crude	..	@	..
Whale, Natural Winter	48	@	..
Whale, Bleached Winter	..	@	61
Whale, Extra Bleached	..	@	62
Sea Elephant, Bleached Winter	..	@	..
Menhaden, Crude, Sound	35	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed	39	@	40
Menhaden, Bleached W'ter.	..	@	43
Menhaden, Extra Bleached.	..	@	46
Tallow, City, prime	..	@	60
Tallow, Western, prime	..	@	55
Cocoanut, Ceylon	5½	@	5¾
Cocoanut, Cochin	6½	@	6¾
Cod, Domestic	38	@	40
Cod, Foreign	42	@	45
Red Elaine	44	@	46
Red Saponified ₩ ℔	4¼	@	4¾
Bank per gal	38	@	..
Straits	39	@	..
Olive, Italian, bbls.	58	@	60
Neatsfoot, prime	75	@	80
Palm, prime, Lagos ₩ ℔	7¾	@	8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test per gal	7	@	7½
Black, 29 gravity, 15 cold test	7½	@	8
Black, 29 gravity, summer	6	@	6½
Cylinder light, filtered	14	@	16
Cylinder, dark, filtered	10	@	13
Paraffine, 23½ @ 24 gravity	11	@	12
Paraffine, 25 gravity	10	@	11
Paraffine, 28 gravity	7½	@	8
Paraffine, red	9¼	@	10½

Paints and Colors—

Barytes, Foreign, ℔ ton	$22.00	@	24.00
Barytes, Amer. floated	29.00	@	32.00
Barytes, Amer. No. 1	16.00	@	18.00
Barytes, Amer. No. 2	13.00	@	15.00
Barytes, Amer. No. 3	11.00	@	12.00
Blue, Celestial ₩ ℔	6	@	8
Blue, Chinese	40	@	50
Blue, Prussian	25	@	40
Blue, Ultramafine	8	@	25
Brown, Spanish	½	@	1
Brown, Vandyke, Amer.	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk	2.75	@	..
Carmine, No. 40, in boxes or barrels	2.85	@	..
Carmine, No. 40, in ounce bottles	3.75	@	..
Chalk, in bulk ₩ ton	1.75	@	2.00
Chalk, in bbls. ₩ 100 ℔	33	@	40
China Clay, English ₩ ton	13.00	@	18.00
Cobalt Oxide, prep'd	9.00	@	11.00
Cobalt Oxide, black lots 100 ℔	1.90	@	....
Cobalt Oxide, black less 100 ℔	1.96	@	....
Green, Paris, in bulk	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs	10½	@	11
Green, Paris, small pack	12	@	17
Green, Chrome, ordinary	6	@	12
Green, Chrom., pure	22	@	25
Lead, Eng., B.B. white	8½	@	10
Lead, Amn. White, dry or in oil:			
Kegs, lots less than 500 ℔	7	@	7¼
Kegs, lots 500 ℔ to 5 tons	6½	@	6¾
Kegs, lots 5 tons to 12 tons	6¾	@	6¾
Kegs, lots 12 tons and over	6¼	@	6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price	..	@	½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	..	@	2¼
Lead, Red, bbls. and ½ bbls	6	@	7
Lead, Red, kegs	6¼	@	7¾
Litharge, kegs	6¼	@	7¼
Litharge, bbls. and ½ bbls	6	@	7

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35	@	1½
Ocher, French Washed	1½	@	2½
Ocher, German Washed	1½	@	3
Ocher, American	½	@	1½
Orange Mineral, English	8½	@	9
Orange Mineral, French	10	@	10½
Orange Mineral, German	8½	@	9
Orange Mineral, American	8¼	@	8¾
Paris White, English Cliff-stone	1.00	@	1.15
Paris White, American	65	@	75
Red, Indian, English	5½	@	7
Red, Indian, American	2	@	6½
Red, Turkey	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American ₩ 100 ℔	1.00	@	1.10
Red, Venetian, English	1.20	@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔	4	@	5
Sienna, Ital., Burnt Lumps	1½	@	3½
Sienna, Ital., Raw, Powd	4½	@	5½
Sienna, Ital., Raw, Lumps	1¾	@	3½
Sienna, American, Raw	1½	@	1¾
Sienna, American, Burnt and Powdered ₩ ℔	1½	@	1¾
Talc, French	..	@	1½
Talc, American	1¼	@	1½
Terra Alba, Fr'ch. ₩ 100 ℔	95	@	1.25
Terra Alba, English	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered ₩ ℔	3½	@	4
Umber, Turkey Bnt. Ln	2¾	@	3
Umber, Turkey, Raw and Powdered	3½	@	..
Umber, Turkey, R'w Lumps	2½	@	2¾
Umber, Turkey, Bnt. Amer.	1½	@	1½
Umber, Turkey, R'w Amer.	1½	@	1½
Yellow, Chrome	10	@	25
Vermilion, American Lead.	11¼	@	12
Vermilion, Quicks'er, bulk	57	@	..
Vermilion, Quicks'er, bags	58	@	..
Vermilion, Quicksilver sm'r pkgs	62	@	..
Vermilion, English Import.	85	@	90
Vermilion, Imitation, Eng.	80	@	85
Vermilion, Trieste	90	@	92½
Vermilion, Chinese	92½	@	95
Whiting Common, ₩ 100 ℔	37½	@	42½
Whiting Gilders'	45	@	55

Zinc, American, dry ₩ ℔ 4 @ 4¾
Zinc, French, Red Seal 7½ @ ..
Zinc, Frech, Green Seal 9 @ ..
Zinc, Frech, V. M. X .. @ 7
Zinc, Antwerp, Red Seal 7½ @ ..
Zinc, Antwerp, Green Seal .. 7¾ @ ..
Zinc, German, L. Z. O 6¾ @ 7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over 10¾ @ 11½
lots less than one ton 11 @ 11½
Zinc, V. M. in Poppy Oil, Red Seal .. @ ..
lots of 1 ton and over 10 @ 10½
lots of less than 1 ton 10 @ 10½
DISCOUNTS.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort	25	@	30
Black, Drop, English	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory	8	@	15
Blue, Chinese	35	@	40
Blue, Prussian	20	@	45
Blue, Ultramarine	12	@	18
Brown, Vandyke	7	@	12
Green, Chrome	8	@	13
Green, Paris	16	@	18½
Sienna, Raw	7	@	14
Sienna, Burnt	7	@	14
Umber, Raw	7	@	10
Umber, Burnt	7	@	10

Putty—

In barrels and ½ bbls	.01½	@	.01¾
In tubs	.01¾	@	.01¾
In tin cans	.01½	@	.02½
In bladders	.01¾	@	.02½

Spirits Turpentine—

In regular bbls	..	@	29½
In machine bbls	..	@	30

Glue—

Low Grade ₩ ℔	8	@	10
Cabinet	12	@	14
Medium White	13	@	15
Extra White	17	@	20
French	10	@	22
English	10	@	15
Irish	12	@	..

THE IRON AGE.

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CURRENT METAL PRICES.

OCTOBER 11, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: ¾ to 2 in. round and square.. 1 to 6 in. x ⅝ to 1 in....	₩ lb 1.80 @ 1.90¢
Refined Iron: ¾ to 2 in. round and square. 1 to 4 in. x ⅝ to 1½ in.... 4½ to 6 in. x ⅝ to 1 in.	₩ lb 1.90 @ 2.00¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.10 @ 2.20¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.00 @ 2.10¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price.	₩ lb .... 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb .... 2.80¢
"Ulster"	₩ lb .... 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store—

	Per lb
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2½¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

Black—

Best Refined Iron.

Nos. 14 to 20	3 @ 3⅛¢
21 to 24	3¼ @ 3⅜¢
25 to 26	3⅜ @ 3½¢
27	3½ @ 3⅝¢
28	3⅝ @ 3¾¢

Common ¼¢ less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 16	2⅛ @ 2⅝¢
" " " 18 to 20	2⅞ @ 3¢
" " " 21 to 24	3⅛ @ 3¼¢
" " " 25 to 26	3⅜ @ 3½¢
" " " 27 to 28	3⅝ @ 3⅞¢

Best Bloom Sheets, ¼¢ extra over above prices.
Best Bloom, Galvanized, jobbing dis. 70 @ 70&5%
Ordinary Bessemer, ⅛¢ @ ¼¢ lower than above prices.

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 12¢ @ 13¢
Patent Planished	₩ lb A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel	₩ lb, 8½¢

English Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 20 ¢

METALS—

Tin—

	Per lb
Banca, Pigs	22¢
Straits, Pigs	21¢ @ 21½¢
Straits in Bars	22½¢

Tin Plates—

Duty: 2.2¢ ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality.

			Per box.
Melyn and Calland Grade	IC, 10	x14..	@ $6.50
" " "	IC, 12	x12..	@ 6.75
" " "	IC, 14	x20..	@ 6.50
" " "	IC, 20	x28..	@ 13.00
" " "	IX, 10	x14..	@ 8.50
" " "	IX, 12	x12..	@ 8.75
" " "	IX, 14	x20..	@ 8.50
" " "	IX, 20	x28..	@ 17.00
" " "	DC, 12½	x17..	@ 6.00
" " "	DX 12½	x17..	@ 8.00
Allaway Grade	IC, 10	x14..	@ 6.00
" "	IC, 12	x12..	@ 6.25
" "	IC, 14	x20..	@ 6.00
" "	IC, 20	x28..	@ 12.00
" "	IX, 10	x14..	@ 7.50
" "	IX, 12	x13..	@ 7.75
" "	IX, 14	x20..	@ 7.50
" "	IX, 20	x28..	@ 15.00
" "	DC, 12½	x17..	@ 5.50
" "	DX, 12½	x17..	@ 7.00

Coke Plates—Bright—

Steel Coke.—IC, 10 x 14, 14 x 20..		@	$5.50
10 x 20..		@	8.50
20 x 28..	11.50	@	12.00
IX, 10 x 14, 14 x 20..		@	7.00
BV Grade—IC, 10 x 14, 14 x 20..		@	5.50

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC, 14 x 20	@	$5.65
20 x 28	@	11.00
IX, 14 x 20	@	6.40
20 x 28	@	12.80
Abecarne Grade.—IC, 14 x 20	@	5.55
20 x 28	@	10 75
IX 14 x 20	@	6 40
20 x 28	@	12.80

Tin Boiler Plates—

IXX, 14x 26	112 sheets	@ $13.35
IXX, 14 x 28	112 sheets	@ 14.50
IXX, 14 x 31	112 sheets	@ 16.00

American Terne Plates.—Apollo.

IC, 14 x 20	$6.25
IC, 20 x 28	12.50
IX, 14 x 20	7.25
IX, 20 x 28	14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35% ad valorem.

Ingot—

Lake	@ 11 ¢
Ansonia grade Arizona	@ 10½¢
Ansonia grade Casting	@ 10 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 35 %, according to size of order. Stubs' gauge standard.

Not wider than	Not longer than	And longer than	Weights per sq. foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	...
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅝ inch diameter and over, ₩ lb 22¢
Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per lb.
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter, 2¢ ₩ lb additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned	₩ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

July 6, 1892. Net.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional

Brazed Brass Tubing. (To No. 20 inclusive.)

Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	$1.50
Fancy Tubing, Brass, to No. 20, inclusive	48¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list	30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2	in. 10	in. 12	in. 14	in. 16	in. 18	in. 20	in. 22	in. 24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33	
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34	
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35	
Nos. 27 and 28	.23	.24	.2	.28	.30	.33	.34	.36	
Common High Brass: Wider than and including	in. 24	in. 26	in. 28	in. 30	in. 32	in. 34	in. 36	in. 38	in. 40
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65	
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.62	.71	
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75	

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0.30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.62
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1 50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2 00
No. 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

—% discount.
Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

	Per lb.		Per lb.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No. 10	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive	17¢ ₩ lb
Over 3½ to 5 inches inclusive	18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight

¼ to 3½ inches inclusive	18¢ ₩ lb
Over 3½ to 5 inches inclusive	19¢ ₩ lb.

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb

Western Spelter	4½¢@4¾¢
Bertha (pure)	8¢@8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.

600 lb casks	5¾¢@6¢
Per lb	6½¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	4¢@4.10
Bar	4¼¢
Pipe, subject to discount 20%	6¼¢
Tin-Lined Pipe, subject to discount 20%	15¢
Block Tin Pipe, subject to discount 20%	37½¢
Sheet, subject to discount 20%	7¢
Old Lead in exchange, 3¼¢ ₩ lb.	

Solder—

½ @ ½ (Guaranteed)	13½¢ @ 14½¢
No. 1	11¾¢ @ 12½¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson	₩ lb 11 ¢
Hallett's	11½¢

Aluminum—

Duty: 15¢ ₩ lb.

No. 2 grade metal, in ton lots	₩ lb .75
No. 1 (guaranteed to be 98 % pure and over), in ton lots	₩ lb .90
Lots less than 1 ton	10¢ ₩ lb additional

Old Metals—

Prices Paid in New York.

Heavy Copper	₩ lb 7½¢
Light and Tinned Copper	₩ lb 6½¢
Heavy Brass	₩ lb 5½¢
Light Brass	₩ lb 4½¢
Lead	₩ lb 3 ¢
Tea Lead	₩ lb 2 ¢
Zinc	₩ lb 2½¢
No. 1 Pewter	₩ lb 14 ¢
No. 2 Pewter	₩ lb .7 ¢
Wrought Scrap Iron	₩ gross ton $10.00
Heavy Cast Scrap	₩ gross ton 8.00
Stove Plate Scrap	₩ gross ton 5.00
Burnt Iron	₩ gross ton 3.00

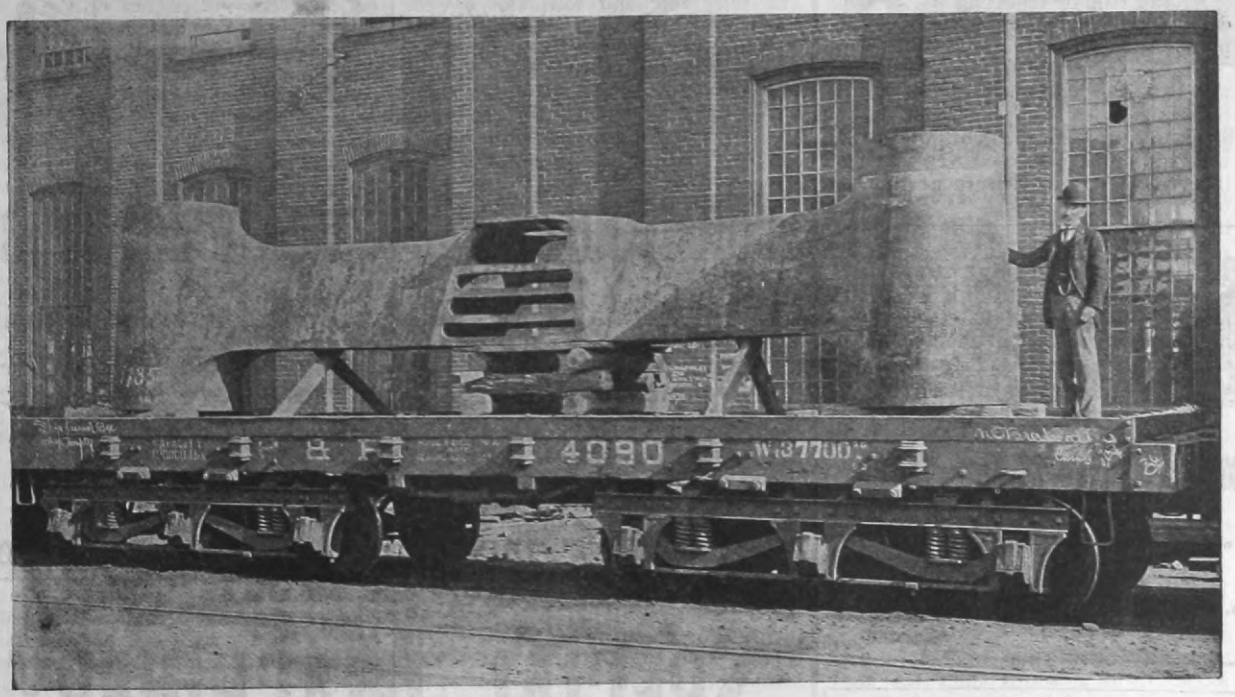
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THE IRON AGE

THURSDAY, OCTOBER 19, 1893.

The Heaviest Steel Casting for Marine Work.

We reproduce from a photograph a view of the steel strut for the screw shafts of the first of the new Inman "American liners," being built at the works of the Cramps, at Philadelphia. It is the largest and heaviest casting yet made by the Standard Steel Casting Company, at Thurlow, Pa., and also the largest single casting yet used for marine work in this country. Its weight is 67,135 pounds, over 30 tons. The growth of this industry in America has been very rapid and satisfactory, and it is somewhat strange that while there now exists no difficulty in producing



THE STEEL STRUT FOR THE SCREW SHAFTS OF THE NEW AMERICAN LINER.

the largest castings called for by any of the designers, it is still extremely difficult to successfully make the smaller ones, where by reason of coring and limited quantity of metal it is almost impossible to avoid the blow holes and spongy spots which render them so unreliable. This point must be overcome before the steel companies can hope to rival the productions of the iron foundries and tempt builders to further trials of steel for the small forms of castings where coring and thin parts exist.

A novelty in the way of a regulating device is the Mason vacuum valve, recently manufactured by the Mason Regulator Company of Boston, at the request of a large Canadian sugar refinery, which has now several in use. It is to the regulation of a vacuum what the reducing valve is to steam pressure, for by placing one of these valves in the exhaust pipe leading to the vacuum pump any desired amount of vacuum may be kept in the chamber by simply adjusting the valve. It is especially useful where different degrees of vacuum are desired in each one of a series of chambers, as in the triple effect process of sugar refining and other processes where a certain vacuum is desirable.

The Walrand and Legenisel Process.

R. M. Daelen, a prominent German engineer, reports in *Stahl und Eisen* concerning the Walrand and Legenisel process of manufacturing Bessemer steel castings. The process in question has attracted considerable attention on the Continent of Europe, and is the out growth of an effort to enable founders of moderate capacity to produce steel castings with a small Bessemer plant. The baby Bessemer has been somewhat discredited by the unsuccessful experiments made abroad and in this country. It appears, however, that more recent modifications have removed some of the troubles incident to the earlier trials. The main obstacle has been thus far the low temperature toward the close of the blow. The recent modification consists in introducing into the bath substances whose rapid combustion creates high temperature. For the acid Bessemer ferrosilicon is employed, and for the basic Bessemer ferrophosphorus is used; still, a pronounced success could not be obtained as long as the practice was to add the ferrosilicon or ferrophosphorus during the boiling period, because the combustion of the silicon or phosphorus is delayed through the presence of a large quantity of carbonic oxide and because considerable heat is carried off by the large volume of gas. Recognizing this, Walrand of Paris decided to make the addition after the carbon had been blown out and thus create a second blow. Mr. Daelen states that the success is complete. The addition of about 5 per cent. of fused ferrosilicon increases the temperature of the blow in a few minutes by 200° C., and makes it possible to carry on the elmination of what carbon there is still in the bath to a further point without introducing into the bath excessive quantities of oxygen. Therefore only a slight addition of ferromanganese is required for expelling the gases, which, besides, is facilitated by the high temperature. The process as invented by Walrand was developed in a practical way in the foundry of Legenisel Fils, at Paris, and a study of the operation led the Hagen Steel Works of Hagen, Westphalia, to put up two convertors having a capacity each of 1100 to 1500 pounds and producing per turn 4 to 5 tons of steel castings. Mr. Daelen states that with their experience in the manufacture of steel castings the Hagen works have succeeded in making with regularity hard and soft steel castings. Test pieces cut from the castings have shown a tensile strength of 59,700 to 71,100 pounds per square inch and an elongation of 25 and 22 per cent. respectively. Mr. Daelen claims that these Bessemer steel castings can be made much more cheaply than crucible steel castings, and that the baby Bessemer has certain advantages over the open hearth furnace in the manufacture of steel castings. The principal one is that the Bessemer converter may be started and stopped as readily as a cupola in a foundry, which cannot be done in the case of open hearth furnaces.

Massachusetts, according to the report of the State Highway Commissioners, loses $5,000,000 annually on account of bad roads.

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Iron and Steel at the World's Columbian Exposition —VII.

BY E. C POTTER, CHICAGO.

The crowning glory of the iron and steel exhibits at the fair is that of the German firm of Fried. Krupp. This is as it should be, for while there may be corporations in the United States which consume more raw material and turn out a larger aggregate tonnage, yet for extent of plant, diversity of product, number of employees and excellence of material and workmanship the Krupp establishment easily leads the world. There probably never was a more extensive or costly display of iron and steel products assembled than is to be found in the Krupp pavilion. The word "iron" may as well be left out, for, with two or three exceptions, every article displayed is of steel, the exhibit thus becoming a valuable object lesson as to the completeness with which steel has displaced iron in the arts.

At the risk of repeating well-known data, I give a list of the component parts of these great works:

The main works at Essen comprise two Bessemer works with a total of 15 converters, four Siemens-Martin works, steel casting foundry, puddling works, welding shops, crucible steel foundry, iron foundry, projectile foundry, brass foundry, two annealing shops, hardening shop, crucible shop, cogging mill, rail mill, plate mill, mill for fish plates and spring steel, spring shop, hydraulic presses and armor plate mill, forge hammer shops, wheel forge, hearth forge, horseshoe forge, tire rolling mill, turning shop for sets of wheels on axles, boiler shop, shop for portable railway material, machine shop No. 1, file factory, repairing shops Nos. 1 to 4, railway repair shop; the ordnance department includes machine shops Nos. 2 to 5, gun shops Nos. 1 to 5, emery shop, boring shop, hoop shop, fuse shop, burnishing shop, gun reception department, gun carriage shed, gun carriage shops Nos. 1 and 2, limber shop, forge for gun shops, galvanizing and pressing shops, engravers' shop, nickel plating shop, laboratory work shop, tool store, projectile turnery, smith shop for shot turnery, lead melting shop, projectile reception department, gun store, packing shed, straw rope shop, proof butts, &c.; the testing department consists of test house and two chemical laboratories; the miscellaneous workshops include a carpenter shop, tinsmiths' shop, builders' joinery, furniture joiners' shop, cartwright's shop, painters' shop, saw mill, mortar shop, saddlers' shop, tailors' shop, steam producing plant, electric plant, gas works with four gasometers of 1,920,000 cubic feet total capacity, water works, fire brick and patent fuel works, brick kilns, coking plant, stone quarries, tile kiln, lithographic and photographic institute, including bookbinding, forwarding department, conveyance of goods, shops for telegraph and telephones, fire brigade and life saving appliances, supply stores, &c. In addition to the Essen works this great firm own and operate 547 iron ore mines in Germany, 13 of which are underground workings; three coal mines; steel works at Annen; four iron works, viz.: Johannes works, at Duisburg; Hermanns works, at Neuwied; Mülhofner works, at Engers, and the Sayner works, at which latter are also a foundry and engine works; sundry iron ore mines at Bilbao and the North of Spain; the shooting range at Meppen for artillery trials, with a maximum range of 15 miles; four seagoing steamers; sundry quarries, clay and sand pits; 3700 dwellings for workingmen; infirmary and two barrack hospitals; workmen's barracks and dining rooms.

In the year 1890-91 the Essen works consumed 722,885 tons of coal and coke, the outlying works and steamers consuming in the same time 530,276 tons, making the total consumption for that year 1,253,161 tons, or about 4200 tons per working day. There are smelted daily about 1800 tons of the firm's iron ore. The consumption of water in that year was 9,230,000 c. m., or the same number of tons. This is distributed through the works and buildings through pipes and conduits aggregating 113 miles in length. The consumption of gas was 424,000,000 cubic feet, distributed through 144 miles of pipes. The electric light plant includes 50 miles of cable, 573 arc lamps and 1804 incandescent lamps. There are 30 miles of standard gauge and 21 miles of narrow gauge railway in the works, with 33 locomotives and 1217 cars. The telegraph and telephone system comprises 20 telegraph stations, with 35 instruments and 50 miles of wire; 200 telephone stations, with 202 instruments and 172 miles of connections. There are also 70 additional fire alarm stations. The supply stores comprise every variety of domestic supplies. The general census of 1892 shows total number of employees to be 25,301, of which 16,956 are employed at Essen and 8345 at the iron works and mines. The members of families aggregate 60,290, making a grand total of 85,591 souls not only dependent upon but actually cared for by this colossal establishment. Of these there are 16,588 school children. To the foregoing should also be added the works of Madgeburg Buckau, purchased during the past summer, but of which there are no data at hand.

It is, therefore, with a keen appreciation of the gigantic size and importance of this establishment that we enter their very extensive exhibit, housed in the striking pavilion on the lake shore south of the peristyle. The center of interest for the general public is, of course, the huge 125-ton gun. The history of this gun, its construction, its transportation from Essen to the fair, has been so often and so fully told one need only mention it in passing. A gun that is of more interest because of its tremendous power in proportion to its size is the 9.45-inch gun. Its great range is thus graphically illustrated: If this gun were mounted at Pre St. Didier, Switzerland, at an angle of elevation of 44° it could throw a projectile weighing 475 pounds over Mont Blanc, clearing the summit by 9000 feet and landing the shot in the neighborhood of Chamounix, 12½ miles distant. At a distance of 2187 yards this terrible engine of war can penetrate a wrought iron plate of a thickness of 23 inches. In addition to these two guns the firm also exhibit a 12-inch 61-ton gun for ships of war, an 11-inch 42-ton coast gun, an 8-inch 14-ton naval gun, a 6-inch quick firing naval gun, a 4.72-inch quick firing naval gun, a 3 43-inch quick firing naval gun, a 3-inch quick firing army gun, a 4-inch siege gun, a 9 45-inch siege mortar, a 3-inch portable mortar, a 3-inch field gun, a 2.4 inch boat gun, a 3-inch mountain gun and a 1 46-inch bush gun. Nearly all of these have their mountings complete, and all sizes and kinds of projectiles are shown. There is also a most complete and comprehensive display of armor plate of various thicknesses, in most of which the effects of shot are shown.

But the steel manufacturer turns with more interest to those articles devoted to the peaceful pursuits and in which the firm of Krupp are no less famous. There are few railroads in America that are not familiar with Krupp tires. These are here shown in great profusion together with cast steel wheel centers, some of which have been subjected to remarkable distortion. The steel forgings include a crank shaft for an Atlantic express steamer, with thrust bearing, cranks, &c., complete, of a total length of 90 feet and weighing 103 tons. The four bladed screw attached to it is of cast steel and weighs 26 tons. A shaft of 12 inches in diameter and 82 feet long was forged by hydraulic press from a block of crucible steel 9 feet long and 4 feet in diameter, and subsequently bored out through its entire length to a diameter of 4.32 inches. A pinion for an armor plate mill of forged steel 3.6 feet width of face, 5.24 feet pitch diameter, with helical teeth milled out of the solid. There are also numerous examples of locomotive forged crank shafts, crank pins, piston rods, pump rods, &c. Among the cast steel articles the most noticeable are a ram stem and a stern post and rudder frame for a ship of war. The stem was molded in three parts, the heaviest weighing 15 tons, the total being 23 tons. The stern post and rudder frame were each molded in one piece, the former weighing 12.6 tons, the latter 11 tons. A bed plate for a cruiser engine, weighing 6 tons. An American consolidated locomotive frame cast in one piece, weighing 1.47 tons.

But the one piece in the whole exhibit which would impress a metallurgical engineer as being the most remarkable and as displaying the highest skill and workmanship is a train of gears for Krupp's own armor plate mill. This consists of two gears, one of 4.14 feet diameter, the other of 13.75 feet diameter, both of 3.28 feet face. Both are cast of crucible steel, the smaller one weighing 5 tons, the larger 20 tons. The smaller has 20 helical teeth, the larger 71 helical teeth of 7.12 inch pitch. The difficult nature of the castings, the material from which they are poured, the accuracy of the work and the smoothness of the finish are such as to excite the highest admiration.

The rolled steel articles include, in addition to the armor plate, a plate for a hydraulic bending press 11.15 feet long, 10 feet wide and 3.28 inches thick, weighing 73 81 tons; a boiler plate of Siemens-Martin steel, 65.5 feet long, 10.82 feet wide and 1.26 inch thick, weighing 16 tons; a boiler head 12.79 feet diameter and 1.5 inches thick, weighing 3.38 tons. These two last show the enormous capacity of Krupp's plate mill. Articles of pressed steel are in great number and variety. They include railway bogie trucks, locomotive domes, gun carriage walls, parts of limbers, ammunition wagons, &c., projectile shells, cream separators, balls for ball bearings and a very large number of die forged articles

Among the miscellaneous articles shown not the least interesting is a pair of hoisting shears capable of lifting 83 tons, specially designed for handling gun barrels and used for placing in position the guns in this pavilion. There are also shown special designs of small hand and power rolling mills for rolling and polishing precious metals, tinsel, &c., and for use in mints.

The pavilion itself is handsomely

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decorated with views and maps of the firm's works and properties. An interesting feature is the model of the very modest ancestral home of the Krupp family, the original of which is still preserved in the midst of the great works which in the course of years have grown up around it. There is also a model of the monument, one-twentieth of the actual size, erected by voluntary contributions of the employees to the memory of the late Alfred Krupp.

One can devote hours of examination and study to this most elaborate and comprehensive exhibit, which, together with the superb display of the Gebrueder Stumm in the Mining Building easily wins for the German Empire the first place in the iron and steel industries at the World's Columbian Exposition.

English exchanges record the disappearance of an interesting and famous old landmark in the demolition of the Fazeley street rolling mills of Clifford & Co. of Birmingham. The old building was erected in 1737, and was a few years later acquired by a couple of Birmingham metal rollers, who are said to have been the first in the trade to employ steam for driving power. There is still upon the premises of Clifford's mill an old engine, known as "Old Bess," with wooden beam, dating back to 1802, and the beam is apparently as perfect now as when erected.

New South Wales, Australia, is likely to have an iron and steel works. The announcement is made that important concessions and mineral rights have been acquired for the purpose, and a company is being formed to carry out the scheme. The Government of the colony have offered a premium for successful works of this description, and the new enterprise will start under fair auspices on property at Wallerawang, where coal, iron ore and limestone are said to be found in abundance.

The Construction of Steamboats Navigating the Western Waters of the United States —I.*

BY JOHN M. SWEENEY, WHEELING, W. VA.

It is perhaps unfortunate that it cannot be definitely settled when was the date of the first attempt of navigation of boats propelled by steam.

In a work, published some 40 years since in Spain, of original papers relating to the voyage of Columbus, preserved in the royal archives at Samancas, and those of the Secretary of War of Spain, in 1543, it is stated that Belasco de Garay, a sea captain, exhibited to Charles V, in the year 1543, an engine by which the largest vessels could be propelled even in a calm sea without oars or sails. The emperor decided that an experiment should be made, which was successfully attempted June 17, 1543, in the harbor of Barcelona. The experiment was on a ship of 209 tons called the "Trinity." Garay never publicly exposed the construction of his engine, but it was observed at the time of the experiment that it consisted of a large caldron of boiling water and a movable wheel attached to each side of the ship.

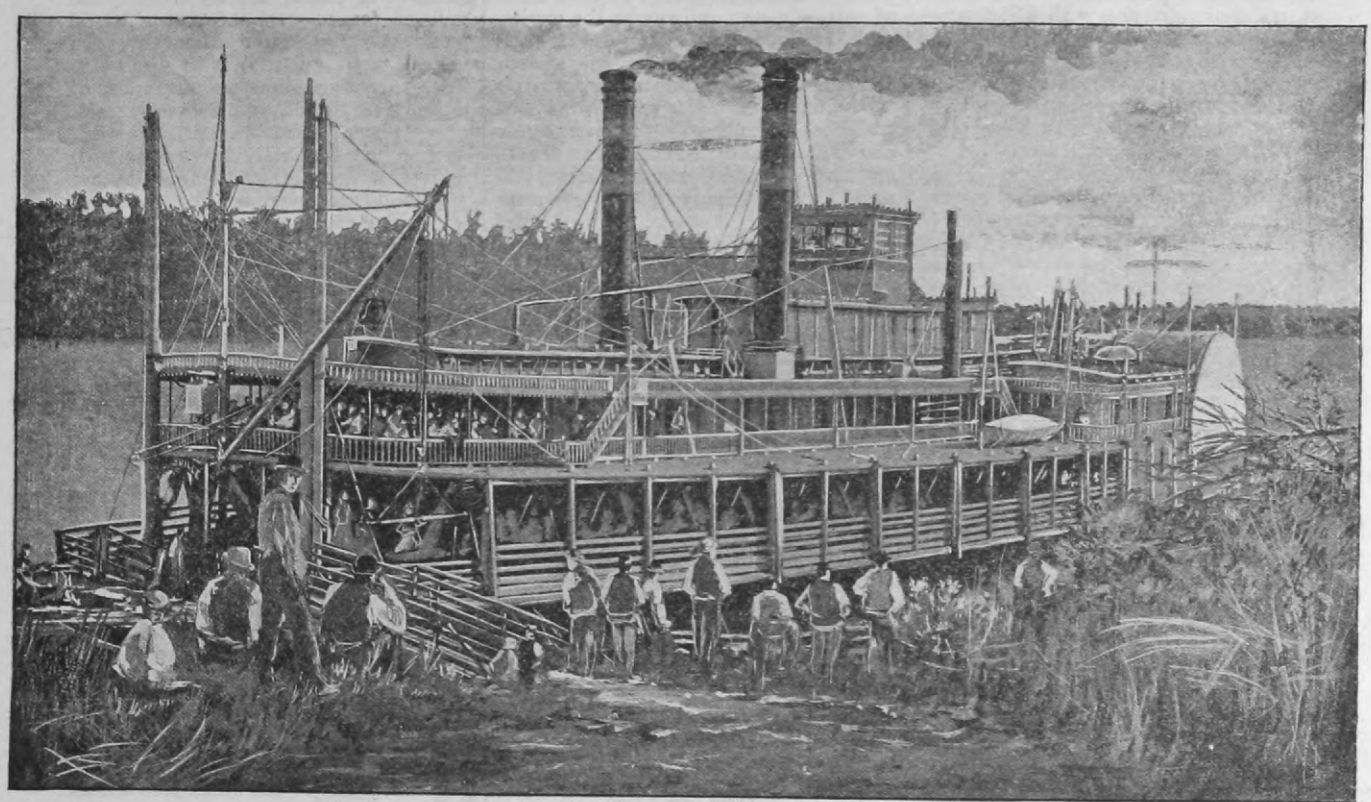
From this statement it would appear that De Garay not only originated the steam engine, but made at the same time its application in one of its most practical and beneficial forms, and at a single effort accomplished that which took the light and talent of several generations to invent and bring to practical shape.

This statement, although based on the archives of Spain and those of the Secretary of War of that kingdom, are by some discredited, as the date is 54 years before the birth of the Marquis of Worcester, who is given by history the credit of being the inventor of the steam engine. It might be said in rebuttal that the incident just quoted of "De Garay's" experiment possibly came in some way to the Marquis's notice, and that he proceeded, after the manner of all inventors, to improve upon it. There is also a fact in history as to an early steamboat that might justify the belief that both Fitch and Fulton were not entirely original in their idea of a boat propelled by machinery moved by steam, presuming even that De Garay's exhibition in 1543 had not accidentally come to their knowledge.

A treatise was printed in London in 1737 describing a machine invented by Jonathan Hulls for carrying vessels against wind and tide, for which George II granted a patent for 14 years. A drawing is attached to the treatise showing a boat with a chimney smoking and a pair of wheels rigged over each side of the stern. From the stern of the boat a tow line passes to the foremast of a two decker, which the boat thus tows. This is evidently the first idea of a steam towboat. As this was a published treatise and there was a patent on record, public information of a steamboat must have circulated before the experiments of Fitch and Fulton, or Stevens or Livingston; and while similarity of ideas in inventions is not infrequent, absolute originality is difficult to establish.

It would seem from the following extract from a diary kept by James Kenny, a Quaker trader at Fort Pitt, in 1761, that the Western waters of the United States had originated some of the first germs of the ideas of steamboat propulsion. The extract is:

"1761, 4th mo., 4th: A young man called Wm. Ramsey has made two little boats, being square at the sterns and joined together at the sterns by a swivel, make the two in form of one boat, but



S.S. FLEETWOOD.

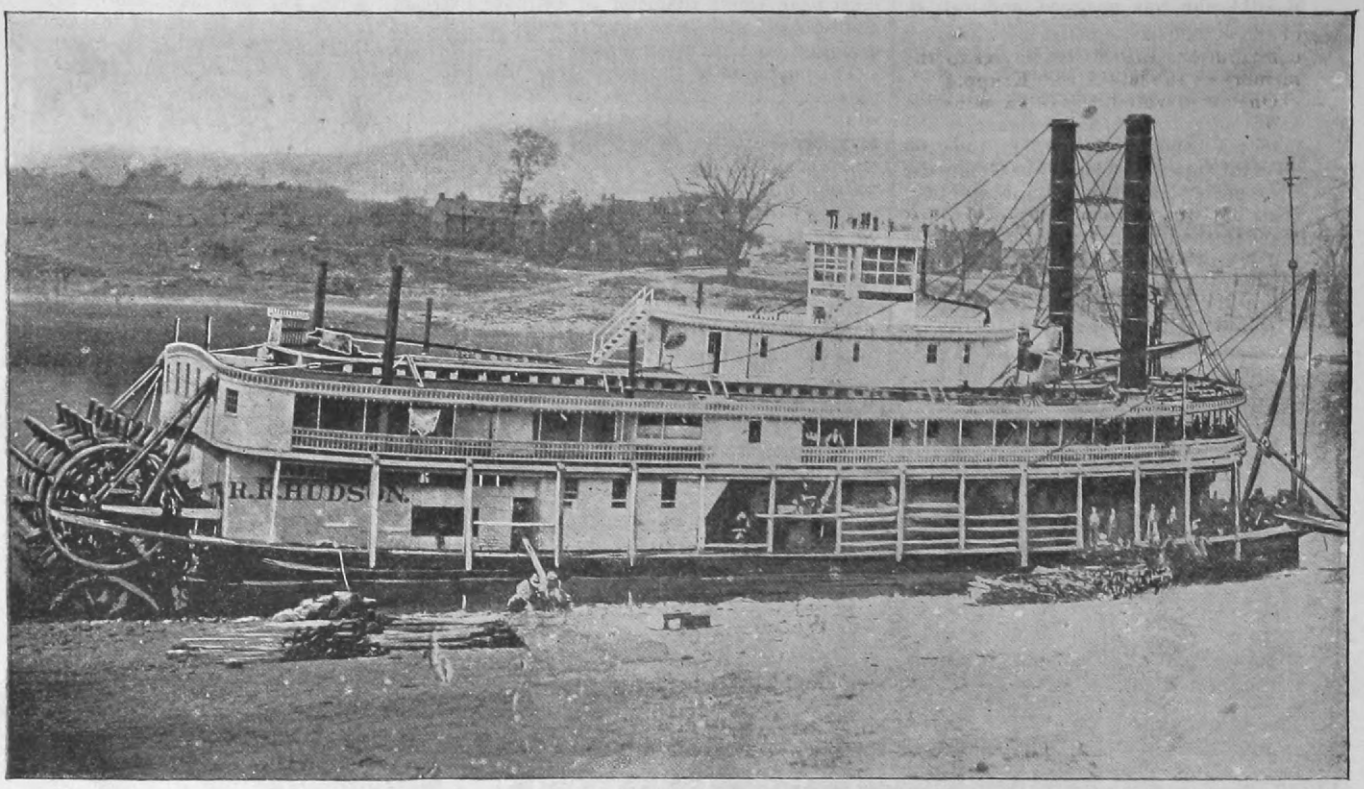
* From a paper read at the World's Engineering Congress before the Division of Marine and Naval Engineering and Naval Architecture.

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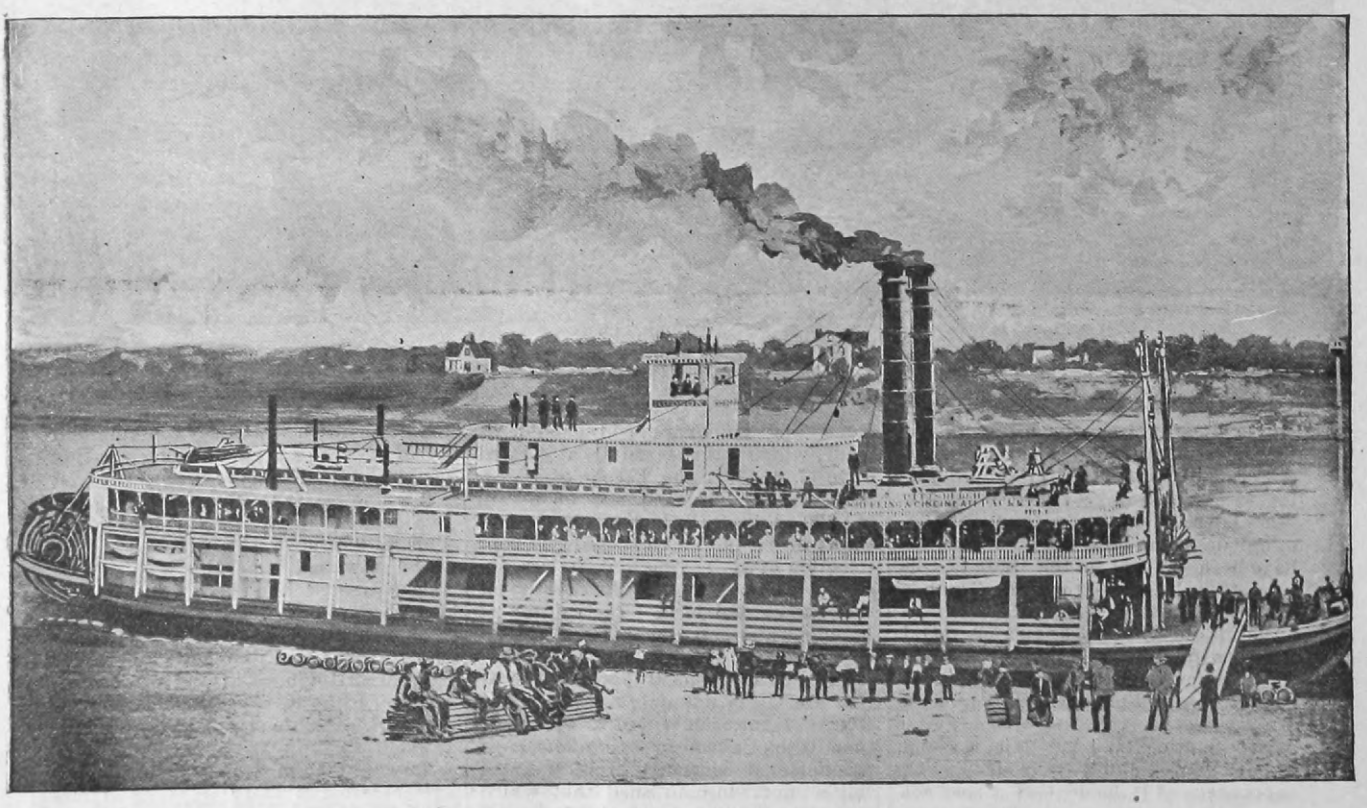
will turn around shorter than a boat of the same length, or raise with more safety in falls and in case of striking rocks. He has also made an engine with wheels that goes in a box, to be worked by one man, by sitting on the end of the box and tredding on treddles at bottom with his feet, set the wheels agoing which work scullers or short paddles fixed over the gunnels turning them around. The under ones always laying hold in the water will make the boat go as if two men rowed, and he can steer at the same time by lines like plow lines."

This was 25 years before James Ramsey of Berkeley County, Va., succeeded in propelling his flying boat, as it was called by the people, against the current of the Potomac at Shepardstown, by steam alone, at the rate of 4 or 5 miles an hour, and also 20 years before Fitch, in 1780, accidentally meeting Ramsey in Winchester, imparted to him his idea of propelling boats by steam.

After all, the preliminary experiments to which history, so far as recorded, gives full credit, seem to be preliminary to the practical results obtained by Fitch and Roosevelt, who, at Pittsburgh in 1810 and 1811, constructed a boat called the "New Orleans." This boat was 138 feet length of keel; her cabin was in the hold and she had port holes, also a bowsprit 8 feet in length (painted sky blue), in ocean style; her cost was $40,000. She was launched in March and descended the river to Natchez in December, at which point



S.S. R. R. HUDSON, 1865.



S.S. HUDSON, 1878.

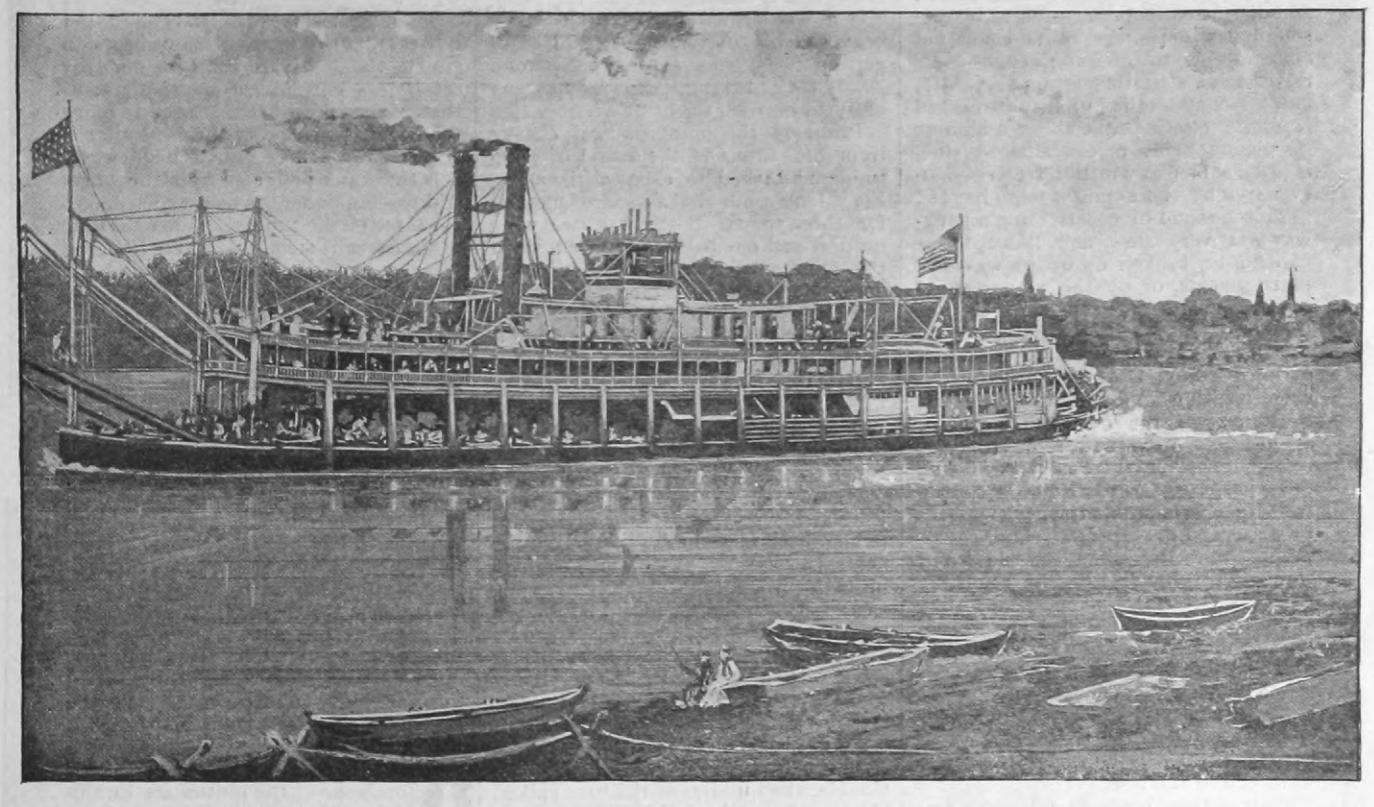
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she took in her first freight and passengers, and thence proceeded to New Orleans on the 24th of the same month. She continued to ply between New Orleans and Natchez until 1814, making the round trip in 10 days, conveying passengers at the rate of $25 up and $18 down. On her first year's business she cleared $20,000 net. In the winter of 1814 she was snagged and lost at Baton Rouge.

Until 1814 there seems to have been no attempt to return boats from New Orleans to the head waters of the Ohio River.

The "Enterprise" was built at Brownsville, Pa., and made two trips to Louisville; later in the year she proceeded toNew Orleans, carrying a cargo of ordnance, and she was for a time actively employed in transporting troops.

In 1817 this boat left New Orleans for Pittsburgh, and arrived at Louisville



S.S. HUDSON, 1886.

25 days out from New Orleans, which event the citizens of Louisville celebrated by a dinner to the captain.

In 1816 the "Washington," built at Wheeling, was the first boat to have her boilers placed above the deck.

In 1818 the "Independent," 50 tons, was constructed for the Yellowstone expedition, and was the first steamboat that ascended the Missouri River.

In 1819 the "Western Engineer" was the first boat to ascend to Council Bluffs, 650 miles above St. Louis.

The successful operation of these boats had, by this time, demonstrated what could be done, and from that time on the construction of boats for the navigation of these waters has been continuous.

The navigation of such streams as the Ohio and Mississippi rivers is a problem entirely distinct. On these Western waters only average results can be expected; boats must go, and make something near schedule time, whether the depth of the water is 30 inches or 30 feet, so that the first desideratum is minimum weight and maximum power, with all possible displacement of hull, per each unit of immersion, at all in keeping with anything like shape.

In boats designed for combined freight and passenger business the hulls are constructed with all the lightness in any way consistent with safety against falling to pieces, and the machinery must have small diameter of cylinder and boilers, and consequently must be designed for high steam pressure.

The character of the valve gear employed in the engines is particularly adapted to the class of boat being considered, because better fitted to the requirements of the service, the boats being very raftlike and limber; overloading at any point will distort their shapes; "tight on their chains" when without load, "slack on their chains" when loaded. So throughout the process of loading and unloading, one or the other effect constantly going on; these in turn perceptibly vary the distances between the center of the main shaft and rock shaft. Now, the lever valve gear allows this variation without seriously affecting the timing of the valve movement; no other form of valve arrangement gives this very necessary quality of stretching.

Gradually, through the past years, side wheel boats have diminished in number and tonnage, and stern wheel boats have increased. At best, any of these wooden boats are perishable, and the vast difference in first cost and the cost of maintenance of the side wheeler over the "wheelbarrow" boat has determined investments in favor of the latter; and while, to outside appearance, the stern wheel boat of to-day is identical with that of 20 years ago, it is only so in that particular. The method of hull and joiner construction is much the same. Models have materially altered, and have carried with them, or perhaps been caused by, broad changes in the application of the rudder or steering arrangements. This article, therefore, will be confined entirely to the stern wheeler, as representing the most successful and recent practice.

For some time after the use of steam propelled craft on the Western waters began it was considered impracticable to bring the boats to a landing without first bringing them to anchor out in the stream; a line was then taken ashore in the yawl, and the boat hauled to the bank by the shore line. When the boat left the landing a reverse of this operation swung her to the anchor cable; the anchor was then lifted and the boat proceeded on her way.

The method of procedure has been very much improved. Now, in making a landing (and it must be understood that in this navigation boats land on the shore, and not against a dock of any kind, in the majority of cases), the boat is headed for the shore, the machinery stopped and reversed until the headway is nearly checked, the remaining headway being sufficient to carry the boat to contact with the shore, and so the landing is accomplished. This practice is very much more expeditious than the old method, and has been brought about by the necessity of saving time in making landings, since the number of landings made by boats navigating these waters has vastly increased since their introduction. The writer has in mind a so-called trade between two points about 100 miles apart on the Ohio River. When the boats first entered the trade, some 40 years ago, they made a maximum number of landings, in a round trip between the points, not exceeding 35 or 40. At the present time boats in this same trade make never less than 150 landings, usually exceeding 200.

The banks of the Ohio River are fast being filled with railroads which parallel the stream. This development has increased the volume of business done in the valleys, and has increased the amount of water traffic, although largely changing its character.

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Prior to the railroad development higher rates for service were charged by the boats than since, and the necessity existed for surplus boats of very light draft, which could be operated during the extreme low water in the river. When these boats were called into commission rates for both freight and passage were usually increased. At the present time the extreme low water boats are fast disappearing, because their navigation is attended with a considerable increase of expense over what might be called normal conditions, and the competing railroads prevent any increase of tariff charges by the low water boats over the regular normal charge.

One noteworthy labor saving device, which is now almost general on Western boats, is a method employed for handling the stage plank. Formerly, the stage plank consisted of rough boards about 18 inches wide, 3 inches thick, and 24 feet in length. These planks were pushed out by the deck hands, and in many instances—where by reason of flat shores the boats could not come in close to the water's edge—were rested upon a trestle set in the water, and a second section of plank reached from the trestle to the shore, a number of planks being placed side by side, making sufficient width to receive whatever freight there might be to handle.

This method of constructing a gangway was very slow and liable to be tripped or broken up by the waves of passing boats, or by the movement of the boat itself from which the gangway was constructed.

Of late years a gang plank has been adopted which is technically called a stage, varying in dimensions according to the size of the boat, but is usually about 8 feet wide and some 35 or 40 feet long. This stage is suspended in the middle, and is carried on a swinging crane which is attached near the forward end of the boat, and so arranged that the stage can be lifted through a tackle operated by a hoisting engine. Occasionally the stage is balanced by a weight, so that the use of the engine is dispensed with. On some of the boats two of these stages are used —one on either side near the forward end of the boat; but generally one stage is used for both sides, the derrick of the crane being in the center of the forward end of the boat.

Both of these methods will be understood by reference to the engravings of the steamers "Fleetwood" and the "R. R. Hudson," built in 1865; the "Hudson," built in 1878; and the third "Hudson," built in 1886. The boats are typical of the improvements of recent years, so far as the outward appearance is concerned, and represent a marked increase in dimension of hull, the "R. R. Hudson" being 180 feet long, 32 feet beam; the "Hudson," 200 feet long, 34 feet beam, and the last "Hudson" 235 feet long and 36 feet beam.

A story is related by some old boatmen that some time between 1820 and 1830 three men, who had been navigators of floating boats on the Ohio River, entered into a partnership for the purpose of having constructed a steamboat. The boat was to be 95 feet long. Shortly after the contracts were closed one of the parties to the enterprise proposed to increase the length of the boat to 110 feet. A meeting of the parties was held to consider the proposition, and two of them agreed that the length of the boat should be 100 feet; the third, not willing to consent to this increase in length, withdrew from the partnership, because he did not believe so large a boat could be successfully navigated through the crooked channels of the Ohio River.

These early ideas seem very faulty and are hard to understand, when we consider that in the present day the same channel of the Ohio River is navigated by boats 350 feet long, and by boats with tows rigidly attached to them, the length of boat and tow reaching as high as 900 feet, and would rather lead one to the reflection that perhaps we, with our ideas of progress to-day, are as wide of the mark as was the man who refused to invest in a steamboat 100 feet long for the reasons given.

The advances made in construction and methods have been almost entirely in small things, but make an aggregate result of some importance. Much larger tonnage is propelled with greater speed. Some fuel economies have been made, and the cost of operation and maintenance largely reduced. The boats are more manageable. Not so very long ago it was a great exception to find a boat capable of turning around or of getting away from shore when strong winds were blowing. Now almost any of them go with slight delay.

Probably the most radical change from old forms is the disuse of wing rudders attached to skegs at the stern. For a long time the standard method for three rudder boats was two wing rudders and one balance rudder; when the number of rudders was increased, one or more balance rudders were added, but the wing rudders and the skeg you had always with you. The best practice of to-day discards the wing rudder entirely, using only balance rudders—never more than four, usually three, and occasionally two, depending on the beam and other dimensions of the hull. When the balance rudder was first employed, that portion of the blade projecting forward under the stern rake (when fitted close to the bottom, in the neutral position of the rudder) presented in its operation a constantly increasing space between the blade and bottom of the boat, as the rudder advanced to its extreme position on either helm. This space was objectionable, because likely to catch drift, and so foul the rudder; also, because it was thought the opening diminished the effectiveness of the rudder. In order best to relieve this trouble, the builders of the time spiked blocks of wood against the bottom plank, being careful to have the blocks thick enough, and then reduced them to a shape discovered by hanging a skeleton rudder in position and traveling it as they cut; this was technically called "building a bustle on." It did not last, however, very long—something like 15 years—until some one, lost to history, discovered it possible to form the frames or floors composing the stern to the desired cone shape, and dispense with the blocks of wood. This was a great stride, and soon became the rage, and was termed "building a bustle in." It is the practice to-day of those designers who think there can be no improvement.

Coeval with this practice was the use of a very short and steep rake to the stern of the boat, insisted on because it was popularly supposed to increase the bearing of the hull and induce a consequent lighter draft, as well as better to sustain the weight of the wheel machinery, which on the stern wheel boat was necessarily at the stern end. It is only in recent years that a probably better conception of the laws governing the propulsion of such boats has induced retirement of the wing rudders, and a longer and more acute stern rake. The two are closely connected, because primarily the measure of the propulsion of the boat in either direction is the measure of the resistance of the body of water moved by the wheel in the opposite direction. Now, the wheel must be supplied with new water as fast or faster than it displaces it, so that, when the boat is being moved ahead, if the shape retards a free delivery of water to the wheel, a very bad application of power results.

In the bustle form of stern the appearance of the water when the boat is moving is very favorable, often smooth and clean, and without breaks between the wheel and stern rake, as well as around the outside of the hull; and many consider this surface condition to indicate proper shapes. However, a chip or block dropped into the water alongside of the boat, some 30 feet from the stern, will usually go under the boat in its effort to get to the wheel.

These boats depend entirely on rudder power to govern their movements in steering, and this can only be done by creating a current on the rudders; so that, when the wheel is used to move the boat astern, and at the same time it is desired to deflect the stern sideways, it is the water delivered from the wheel and passing under the boat which makes the force on the rudder. When the rake of the stern is steep the water from the wheel is banked against the end of the boat and reacts upon the rudder, causing the frequent deflection of the stern in the opposite direction to that desired.

In adopting designs for stern shapes, as shown, and making that shape the reverse of the bustle, it is still possible to preserve an approximate contact between the forward rudder blade top and the bottom of the boat. This is secured by discarding the old method of setting the rudder post and pintle square with the keel line, substituting a position at right angles to the plane presented by a rise of the rake at the station met by the under blade; so that the pintle and rudder stock and post pitch forward from a right line with the keel, and rudders other than the center one pitch also sidewise to meet a right line with the thwartship deadrise of the bottom at the same point; therefore none of the pintles are in the same plane, and a ball joint is used on the tiller to connect the coupling bar common to all of them. A further guard against fouling the rudder action is in the opening left between the top of the rudder blade and the bottom of the hull, whereby any drift forcing in is soon relieved by the enlarging opening. The success of this plan has proved that the idea insisted on to have no current pass over the blade was a mistaken one.

The models for forward body or bow form are usually subject as much to the character of the craft as anything else. For a freight boat loading heavy weights on the forecastle, a shape very full in harping adds increased bearing as the load increases, and at the same time allows sufficient cutting away in the first 2 feet to properly balance the boat when in light trim. Boats used exclusively for towing may be sharper in order to properly load with fuel carried almost exclusively amidships.

The best general shape seems to be that in which well-defined rising lines are found, so that the displacement is made downward rather than sidewise. This increases buoyancy when the hull is driven hard, and holds the head of

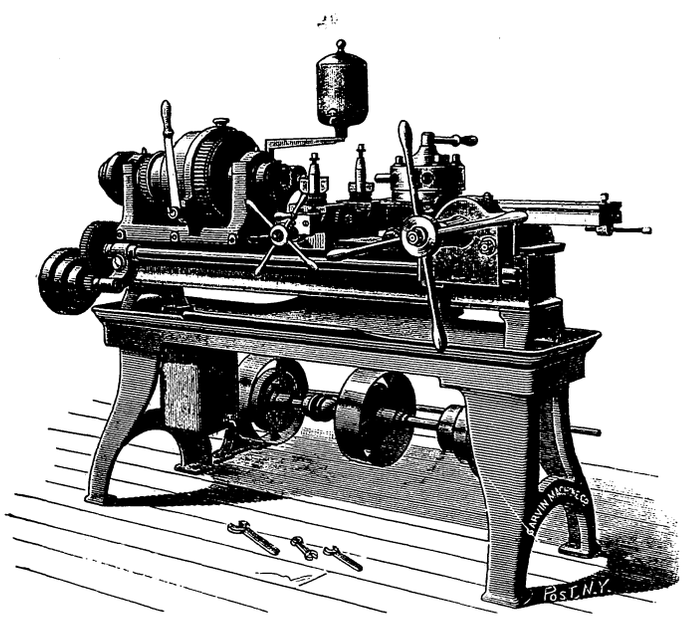
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the boat up against burying; while the wall sided forward model seems to account for cases where the same hull, with larger driving power developed, actually showed a decreased speed.

Garvin Screw Machine and Universal Cutter and Tool Grinder.

The screw machine here illustrated is provided with geared friction head and power feed to the turret. The feed shaft extends along the front of the machine and is driven by a three-step cone, giving the necessary changes. The feed gears of the turret are also placed in front and are neatly incased to protect them from chips and dirt. The handle for operating the feed latch is conveniently placed on the side of this case. The turret slide is operated by the pilot wheel when desired, and has an automatic feed of 9 inches, which may be set to trip at any point in the travel by an adjustable stop on the slide. The cross slide is operated by a screw and pilot wheel and is fitted with two tool posts, each of which has an independent adjustment sidewise by means of screw and knurled handwheel, insuring ease and accuracy in setting the tools. When desired the machine is furnished with wire feed or with plain cone, plain back gears, and without power feed to the turret. The principal dimensions are :

Largest diameter of cone, 12 inches; width of belt required for geared cone, 3 inches; for plain cone, 3¾ inches; diameter of spindle, 3¼ inches; capacity of spindle with wire feed, 1⅛ inches; without wire feed, 2⅛ inches; swing over bed, 17 inches; length of bed, 6 feet; diameter of turret, 9 inches; number of holes in turret, 6; diameter of holes in turret, 1¼ inches; length that can be milled, 9 inches; friction pulleys on countershaft, 14 x 4 inches; speed of countershaft, 150 revolutions; weight complete, 1900 pounds.



GARVIN SCREW MACHINE.

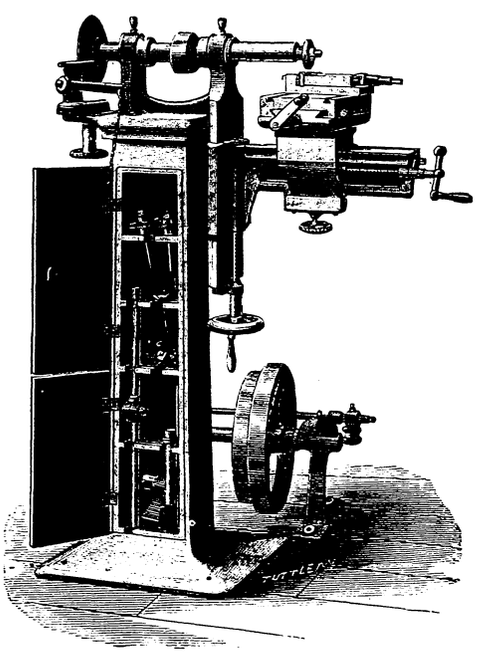
Universal Cutter and Tool Grinder.

This machine has been improved recently, and it now embodies several new and valuable features. The front bearing is extended, forming an outboard support for the end of the spindle, thus preventing any vibration. The spindle is hollow, and is provided with a rammer for removing the arbors. The rear end extends beyond the bearing and is arranged to carry emery wheels up to 8 inches diameter. A rest is also provided for grinding small drills, light tools, gear tooth cutters, &c. The guide finger is fixed in a yoke which clamps around the end of the front bearing, giving a wide range of adjustment and being quickly and easily set.

The surface grinding attachment is secured to the sliding carriage by a dovetailed swivel plate, and is securely held at any angle by a cam binder. The actuating mechanism is conveniently operated either from the end or side of the table, the travel being regulated by adjustable stops on the side. A vise is furnished for use in connection with the sliding table, for holding flat work. The column base is fitted up as a cupboard with wood shelves for holding all the fixtures, wheels, &c. The machine will grind mills of 20 inches diameter and 6 inches face, and grind a surface of 8 x 10 inches.

The main dimensions are: Vertical adjustment of knee on column, 6¼ inches; adjustment of sliding table in line with spindle, 6¼ inches; travel of surfacing table, 10 inches; tight and loose pulleys on counter, 4½ x 2 inches; weight, 400 pounds.

Both these machines are made by the Garvin Machine Company of Laight and Canal streets, New York.



GARVIN UNIVERSAL CUTTER AND TOOL GRINDER.

The fire loss of the United States and Canada during September amounted to no less than $10,508,700, which, although a decrease of $2,714,000 from that of August, still shows a serious increase, amounting to $2,628,900, over the loss of September, 1892. The total value of property destroyed by fire for the first nine months of the present year now reaches the enormous figures of $120,832,700, or over 25 per cent. greater in the aggregate than those of the same period in 1892.

WORLD'S FAIR NOTES.

W. Osterlein

of Cincinnati exhibits friction clutches at Column J 28, Machinery Hall. Three sizes are shown, the largest being adapted to very heavy work and the others to light work. The shafting to which these clutches are connected is mounted on floor stands, but not supplied with power.

A. Falkenau

of Philadelphia exhibits lathes, grinding machinery, &c., at J 39, Machinery Hall. A 14 inch lathe is shown as a specimen of fine construction, embodying throughout the best materials and the highest class of workmanship. It is extra heavy with metal well distributed for strength and stiffness, has all parts subject to bruising wear case-hardened, the gearing is accurately cut from the solid, the sliding surfaces are accurately scraped to a bearing, with no emery used in fitting, and with ordinary change gear it will cut all threads from 2 to 16 and even threads from 16 to 32. A 14-inch lathe is shown with a turret slide, the lathe having a 4-foot bed. The turret head is mounted on a slide, taking the place of the regular cross feed slide of the lathe. It is turned by hand, can be securely locked in its various positions and is furnished with stops to accurately size the work, while it can be locked in a central position for drilling, &c. The turret slide can readily be exchanged for a plain tool rest. The lathe can thus be used on a large class of work for which the more expensive automatic turret machines are not suited. The Taylor automatic tool grinder, shown in this exhibit, is a machine designed for grinding lathe and planer tools, as conducted in establishments in which one man or a boy does all the grinding, instead of each man leaving his machine to go to the grindstone when his tools are dull. The operation of this machine may be thus described: On an adjustable platen in front of the stone is a tool holder in

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which the tool is fastened by a gear operated by a hand wheel. In the tool holder, directly over the tool to be ground, is placed a sheet steel former of the shape desired for the tool. The former rests against a hardened steel apron, attached to the head of the stone and made adjustable in and out. When the former bears against the apron the tool comes in contact with the stone. The former is held against the adjustable apron and the tool against the stone by means of a yoke and counterweight controlled by a treadle. Tools are thus ground to a uniform or standard shape. A universal and cutter grinder is also shown, which covers the whole field of accurate grinding of machine parts, milling and gear cutters, reamers, &c. A vertical belt pump, for boiler feeding, is shown in operation. This pump has a long plunger and a long connecting rod. The suction valve is furnished with a by-pass, so that the pump can be run continuously.

The Sherwood Mfg. Company

of Buffalo, N. Y., have an exhibit at K 25, Machinery Hall. Although occupying small space, they have used every available inch to such excellent advantage that it attracts more attention than some of the larger exhibits.

A small figure of Uncle Sam seated upon an iron pedestal works a Buffalo automatic cylinder oil pump with one hand and a Buffalo duplex flue scraper with the other, while with his feet he turns a handsomely nickel plated pedestal on which each alternate wheel is of lacquered brass. The pedestal holds glass oil and grease cups, hand oil pumps, lubricators and ball gauges, cocks, the entire pyramid being topped by a glass oil cup. On the railing which fronts the exhibit they have samples of the Sherwood and Buffalo automatic injectors. A 6-foot column of flue scrapers varying in size and branching into four arms at the top occupies a position of prominence. The Favorite flue blower is shown in various sizes, completing what is one of the most tasteful small displays of the entire machinery exhibit.

The Keasbey & Mattison Company

of Ambler, Pa., have an exhibit in Section D of the boiler house annex, Machinery Hall, where they have erected a neat and serviceable platform, around the outer edges of which showcases have been built containing specimens of their magnesia sectional steam pipe covering. It is composed of magnesia and asbestos and is intended for all manner of steam pipe, both high and low pressure, and also for boilers. It is further available for connections and fittings separately.

Beaman & Smith

of Providence, R. I., builders of milling, boring and special machinery, have on exhibition at Column K 47, Machinery Hall, a horizontal spindle milling machine, a heavy standard milling machine, floor and standard drilling and boring machines and a safety drill and tap holder. The milling and boring machines cover the leading types of machines of this character manufactured by the firm, and are shown in operation. The horizontal spindle milling machine is intended for long and heavy cuts, such as guide bars, connecting rods, key seating shafting, axles up to 10 inches diameter, &c. The heavy standard milling machine is intended for general machine shop use, but on larger work requiring larger cutters and taking deeper cuts than usually attempted on milling machines of its type. The drilling and boring machines are of the horizontal type and are designed for drilling, boring and tapping a great variety of work. These machines are all of a high order of merit, but their safety drill and tap holder specially warrants a detailed description. The holder consists of a body with a taper shank to fit any machine having a revolving spindle, threaded on the outside and recessed to receive a socket held between two pieces of vulcanite fiber. A cap is screwed on over the socket and adjusted so that there is sufficient strength to drive the tap. A drill socket is held in the friction socket by a pin and is driven by feathers, the tap and its socket is held in the same manner. The taps being held loosely they cannot cut larger than themselves, and being driven by feathers, by feeding out and in themselves they cannot cut or strip the thread by careless hand feeding. On reaching the bottom of the hole the friction slips and the danger of breaking the tap is reduced to a minimum. The change from the drill to the tap socket can be instantly made without stopping the machine.

In the east gallery of the Mines and Mining Building are a number of exceedingly interesting exhibits, comprising graphite and its applications, abrasives, fuels, &c. All are more or less attractive, either by reason of the taste and ingenuity shown in the arrangement of the exhibits or else by the special character of the products displayed. An exhibit which combines all these characteristics is that of

The Joseph Dixon Crucible Company

of Jersey City, N. J. They have erected a very artistic *façade* of cherry and mahogany to mark the boundary of their space, which is richly furnished with fine carpet and handsome show cases, while numerous chairs have been provided for the hospitable reception of visitors. Arranged in the showcases are products of graphite in many forms, such as crucibles and silver and gold retorts, from No. 0000 up to No. 300, dippers, bowls, stirrers, nozzles, stoppers, electrical appliances, forms for incandescent lights, electrotypers' facings, founders' core wash, foundry facings, shot glazing, graphite lubricants, machinery oil, cylinder oil, inside and outside grease, dry lubricants, roof paint, boiler and smoke stack paint, yacht graphite, hatters' lead, pigment for paint, flake graphite, &c. These exhibits are in many instances arranged in glass jars, with richly enameled labels. One showcase contains specimens of graphite in special shapes, such as great bunches of pencil leads in all shapes and thicknesses, and resistants for electrical purposes in bars, coils, rings, rods, &c. On a mahogany table stands a Dixon crucible which was used at the American Bronze Works, Grand Crossing, Ill., in casting the solid silver statue of Justice for the Montana display in the Mines and Mining Building. The finest specimen of graphite ever mined, according to experts, is here exhibited, and an award has been granted the company on that ground. It weighs 269 pounds, and is said by mineralogists and chemists to be at least 98 per cent. pure. It was mined on the island of Ceylon. Numerous other specimens of graphite are shown which run up to almost 100 in fineness. The company's graphite is principally obtained from their own mine at Ticonderoga, N. Y. So little is known of graphite by the general public that the company's representative in charge of the exhibit, John H. Baird, may be said to be delivering a perpetual lecture on this useful mineral to a stream of visitors. The special lead pencil display of the Jos. Dixon Company is located at Column F 98 in the northeast gallery of Manufactures Building. It occupies a small space, but the exhibit is nevertheless a very fine one. Samples of lead pencils in almost every conceivable shape and size are tastefully arranged on a four-sided frame in a handsome glass showcase. Returning to the Mines and Mining Building, another exhibit in the east gallery worthy of mention is that of

Robert J. Taylor & Son,

Nineteenth and Callowhill streets, Philadelphia, who show a great variety of crucibles and retorts for all purposes. These are arranged on a set of shelves, receding from very wide ones at the bottom to narrow ones at the top, to accommodate the different sizes of crucibles. A much larger display, however, in the same line is that of the

Phœnix Crucible Company

of Taunton, Mass., who have erected a great pyramid of shelves, crucibles of all sizes completely covering the four sides. Banners prominently displayed state that this is the oldest incorporated crucible manufacturing company in the United States. A large gilt phœnix surmounts this exhibit. In close proximity

The Carborundum Company

of Monongahela, Pa., make an interesting exhibit of a new abrasive. Carborundum is a recently invented material for this purpose due to the experiment of Edward G. Acheson. It is a compound of carbon and silicon, obtained through their fusion by an electric current. The material thus produced is crushed and sifted into different sizes. Very small but highly brilliant crystals are the result. Experiments of the most exacting character have been made with this material and its properties have been shown to be more nearly those of the diamond than of corundum. Its production thus far has been limited and for some time it was used in making very small grinding and cutting wheels, such as dentists' wheels, for which it proved to be superior to emery. It was also introduced in the form of powder for fine polishing, and notwithstanding its greater cost was shown to be able to compete with emery on account of its longer service. The production is now up to 200 pounds per day and it is being used for a wider range of grinding and polishing. Wheels of good size are being made for use in competition with emery wheels. A peculiar property of this abrasive is that it does not burr a tool or draw the temper, but can be used either wet or dry. This is explained on the theory that carborundum is an excellent and rapid conductor of heat. The manufacturers advise the use of a finer grain in carborundum than in emery. For instance, they suggest No. 70 in carborundum to use for the same work as that done by No. 60 in emery, the degrees of fineness being numbered in the same manner as emery. Next comes a remarkably interesting exhibit by the

Pittsburgh Crushed Steel Company, Limited,

of Pittsburgh, Pa., who display another artificial abrasive of a totally different character, which they style

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crushed steel and steel emery, according to its degree of fineness. It is made from high grade and very high carbon crucible steel, each particle tempered to a proper degree to give it a cutting edge. The shape is irregular, so that no two grains are similar, and in wearing off one edge another is thereby produced until entirely worn away. The manufacturers claim that it will not pulverize, but must be worn out. It is assorted in all sizes from very coarse grains to a fine powder. So fine is the latter made that it is used for polishing the most expensive lenses. The coarser grains are used for solid core drilling, sawing, granite, onyx, bluestone, marble, sandstone, limestone, &c., while the finer are used for rubbing stone, polishing glass, metals, brick, tile, &c. Beautiful specimens are shown of the work done with crushed steel in sawing, cutting and polishing stone. Among them are long, slender rods of marble, which would be very expensive if produced by methods ordinarily in vogue. Samples of the material are exhibited which have been in constant use for seven months and are still in condition for much more service in cutting and grinding. A truly magnificent display of abrasives is next made by

The Tanite Company

of Stroudsburg, Pa., which can be best described by quoting from a circular prepared by this company. They were requested by the exposition authorities to treat "abrasives" from an educational standpoint. The exhibit here illustrated and described is the result, and its compact character is due to the fact that the exhibit will be presented as a gift to the Smithonian, the Chicago University, or some other suitable institution. While some of the articles were furnished by the Tanite Company many were contributed by liberal minded manufacturers.

Emery, being the most important abrasive, is illustrated fully. Emery ore is shown from Turkey, Greece and the United States. In one piece clear blue sapphire can be seen with the naked eye. On a platter of pure aluminum are shown sapphires, corundum and emery, with the explanation that alumina is the oxide of aluminum, and that the articles on the platter are largely composed of crystallized alumina, the sapphire being almost pure alumina. Emery is then shown in its successive stages—first as it comes from the crusher; then in the form of grain and flour; then as polish (powder, liquid and paste); and, lastly, in the shape of whetstones and solid emery wheels. Fragments of various classes of Tanite wheels are displayed to show the internal texture. There are bottles containing the dust gathered under Tanite wheels after the grinding of cast, malleable and wrought iron, and of brass and steel. These are for experimental examination with magnifying glass and magnet. "Petrified sparks" are an interesting feature. These are strangely shaped cones formed of the matter which fuses below an emery wheel when grinding under heavy pressure. The comparative products of the emery wheel, file and cold chisel are tabulated on a framed sheet, while the case contains pieces of cast iron and saw steel with the cuts made by file and wheel. The piece of saw plate demonstrates that in a given time the wheel did 126 times as much work as the file. In the case and on the ends of the stand are numerous parts of machines, all of which have been surfaced by the Newman emery plater. These appear to be as true as if planed, and tabulation shows that this machine has taken a maximum cut $\frac{1}{4}$ inch deep, and has taken a $\frac{1}{16}$ inch cut over a surface of 100 square inches in six minutes and nine seconds. Its ordinary cut is from $\frac{1}{64}$ to $\frac{1}{32}$ inch.

Emery wheels are usually thought of in connection with metal grinding, but in this case are shown blanks for long combs and ladies' back combs, made of vulcanite, and other samples showing that the long comb has been edged and the back comb had the spaces between the teeth cut out with Tanite wheels. Glass guides from a silk spinning mill are also shown. In these guides the silken thread wears a tapering groove which eventually breaks the thread, and these grooves are ground out by the use of Tanite wheels.

As curious and instructive examples of abrasion, the parts of various machines used in the Tanite factory are shown, all testifying to unequal and destructive wear due to unequal stress and the friction of emery dust.

Corundum is shown from Ceylon and from our Southern States, in the form of mineral samples, and also in grain. To the latter samples, as also to some of the emery samples, are attached analyses showing the proportions of insoluble corundum, of dissolved alumina, &c. Samples of pumice stone and of rotten stone are contributed by T. Van Amringe of New York. Baeder, Adamson & Co., Philadelphia, show rock flint or quartz and rock crystal garnet in rock, in grain and on cloth. Norris & Brother, Baltimore, exhibit India spar. B. C. & R. A. Tilghman, Philadelphia show chilled iron shot. The Pittsburgh Crushed Steel Company show a full line of samples of their so-called steel emery, and the Carborundum Company show that material rough and finished. Millstone rock is shown by W. & F. Livingston and by Samuel Carey, both of New York. Wm. M. Kirby, Pittsburgh, shows grindstone rock, as do also J. Westby, Levick & Co., Sheffield, England. J. B. Hull, Stroudsburg, shows, in regular order, the materials used in rubbing down granite and marble. Scythe stones, rough and finished, are displayed in great variety by P. M. Peterson & Son, Porsgrund, Norway. The Pike Mfg. Company of New Hampshire also show a great variety of natural whetstones, &c. D. A. Richardson, Helena, Mont., contributes rough sapphires and A. W. & C. E. Tanner, Red Bluff, Mont., some fine specimens of garnet. Corundum is supplied to this exhibit by Ed. L. Hand & Co., Philadelphia, and by Geo. L. English & Co., New York. Among the curiosities of abrasion are the following: Leaves of the afeen plant, used to clean gourds after the manner of sandpaper, contributed by Bolding Bowser, U. S. Consul, Sierra Leone, Africa. Wood of Agave Polyacantha, used for razor strops, contributed by Wm. P. Pierce, U. S. Consul, Trinidad. Dutch rushes or scouring rush (*Equisetum Hyemale*) from Yorkshire, England, supplied by David Brodie, M.D., London, and rush for same purpose furnished by John Selwood, Stroudsburg, Pa. The epidermis of these plants is formed of silica and the rush is used to polish wood and metals. Shark skin is contributed by the Tanite Company. This is to be used in same way as emery cloth and sandpaper.

Samples of carbon or black diamond and also samples of clear or gem diamond, suitable for turning or dressing emery wheels, are shown by the Tanite Company. The evolution of razors and table knives is shown in two series of samples, beginning in each case with the rough ingot or blank of steel, progressing through various stages of polish to the final bright finish.

An interesting series of photographs shows emery veins and mining processes in Westchester County, N. Y.

After showing how wide a range of materials and processes is covered by this compact and unique exhibit, we can close in no better way than by referring to two pictures: One of these seems to represent the tail of a comet, though what is really shown is the stream of fiery sparks streaming off from a Tanite emery wheel while engaged in grinding through a file. The other is a photograhic reproduction of a picture in the Royal Gallery, Berlin. The photograph was contributed by Markt & Co., Hamburg, and the painting was by Gerard Ter Borch, who was born in Holland in 1617. This painting represents with much detail "The Grinder's Family," and depicts clearly the rough and primitive grinding processes then employed.

The many articles already mentioned form only a part of this exhibit; but enough has been said to show how much unexpected interest, even for the unlearned, may be found in an exhibit whose name suggests nothing but a dry, hard, technical study.

H. W. Johns Mfg. Company

of New York, Chicago, Boston, Philadelphia, Atlanta, Jersey City and London, have six exhibits of their specialties, owing to the variety of claims covered by their productions. In the Mines and Mining Building they have machinery in operation manufacturing asbestos fabrics, on the ground floor in the northeast corner of the building, Section Q. In the same building, in the northeast gallery, Section T, Column 11, they exhibit a collection of asbestos minerals from all parts of the world. In the Electricity Building, west gallery, Section U, they show insulating materials for electrical purposes, vulcabeston, &c. In Machinery Hall asbestos pipe and boiler coverings are in actual use. The feed pipes for 70 engines and about 50,000 feet of main steam supply pipes are covered with asbestos sectional coverings. In the great Manufactures Building paints are shown on the ground floor in the northwest part of the building, Section H, Block 1, while the general exhibit of the manufactures of the company is located in the gallery in the northeast corner, Section F. This last exhibit covers an enormous variety of asbestos goods, such as drop curtains for theaters, fire proof building paper, gaskets for pipe joints, pipe coverings, &c.

B. & S. Massey

of Openshaw, Manchester, England, exhibit in the British section of Machinery Hall, at Column K 6, several full sized steam hammers and some small working models of their hammers. One of the full sized hammers is a 1½-hundredweight self acting and hand worked steam, with loose adjustable slides and overhung framing, the stop valve being controlled by a foot lever and hand lever at will. The slides are separate from the standards and made adjustable to take up wear. The trip or hammer head is accurately grooved and works between these guides, which also support it, taking the strain off the piston rod, especially when subjected to side thrusts. The anvil block is accurately turned to fit the bored out hole in the base plate, which is of importance in

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preventing all lateral movement. It is provided with a strong key to prevent its turning round. It is fitted with a loose anvil top of best crucible steel, also a palette or hammer face of the same material. The loose top can be easily removed when more space is needed under the hammer, or it can be readily repaired or replaced when worn or broken. The hammer is so perfetly under control that it can be made to deliver long or short, quick or slow, heavy or light blows, instantly and without stopping. Another full sized tool is a 3 hundredweight special steam stamp, for stamping in dies. It has specially arranged gear for the purpose, and is also fitted with self-acting gear for forging, which can be thrown in or out of gear as desired, and patent loose adjustable slides and patent buffer arrangement complete, with massive base and tool holder. It is useful for dishing and hollow ware generally. The principle on which the slides are made is new and has just been patented. They are so constructed that the wear on the slides and tup can be taken up. Not being in one piece with the standards they can be readily replaced. The patent adjustable buffer limits the upward stroke of the piston to any required hight, thus insuring a regular and even blow for different classes of work. When lowered for short strokes the buffer fills the upper part of the cylinder and prevents the steam from needlessly filling this space, which economizes the use of steam. The valve gear is simple and efficient. When being used for stamping, as the steam is turned on the tup instantly rises to the top of its lift and remains there until the hand lever is pressed, when it at once delivers its blow and rises, leaving the lower die clear for the removal of work. Three small models of steam hammers are shown worked by compressed air. They are made accurately to scale to represent different types of hammers. Photographs are shown of different styles of hammers, with specimens of actual forgings made.

Peter Wright & Sons

of Dudley, England, exhibit at Column K 6, in the British section, Machinery Hall, 112 samples of their famous "solid wrought" anvils, ranging from 30 pounds to 648 pounds, made after a patent process. It is claimed that they cannot be broken by ordinary usage. They have a grade of finish peculiar to the firm. Every anvil is tested by a member of the firm as to soundness, hardness of face, &c. The Government test of hardness is that a new second cut file shall just touch the face, and all these anvils must conform to it. All are made of forged scrap iron, and are forged under Massey's hammers. Thirteen vises are also shown made of fagoted scrap iron, BB iron and steel jaws. The worm and box are cut from the solid by a patent process. There are seven leg vises and six parallel vises. The leg vises range from 31 pounds and 3½ inch jaw to 209 pounds and 8-inch jaw; the parallel vises from 3½ to 8 inch jaws. These vises are peculiar in having a very long pin, so that when the jaws are spread to their full opening the screw on the end of the pin still fills the box. They are further stiffened and strengthened by a ⊥-shaped slide under the pin, also made very long. The vises are shown attached to a long bench, while the anvils are displayed on a platform having several steps. The anvils include saw makers', farriers', plow makers' and the regular smiths' patterns. Their total weight is a little under 20,000 pounds. This entire exhibit has been sold to Jones & Laughlins of Chicago.

The Electrical Forging Company

of Boston, Mass., make one of the most novel exhibits at the exposition. The operation of heating and working metals by electricity on the Burton system is shown on quite a comprehensive scale in Electricity Building, Section D, Space 2, in the northeast quarter of the building. Appliances for forging, welding, rolling, brazing and for rolling balls and taper pins are in regular operation. One of Merrill Bros.' large drop forges is used for the manufacture of miniature horseshoes, which are in eager demand by spectators for souvenirs. Everything is done by electricity, the machines being operated by an elecric motor. A large electric heater with several metal holders is used for heating bars for forging, rolling and welding, also for welding tubes or pipes. This heater is so governed by a regulator or rheostat that pieces of different diameters and varying lengths are heated at the same time, the heater dividing its current automatically. Iron or steel or copper can be heated easily and in a remarkably short time. The holders for heating bars to be rolled into balls are located close to the rolling machine. There are four of these holders, so that the operator can be kept supplied with heated rods. The metal thus heated is not oxidized, and the most ignorant workman is in no danger of burning it. Experiments of many kinds were made in the presence of the writer to demonstrate the remarkable mildness of the heat thus applied. A striking peculiarity of the heated bars is that at a white heat the part of the metal not exposed to the electric current is quite cold within a very short distance of the heated portion. A portable heating apparatus is shown, which is adapted for use in heating rivets in the construction of buildings or in other isolated locations. A bucket containing water is connected with one pole of an electric current, which may be taken from an electric light, a trolley wire or other convenient source of electric energy. A pair of tongs is connected with the other pole. A piece of metal held by the tongs being dipped in the water the circuit is completed and the metal at once begins to heat. It will melt if kept in the water any length of time, the action being very rapid. A jacket of hydrogen, it is explained, is generated which envelopes the metal and protects it from the action of the oxygen, so that the iron or steel is not injured by the heat as applied in this manner. A piece of steel held in the water until the end fused was found to be unburnt after it was allowed to cool. A medal and diploma have been awarded this exhibit "for originality, rapidity in placing and removing the metal to be heated and adjusting the heating devices to varying sizes, shapes and lengths, and for original and superior construction and apparatus."

The Pratt & Whitney Company's

exhibit occupies a very large space at Column J 44 and 45, Machinery Hall, comprising machine tools in operation and a great variety of small tools in showcases. There are eight large show cases, filled with beautifully finished tools that make machinists' eyes water. These comprise a

Set standard cylindrical size gauges, plugs and templets, ¼ inch to 2 inches by sixteenths, in case.

U. S. standard thread gauges; M. C. B. standard limit gauges.

M C. B. standard gauges for automatic couplers; standard drop forged caliper gauges; standard hardened mandrels.

Standard hand, shell, chucking and taper reamers.

Set Am. Ry. M. M. Assoc. wheel center and tire gauges.

Car wheel circumference gauges, M. C. B. standard.

Gear cutters, milling cutters, &c.

Taps, U. S. standard, dies, die stocks, boiler and stay bolt taps, punches, Kennedy and plain, and hand punching machines, hand shearing machines.

Counterbores, cutting off tools, threading and lathe tools and small tools of every description ordinarily required in modern machine shop equipment.

Sets of gauges are also shown in other cases, being kept under key to prevent them from being handled.

Milling machines are a prominent feature of the display of machine tools. Many kinds of work are now done by milling cutters of special form or special application very much more rapidly and accurately than by old methods.

Much interest is excited among visitors in a new plain chucking machine fitted with tools for brass cock and key manufacture.

The gun making machinery is a novelty to most people. Here are shown gun barrel drilling machine, gun barrel reaming machines, and gun barrel rifling machines. The operator of the gun barrel drilling machine can, without any particular effort of mechanical skill, drill a continuous hole through solid stock, and if conditions are what they should be there will be found little deviation from a straight central bore of uniform size. No particular apparatus is required for starting the drill, neither is any straightening required during the operation, and little or none until after the proof reaming. The machine is double and has a horizontal bed. The heads are at the end and have mounted in them independent spindles parallel to each other. On their inner ends are chucks for securing and rotating the barrels in the adjustable rests which support, guide and control the starting of the drills, which are secured in the sliding carriages. These are fed positively 38 inches by a screw having automatic stops. The screw has a variety of speeds through change gearing, in order to compensate for the different qualities of stock to be drilled. Two rotary pumps (one for each barrel) force oil, supplied from a tank placed underneath the machine, through a series of tubes into and through the drill. The oil lubricates the cutting lip and forces out the chips into the basin on top of the tank, where they are drained, and the strained oil returned to be pumped again. Rifle barrels 30 inches long, 0 3 inch bore, can be drilled (with each spindle) in 1⅛ hours; the same length, 0.76 inch bore, in 1¼ hours.

The very accurate scales on which the machines of this company work cause many expressions of surprise and admiration from foreign engineers.

The company make a special exhibit, at another part of Machinery Hall, of their automatic grain weighing machine and bagging machine.

Geo. M. Bond is in charge of the exhibit.

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The Illinois Iron & Bolt Company

of Carpentersville, Ill., make a fine exhibit of letter presses in the northeast corner of the gallery of the Manufactures Building, Column F 94. The collection comprises hand wheels, levers and double hand wheels for heavy work. Huge presses are shown for taking impressions of very large sheets. The large presses are handsomely decorated, and trimmed with nickel plate. There are a number of specimens of presses of the ordinary office size in a variety of styles and kinds of finish.

McIntosh, Seymour & Co.

of Auburn, N. Y., have in operation in Machinery Hall, running dynamos for the General Electric Company, a 1200 horse-power double tandem compound engine, which is receiving much commendation. This engine is equipped with a governor which is remarkably sensitive, quickly controlling the action of the engine on varying loads. The special features of the engine are that the main valves are of the piston type, with adjustable seats and auxiliary cut off valves driven by the governor; all valve gear is driven from detachable drag link shafts; copper heating coils in the receiver are fed from the high pressure cylinder steam jackets; water jackets are applied to guides and main bearings; ball and socket main bearings are provided with oil settling chambers and circulating pumps for continuous oiling. The dimensions of the engine are as follows: Diameter of high pressure cylinder, 18 inches; diameter of low pressure, 32 inches; stroke, 36 inches; speed, 112 revolutions per minute; steam pressure, 125 pounds condensing; main bearings, 24 inches long by 14 inches diameter; diameter of shaft between bearings, 16 inches; fly wheel, 16 feet in diameter and 78-inch face; weight of fly wheel, 62,000 pounds; total weight of engine, 250,000 pounds.

The Electric Traveling Crane,

built by the Yale & Towne Mfg. Company of Stamford, Conn., that did so much of the work of installing the exhibits in Machinery Hall and is now carrying passengers, has become as popular as a means of obtaining a bird's eye view of the hall as is the Ferris wheel for a general view. It has received an award from the John Boyd Thatcher commission. In addition this company have received individual awards on the locomotive crane in the Transportation Building, on the 10-ton pillar crane, the triplex block, the duplex block, the safety double lift hoists and the crabs and winches in Machinery Hall, every machine shown by the company thus receiving an award entirely on its own merits, the excellence of the company's products being thus emphasized and indorsed in the strongest manner possible within their power by the Board of Awards.

Hemenway & Browne, New York, exporters of American products to West Cost South American ports since 1829, have recently secured a contract to supply the Chilian Government with 12 locomotives and tenders. They were obliged to compete twice with leading European and American concerns, bidding the lowest both times. A year ago this house bid on 450 freight cars twice and were the lowest bidders in each case, but the local press objected so strongly to sending such an order out of the country, when native shops needed encouragement, that finally it was kept there. While most of the South American countries have for some time preferred such goods should be built in the United States, it is worthy of note that the volume is constantly increasing and this particular order will not only amount to about $200,000 in American gold, but be the means of influencing a certain amount of contingent commerce. This rolling stock will be built by the Rogers Locomotive Works, Paterson, N. J.

San Francisco News.

The sales of wheat, flour, barley, fruit, &c., though at much lower prices than last year, have been so much larger than they were then that the prospect of business should be equally good. It has not been as good yet as it was then, but matters are improving, and business in hardware, iron, &c, has been much better than it was a little while ago. The value of the produce sold to date in a few of the leading articles has been equal to a round $9,000,000, and though that may not seem large to an Eastern business man it seems a good deal to the people in trade in this city, especially when it just represents the business done for the past three months only. These figures make no account of lumber, borax, wool, quicksilver or metals and minerals of various kinds, which would add very considerably to the total. There is an improvement, but a very light one, when compared with the falling off shown by the figures of the Clearing House, which vary all the way from 25 to 30 per cent. below those of a year ago. There is a fair demand springing up for builders' and farm hardware. Agricultural implements are selling in smaller quantity than they were a year ago. The demand for machinery is light, and as considerable of that has been supplied from the East the dullness of the times is felt by the agents of Eastern houses here. They try to put on a cheerful face before representatives of the press, but in private they will tell you that business was never duller.

The sales of nails are increasing somewhat. They have been dull and a big reduction was made some time ago, but that does not seem to improve the market. The "Commodore T. H. Allen," the "Florence" and the "Reuce" have come to hand recently with 6039 kegs. Receipts by rail for a long time have been very light. The jobbing rate for iron is $1.75 per keg, but it is said that the Nail Company have been selling as low as $1.65 per keg. This is a great difference compared to the old-time prices—about one-half. Prices have dropped rapidly this year. The Nail Company are talking of building again, but the cost would be very great and it is somewhat uncertain when they may start in. It is hard to get money and the price of nails is low. The consumption of California, Oregon and Washington is probably 600,000 kegs a year, worth at present prices about $1,000,000 a year. Now, with any sort of decent freight rates, all these nails could be supplied from this city. At present a little over one half of them is so supplied. They might all be, while the present factory could manufacture about one-half of them. We have, since the 1st of the year, received a few thousand kegs from Washington.

The pig iron business is duller than ever before. I have given you some figures as to consumption here. Now, since the first of the year the imports have slightly exceeded 8000 tons, of which 2000 tons have been from Great Britain. It will thus be seen that American iron now commands the market. It, however, sells very low, not to exceed $18 per ton. English and Scotch, when either is wanted, command about $4 more. The imports of scrap have fallen off almost altogether since the first of the year. This tells the story of the decline of business in our manufacturing establishments very eloquently.

There have been no imports of pig tin or tin plate for the past two weeks, but the market continues very dull in both. Tin plate is quotable at $5 50 to $5.60 for coke, and pig tin sells in small lots occasionally at 21¾ cents to 22 cents. Of course, the purchasing for the canning season has been much more extensive than was expected.

The Naval Architects.

The first general meeting of the Society of Naval Architects and Marine Engineers will take place in New York City at 10 a.m. Taursday, November 16, 1893, in the rooms of the American Society of Mechanical Engineers, 12 West Thirty-first street, the sessions extending through Thursday and Friday, November 16 and 17. The following is a preliminary list of papers to be read: "Transatlantic Navigation," Charles H. Cramp, president Wm. Cramp & Sons' Ship and Engine Building Company, Philadelphia, Pa.; "Steel Ships of the United States Navy," Theodore D. Wilson, ex-Chief Constructor, U. S. N.; "The Development of Shipbuilding on the Great Lakes," Jno. F. Pankhurst, vice-president and general manager Globe Iron Works, Cleveland, Ohio; "Notes on the Machinery of the New Vessels of the United States Navy" George W. Melville, Engineer-in-Chief, U. S. Navy; "Coal Bunkers and Coaling Ships," Albert P. Niblack, lieutenant, U S. Navy; "Production in the United States of Heavy Steel Engine, Gun and Armor Forgings," Russell W. Davenport, vice-president Bethlehem Iron Company, South Bethlehem, Pa.; "Determination of the Approximate Dimensions of a Vessel to Fulfill a Given Programme of Requirements," Joseph J. Woodward, naval constructor, U. S. Navy; "Comparative Performances of American and Foreign Freighting Ships—Our Superiority," Wm. W. Bates, late Commissioner of Navigation, Treasury Department; "The Wetted Surface of Ships," David W. Taylor, Naval Constructor, U. S. N.; "The Influence of Speed and Weight of Machinery on the Determination of the Other Elements of the Design of Steam Vessels," John J. O'Neill, Naval Architect and Marine Engineer; "United States Treasury Rules for the Inspection of Machinery and Boilers," Jas. T. Boyd, general manager George F. Blake Mfg. Company. Papers are also expected from the following gentlemen, but the exact titles have not yet been decided upon: Col. Edwin A. Stevens, president Hoboken ferries; A. Cass Canfield, member America's Cup Committee, New York Yacht Club; Joseph H. Linnard, naval constructor, U. S. N.

The recent depression in business has had a marked effect in decreasing the consumption of tobacco and beer, as shown in a material falling off in the internal revenue from those manufactures.

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Intricate Drop Forgings.

Less than half a century ago necessity created a demand for "blacksmithing by machinery," or, as it is now commercially and generally termed "drop forging." The success of articles made by this process was first demonstrated in the production of firearms, sewing machines, &c., and in no small measure have they contributed to the enviable reputation of this country for superior machinery of all description. So rapidly has this industry grown and so widely have its products found acceptance that it would be a task of vast magnitude to even attempt to enumerate the several uses of drop forgings.

Any well equipped machine shop will be found capable of producing dies. To use these, however, for drop forging purposes without the genius embodied in the break-down impressions would be wholly impracticable. This factor has been especially prominent in the making of drop forging a distinct class of work, and to the successful application of the inherent principle of a smithy's art is almost wholly due that improvement which makes the adoption of drop forging almost universal.

As showing some of the difficulties encountered in drop forging we present drawings of some specimens of intricate work, and a description showing in more or less detail the exact methods pursued from the time the order is received in the office until the final product is shipped. It is through the courtesy of J. H. Williams & Co. of Richards and Bowne streets, Brooklyn, N. Y., that we are enabled to give our readers an account of the process carried along in their extensive establishment.

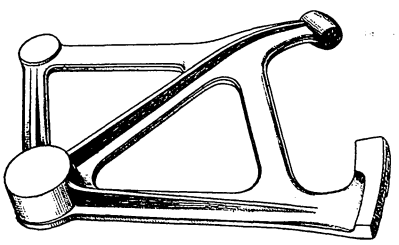


Fig. 1.—Shuttle Carrier.

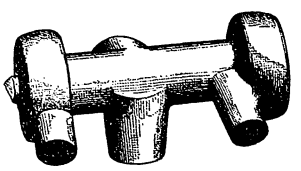


Fig. 3.—Bicycle Crank Axle Drum.

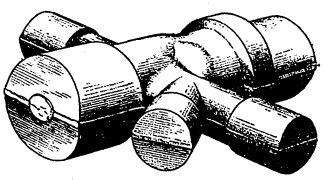


Fig. 5.—Ammonia Pipe Fitting.

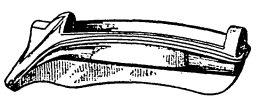


Fig. 2.—Shuttle.

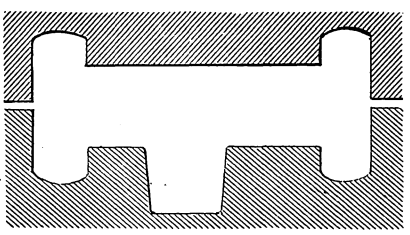


Fig. 4.—Section through Dies for Fig. 3.

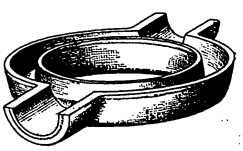


Fig. 6.—Bicycle Fork Connection.

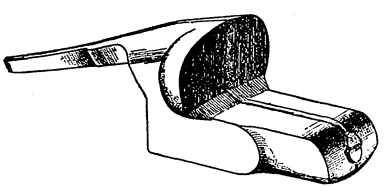


Fig. 8.—Gun Frame.

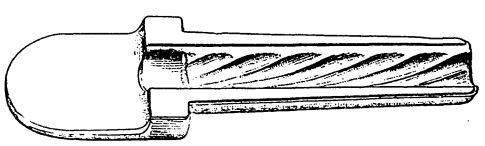


Fig. 9.—Wire Rope Clamp.

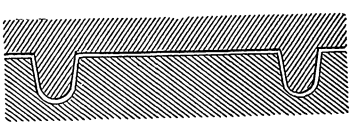


Fig. 7.—Section through Dies for Fig. 6.

INTRICATE DROP FORGINGS.

Contrary to the prevalent idea, the process of drop forging is the most expensive way of working metal, if but small quantities of forgings are desired. As the production of a single forging involves the entire cost of sinking dies and the making of all tools, each forging in the first product must necessarily bear its share of cost pro rata. This fact alone debars the absorption of the entire source of trade now supplied by castings and hand forgings, and as the art advances and the cost of production is reduced, that field, necessarily for its own good, must be further encroached upon. Therefore, drop forging should be classed as a work distinct and apart from that of steam or helve hammer forging, hydraulic press and hot-rolled work. Aside from the invaluable possibility of duplicating, the superiority of drop over hand forgings is due to the almost perfect homogeneity resulting from the continued pounding of a heavy hammer mechanically, yet wholly under the control of the drop hand.

First Work Necessary.

The order for a special forging may be accompanied by merely a verbal description and rough or scale drawing giving the dimensions, or a pattern more or less perfect. This forms the foundation and is handed from the office to the foreman of the die-sinking department. His first work consists in the making of sheet steel templets or gauges, which serve the die sinker as guides in his work and by means of which the final dies may be finished. After the dies have been sent to the hammer department these templets serve to tell when the dies have been worn out and when they should be either discarded or resunk, as, on account of the wear resulting from use, they have become worn beyond the standard allowance for that particular piece. Taking an ordinary lathe dog as an illustration, the sheet steel templets are nine in number, one giving the horizontal or flat outline of the dog, the others, when placed on the edges of the dies, outlining the several curves and their depths at different angles. In other words, considering the die as simply a block formed with irregular depressions, these templets serve to show when the die sinker has on any particular line reached the exact distance below the surface of the block, and also to inform him when he has obtained the exact degree of curvature.

It will be observed that the foreman in this case has no guide whatever, except his own experience and judgment. Of course, his object is to so make his templets that there may be no possibility of error on the part of the die sinker and that there may be no confusion in regard to his work as it progresses. This is essential, from the fact that in the die-sinking department all work is of the most expensive character, only the first outlining or roughing being done by machinery, the final fitting and bringing to the perfect outline being hand work by men receiving high wages.

Die Sinking.

The die-sinking department resembles, in a certain sense, a well-equipped tool room. We find lathes, drills, shapers and planers of common form. The two blocks forming the male and female dies are machined wherever possible in order to save subsequent hand work. We find here a special tool, known as the die sinking machine, resembling in its spindle and spindle driving gear the ordinary upright drill, but being provided with carriages, by

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means of which the work held below the spindle can be placed at any desired angle and can be moved in any desired direction. The cutter, carried by the vertical spindle in precisely the same way as would a drill, is a milling cutter shaped according to the cut it is desired to make in the block. For instance, the female die for forming the curve in the bicycle frame connection, shown in Fig. 6, would be a round nose milling cutter, which would cut this curve to a depth and width sufficient to obviate in a great part any subsequent hand work. The universal movements of this machine and the rapidity of its operation and accuracy with which it can be manipulated, make it one of the most essential appliances in the department.

After having been machined as far as possible, the final work is done by hand by means of a hammer and cold chisel, the surface finally being brought to a fine finish with the aid of scrapers and rifflers, and in some cases, where the surface desired is unusually fine, the dies are polished with emery.

As is well known the dies consist of two blocks, male and female, which may or may not, according to the form of forging they are intended to make, be reversed duplicates of each other. In the laying out of the dies by the foreman, and in the making of his templets, he must first decide how he will cut the cavities in the dies in order that they may draw. This is precisely the same question that confronts the molder who receives a pattern. He must decide how he will mold it in order that the two parts of his mold may be separated and permit the withdrawal of the pattern. Two dies practically form a mold, which, under the operation of the hammer, is filled with the metal forming the forging, and it is therefore essential that upon the separation of the dies the withdrawal of the forging should be an easy task.

Lead Proving.

The dies having been finished are bolted together and lead poured in the impression in order to furnish a proof of the forging, which is submitted to the customer and by him altered or corrected as may be necessary. This is done as a safeguard and is practically forced upon the proprietors of the forge shop by reason of the fact that the orders they receive are not always perfectly explicit, and by submitting a proof they not only permit of alterations being made but also guard against final dispute.

Adjusting in Hammer.

Each die is formed with what is termed a shank on its surface opposite the face, this being provided in order that the dies may be attached respectively to the anvil and ram of the hammer. The shank is dovetailed, in order to fit in a corresponding opening in the hammer, and upon one side of the dovetail is inserted a wedge, which holds the block in position and also permits of its adjustment forward and backward. Sidewise adjustment is provided in the hammer itself. The guides carrying the ram can be moved so as to bring the upper die in any desired relation to the lower one. These two means of adjustment, front and back, and the right and left, are necessary, in order that the two dies may come together perfectly in line, and at the same time they permit of adjustment being made for wear in the hammer itself.

Tempering.

Some dies are tempered and some are not, according to the size of the die, the character of the forging it is expected to make and also the number of forgings called for. Where the edges are sharp and a great number of impressions are to be made steel of the highest quality is used, and it is tempered as hard as fire and water will make it. The first process in tempering is to heat the block evenly and thoroughly all the way through in an ordinary charcoal fire. It is then cooled entirely in water, after which it is again placed in the fire, warmed slightly to produce the desired color—usually a straw or copper—and cooled again in water.

This is one of the operations in which no guide can be followed and no rules formulated. The success of the operation depends solely upon the experience and judgment of the temperer, and when we state that the man who is now doing that work for the Williams Company has been before a forge fire for 53 years and over and is now doing all their tempering, the fact will be appreciated that his success is due in a large measure to long experience. The dies are now ready to go to the hammer.

Breaking-Down Dies.

The most difficult part of the whole business to learn, and at the same time the most essential branch, consists in designing the breaking-down dies. This is for the reason that not only the success of the work done by the forming dies is dependent upon the work produced by these dies, but also the cost of the whole operation, and especially the amount of waste material, which is a result in all drop forging processes, depends directly upon their correct form. This will be appreciated from the following: The shuttle carrier shown in Fig. 1 measures 6 inches horizontally and 5¼ inches vertically. It is formed from a steel bar 2 inches wide by ¼ inch thick. It is the work of the breaking-down dies to so distribute the metal of this bar that at the hub it will be collected or increased in thickness, that sufficient depth will be provided for the two right-hand ends, and that the metal will be formed up so that the finishing dies will have material enough in order to form the webs of the arms. The forming dies are approximate in shape to the finishing dies, but the edges are so arranged and curved as to force the metal in the desired direction. This specimen, Fig. 1, could be made directly by the finishing dies by providing metal of the desired thickness and width, but it is very evident that the work required of the dies would then be altogether too severe in character, and further than this, that the amount of metal wasted and going to the scrap heap would be out of all proportion. It is for this reason, and this reason alone, that the breaking-down



Fig. 10.—*Bicycle Fork Head.*

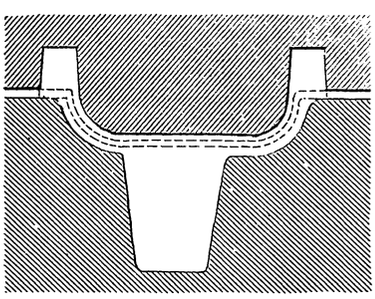


Fig. 11.—*Section through Dies for Fig.* 10.

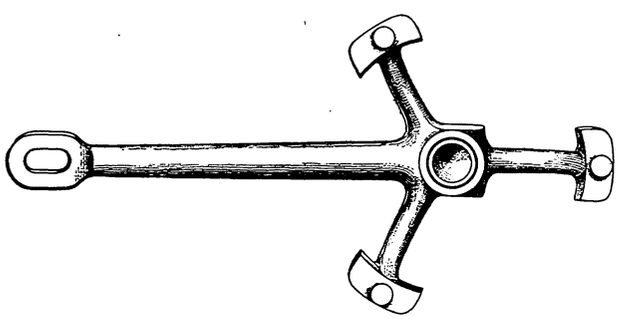


Fig. 12.—*Bicycle Sprocket Crank.*

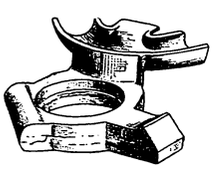


Fig. 13.—*Bicycle Crank-Bearing Connection.*

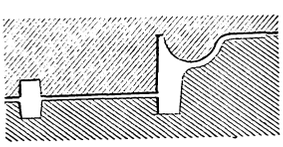


Fig. 14.—*Section through Dies for Fig.* 13.

INTRICATE DROP FORGINGS.

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dies occupy such a prominent position in a drop-forging establishment. Sometimes in the case of small work the breaking-down dies and the finishing dies are cut on the same blocks. This is done mainly to save time, as at one heat the piece can be broken down to approximate shape and then passed to the finishing dies.

Trimming Dies.

Referring now to Fig. 1 and also Fig. 12, which are good examples of the part played by the trimming dies: As these two pieces leave the finishing dies the inner spaces and also around all the outer edges are filled with a thin web of metal caused by the surplus metal spreading out between the dies. It becomes necessary to remove this metal and the trimming dies are called into operation. They are constructed and they operate on the same principle as the common press. The punch corresponds in outline to the forging, which is forced through a die, the edges of which, in connection with the action of the punch, remove all the surplus metal in the openings and around the edges. The forging is then delivered or finished at the works, as the original order may call for.

Forge Shop.

In the forge shop we find a collection of drop hammers, ranging in capacity from 200 to 2000 pounds, trip and helve hammers and a steam hammer, the principal work of which is to aid the breaking-down dies and bring the piece as far as possible to a form approximating the form desired. Hard coal is used in all the furnaces, which are arranged down each side of the shop, and to which air is supplied by two blowers. There has also been recently introduced an upsetting machine intended for massing the metal on the end of bars, which otherwise would have to be made of stock the size of the head desired, and which would have to be hammered down in order to produce the smaller portion. This has been found extremely useful and has greatly aided and saved both time and expense.

Resinking Dies.

When dies have become so worn by long use—and we may state parenthetically that the life of a die varies from 300 to 20,000 forgings, according to the intricacy of the pattern—that the forging no longer comes up to the standard required, it becomes a question whether or not to discard the die completely or to re-sink it. If it is desired to re-sink it the temper is drawn and it is returned to the die-sinking department. Here the templets used in first construction are again brought into play and the face of the die planed off to the depth at which it has been decided to re-sink the pattern. The work from here on is in no way different from what was done in the first making of the die. Whenever possible a die is re-sunk for the simple reason that much preliminary work has already been done, and although it may have been worn considerably it still approaches very nearly to the exact form needed.

Quality of Steel.

Steel for dies varies from the softest steel obtainable to the highest quality of tool steel, this depending, as previously stated, solely upon the size and form of the forging desired. When there are many and sharp edges, and when the order calls for an unusual number, only steel of the finest quality is used. Steel is received in bars for the forging and in hammered blocks for the dies, and in the former case is piled in racks under suitable classification, in order that the shapes and quality may be easily kept track of.

Accuracy of Drop Forging.

It may seem strange to state that drop forging can be done so that it will gauge to within 0.001 inch. It will be evident that this could not be done with the metal hot, since it would not be possible for any hammer man to so heat his metal that there would not be a variation in size due to a difference in temperature. Therefore, when forging of this character is desired it is forged hot as closely as possible and then cooled and hammered cold to gauge.

Illustrations.

Our drawings were made from specimens selected at random, the endeavor being to show the intricacy of some of the work and at the same time to convey some idea of the range. Fig. 7 is an approximate cross section of Fig. 6, and shows the upper and lower dies and spaces between the two dies representing a cross section of the completed forging. The same is true in Figs. 3 and 4, 10 and 11, and 13 and 14. These are merely presented in order that an estimate may be formed of the character of the work done and how it is done, and particularly of the change which takes place in the shape of the metal in the dies.

Treatment of Forgings.

During the operation of forging the piece is brushed with a steel brush in order to remove the scale made by the hammer. If the piece, in order to complete it, is to be machined, the scale is pickled off in a weak sulphuric acid bath. When the pieces are to be case hardened they are placed in a muffle, packed with crushed bone and leather, and heated in a furnace. Forgings presenting sharp and well-defined edges are dumped from the furnace into oil, the planer and rounded shapes being immersed in water.

Keeping Track of Work.

In the foreman's office is a blank order book in which is entered each entry as it comes from the office, and which contains all instructions necessary. The items covered are as follows: Name of article, quantity required, material to be made of, size of material from which it is to be made, rack in which this material is found, anneal, pickle, number of dies, previous order, model, specimen, promised, shipped, net weight, lead proof or not. There is also space on each page for a record to be kept of the material taken from the stock room, and also of any surplus material returned to the stock room. Careful entries are made from time to time under the different heads of these orders, and at an instant's notice the exact condition of the work can be ascertained.

Regular Work Done.

J. H. Williams & Co.. in addition to a varied business in special forgings for outside parties, as is shown by an inspection of their die room, in which are some 2000 dies which they made and which are kept on hand in case they may be needed at some time in the future, do much forging for their own particular line of manufacture. They now make forgings from iron, steel, copper, bronze and aluminum, the latter working well under the hammer, but requiring extreme care in heating in the furnace, since, as is well known, it melts without giving to the eye any indication of heat. Among the regular work made by them are the well-known Brock chain pipe wrenches, single and double head engineers' wrenches, lathe dogs, thumb nut and thumb screw blanks, bicycle wrenches, and the like. Their special forgings have covered almost every line where it has been possible to introduce a forging in bicycle work, electrical appliances, pumps, railway appliances, sewing machines, typewriters, firearms, machinists' tools, &c. The quality of the work produced and the possibility of reducing the weight, and at the same time increasing the strength by means of drop steel forgings, have combined to constantly and quickly enlarge their field of operations. To appreciate this fact one must inspect, as shown in their office, their show boards, upon which are artistically arranged many of the specimens of work they have recently produced.

Wood Working Machinery at the Fair.

The display of wood working machinery at the World's Fair is a very fine one. The exhibits illustrate the great progress which has been made in this line of mechanical development during recent years. Many of the machines shown are triumphs of ingenuity. An interesting feature is also the remarkable manner in which difficult pieces of work are equally well accomplished by several radically different methods. The exhibits described are located in Machinery Hall.

The J. A. Fay & Egan Company

of Cincinnati, Ohio, have exhibits at Column F 38 and 41, which in completeness and size are characteristic of the company making them. A 42-inch triple drum floor sander shares the honors of attention from machinery men with a triple cylinder flooring machine and a timber planer for dressing stock as large as 16 x 20 inches on four sides. A band saw is exhibited which can saw stock 24 x 48 inches, also a hollow chisel mortiser ⅛ x 2½ inches. The entire display embraces 46 machines for use in planing mills, box and furniture factories, spoke and handle works, car shops, shipyards, &c. O. C. Wysong, in charge of the exhibit, says: "The latest thing on the market is the double end car tenoning machine, so constructed as to tenon long sills without having to turn the stock around, thereby saving time and space." On this machine, which cuts two tenons at once, instead of a carriage moving the main frame travels on planed ways by means of a screw which operates by friction. This may also be used as a cut off saw or gaining machine. Its weight is 10,000 pounds and it is highly approved by car builders. A new twin screw planer planes the stock on the sides 14 x 18 inches, is arranged to take the bottom cut first, and is provided with a hand wheel so that the bottom cut lower cylinder can be changed instantly without changing the size of the timber being dressed. It has eight feed rolls, all powerfully geared and making a positive feed, being raised and lowered by power. This machine has only recently been placed upon the market, but in that short time has met with pronounced favor. About 30 Reeves pulleys and

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as many belts from the Page Belting Company's Works form a perfect net work in this exhibit around a booth used as an office and reception room in the center of the space. This booth is appropriately draped in red, white and blue.

The Hall & Brown Wood Working Machine Company

of St. Louis, Mo., have erected a booth of Georgia yellow pine within their area of 30 x 50 feet, at Column F 51. Here they exhibit to advantage 15 of their wood working machines, among which are included their band saw, 10-inch molder, No. 9 Hoo Hoo planer, one masher, two Mississippi matchers and an automatic double box cut off saw. The No. 9 Hoo Hoo, mentioned above, is adapted for almost any stock of heavy dimension for flooring and ceiling. Both the feed rolls are broken and two pieces may be fed at once from 8 x 12 to 1 x 1. The weight of this ponderous machine is 14,000 pounds; it is well constructed and free from complications. The stock goes to the top cylinder, 30 inches long, 5 inches cutting circle, and then passes to side heads, which edge the board, and it is then passed on to the lower cylinder, which planes the under side. This planer, which is in operation, is provided with feeding out wheels which carry the board through the machine. J. F. Judd, who has charge of the display, prides himself on having the only exhibit in this line which is piped for carrying away sawdust, shavings, &c.

Paul Pryibil

of New York City occupies about 900 square feet, at Column F 45, with his special machinery. From an overhead shafting some 45 pulleys and belts propel band and jig saws, planers, twist and fluting machines, corner block and rosette machinery, an edge molder, double and single borers, mortiser, drill for piano plates, piano action machine and a piano plate borer, which stands alone in its class. The last named machine has a double platform for carrying the piano plate, while overhead a suspended drill works upon it. A new parallel swing saw, which has only been on the market about six months, is doing good work and attracting considerable attention from the trade. An oval lathe for turning ovals is also deserving of more than passing mention and completes a very extensive exhibit.

Greenlee Bros. & Co.

of Chicago are located at Column F 48. Their exhibit covers in the neighborhood of 2000 square feet, being bounded by three aisles. A handsome oak booth in the shape of a pagoda has been constructed in the center, with maple flooring, and is occupied by Messrs. Gray and Carse, in charge of the exhibit, as an office and reception room. The line of high grade wood working machinery and special tools which this firm manufacture is so well known to the trade at large that a detailed description of all of them is superfluous. Probably the most attention is paid to their hollow chisel mortise machines, in which they make everything demanded from small sash work up to the large No. 7 car mortising machine, which mortises 2½ inches square, and carries on table, by power, timbers 70 feet in length. The double compound automatic machine shown has four hollow chisels operating on two door stiles at the same time by one operator, who clamps them to the table, thereby taking any wind out of them, and also feeding them to the stops, thus requiring no "laying out." This machine will blind mortise or mortise clear through two stiles at one operation. The advantage claimed for this over a chain mortising machine is that it will operate upon hardwood also, and the mortises are always square. Its remarkable points are its adjustments and high speed of gears revolving the bits, which make 5000 revolutions per minute, with no perceptible noise or wear. In addition, they also have a full line of self feeding saw tables, of which they are the inventors, embracing a No. 0 machine which rips 2-inch stock, and various other sizes up to a No. 12, capable of ripping 12-inch plank. Their latest improvement is an adjustable outfeeding device back of saw. They also have on exhibition a full line of anti-cut off machines, both single and double. The double machines are designed more for railroad work, it being possible to cross cut both ends of several pieces of flooring or siding by one operation at the same time. Here, too, are found two of their special sash, door and blind machines.

The Dubuque Specialty Machine Works

of Dubuque, Iowa, show their chain mortiser in operation at Column F 52. This machine is made in three sizes and is specially adapted for sash and door work, furniture factories and light stock work of all kinds. The three points which are claimed for it by the manufacturers are, accuracy, excellence of work and rapidity. It is simple and entirely automatic, the saw being fixed and the table bringing the stock to the tool along a vertical slide and dropping it again at the completion of the cut. The mortiser proper is composed of a chain of cutters riveted together, propelled by a sprocket and guided about a fixed bar with roller bearing at the point. A bright boy can operate it; it is easily kept in order, may be sharpened in three minutes and is adapted to all sizes from ¼ inch to 1 inch.

Charles L. Goehring

of Allegheny, Pa., has on exhibition at Column F 35 several of his immense machines for cutting geometrical moldings out of solid wood. There is a high speed molder of 16,000 pounds weight which requires no sand papering on the molding and produces perfectly smooth stock with a dead finish. The geometrical center piece circle machine tips the beam at 4500 pounds. It is excellent for oval, circular and geometrical figure of eight carving. A geometrical panel machine carves nine figures on door paneling at the same time. Completing the exhibit is the geometrical carver and molder, which operates as rapidly as straight work. The last named machine weighs 18,000 pounds. The Goehring geometrical molding machines are meeting with pronounced success in England and on the Continent of Europe.

The Fox Machine Company

of Grand Rapids, Mich., manufacturers of Universal mitering machines, show a full line of them at column J 43. The Universal trimmer is built in three sizes and five styles, including the latest improved trimmer, which cuts a back angle for a pattern maker, cutting any desired angle from 30° to 135°. These manufacturers build and show miter machines for belt and foot power, also cooping machines for factories. Included in their exhibit is a full line of dado saws or grooving heads, among them being a 62-inch machine, carrying five heads. A three-spindle boring machine, with tilt table, is likewise shown; also a 30-inch open side shaper and a 15-inch crank shaper. A planer chuck recently produced is on exhibition, together with corrugated sash pulleys, the latter wholly made of sheet steel by an ingenious process. Considerable attention is bestowed upon the quadruple bit for corrugated pulleys, making four holes at once, for the insertion of pulleys.

The Milwaukee Carving Company

of Milwaukee, Wis., show at Column G 44 one of the most interesting exhibits in their carving machine and samples of its work. It is particularly adapted for the furniture trade and interior decoration. The work is all done from a model, the machine consisting of four cutters connected in a yoke which follows a tracer, reproducing the model four times. The power is transmitted through a flexible shaft, the speed of each cutter being 15,000 revolutions per minute. It measures 7½ feet wide and weighs 2200 pounds, producing the heaviest work with large tools as well as the finest and most delicate work with smaller tools, varying in size down to a pin point. It will also cut one piece 40 inches, two pieces 20 inches and four pieces 10 inches in width, of any length and thickness up to 16 inches, finishing the work perfectly with the exception of sandpapering. Among other figures on exhibition are reproductions from a bust of Gladstone carved by the Seaman machine, of English manufacture; a head of Columbus in relief work which is very appropriate, and other ornamental and panel work, receiving much attention and many compliments.

The John A. White Company

of Dover, N. H., display at Column E 50 seven wood working machines, all in operation, in the 700 feet of space which their exhibit occupies. This collection includes the latest combination band resaw. They show one 54-inch resaw, one 26-inch Dover planer, one 16-inch planer, and a 24-inch Concord planer, besides lathes and circular saw tables. They further exhibit an improved method of power transmission, by which it is claimed that an irresistible force is derived from the edge of the belt. These goods were exhibited last year in Boston, where they received the gold medal. R. J. Butcher, road representative of the company, has the present exhibit in charge, and reports having sold one consignment of machines from the World's Fair samples to be shipped to Madras, India. A large photograph is prominently displayed of their works at Dover, N. H., which have been run full time during the prevailing depression in business.

The Art Embossing Machine Company

of Indianapolis, Ind., have in operation at Column F 33 one of their wood embossing machines. It is constructed of a bronze mandrel running on automatic friction rolls, with dies of any figure desired placed on the revolving mandrel and heated from within by gas, gasoline, &c. The stock is then passed through under pressure, receiving the design from the die above and at the same time taking color and smooth finish from the heat. The machine is provided with a pilot wheel for different thicknesses of stock and by a cam lever is thrown into or out of contact with

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the die instantly. This machine is suitable for furniture work, moldings, car finish or any design on any wood desired, or produces an inlaid effect by bringing the hot die in contact with the surface, coloring the wood according to design.

The American Wood Decorating Machine Company

of New York City, by means of their wood embossing machine, shown at Column F 45, produce a very close imitation of hand carved work, so that few are able to detect the difference. The machine consists of a solid revolving die operated by friction. Work is done upon all kinds of hardwood, of which numerous fine samples are shown. This machine operates on any shaped piece of wood, working on circles, sweeps, insides and outsides equally well, executing all manner of figures and designs. They do not cater to heavy scroll work.

The Rohlmann Mfg. Co.

of St. Joseph, Mo., have their improved carving machine on exhibition at Column G 33, which carves four duplicate pieces at one operation up to 12 inches wide, or two duplicate pieces of any length up to 33 inches in width, or one piece as wide as 30 inches. The bits may be handled conveniently and in any direction within an angle of 30°, the top or table being raised or lowered to make thick or thin work and remaining the proper hight for the operator. The table rests upon sliding ways, so that it can be adjusted for the convenience of the workman on different varieties of work. An advantage claimed over other machines is its adaptability for different kinds of ornamental work without extra attachments, owing to the arrangement of cutters. These are so arranged that they may be carried in any direction, cutting under an angle of 30°. By a recently improved and original device all chips and dust accumulating are blown from the carvings, thereby assisting the operator. In chair patterns, panels, reliefs, statuettes, &c., the machine turns out remarkably fine work.

Goodell & Waters

of Philadelphia have an immense planer on exhibition at Column G 48 capable of planing four sides at one time. A "sticker" dresses, tongues and grooves the stock at one operation. Other machinery shown includes a band saw, one 12-inch jointer and countershafts.

Moore Carving Machine Company

of Minneapolis, Minn., have, at Column G 34, a handsome booth of ebony finish, 16 feet square, containing much of interest, on which visitors bestow a vast amount of admiration. The wood carving machine shown has four cutters, with an attachment of a pair of centers with tables for getting all degrees of undercuts. The model from which the machine works can be either hand carved, plaster of paris or papier mache. The figure on which the machine was working when a representative of this paper called last week was the well-known Venus, Goddess of Love, perhaps more familiarly known as the Lady on the Shell. This model is of plaster of paris, and four reproductions were made in four days, each valued at $75. One of the points commending this machine to manufacturers who use a carving machine is the width and thickness of stock which can be used and the work which can be done to advantage on the full length of any panel, either of hard or soft wood. This machine has only been on the market five years, but already there are nearly 100 working in Europe and five times that number in this country.

The Berlin Machine Works

of Beloit, Wis., have at Column F 42 one of the largest and most complete exhibits of wood working machinery. It occupies a space of 40 x 55 feet, which fronts on three different aisles and is inclosed by a neat iron railing. This exhibit may be divided into three departments, namely: Planing mill machinery, furniture trade machinery, including glue jointers and the Invincible sanders. The improved planer and matcher made by this company will work stock 6 x 15 inches. The cylinders make 4500 revolutions a minute, and a marked feature is the connection of rollers with self-oiling bearings instead of transmission by gears, thereby running rolls without vibration and having chip breakers on top and bottom cylinders. They also have the finest crucible steel arbors and all gearing inside of the frame, thus running cylinder pulleys close to cylinder boxes. The spindles measure $2\frac{3}{16}$ inches in diameter and the bearings 11 inches in length, with an improved cam locking device to lock the matcher spindles, avoiding variations. This size machine working stock 6 x 15 inches, weighs 11,000 pounds, which is 3000 more than the ordinary matcher of the same style. All parts are perfectly adjustable and interchangeable. The inside molder is of similar construction and possesses many of the same points of excellence. It is a 12-inch inside molder, having an extra bottom cylinder, and possessing all the advantages of an outside molder, throwing the heads horizontally, having the latest improved gearing. It is durably and scientifically constructed for accuracy and rapidity, being aptly termed the planing mill man's friend. The Beloit manufacturers also display a single cabinet surfacer with sectional broken rolls, all the rolls being weighted with improved fast and slow feeding device, neither a friction nor clutch, but a simple and accurate operation. A description of their machinery would indeed be incomplete without reference to the Invincible sander, which for the past 15 years has sustained an enviable reputation for producing a high level parallel finish. By the triple drum a positive and accurate oscillation of the steel cylinder is secured. One of their Junior Sanders is also included in the exhibit. The glue jointer shown was only introduced a year ago. Other machinery shown includes a self feeding rip saw, double shaper and a buzz planer or hand jointer. The display is in charge of the company's genial salesman, Mr. Kelly.

E. & B. Holmes

of Buffalo, N. Y., exhibit at Column F 50, Machinery Hall, a variety of wood working machines, including machinery for the production of barrels and kegs. Prominent in this display is the King timber planer and sizer, claimed to be the largest exhibited at the fair. It will work pieces 26 inches wide and 16 inches thick, and planes all four sides. Another notable machine is the Niagara endless bed double surfacer with feeding out rolls, built to work 26 and 30 inches wide and 12 inches thick. In addition are shown the Erie fast feed flooring machine, an improved circular resaw, an improved gang edger with straightening attachment, an improved spur feed rip saw hand siding machine, an improved balancing scale for planer knives, a new automatic knife grinder, &c., comprising in all 15 patterns of high class machinery. An important feature of the exhibit is a variable feeding device which can be applied to all planers and matchers and is regarded as a most valuable improvement in the operation of wood working machinery. The manufacturers state that it thoroughly regulates the speed of the machine, so that the operator can adjust it to a nicety, whether the material be wide or narrow, or the cut heavy or light, and whether the wood be hard or soft. It can be changed instantly without stopping the machine or the motion of the material, and it is claimed that by its use one-third can be added to the output of the machine. The keg machinery shown is in extensive use among makers of nail kegs. Edwin Bell's Sons & Co., very large manufacturers of nail kegs, whose operations are conducted at various nail making centers, have recently made heavy purchases of the machinery manufactured by the Messrs. Holmes. The exhibit is in charge of E. B. Holmes and A. E. Lambert.

H. B. Smith Machine Company

of Smithville, Burlington County, N. J., make a very large exhibit of their machines at Column F 46, Machinery Hall. The display includes a planer and matcher, a new six-roll double surface planer working up to 26 inches in width and 16 inches thick, a cabinet surface planer, a new single surface planer, a new hand planer or jointer, new 10, 9, 8, 7 and 6 inch molding machines, an improved double spindle irregular shaping machine, a single spindle reversible shaping machine, an improved panel raising machine, a blind rabbeting, beading and jointing machine, a double end tenoning machine with double cut off saws in front, a double end tenoning machine with double cut off saws in the rear, a new single tenoning machine, a new self feed blind slat tenoning machine, a power mortiser with boring attachment and clamp table and rack and pinion feed, foot power mortiser, band saws, resaws, sawing tables, relishing machine with attachment for dovetailing sash, a three-spindle boring machine, geometrical carving machine, miter cutting machines, lathes, &c. The special features shown in connection with many of these machines would require unlimited space for their enumeration. An example is the new carriage devised for No. 2 tenoning machine. This is now mounted on rollers instead of slides, greatly decreasing the friction and adding much to the ease of operating the machine. The geometrical carver is a machine of simple design, easily operated, but capable of a great variety of work in carving corner blocks, rosettes, &c. The designs of which it is capable are almost innumerable. The company also have on exhibition the Haines patent blind slat tenoning machine, which operates two slats at once, the slats being revolved by power, thus increasing the output at least 50 per cent. The display is in charge of Wm. S. Kelly.

The S. A. Woods Machine Company

of Boston, Mass., exhibit 15 machines at Column F 35, Machinery Hall. In such an exhibit as the Woods Company have made it is difficult to determine which is the most deserving of mention. Perhaps their new double surfacer and sizer attracts as much at-

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tention as any one machine shown. It is intended for planing all kinds of bill timber perfectly square, beading heavy girders and a variety of mill work. By use of a center guide two pieces may be dressed simultaneously on three sides each. By use of a power hoist the machine is quickly changed while running so that timber of various sizes can be planed without sorting, or two pieces of unequal thickness run through at the same time. Another machine deserving the many good things said of it is the 24-inch single shop surfacer, especially adapted where a strong feed and fine finish are necessary. The bed moves up or down on gibbed ways located to obtain great steadiness, and the elevating screws are of large diameter, aiding to keep the bed firm and steady. The new automatic knife grinder with power feed for wet or dry grinding is a very superior machine, having an absolutely straight and true edge. The machine is very compact, solid upon the floor and no jar is experienced in running. Other machines on exhibition are their automatic floor board boring machine, 38-inch band saw machine, a heavy pattern self feed saw table, double iron adjustable saw table, circular resawing machine, improved jointing and facing machine, new cabinet surface planer, and their four-roll molding machine.

J. Hallawell

of North Mernon, Ind., has on exhibition at Column I 35 one of the hub boring machines which he manufactures. These machines bore from both sides at the same time, and have a capacity of 3000 planks per day. One pair of augers will bore 1,000,000 blocks, and they may be resharpened in three minutes. A prominent feature of the display is a pyramid of blocks in one corner of the space.

The American Well Works of Aurora, Ill., have secured a medal for their revolving process machine, by which wells are sunk by the revolving of the tubing and a stream of water washes out the borings. The deepest and largest wells sunk in alluvial formations, quicksand, &c., have been sunk with it. J. W. Byrnes & Co. have sunk a well with it at Galveston, Texas. It was commenced with 22-inch bore, and is sunk to a depth of 3067 feet in quicksand and clay, with alternate strata of hard materials.

The Verein zur Befoerderung des Gewerbfleisses of Berlin has awarded to Professor Ledebur the prize for an essay on the reliability of current methods for the estimation of carbon in iron and steel. The memoir is printed in full in the last issue of the Transactions. Professor Ledebur prefers the Saernstroem methods.

Judging from the number of meetings being held and their stormy character, the representative members of the Finishers' Association of the Youngstown district would rival our national legislators as prize talkers over a vague subject.

The Berlin Iron Bridge Company of East Berlin, Conn., have received the contract for the new draw bridge at Salem, Mass. The bridge will have a 60 feet opening with a roadway 28 feet wide in the clear, and two sidewalks each 6 feet wide. It will be a deck plate girder construction.

THE WEEK.

To encourage the mining industry of Chile the Government of that Republic has, as previously mentioned in these columns, decided to hold a mining and metallurgical exposition at Santiago, opening on March 15, 1894. Foreign manufacturers have been invited to exhibit machinery and tools and other apparatus connected with mining, the suggestion being made that only models or drawings of heavy machinery, motors and boilers be sent. The space needed will be given to exhibitors who apply for it before January 1, 1894, and motive power will be supplied. The freight on exhibits from Europe or the United States will also, it is understood, be paid by the Chilian Government. The exposition will close on April 30, 1894.

A combination of all the street railways of San Francisco is announced, with a capital stock of over $18,000,000, the greater portion of which is understood to be owned by the Southern Pacific Company.

Professor Bland of Vermont University is making experiments with the view of converting culm into a fertilizer.

The substitution of electricity for cable power is being considered for the Brooklyn Bridge railroad.

The great coal strike in England, which began on July 28, is practically over, a large majority of the strking miners having resumed work.

Co-operation has, says the *Mining and Scientific Press* of San Francisco, Cal., been successfully adopted as the method for starting several of the idle mines at Leadville, Col. The Maid of Erin has set the example, and others are expected to follow. The plan whereby the resumption took place was an agreement between the men and the management to deduct the expenses of operating from the gross receipts and divide the net profits on a percentage mutually satisfactory. Between 50 and 100 men went to work on the first day, and should the scheme prove successful the force will be largely increased, and many idle men thus be employed.

Representative Caminetti of California has introduced in the House a bill to provide for the establishment of a gun factory for the finishing and assembling of heavy ordnance at Benicia, Cal., at the cost of $1,000,000.

Ground was broken on October 12 for the new Bourse Building in Philadelphia. The work will, it is said, be vigorously pushed, and the building is expected to be well under way by spring.

Canada's mercantile fleet on the registry books last year numbered 7007, with a tonnage of 964,129, a decrease in the year of 84,364 tons.

A notable exodus of Hungarians from Pennsylvania has occurred during the past two months. At least 7000 laborers of that nationality are reported as having left the State, owing to the poor labor market. Most of them have returned to their own country.

The Hamburg American Packet Company have made contracts for the construction of five large twin-screw steamers for Transatlantic service. Three of the new steamers will be built at Belfast, and the other two at Stettin and Hamburg respectively. They will each be of 7800 tons and 465 feet in length, and will have a very large freight capacity. When these five steamers are completed, the Hamburg-American line will own the second largest tonnage in the world, being less than that of the Peninsular and Oriental Company only.

Recent troubles in Central and South American republics have caused an active drain on our naval resources for war vessels for the protection of United States interests in the disturbed quarters.

One outcome of the recent financial stringency in New York City is noted in an almost complete cessation of speculative building during the past few months. Real estate journals regard this as a not unmixed evil, as the demand for houses is said to be rapidly catching up to the supply, causing greater steadiness in the market. The concomitant lack of employment is, however, pressing hardly on workmen in the building trades.

Incoming vessels report an unusual crop of derelicts in the Atlantic, many of which are in the direct path of the ocean liners. Twenty of these obstructions were recently reported to the Hydrographic Department in various positions off the coast from Maine to Florida, and the dynamite cruiser "Vesuvius" was sent last week on a mission of destruction toward those floating off the Jersey shore. It is probable that another naval vessel will be detailed to remove the derelicts since located, the number of which is said to have been augmented by last Friday's storm.

It is said that Secretary Herbert does not think that the Holland submarine boat, selected by the expert board, fulfills all the requirements sufficiently fully to justify him in expending $150,000 in constructing and experimenting with a boat of this type. The Secretary believes it will be better to wait awhile before building a submarine vessel, so that time may be allowed for the development of a thoroughly trustworthy one.

Immigration statistics for the port of New York for the month of September show a decided falling off in the number of immigrants, particularly from Italy and Poland. The number of alien steerage passengers landed was 21,797.

The contract for building the much talked of Syrian railroad from Haifa to Damascus has been awarded to a Chicago firm, Huss & Townsend. Work is to be begun immediately. The enterprise has been initiated by English capitalists, who purpose ultimately extending the road to India if Persian concessions can be obtained.

After exhaustive experiments in New York harbor with the torpedo boat "Cushing" to determine the best color to paint such boats in order to escape detection by search lights, it was found that a dull green hue rendered the boat almost indisguishable from the water. A recommendation is to be made to the Navy Department that all torpedo boats should be of this color.

The situation of the unemployed miners on the Gogebic range is reported by Western papers to be becoming serious. Bread riots have already occurred in several towns, and further disturbances are feared. Efforts are meanwhile being made to relieve the distress by raising money to feed the men and their families, as no present prospect of employment can be be held out to them.

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The Iron Age

New York, Thursday, October 19, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Disposition of Machinery Exhibits.

Considerable interest is manifested in the probable disposition of machinery exhibits at the close of the World's Fair. Some of this is due to the effort recently made by a prominent machinery house to sell at auction a large stock of machine tools, including those in their exhibit at the fair. It is evidently thought that this may be an example which will be followed by others. Those who are looking for bargains in the machinery line are presumably hoping that this will be the case. The auction sale alluded to, however, was not a success. The number of machines disposed of fell far short of expectations, while the prices realized fell still shorter. It is stated that few of them brought two-thirds of the very lowest discount previously allowed, while some sold down to, if not below, half price. Such results are rather discouraging to the growth of auction sales in the machinery trade. Had the one just tried proved fairly successful, others, perhaps, might have followed. It is now likely that no one will care to venture a repetition of the experiment. Careful inquiry fails to disclose any prospect of such sales taking place among the exhibitors of machinery at the fair. It is true that one manufacturer of wood working machinery is offering his machines, according to conspicuously posted signs, at an "enormous discount," but not even his example is being followed, so far as can be ascertained.

Many exhibitors state that they have sold duplicates of machines exhibited, and that they may at the close of the fair decide to ship direct to such purchasers from the exhibit. But this cannot be so satisfactorily done at the fair as at the home shops, because it may be necessary to pack certain parts much more carefully than would be done for merely shipping from the fair to the shops. This is especially the case with sales for export, which have latterly become quite a feature in the machinery section. There are some portions of machines destined for such shipment that will be carefully soldered in tin packages to insure their receipt in good order, free from rust or other deterioration. Makers of ponderous machinery, and perhaps others, are willing to take reasonable reductions on regular prices, which would offset the expense of shipment back to the shops, but there is little apparent disposition to make any sacrifice in the value of standard machines merely to get rid of them. Exhibitors who have had previous experience at large fairs say that those who try the experiment of storing machinery in Chicago in the hope of selling it in the course of time will find that they have made a blunder. In much better times than these machines have been stored in the hope of an early sale, but disappointment followed in the majority of cases. Concerns having regular warehouses in Chicago, with agents to carefully look after their special interests, are of course in a position to pursue a different policy. Their machines will be transferred to the Chicago warehouses as a matter of regular business.

A number of exhibitors interviewed appear to be in no hurry to make any definite arrangements for the disposal of their machines, but will let circumstances govern them. Such machines as can easily be removed to the shops will be shipped as soon as convenient after the fair closes. Those of which there is some reasonable hope that they may be sold will be permitted to stand for a time. As the buildings will not be torn down this winter, such machines can be "doped" and will then pass through the winter without injury, and can be removed in the spring when the rush of shipping exhibits will be over. The transportation facilities, however, are vastly superior to what they were last winter and spring when installations were made, and those who are in a hurry to get their exhibits back to their shops will not experience much delay or inconvenience on that account.

Professor Reuleaux's Chicago Speech.

A casual utterance of *The Iron Age*, innocent in intent, and growing out of a misapprehension, has created a great hubbub on the other side of the Atlantic. It has, we regret to state, done great injury to one whom Americans justly honor, and who has in the past done signal service by timely and frank criticism to the manufacturing and art industry of his own country. At the meeting of the World's Engineering Congress Professor Reuleaux was called upon, unexpectedly to him, to address his fellow engineers. One sentence in this extemporaneous speech was misinterpreted by us as implying an acknowledgment by him that American workmen had attained greater precision as mechanics than their German fellows. In justice to Professor Reuleaux we print below the full text of that part of his remarks dealing with the subject, from the stenographer's official record:

Should I be allowed to mention some points on the mechanical exposition, to which my own profession goes directly, I should say that I was astonished on one point in the most striking way. It was the development of exact measuring. That precise measure method has been developed through America in such an astonishing way that we are always struck by it. Your workmen are already accustomed to measure by the thousanth of an inch, we have begun only to do so. In the United States you will find instruments in nearly every hardware shop for such measurements, and especially on the part of scientific engineering; this is giving you, and will further on give you, a great advantage over all others who do not work so. I dare say we have begun in Germany and in France and England to follow you, but we are the followers and you are the leaders until now. So I could find a great many points in the mechanical exhibition of this exposition which are in advance, and so I see the Americans now going on to lead the progress of mechanical engineering, and I have been thankful to have been able to see them, and to be able to congratulate American friends and engineers.

From a more detailed elaboration of Professor Reuleaux's position which he then desired to present to his audience, and to which he still adheres, we understand it now to be this: In this country the system of depending upon precise measuring as the fundamental basis of manufacturing operations in certain lines of work has developed rapidly, and while Europeans are following, further progress in that direction is still being made in this country, keeping us in the van. As an illustration of how widespread that system is Professor Reuleaux instanced the fact that the necessary instruments are in the hands of every mechanic. He dealt with the system, he did not mean to draw any comparisons between the ability of mechanics of different countries to employ tools for fine measurement.

We believe that in the light of this statement Professor Reuleaux will be pronounced innocent of any effort to disparage the abilities of the workmen of his own country. We must confess that the violent outburst of patriotic indignation which the German press has indulged in is somewhat incomprehensible to us. We trust that those who were so eager to assail Professor Reuleux will be animated by the same fair spirit of seeing justice done which has made us anxious to acknowledge that we misunderstood his remarks and drew from them inferences which we now know were far from his thoughts.

The Iron and Steel Institute Meeting.

On the whole, the expectations raised by the announcement of the proceedings of the Darlington meeting of the Iron and Steel Institute have not been realized. The first paper read was that of the famous Austrian metallurgist, Paul Kupelweiser, which was not put before the Institute at its last gathering. We commented on it at the time, regarding it as one of the most important contributions of recent years. It is possible that the Witkowitz duplex process has not that interest for English metallurgists which it possesses particularly for those who are striving and hoping to establish a steel industry in our Southern States. The works which Paul Kupelweiser conducted until recently are the only establishment in which pig iron is taken direct from the blast furnace to Bessemer converters, where

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it is desiliconized and is then poured into a basic open hearth furnace. Since that has been the favorite method proposed by Southern metallurgists, the success at Witkowitz has been very encouraging. The remarks and criticisms of James Riley of the Steel Company of Scotland in the discussion of the paper were evidently from the narrower standpoint of availability of the duplex process for conditions prevailing in England. We are inclined to believe that from a commercial point of view Mr. Riley's position is correct. The technical results, however, seem to us to have been belittled in vain. The achievements at Witkowitz prove that the duplex process can be carried through successfully. It remains to be seen, of course, whether commercially the South can meet the competition of soft steel produced from lake ores at points west of the Alleghenies or made in the Eastern territory from local and foreign raw material.

Sir Lowthian Bell has contributed a paper on "The Waste of Heat (Past, Present and Future) in Smelting Ores of Iron," in which he develops an interesting analysis of the heat balance sheet, if it may be so termed, of the blast furnace. Sir Lowthian Bell does not appear to hope for much gain in the direction of higher blast temperatures, or the better utilization of the heat in the gases in the hot blast stoves or under the boilers. He has turned to the employment of the sensible heat in the cinder produced and that in the exhaust steam from the engines. He has experimented without accumulating any large array of data thus far, with turning the exhaust steam into chambers in which the cinder is allowed to cool and then availing himself of the heated steam thus obtained to evaporate brine.

Professor Ledebur's paper on "The Modifications of Carbon in Iron" is a good summary of the present status of research into that somewhat abstruse subject in which developments may soon attain a point where their practical utility to the producer and the consumer of steel become apparent.

We confess to some disappointment at the paper presented by J. P. Bedson, on "Iron and Steel Wire and the Development of its Manufacture." It is very largely historical and does not refer to the very latest work done. It is only fair to state, however, that Mr. Bedson promises to give some data later on concerning the new works which he is building for the Bedson Wire Company, at Middlesborough.

To rolling mill managers in America the most interesting but at the same time puzzling paper is that of William Muirhead on "Suggested Improvements in the Manufacture of Steel Plates." Mr. Muirhead was encouraged by his success in rolling angles, bulbs and bars, to propose a similar method for plates. So far as we can understand the plan without the drawings which accompany the paper, Mr. Muirhead does his blooming on one train driven by a direct coupled high speed engine and finishes without reheating on a second train. This is what he intends to adopt also for plate rolling, the main object being to get rid of the reheating of the slab.

The Closing Month of the Fair.

The World's Fair is winding up its career in a blaze of glory. As Chicago suprised the world with the grandeur of its exposition buildings, and as the magnificence of the display in its entirety far surpassed anything previously accomplished in the same line, so has the attendance outrun all expectations, and in that respect another phenomenal triumph has been scored. High water mark was struck on the 9th inst., "Chicago Day," when the total attendance reached 761,942 including those admitted on passes, or 716,881 paid admissions. Several days in the same week the paid attandance ran above 250,000 and on two days it was over 300,000. The total paid attendance for the week, including Sunday, the 8th, was 2,131,719. This far outnumbers the attendance in any similar period at any previous international or any other kind of exposition, or, in fact, any other kind of gathering of which there is any authentic record. A figure is thus set for the future that will be very difficult to exceed, and it is safe to say that for years to come any very great gathering of people will be compared with this stupendous occurrence in Chicago on the 9th of October, 1893. The attendance at the exposition for the week is another most notable matter. The figures are staggering. But Chicago boasts not alone of this achievement in attendance. To the surprise of many shrewd business men, who had not looked for such success, the exposition managers signalized Chicago Day by paying off the floating debt and the mortgage on the gate receipts, thus leaving the enterprise free of all obligations to any persons but the stockholders, who may now reasonably expect a dividend in due season. The check drawn on this memorable occasion for the payment of the trustee of the several classes of creditors called for $1,565,310.76. Thus has Chicago gloriously redeemed the obligations incurred when she assumed the task of building a World's Fair. Chicago's business men started out to prepare for a finer, bigger and more successful enterprise than the world had ever seen in this line. The verdict of the jury of the nations of the earth who have seen it is that it is unquestionably bigger and undoubtedly finer, and now it is assuredly more successful. Great is Chicago, and we are prouder than ever of her.

Among those who will lecture before the Franklin Institute of Philadelphia during the coming season will be Henry R. Towne of Stamford, Conn., who will speak, on January 26, on "American Bank Locks and Fastenings."

CORRESPONDENCE.

Foreign Labor Pests.

To the Editor: The Riverside Iron Works of Wheeling, W. Va., have set an example in dealing with obnoxious foreign laborers which many managers and superintendents will hope that their companies will soon be able to follow. They have summarily discharged from their employment all Italians, Poles and other common laborers who represent Europe's worst element, and hereafter will employ only good citizens. This action was the result of riot and disturbance in which these labor pests indulged a few weeks ago; and it will cause exultation among all who have ever had dealings with this class of workmen. Following the action of the Riverside Company, blast furnace proprietors, rolling mill operators, the Pittsburgh & Lake Erie Railroad Company, and other employees of common labor at New Castle, Pa., have taken a decided stand against the employment of such labor, and there has been a general exodus of undesirable foreigners to their native shores or to other parts of the United States where they are still tolerated.

Only those who have had laborers of this class under their charge can fully realize how difficult it is to deal with them. They are capable of exasperating any one with whom they come in contact. When seeking employment they are submissive and servile, but after they have secured it their dumb insolence is unbearable. They are cunning as foxes, and will never understand except when it suits their convenience, and their vocabulary of English is never used except when there is an imaginary or real shortage in their pay or they think that an opportune time has arrived to raise a disturbance. If furnaces, mills or coke ovens are shut down and they are temporarily thrown out of employment, they do not spend any part of their savings, but live by committing depredations among farmers and others. They will shirk their work and do only the bidding of a taskmaster who speaks their language and is too often the recipient of a commission from their wages. Their appreciation of a labor situation is keen, and troubles among them always rise like a volcano. In the language of one of their number who tries to hide his disgust under cover of a plea of extenuation for his more ignorant brethren, "If each Italian would try to become a good, naturalized citizen the prejudice against them would die out." It is doubtful, however, if this would make the average Italian or Polish laborer tolerable. They are a source of continual annoyance, always getting into lawsuits, fighting among themselves and a constant menace to peace wherever they are gathered in numbers. Taken altogether, they have not a redeeming trait, as a body, no matter what virtues individuals may possess, and the employer who lends his assistance toward ridding the labor world of this disturbing element will be entitled to the thanks of all concerned, and will afford opportunities for securing employment to good, honest, peaceable workmen, whose citizenship will be a credit to the country. B. D.

Prof. Sylvanus Thompson of London believes that ocean telephony is not only possible, but that it will be among the developments of the near future.

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Lake Superior Mines.

Along the Lake Superior mining district has there been not even the semblance of increasing activity that the daily press has given the iron workers' trade. The situation has steadily gone from bad to worse ever since the general shut down in July. Even the phenomenal activity in shipping from the Mesaba is a sign of quiet for the older ranges not only for this fall, but the early part of next year at least, for most of the Mesaba ore now going forward in such quantity is unsold and will lie on Cleveland and Lake Erie docks until such time as there is a better demand. The startlingly large decrease of furnace work does not augur well for activity for the ore trade for a long time to come.

By ranges the situation is about as follows: On the Menominee and Marquette ranges, where 57 mines produced ore last year, only about a dozen are at work, and those not actively or extensively. Less than 1000 men are at work on the Menominee, where a year ago there were 3000 or more. In the Crystal Falls section of the Menominee not a single mine or prospect is busy. The Chapin Mine, which had achieved a production up to last fall third in rank in the entire country, has lifted its pumps and abandoned operations for the present at least. Three of the large mines of the Marquette range have lately been added to the same list of flooded properties. Ore shipments for the year from both these ranges are about over.

On the Gogebic range only enough ore will now be sent to shipping ports to load vessels now on the way or under charter. A year ago 15 mines were shipping to Ashland and the week's forwarding was 75,380 tons. This week only one mine is shipping and the weekly report is scarcely worth mention. Last week the total shipped was 17,459 tons. A year ago Ashland shipments had been 1,966,000 tons for the season. To date this year they have been 1,015,000 tons. Total Gogebic range shipments to the lower lakes last year were 2,974,000 tons. This year they will not equal half that. Several of the better mines here also are filled with water.

On the Vermillion range, at the Minnesota Iron Company's mines, where 2500 or more men are employed in prosperous times, there are only half a dozen underground carpenters, and less than 200 on the surface, stock pile men. It is generally believed that even this trifling force will be idle November 1. At the Chandler there are none but stock pile men, and only a score or two of them. The Pioneer is idle and is flooded. The Zenith has shipped its stock pile and stopped all operations. There are no other productive mines on the range.

On the Mesaba the Biwabik, Oliver, Commodore, Franklin and Mountain Iron are working. Were it not for the cheapest mining and the money of a very heavy syndicate furnished to allow ore to be held on Lake Erie docks and the desire to get as much of the new ore as possible to furnaces, several of these would be idle. The Commodore will shut down in a few days. The range will ship about 500,000 tons for the season, not nearly as much as was expected last season, but certainly a good total for a new district.

That there isn't much consolation in this review of the situation goes without saying.

The Mesaba has made some steam shovel mining records the last week that are interesting and exceedingly important as showing what the range can do. At the Biwabik are shoveled, mined and loaded on cars, 85 cars, or 1950 tons, in nine hours. This is at the continuous rate of nearly 4 tons per minute for the entire time. Other records made in the past two weeks have been, at the Oliver, 1500 tons in seven hours; at the Mountain Iron, 1700 in nine hours; at the Biwabik, 3400 in 20 hours. It is expected that the Hale will resume shipping in a short time. Very extensive operations will be carried on by the Biwabik, Commodore, Franklin and by several of the consolidated mines during the winter, among the latter particularly at the Rathbun and Adams, which will each be stripped for steam shovel mining.

The total ore shipments from Lake Superior, including all the mines in the region except those shipping via Escanaba, on Lake Michigan, up to and including October 12, were 4,100,000 tons. Escanaba shipments have probably not been to exceed 1,000,000 tons more. For the entire year there may be sent forward from the mines as high as 5,500,000 tons, against a total of 9,074,000 tons in 1892 and an average of over 8,000,000 tons for the past four years.

OBITUARY.

DENNIS LONG.

Dennis Long, founder of the well-known pipe making firm of Dennis Long & Co. of Louisville, Ky., died at his residence in that city on the 8th inst., after a short sickness. Mr. Long was born in Londonderry, Ireland, in 1816. At the age of four years he came to America with his parents, the family settling at Erie, Pa. A few years later they moved to Pittsburgh, where Mr. Long served his apprenticeship as a molder. His first journey work was performed in Louisville, to which place he went over 50 years ago. Of an industrious and saving turn of mind, he soon saved enough money to start a foundry and machine shop of his own. His principal business at first was done with the steamboats on the Ohio river, the river traffic at that time being one of the chief revenues of business of Louisville. The first pipes for the St. Louis, Mo., gas works and the first large water pipes for the city of Nashville were made by Mr. Long. About this time Bryan Roach became associated with Mr. Long, and the firm enlarged their capacity under the firm name of Roach & Long. In 1860 Mr. Roach died, and the business from that time on was conducted by Mr. Long, the corporation of Dennis Long & Co. being formed later on. He also built and run for a number of years pipe works in Columbus, Ohio, and Chicago. Mr. Long was particularly unfortunate in suffering loss from fire on four different occasions, one of the occasions being the burning of the large pipe works, entailing a loss of $300,000. Some years ago the holding of a large amount of the then unsalable water company bonds of a distant company compelled Mr. Long to call his creditors together. He exhibited the state of his affairs to his creditors, who decided to act in accordance with any plan Mr. Long might himself suggest. He asked for an extension of time and gave his notes with interest at 6 per cent. Every note was faithfully paid in three years' time and many of the notes were paid before maturing. At the time of his death Mr. Long was president of the corporation of Dennis Long & Co., president of the Louisville & Jeffersonville Bridge Company, and director in several companies and of various institutions. He leaves an estate valued at $1,000,000.

BENJAMIN WHITWORTH.

English journals announce the death, on September 24, at his residence, Hampstead, near London, of Benjamin Whitworth, one of the foremost men in the coal and iron trade of England. Mr. Whitworth was born at Manchester in 1816, and as a young man joined with his brothers in the business of fustian manufacture. Subsequently he became connected with the coal and iron industries, and was one of the originators and first directors of the following well-known corporations: Bolckow, Vaughan & Co., Tredegar Coal & Iron Company, John Brown & Co. of Sheffield, Staveley Coal & Iron Company and Sheepbridge Coal & Iron Company. Mr. Whitworth was a man of wide sympathies and engaged in many philanthropic works, besides being a liberal giver of halls, libraries, water works and other useful public institutions to towns with which he was connected. He sat in the British Parliament as a Liberal for a number of years.

THOMAS HAWKESLEY, F.R.S.

Thomas Hawkesley, F.R.S., one of the best known civil engineers of the day, and a prominent member of the British Iron and Steel Institute, died in England, on September 23, at the age of 86, having retained his mental powers and his large professional practice to the last. Mr. Hawkesley stood for a long period at the head of his profession as an expert in that branch of it which relates to water and gas supply and to drainage and hydrants, having constructed over 150 water works all over the world, many of them of the largest character.

VALENTINE W. WEAVER.

Valentine W. Weaver, superintendent of the Macungie Furnace of the Crane Iron Company at Macungie, Pa., dropped dead at Catasauqua, October 11, of apoplexy. Deceased was born in Northampton County, Pa., in 1826. At the age of 20 he became an apprentice at the Crane Iron Works, Catasauqua, where he learned the trade of machinist. After several years he became assistant superintendent of the Thomas Iron Company, Hokendauqua, for whom he erected and managed the Lock Ridge Furnaces, at Alburtis. He also superintended the erection of the Macungie Furnace. In 1879 Mr. Weaver moved to Coplay, Pa., as superintendent of the Coplay Iron Company's works, where he remained several years. Later he removed to Macungie and assumed the superintendency of the Macungie Furnace. Mr. Weaver was a director in the Catasauqua Mfg. Company, a stockholder of the Thomas Iron Company and a director in the Catasauqua and Slatington banks.

DANIEL WOLF.

Daniel Wolf, of the well-known firm of Hillebrand & Wolf, proprietors of the Star Lock Works, Philadelphia, died on Friday evening, September 29. Mr. Wolf was born in Rhenish Bavaria, and came to this country in 1846, and in 1867 formed a partnership with Mr. Hillebrand, which continued uninter-

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ruptedly and successfully up to the day of his death. The deceased was of a quiet, unassuming disposition, but of excellent business qualifications, and was highly respected by the firm's numerous employees and by all who had the pleasure of his acquaintance. The business will be carried on by Mr. Hillebrand, under the old firm name of Hillebrand & Wolf, the Star Lock Works.

Washington News.

(*From our Special Correspondent.*)

WASHINGTON, D. C., October 17, 1893.

Commodore William T. Sampson, Chief of the Bureau of Ordnance, U. S. Navy, converses very interestingly upon the subject of naval ordnance and what has been accomplished by the Government of the United States. The Commodore is not only an experienced seaman, but an expert in ordnance. He commanded the "San Francisco," one of the finest of the new ships of the navy; was on duty at the torpedo station, and later Inspector of Ordnance at the Washington Gun Foundry, from which position he was promoted to his present important duty as Chief of Bureau. Commodore Sampson has completed his annual report, which will be ready in a few days. In taking a conversational retrospect of the year, he said:

The experiments in the different classes of armor plate were completed a year ago. These comprised tests of high and low carbon nickel steel, low carbon steel and nickel steel Harveyed. The results of those experiments have been amply sustained by the tests of lots of armor for the different ships under construction during the past year. We now use nothing but Harveyed plates for the armor of our vessels. They are undoubtedly the best plates made, not only in this but in any country.

As a matter of comparison the following shows the official results of the experiments, which have been borne out by subsequent tests:

Character of plate.	Maker.	Weight, pounds.	Total bolt cross section per ton of plate, sq. inches.
High carbon nickel-steel	B. I. Co.	20,494	5.71
Low carbon nickel-steel	C. P. & Co.	20,844	5.62
Low carbon steel Harvey	B. I. Co.	20,506	5.71
High carbon nickel-steel	C. P. & Co.	20,590	5.69
Low carbon nickel-steel Harvey	C. P. & Co.	20,220	5.79
High carbon nickel-steel Harvey	B. I. Co.	20,682	5.66

The plates, 8 feet by 6 feet by 10 feet 5 inches, were fastened by 12 bolts 2.36 inches in diameter, giving a total cross section of 52.29 square inches. The targets were set up so that the faces of the plate were on the chords of a circle whose center was the gun's pivot and whose radius was 73 feet 5 inches. The muzzle of the 6 inch B. L. R. was 57 feet 5 inches and the 8-inch gun 55 feet 5 inches from the face of the plate, the axis of the gun being then perpendicular to the plane of the plate.

The tests of plates this year have been for the "Indiana," "Massachusetts" and "Oregon," battle ships, and "Maine" and "Texas," armored cruisers. These plates have run up to 17 inches in thickness, and in every case have been successful.

We anticipate no trouble in working the high grade of plates we are now using on our battle ships. The work must be done on the plates; that is, the bolt holes put in before the plates are Harveyed. This will put a stop to a practice which is of doubtful expediency. Bolts are put in to hold the plates, and sometimes a row of them across the plates, which must necessarily weaken them. The bolt holes must now be located first and inspected, after which the plates can be Harveyed.

There will be no trouble in working the plates in this manner, and we will secure better results.

The work on the hulls of the ships is far ahead of the supply of armor. Here is a table which shows how we stand on that important subject:

Summary of Armor Contracts (to October 1, 1893).

Vessels.	Amount required and ordered—Tons.			Amount delivered to October 1, 1893.	
	Bethlehem.	Carnegie.	Total.	Bethlehem.	Carnegie.
Amphitrite	311.23	359.39	670.62	172.74	259.39
Monadnock	145.29	504.80	650.09	8.71	168.49
Terror	337.99	298.66	636.65	312.36	151.83
Puritan	976.19	118.58	1,094.77	281.04	.....
Texas	1,025.52	.....	1,025.52	703.85	.....
Maine	1,172.31	.....	1,172.31	506.17	.....
Monterey	160.64	546.62	707.26	160.64	546.62
Ram	.....	768.17	768.17	.....	112.10
New York	.....	538.46	538.46	.....	538 46
Oregon	710.19	2,002.40	2,712.59	254.15	331.69
Massachusetts	2,164.21	552.36	2,716,57	265.09	183.43
Indiana	2,337.86	384.63	2,722.49	1,216.52	179.67
Olympia	.....	224.25	224.25	.....	150.51
Cincinnati	.....	48.40	48.40	.....	48.40
Raleigh	.....	47.49	47.49	.....	47.49
Montgomery	.....	22.20	22.20	.....	22.20
Detroit	.....	21.86	21.86	.....	21.86
Marblehead	.....	20.41	20.41	.....	20.41
Columbia	.....	77.11	77.11	.....	77.11
Minneapolis	.....	89.23	89.23	.....	26.56
Machias	.....	21.17	21 17	.....	4.34
Castine	.....	21.21	21.21	.....	21.21
Iowa	906.19	1,721.28	2,627.47	.....	.....
Brooklyn	113.86	578.62	692.48	.....	.....
Gunboat No. 7	.....	.....	17.00	.....	.....
Gunboat No. 8	.....	.....	14 00	.....	.....
Gunboat No. 9	.....	.....	14.00	.....	.....
Totals	10,361.48	8,967.30	19,373.78	3,881.27	3,011.77

Each nation claims a special merit for its own arm, but the Creusot is regarded as the best of foreign plates. This is made of steel of a high grade. But I have no hesitation in saying that a comparison of results of tests shows that we are in the lead. The nickel armor plate can be produced cheaper here than abroad. Many inquiries from expert sources abroad are being made concerning our wonderful nickel plate armor. The simple steel is almost certain to crack. The nickel plate is tougher and can better resist battering by the formidable armor piercing projectiles we have in these days and made in the United States.

I think our superiority in plate is being reluctantly conceded from abroad, and, being able to manufacture it cheaper here than there, it may open a new and valuable trade.

In reference to guns we are going ahead in the same line. We are making no change, but turning out guns of our own designs as rapidly as possible to meet the demand of the ships as they are required. We can now keep pace with the requirements of the ships as they are completed ready for their armament of high power B. L. guns.

We claim for our guns that they surpass the finest in the world. This many experts admit, and, we think, others will be compelled to as their work becomes better known. Our guns will stand a pressure of 32 tons to the square inch. This is 7 tons more than is required by the rules laid down by the Department. The 13-inch gun is the largest we are making at present. That is an effective gun for the best results in rapidity of handling and destructive power.

All carriages are of the Department designing. They are controlled by hydraulic power. Experiments are in progress in the application of electricity. This is now being experimented with in revolving the turrets. I have no doubt it will be applied to other uses about heavy guns. There is now a system of supplying guns by means of electricity.

The Krupp 110-ton gun is 16 inches, but a gun too large to be readily handled become really ineffective. Smaller guns quickly and more accurately handled are better. The most important tests which are now being made are with projectiles fired at an inclination. We find in this severe trial the projectiles are badly broken. When fired vertically to the plane of the plate they turn out all right, because in this case the parts of the projectile are supported, but fired at an inclination each part must depend upon itself. The result is as stated. We will continue our experiments in this line.

A meeting of the Association of Iron and Steel Sheet Manufacturers was held at their headquarters, in the *Times* Building, Pittsburgh, last week. The wage scale question was up for discussion and it was decided to postpone action until the vote now being taken by the lodges of the Amalgamated Association on the question of agreeing to a 10 per cent. reduction has been completed. As soon as the result of the vote is known another meeting of the association will be held to take suitable action.

Two natural gas wells have been tapped recently near Ballston, N. Y., and further drilling is in progress.

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MANUFACTURING.

Iron and Steel.

Last week test operations were commenced at the new plant of the New Castle Steel & Tin Plate Company, New Castle, Pa. Only black plates were made, the tinning department not being completed. The result gave perfect satisfaction, plates produced being pronounced by experts equal in finish to any foreign make.

The partnership heretofore existing under the firm name of N. D. Doxey & Co., wherein N. D. Doxey of Elmira, N. Y.; Benjamin Maurice of Athens, Pa., and Charles J. Root of Elmira, N. Y., were partners, has been dissolved by mutual consent, Benjamin Maurice retiring. The Elmira Iron & Steel Rolling Mills will hereafter be operated by N. D. Doxey and Chas. J. Root, under the title of N. D. Doxey & Co. Messrs. Doxey and Root have long been identified with these mills, and will continue to produce plates, angles and merchant bar iron.

A petition has been filed in the Circuit Court at New Albany, Ind,, praying that a receiver be appointed for the New Albany Forge & Rolling Mill Company. The petitioners are holders of $50,000 of the first mortgage bonds issued by the company and secured by a lien on the plant.

After a shut down of two weeks the sheet mill of Summers Bros. & Co., at Struthers, Ohio, is again in operation.

Sarah Furnace of the Kelly Nail & Iron Company, at Ironton, Ohio, has resumed operations.

Frank L. Froment, iron and steel commission merchant, at Nos. 446 West and 161 and 163 Bank streets, New York, has made an assignment to Wylie H. Vilas, giving a preference to Mary E. Bacon of Boston for $10,000 borrowed money. He was the principal owner of the Blandon Iron & Steel Company of Blandon, Pa., who failed two years ago, and was also for several years president of the New York & Perry Coal & Iron Company of Shawnee and Straitsville, Ohio.

It is now announced that a settlement has finally been made between the Salem Wire Nail Company, Salem, Ohio, and their wire drawers. At one time it seemed as though a prolonged strike would result, but the men have concluded to accept a reduction of 10 per cent. Vice-President McEvery of the Amalgamated Association was instrumental in bringing about the agreement. It is understood that this settlement affects the Findlay, Ohio, mill also operated by this company.

The Union Iron & Steel Company of Youngstown, Ohio, have discharged their entire force with the exception of two men. In explanation of this action an official of the firm states that it was taken for the reason that it is very uncertain when operations will be resumed in any of the various mills of the firm.

Belfont Furnace of the Belfont Iron Works Company, at Ironton, Ohio, resumed operations last week.

The Carnegie Steel Company, Limited, have recently purchased 22 lots with a river frontage of 650 feet situated adjacent to the Homestead Steel Works, at Homestead, Pa.

The Monongahela Furnace of the Monongahela Furnace Company, McKeesport, Pa., which has been banked down for several months, will resume operations during this week. These two furnaces each turn out about 250 tons of iron every 24 hours.

The personal property of the Columbia Iron & Steel Company, at Uniontown, Pa.. was sold last week at sheriff's sale. The sale was brought about by executions amounting to $120,000, entered by Robert Hogsett, president of the firm, and the People's Bank of Uniontown. The most of the property was bought in by James A. A. Seabright, a director of the firm.

The Youngstown Bridge Company, Youngstown, Ohio, have the contract to supply the material for a tubular iron bridge, now under construction at Quincy, Ill., and which will cost $40,000.

The Falcon Iron & Nail Company, Niles, Ohio, have notified their employees of a 10 per cent. reduction in wages to take effect at once. This applies to all workmen except those whose wages are governed by the Amalgamated Association scale.

The Muncie Nail Company of Muncie, Ind., went into the hands of a receiver last week.

A number of puddling furnaces in the plant of the Clinton Iron & Steel Company, at Pittsburgh, Pa., were started up last week with non-union men, the price for puddling being set at $4 per ton. The firm state that so far they have had no trouble in securing competent men as fast as they could use them.

Last week notices were posted at the Edgar Thomson Steel Works, Bessemer, Pa., announcing that operations would be resumed in all departments on Monday morning, the 16th inst., at 6 o'clock. During last week the wages of some of the tonnage men were slightly reduced in order to have them conform more closely to wages paid for the same kind of labor at the Homestead Steel Works and other plants.

The Lockhart Iron & Steel Company, operating the Vulcan Forge & Iron Works, at Chartiers, Pittsburgh, have their muck and guide mills on double turn, while the bar mill is on single turn.

George B. Lessig, chairman of the Ellis & Lessig Steel & Iron Company, Limited, of Pottstown, Pa., at a meeting of the striking puddlers, made them two propositions. The first was to pay them $2.75 per ton, with small chance of steady work, and the second was to pay $2.50 per ton and guarantee them at least 15 days' work each month during the coming winter. We are advised that the men decided to accept the latter and will resume work on Monday.

Machinery.

The Jeffrey Mfg. Company, 163 Washington street, New York, and Columbus, Ohio, are installing an entire new plant for the Rumford Falls Paper Company, Rumford, Maine, from start to finish, for the economical hauling of logs from the river some hundreds of feet to a suitable place convenient to the mill, to be used as wanted. One of the objects is to provide a reserve for use in winter when the adjacent river freezes solid, although provided for the quick handling of logs at any time.

Among the sales recently made of the Stirling water tube safety boiler are the following: Adriance Platt & Co., Poughkeepsie, N. Y., manufacturers of Buckeye mowers and reapers, 250 horse-power; Simpson & Watkins, Scranton, Pa., three boilers (second order), 300 horse-power, and Lutz, Lilly & Co., Philadelphia, Pa. (second order), 250 horse-power. In the West Farms station of the Union Railway Company, New York City, 500 horse-power has recently been put into service and an additional 500 horse power ordered.

The Flemington Iron Foundry, at Flemington, N. J., has started up with a full force after nine months of idleness.

Smith & Hall, dealers in engines, boilers and general machinery at Macon, Ga., have made an assignment. The liabilities are estimated at about $25,000 and the assets at $20,000. The failure is attributed to dull trade.

The Tonkin Boiler & Engine Works, at Oswego, N. Y., have been completed and operations will begin at once.

W. F. & John Barnes Company of Rockford, Ill., manufacturers of machinery and mechanics' tools and supplies, report a material increase in orders and a much better inquiry for prices, indicating that, despite the delay at Washington, business is assuming a firmer tone. The company have been operating their plant with a force equivalent to one-half on full time; but during the past two weeks have put more men at work, and will continue to increase their force as business warrants.

H. H. Buzzell & Son are about to start a brass foundry at Laconia, N. H.

D. J. Bolenger's Foundry, at Waynesburg, Ohio, has been burned. Loss, $5000; insurance, $500.

The Ferracute Machine Company of Bridgeton, N. J., manufacturers of presses, dies and other sheet metal tools, have kept their works running during the entire summer with a part of their force. Orders are now coming in much better than a month ago, and trade prospects seem much brighter.

The works of the Birdsall Company, manufacturers of steam engines grain threshers and portable sawmills, at Auburn, N. Y., have been closed by the sheriff on an execution of $165,000. The judgment was in favor of Henry H. Cook of New York City, and is for money loaned to the concern. An hour after the judgment was filed a chattel mortgage for $75,000 in favor of H. H. Cook and Nelson Beardsley was filed.

Aultman, Miller & Co., mower and reaper manufacturers, of Akron, Ohio, have just completed the erection of a new foundry. The building is 400 x 100 feet in size, the molding room being 300 x 100. The remaining 100 feet of length is taken up with pattern rooms, core rooms, &c. The cupola is of the Whiting design, furnished by the Detroit Foundry Equipment Company of Detroit, Mich. For heating and ventilating the Sturtevant system is used, put in by E. H. Jones & Co. of Cleveland, Ohio. It is probable that this new foundry will be put in operation during this month.

The Enterprise Machine Company of Elyria, Ohio, have been chartered, with a capital stock of $10,000, for the purpose of manufacturing and selling all kinds of machinery and conducting a general foundry business.

The Pittsburgh Gauge Company of Pittsburgh recently received an order from the United States Government for a number of special safety water columns of phosphor bronze, nickel plated and polished, with water gauges and gauge cocks. These will be placed in the Treasury Building at Washington.

The Glover Foundry Company, Limited, New Castle, Pa., advise us that they have recently received some fairly large orders for annealing boxes, housings and chilled rolls.

The Stillwell-Bierce & Smith-Vaile Company of Dayton, Ohio, have declared a dividend of 2 per cent. on the preferred stock, payable October 16.

The Cowles Engineering Company, which did a large business at 43d street and the East River, Brooklyn, N. Y., has failed. Vaulx Carter is the assignee. The company were incorporated three years ago to design, build, repair and alter steam engines and boilers. William Cowles, formerly a mechanical engineer and draftsman in the Navy Yard, is president of the company. The assignee was the treasurer. The company built the fireboat David A. Boody for Brooklyn, and two other fireboats. Among the creditors are Nathanael F. Bacon of Syracuse, $130,000; R. Hazard, Rhode Island, $9,500; Thomas F. Nevins, Brooklyn, $8,470; First National Bank, Syracuse, $6,000; E. F. Rice, Syracuse, $7,025, and G. W. Schmidt, New York, $1,000—all for money lent. Considerable amounts are owing to various firms and the workmen have not been paid $1,800. There are seven attachments for $30,000 in the Sheriff's hands against the company.

The Patapsco Iron Company, for the manufacture of metal castings and machinery, have been incorporated in Baltimore, Md., by Robert R. Zell and Wm. J. O'Brien, Jr.

Hardware.

The Northwestern Barb Wire Company, Rock Falls, Ill., commenced operations on a small scale on the 2d inst., and expect to put on their full force in the near future.

A cut down of 10 per cent. in all departments of the Concord Axle Works, Penacook, N. H., went into effect on the 9th inst.

Blenkhorn & Son's axe factory, at Canning, N. S., was destroyed by fire on the 29th ult. Loss, $8000; insurance, $1000.

The Eagle Lock Company, Terryville, Conn., have commenced to work on short time and until further notice will run only four days per week.

The shovel works of the Oliver Ames & Sons' Corporation, North Easton, Mass., are running but nine hours a day.

The Vermont Farm Machine Company, Bellows Falls, Vt, closed down on the 30th ult. for the annual inventory. Advantage will be made of the shut down to make needed repairs.

At the annual meeting of the stockholders of the Portland Screen Company, Portland, Maine, the following persons were elected directors: W. S. Eaton, Wm. H. Stevens, F. A. Neal, Chas. W. Allen, Chas. J. Chapman, Fred. E. Haskell and Lewis A. Goudy. W. S. Eaton was elected president and Chas. R. Lewis treasurer. The reports of the officers showed that the company have earned a gratifying profit on

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the business of the past year, and a dividend of 6 per cent. was declared.

The Ely Hoe & Fork Company, St. Johnsbury, Vt., have resumed operations, after spending about $5000 on repairs to the works, putting in a new dam, &c.

The Western Screw Company, Chicago, Ill., have been incorporated, with a capital stock of $100,000. The incorporators are Michael J. Dunne, John T. Boos and Frank M. Burwash.

The Canton works of the Cleveland Axle Mfg. Company, Cleveland, Ohio, have resumed operations with a force of 160 hands. It is expected that 200 will be employed by November.

Wellsboro, N. Y., is to have a new industry in the form of a lock factory. A stock company has been formed, with a capital of $50,000, $10,000 of which has already been raised.

The Peck, Stow & Wilcox Company's main factories, at Southington, Conn., are again in full operation.

Lees Mfg. Company, Westport, Conn., are making over 100 different kinds of twine and make special twine for any purpose and put up in any way. They are running full time, and have only stopped for two weeks during the present year.

Clayton Bros., manufacturers of steel laid and cast iron shears, hardware specialties, &c., Bristol Conn., and 122 Chambers street, New York, have enlarged their plant so that their facilities for filling orders are much improved.

W. H. Davenport Fire Arms Company, Norwich, Conn., are preparing new designs and models for next year's business, and are intending to issue a complete catalogue which will represent their present as well as their new models.

The Frazier Cycle Company, 373 and 375 Wabash avenue, Chicago, with factory at Aurora, Ill., have so far built no bicycles, their attention having been confined exclusively to the manufacture of pneumatic sulky wheels, ball bearings for high wheels, &c.

The Kilmer Mfg. Company, Newburg, N. Y., are extremely busy and behind their orders.

The loss in the fire at the works of the Clinton Wire Cloth Company, Clinton, Mass, on April 19 last, has been adjusted, the loss being fixed at $170,000. This covers the loss to buildings, machinery and stock in process of manufacture. Through the system of insurance followed, the company's loss not covered by insurance is very small. Work on the new mill is progressing rapidly. The mill will be ready for the placing of machinery about December 1.

The factory of F. E. Myers & Bro., Ashland, Ohio, is now running full force. The firm have made a number of valuable improvements and are better equipped than ever before. They have recently placed a new 15-ton Colliau cupola in their foundry, and refitted the cleaning room with the latest equipments in that line, which will increase the capacity of the foundry nearly one-half.

J. E. Rhoads & Sons, manufacturers of oak tanned leather belting, Wilmington, Del., and 229 Market street, Philadelphia, make specialties of heavy driving belts and Volto dynamo belting, which they refer to as a superior brand and which is treated with their preparation for increasing adhesive power and pliability. They have recently put in several new machines and have a very well equipped shop. They have several power presses, the widest of which will make a 72-inch belt. They also have improved machines for working, stretching and finishing their leather. The firm are also dealers in lace leather, rubber belting, hose, packing, &c.

The Gormully & Jeffery Mfg. Co., Chicago, are preparing to build a new eight story factory, 120 feet long, which will afford additional floor space of 1⅛ acres. For this purpose they are tearing down the old warehouse, corner of North Franklin street and Institute Place, Chicago.

Bissell Carpet Sweeper Company, Grand Rapids, Mich., have recently completed a six-story addition to their factory. Something like 54,000 square feet will thus be added to their floor space, with a corresponding increase in their manufacturing capacity. Their plant now contains about 160,000 square feet of floor space. The factories throughout are designed for the special convenience of the carpet sweeper business, and much of the machinery differs materially from that in use in any other line of manufacture. Every precaution has been taken against fire and the buildings are regarded as thoroughly fire proof. The very large sale which the Bissell sweepers have had is evidenced by the fact that during the past seven years the factory floor space has been quintupled. The capacity of the works now exceeds 1200 sweepers per day. Branch stores of the company are located in New York, Boston, London, Rotterdam, Hamburg, Melbourne and Sydney.

The American Ormonde Company, New York, will hereafter conduct their wholesale and retail departments entirely independent of each other. The wholesaling will be done at a new depot, soon to be opened in the down town portion of the city, while their retail department will be carried on in their new store, 135 West 125th street. It is understood that the Ormonde wheel will in future be manufactured in this country, and not imported, as formerly.

The Homer D. Bronson Company, Beacon Falls, Conn., make a specialty of fine art metal work of electro bronze from architects' drawings, models, carvings, &c., for interior decoration of all descriptions, including panels for dadoes, friezes, doors, mantels, sideboards, houses, steamboats, palace cars, furniture, pianos and organs, billiard tables, &c. The company have just completed a quantity of ornamental bronze work finished in gold for the Columbus Building, Wabash avenue, Chicago, from architect's designs. In addition to the above work the company manufacture wrought brass butt hinges, finely polished and plated piano and organ hinges, continuous and sectional hinges for every purpose, any width and length, fancy and irregular shapes to order, wrought brass pressure bars and brass goods in general.

Yale & Towne Mfg. Company, New York, have received the contract for refitting the New York Post Office with an entire new outfit of lock boxes. They recently fitted the new branch post office in the Industrial Building, at Forty-third street and Lexington avenue, New York, with all of its post office furniture, including routing, letter distributing, pouching and mailing cases, tables and all the paraphernalia of a complete post office.

The League Cycle Company, Hartford, Conn., advise us that their orders for their chainless safety have forced them to work overtime and that the capacity of their plant has been tripled, a fact which they refer to as indicating the merits of their wheel and its excellent workmanship, finish and design. The company are contemplating making large additions to their plant in the way of new and improved machinery and expect to have an excellent season in 1894.

Franklin Brass & Bronze Company have about finished a new factory at Derby, Conn., which they expect to occupy and operate the latter part of this month. They will manufacture the same class of goods formerly made by the Franklin Brass Company, at their factory in Buchanan, Va., destroyed by fire two years ago, soon after starting up. They now have at Derby a well equipped plant for producing refrigerator and box trimmings, hinges for water closet seats, hasps, door numbers, molding hooks, cabinet and builders' hardware, escutcheons, shutter bars, flush lifts, brackets, cabinet hinges and butts. They expect to increase their line of builders' hardware largely They have a foundry also for casting special goods to order, and will make this department a feature of their business. W. F. Brainerd will be in charge of the business at 111 Chambers street, New York.

Mossberg Mfg. Company, Attleboro, Mass., have recently united their Attleboro and North Attleboro plants and added to them by the purchase of additional machinery, so that they now occupy a new building with more than double their former floor area. With a better arrangement of departments and improved methods the company are now in a position to produce any work in their line more satisfactorily and economically than ever before. It is the company's intention in the future to always carry a complete line of jewelers' tools, while still paying particular attention to designing and constructing special complicated and automatic machinery of any kind.

Miscellaneous.

A force of over 200 men is now employed at the Terre Haute Car & Mfg. Company's works at Terre Haute, Ind., repairing freight cars and finishing the construction of the two frame buildings located on the ground recently made vacant by the burning of the plant.

Benj. D. Stone of New York has been appointed receiver for the firm of Reubel & Taylor, manufacturers of brass goods, at Rome, N. Y. The liabilities are said to be $17,000 while the nominal assets are much larger.

The Mount Vernon Car Mfg. Company of Mount Vernon, Ill., have certified to an increase of capital stock from $150,000 to $200,000.

The Chattanooga, Tenn., Car & Foundry Company are running in all departments and have a good number of orders ahead.

John V. Bacot of Jersey City and J. Friedenstein, president of the Anglo-American Iron & Metal Company, 213 Pearl street, New York, have been appointed joint receivers for the property in New Jersey, and Mr. Friedenstein has been confirmed as ancillary receiver for the property in New York. Assurances of support from the great majority of creditors have been received, and with the preparation of a statement of the condition of the company, which will be ready in a few days, it is believed that a continuance of the business under a receivership will be of short duration. The business will be continued on the same lines as heretofore, and the installment of a receiver will not in any way affect it.

Manager Kruesi says, regarding the rumor that the United States Wire & Cable Company had been absorbed by the Edison General Electric Company of Schenectady, N. Y., that the Wire & Cable Company have always been owned by the Edison Company, but had of late been conducted as a separate concern. Now a change has been made so that it will be conducted as a department of the Edison General Electric Works. Manager Kruesi also says that the force at the works is being increased.

The expanded metal works of Chess, Cook & Co., Rankin Station, Pa., are now running.

Eight new locomotives, constructed by the Rhode Island Locomotive Works of Providence, R. I., for the Manhattan Elevated Railway of New York, have been delivered.

The Charles Munson Belting Company of Chicago have received second advice from the Toledo Electric Company of Toledo, Ohio, that the 80-foot belt which they placed in the plant eight weeks ago is running just the same as the first day it was placed on the pulleys. This belt has been running steadily and overtaxed by work ever since that time, and the belt shows no signs of labor whatever.

The New Howe Sewing Machine Company, at Orange, Mass., have placed the contract with the Berlin Iron Bridge Company of East Berlin, Conn., for a new foundry and tumbling room. The building will be entirely of iron, 45 feet in width and 120 feet in length.

The strike of boiler makers in the shops of the Big Four system at Indianapolis, Ind., has led to violence and bloodshed, one man having been killed in an attack made by the strikers on the workmen who had taken their places.

A press dispatch from Philadelphia says that the Baldwin Locomotive Works of that city on Saturday again reduced their force in all departments. Unless there is a marked improvement in business there is a likelihood of a complete shut down. Last year at this time 5890 men were employed on double time. Now but 2480 are employed on half time. Then from 20 to 24 locomotives were turned out weekly. Now from three to five are made.

On the application of John A. Roebling's Sons Company of Trenton, N. J., the court has appointed a receiver for the Kokomo Stamping Company, successors to the U. S. Projectile Company, Kokomo, Ind. The concern were reorganized August last, and the capital stock placed at $50,000. The general business stagnation of the country is said to be responsible for the failure.

Officials of the Bath, Maine, Iron Works deny the report that there is any likelihood that the concern will be removed from Bath to New London, Conn. Nevertheless the New London Board of Trade has appointed a committee to look into the matter.

The statement of the Michigan Peninsular Car Company for the year ended August 31, 1893, shows net earnings of $866,906, which, after paying fixed charges, includ-

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ing a dividend of 8 per cent. on the preferred stock, leaves something more than 18 per cent. profit. Eight per cent. was paid on the common stock, and a little over 10 per cent. carried to the surplus fund. The cash assets of the company amount to over $3,000,000, and the fixed assets to over $7,000,000.

The Litchfield, Ill., Car & Machine Works may be removed to Memphis, Tenn.

The Western Iron Works have secured two contracts for work on the Mechanical Arts Building to be erected for the California Midwinter International Exposition at San Francisco. The Judson Iron Works will have the work on the Liberal Arts Building at a fixed price per pound.

Among recently authorized corporations in Illinois are the following: Globe Tin Plate Company, at Chicago; capital stock, $45,000; for the manufacture of tin and terne; incorporators, James Spruce, William Killmer and Henry C. Gager. Schoolhouse Construction Company, at Peoria; capital stock, $100,000; to build schoolhouses and for general contracting; incorporators, William D. Dickson, Henry Sandmeyer, Jr., and George F. Page. The Fullner-Danhoff Electric Company, at Chicago; capital stock, $5,000,000; for the manufacture of electric light, heat and power; incorporators, Franz Fullner, A. B. Coon, Henry A. Gates and William B. Keep. Western Screw Company, at Chicago; capital stock, $100,000; for the manufacture of hardware and machinery; incorporators, Michael J. Dunne, John T. Booz and Frank M. Burwash. Wabash Truss Hoop Company, at Mount Carmel; capital stock, $10,000; for the manufacture of coopers' supplies and wagon materials; incorporators, Philip S. Reyman, Henry H. Mason and L. W. Miller.

At a meeting of the stockholders of the Allegheny Heating Company, suppliers of natural gas, with headquarters in Allegheny, Pa., the old Board of Directors was re-elected and the following officers were chosen: George Westinghouse, president; J. R. McGinley, vice-president; John Caldwell, treasurer, and W. D. Uptegraff, secretary.

A statement recently issued by the treasurer of the Philadelphia Natural Gas Company of Pittsburgh shows the condition of that concern on September 30, 1893, to have been as follows:

Debt.

Accounts payable	$62,000.00	
Security deposits	73,524.00	
Bonds	139,000.00	
		$274,524.00

Available Assets.

Cash	$402,676.42	
Accounts and bills receivable	310,086.15	
Stock in other companies (paying dividends)	385,970.00	
		$1,098,732.57

The company during the quarter retired $20,000 additional bonds. On June 30, 1893, the cash item amounted to $515,000, and on September 3, 1892, it was $228,000.

The entire plant of the Westinghouse Air Brake Company, at Wilmerding, Pa., is closed down for 30 days. During the shut down a new battery of boilers will be erected and other improvements made.

The Pitts Mfg. Company, the last agricultural implement concern in Will County, Ill., will be moved to Chicago this week and located at Columbia Heights. The castings, stock and machinery of the big plant were placed on freight cars last week ready to begin shipment on Monday. When in operation the new plant will give employment to between 500 and 800 skilled mechanics.

Mayor Latrobe and Charles T. Crane of Baltimore, Md., have been appointed receivers of the South Baltimore Car Building Company, one of the largest concerns of its kind in the country. The financial stringency is given as the cause of the embarrassment. The assets are about $617,000, and the liabilities $294,000. The company have been in operation several years, employs hundreds of men, and have a large plant at Curtis Bay, a few miles from Baltimore.

The Gilbert Car Works, on Green Island, near Troy, N. Y., have resumed operations after a shut down for six weeks under a receivership. Employment was given to nearly 300 men. The works are sure to run until 50 cars for the Lake Street Elevated Road in Chicago have been completed.

TRADE REPORT

The best that may be said is that the past week has not brought any more particularly unfavorable developments in the Iron trade proper. Like every other industry and business throughout the country, it is suffering from the failure of the Senate to put our currency question into proper shape. With admirable patience the business community has suffered without displaying more than pardonable exasperation. We do not believe that this phase will last much longer. It will take but a small impulse to bring about the ears of the Senators a cyclone of wrath from the business world which will put an end to dallying. It will be made apparent who are the masters and who are the servants.

Every day's delay pushes further into the future the prospects of a recovery. Every day's delay drags nearer to the brink of bankruptcy many merchants and manufacturers. It is steadily sapping the vitality of the strongest. Business men not only owe it to themselves but to their employees to adopt vigorous measures. When the threatened bread riots come this winter, with their loss of life and of property, they will not be quite free from their share of blame, since they have not yet exhausted their power of coercion.

From the majority of the Iron trade centers comes the same talk of discouragement. In isolated cases there are reports that a moderate volume of business is coming up, but orders which would hardly cause comment in ordinary times are eagerly pointed to now as offering some encouragement.

How light the purchases of the railroads are, who are the greatest customers of the iron industry, is proven by the report that during the whole month of December the deliveries of Steel Rails by the mills amounted to 32,000 tons, or about one-fifth of what they ought to be in ordinary times. While it is true that special circumstances may have led to singling out this branch as the dullest in the whole industry, we believe that statistics relating to the car shops and the locomotive builders would display very striking figures too. The Iron trade needs the immediate repeal of the purchasing clause of the Sherman act, and wants peace for a long time after that.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., October 17, 1893.

The situation as regards the market for Iron and Steel shows only slight changes from last week, and these not altogether of a favorable character. The only good feature is a better demand for rolling mill products, although without any corresponding increase in prices. The shipyards are taking material somewhat freely, and with further inquiries from this source, and for architectural purposes, manufacturers are beginning to feel that there is a reasonably good prospect of being able to keep their machinery in operation. In other departments there is no improvement whatever, and the outlook for the winter months is anything but cheering. Nevertheless, prices are down to a point beyond which it is almost impossible to show further recession, and with an output of Pig Iron only about 40 % of what it was during the first six months of the year, it is surely time to look for something of a reaction. The spirit of speculation has been so thoroughly crushed, however, that on the principle that "sufficient for the day is the evil thereof," there is very little disposition to operate, except to cover contracts actually in hand.

Pig Iron.—The feeling as regards Pig metal is exceedingly dull. Prices are weaker and lower, yet with a production of only 40 % of what it was a few months ago, there is more unwillingness to buy than when prices were very much higher and production twice as large as it is to-day. This can only be explained by the fact that consumers have very few orders on their books, and that recent experience has shown that no matter how cheap they might secure Iron one day, they could do still better in their next purchase. This, of course, cannot continue indefinitely, and there is little doubt that prices are either at rock bottom or within sight of it, but all the same there is no disposition to buy anything that is not actually needed, no matter what inducement may be offered as regards prices. The usual quotations are about $12 @ $12.50, delivered, for standard brands of Gray Forge; $13 @ $13.50 for No. 2 Foundry, and $14 @ $14.50 for No. 1. Southern Irons can be had at less money, several lots having changed hands at $11.50 @ $11.75, with a fair chance that orders could be readily placed at the same or slightly lower figures for good sized lots and prompt settlements.

Steel Billets.—Prices are still on the down grade, with sellers at $19.75 @ $20, but very little demand. For 1000s ton lots it is thought that $19.50 or less would be accepted, but as consumers' requirements are only moderate bids are not forthcoming, except for very small lots. Sales were made in lots of 100 to 200 tons each at $20 @ $20.25, but more recently the feeling has become weaker, and $20 would be regarded as a full quotation for any kind of an order, and from that down to $19.50 or less for a good sized lot.

Finished Material.—The market is looking better as regards the volume of business, but not as regards prices. There are several inquiries from the shipyards, which, with the work taken during the early spring, is helping the mills considerably. There is also something doing in buildings; one at Tenth and Filbert, in this city, will call for 1500 tons, the Boys' High School will take sev-

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eral hundred tons more, so that there is a little business around, although compared with the capacity it is a mere drop in the bucket. The general demand for small lots is also pretty fair, but taking the most hopeful view of the situation, the prospect for winter work is less favorable than for years past, and if mills make half time it is about as much as can be hoped for, unless some very unexpected change occurs. Prices are weak, and on any good sized order it is easy to secure liberal concessions from quotations on small lots, which are about as follows:

Grooved Skelp, delivered	1.50¢	@	1.55¢
Best Refined Bars	1.55¢	@	1.60¢
At interior points	1.50¢	@	1.55¢
Tank Steel	1.60¢	@	1.65¢
Heavy Plates	1.65¢	@	1.70¢
Shell	1.75¢	@	1.85¢
Flange	2.00¢	@	2.20¢

Old Material.—The market is extremely dull, and prices liable to weaken under any extra pressure to sell. Asking prices are about as follows:

No. 1 Wrought Scrap, delivered	$12.00	@	$13.00
Machinery Cast, delivered	10.00	@	11.00
Heavy Steel Scrap, delivered	13.00	@	14.00
Old Iron Rails, delivered	15.00	@	16.00
Old Street Rails, delivered	17.00	@	18.00
Wrought Turnings, delivered	10.00	@	11.00
Cast Borings, delivered	6.00	@	7.00
No. 2 Light Scrap	6.00	@	7.00

Dreifus, Block & Co. of Pittsburgh, dealers in Iron and Steel Scrap, Billets and Muck Bars, have recently opened an office at 421 Chestnut street, Philadelphia, under the management of E. Dreifus.

Janney & Steimetz are among the latest candidates for business in Coal, Coke, Iron, Steel and Aluminum. The last mentioned article is to be made one of their leading speciaities, both in the ingot and in its manufactured shape. Their office is in the Philadelphia Bank Building, 423 Chestnut street.

Chicago.

(*By Telegraph.*)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, October 18, 1893.

No improvement can be discerned in the condition of trade. Everything is waiting. A great deal of business is reported in prospect which might be transacted at an early date if Congress would act decisively on the currency question, but every day lost makes the prospects fainter for anything of consequence this year. Many are of the opinion that not much can now be expected before next spring.

Pig Iron.—But few sales during the past week are of sufficient importance to mention. Among these were 500 tons Southern Coke Foundry, 500 tons Lake Superior Charcoal, 300 tons local Coke and a few 100-ton lots. Carload orders have been fair but not very numerous. Some Iron houses reported the past week as one of almost complete stagnation with them. In view of the very low prices reported elsewhere it may be interesting to state that Southern Mottled Iron has been sold here within the past few days at $10.85, equivalent to $7 at furnace. The attitude of the Southern companies represented here is one of continued firmness and our quotations represent actual prices obtained. Buyers are reported to be generally satisfied with present prices and the only question with them is that of getting orders for their own products, when they would be glad to place contracts for the Pig Iron required. Shipments of Coke Iron from the furnaces are steadily increasing, largely on account of the growing consumption of agricultural concerns. Some little improvement, however, is noticed in the consumption by general foundries. The sale of Charcoal Iron reported was on account of a bankrupt company, but it brought a price fully equal to our quotations, which shows remarkable strength in that class of Iron. Quotations are now as follows for cash:

Lake Superior Charcoal	$16.00	@	$16.50
Local Coke Foundry, No. 1	13.50	@	14.00
Local Coke Foundry, No. 2	12.75	@	13.00
Local Coke Foundry, No. 3	12.50	@	12.75
Local Scotch	14.00	@	14.50
Ohio Strong Softeners No. 1	15.50	@	16.00
Southern Silvery, No. 1		@	14.50
Southern Silvery, No. 2		@	14.00
Southern Coke, No. 2	12.35	@	12.60
Southern Coke, No. 3	11.60	@	11.85
Southern, No. 1, Soft	12.35	@	12.60
Southern, No. 2, Soft	11.85	@	12.10
Southern Gray Forge	11.10	@	11.35
Tennessee Charcoal, No. 1	16.00	@	16.50
Alabama Car Wheel	18.50	@	18.75
Hocking Valley, No. 1	15 25	@	16.00
Jackson County Silvery	16.00	@	17.00

Bars.—Considerably more inquiry is reported and some sales have resulted. The quantity purchased, however, falls very much under the usual amounts bought by the same parties under ordinary circumstances. Carload lots are now about the general run of business and larger sales are rare except on season contracts. One good agricultural contract was placed last week. Specifications are coming in a little more freely on season contracts also. The tendency noted some time since to substitute Steel for Iron is not so marked. The price of Common Iron is now so much below that of Steel that Iron is maintaining a good position in the market. Prices for ordinary lots of Bar Iron, mill shipment, range from 1.42½¢ to 1.45¢, half extras, Chicago. Soft Steel Bars of good quality sell at 1.57½¢ @ 1.60¢. Jobbers have experienced a little better business during the past week, but much of this is attributed to orders received from large consumers who are buying from store in small quantities rather than from mill. Prices on small lots from stock are weak at .65¢ @ 1.70¢ for Bar Iron and 1.70¢ @ 1.75¢ for Soft Steel Bars.

Structural Material.—No large contracts are reported. Business in small lots is fair. Steel is now entering quite considerably into the construction of much smaller buildings than hitherto. Architects are even considering the desirability of specifying Steel Beams for certain uses in dwellings. This is expected to be an important development of the present era of low prices. Quotations are maintained at the following prices on mill shipments, Chicago delivery: Beams, 1.75¢ @ 1.90¢; Tees, 1.95¢ @ 2.05¢; Angles and Universal Plates, 1.75¢ @ 1.80¢.

Plates.—If there was any business of consequence prices from mill would be considerably reduced. Current business is confined to such small lots, however, that our quotations fairly represent the market. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.75¢ @ 1.80¢; Shell Steel, 2¢ @ 2.10¢; Flange Steel, 2.15¢ @ 2.30¢; Fire Box, 2.75¢ @ 5¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2.25¢ @ 2.40¢; Tank Steel, 2.10¢ @ 2.20¢; Shell Steel, 2.20¢ @ 2.40¢; Flange Steel, 2.50¢ @ 2.65¢; Boiler Tubes, 70 %.

Sheets.—The demand for Black Sheets is excellent from mills in a position to make prompt deliveries. Jobbers are not holding prices firmly from stock, and in some cases are reported to have named figures very close to quotations now current from mill. They are doing better on Smooth Iron and Sheet Steel. Quotations on mill shipments, Chicago delivery, for No. 27 Common Black Sheets range from 2.75¢ to 2.80¢, while small lots from stock sell at 2.90¢ @ 3¢. Galvanized Iron has been in remarkably good demand and for the first time in many months some of the mills have refused to take further orders, as their capacity is covered for the immediate future. Juniata Galvanized continues to be quoted at 75 % off for mill shipment with freight added. Sheet Copper is in light demand, but is still quoted at 30 % @ 35 % off, according to quantity.

Merchant Steel.—More specifications are coming in on season contracts than in previous weeks, but still not in sufficient quantities to satisfy the manufacturers, who fear trouble in making prompt deliveries later in the year. Some new business has been entered during the past week from season buyers, and a fair trade has been done with the mills by jobbing houses. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel at 1.90¢ @ 2¢; Ordinary Bessemer Machinery, 1.60¢ @ 1 65¢; Ordinary Bessemer Tire, 1.55¢ @ 1 60¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Rails and Track Supplies.—The manufacturers of Track Material are deriving some encouragement from the increasing freight business reported by railroads running West and Northwest. They are doing a great deal more in transporting grain and provisions as well as merchandise, but the Coal and Iron shipments are still very light. A few orders for moderate quantities of standard sections were received during the past week, but the volume of business both in standard and light sections has been small. Standard sizes are unchanged at $30 @ $32; and Light Rails $31.50 @ $32. Iron and Steel Splice Bars 1.60¢ @ 1.65¢; Track Bolts with Hexagon Nuts, 2.50¢ @ 2.55¢; Spikes, 1.85¢ @ 1.90¢.

Old Rails and Car Wheels.—No transactions are reported in Old Iron Rails, but railroads are weakening and some have asked for offers from consumers of $14.50. The latter, however, are now convinced that they will be able to buy cheaper, and are disinclined to offer even $14. Old Steel Rails in long lengths are sold at $10 @ $10.25. Short pieces are worth $7.50 @ $8 on a parity with prices at Eastern points of consumption. Old Car Wheels are very quiet, and while single carloads are quoted at $13.50 @ $14, a large lot could not be sold except at a very material reduction from these prices.

Scrap.—The sale of a round lot of No. 1 Forge is noted. There are plenty of other inquiries, but buyers are trying to force prices lower than dealers are willing to accept. The demand for low grade Scrap is light. Steel is still neglected and Mixed Steel is now offered at a very low rate. Dealers' selling prices, net ton, are as follows: No. 1 Forge, $10; No. 1 Mill, $8; Sheet Iron, $5; Pipes and Flues, $7.50; Axles, $15; Horseshoes, $10; Fish Plates, $12.75; Spikes and Bolts, $10; Cast Borings, $5; Wrought

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Turnings, $6.50; Axle Turnings, $8; Heavy Cast, $9; Stove Plate, $7.75; Malleable Cast, $8; Mixed Steel, $7, gross ton; Leaf Steel, $14 50.

Metals.—Carload lots of Lake Copper are unchanged at 10⅜¢ and casting brands maintain the old price of 9¼¢, with very little doing. Considerable inquiry has been received for Spelter, but sales are light. It is now quoted at 3.50¢. Lead has been reduced to 3.25¢ @ 3.30¢, with plenty of sellers but very few buyers.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, Pittsburgh, October 17, 1893.

The same discouraging report of the condition of the Iron and Steel trades must be repeated this week. A very thorough canvass made among the trade here reveals the fact that as yet there is no indication of an early improvement, either as regards demand or prices. No one believes that things are going to remain as they are for all time, but it is the general impression that it will be very slow work to lift the Iron and Steel trade out of the rut into which it has gotten. Buyers seemingly have no confidence that bottom has been reached, and each time they enter the market they expect to buy to better advantage than before. Pittsburgh, with its unrivaled facilities for cheap production, continues to set the pace in naming low prices that practically leave makers in other sections entirely helpless. It would seem that a few leading makers have concluded that if they can earn interest on the investment until trade resumes something like its normal condition, it is better to run as full as they can, making the securing of orders the first consideration and prices the second. It is also evident that a determination exists in certain quarters to find out how low competitors can go before they will cry "enough." All this has largely brought about the present low range of values, until, as one maker aptly puts it, "it is no longer a question of quoting a price, but a question of how much you can get." In Plates the competition has been especially severe, and on fair sized orders prices have been made that are almost beyond belief. In Billets, too, the determination of one or two makers to take everything in sight has resulted in prices being hammered down until neither buyer nor seller can tell "where he is at." The large stocks of Pig Iron in hands of makers, coupled with the light demand and the eagerness to sell, have forced prices to a point where it is doubtful if the furnaces can come out whole. The situation, summed up, could hardly be worse, and the long hoped for change for the better cannot come too soon.

Pig Iron.—The market continues a waiting one, and although buyers are aware of the fact that furnaces are offering their product at about cost, or perhaps below, orders continue to come in for immediate requirements only. For a long time past buyers have had everything pretty much their own way, and they have not failed to make good their advantages. However, this may change sooner than expected, and when it does come it is not likely that producers of Pig Iron will be slow in making just as good use of their opportunities. Production in this district has been increased to the extent of about 250 tons per day by the blowing in of the stack of the Monongahela Furnace Company, at McKeesport, on Mill Iron. Their other stack remains idle. For ordinary lots asking prices are as follows:

Neutral Gray Forge	$10.50 @	$10.75,	cash
All-Ore Mill	10.75 @	11.00	"
Bessemer Pig	11.25 @	11.50	"
No. 1 Foundry	12.50 @	13.00	"
No. 2 Foundry	11.50 @	12.00	"

We note a sale of 500 tons of Gray Forge Iron at a price equal to $10.60, Pittsburgh.

Billets.—A very limited amount of Steel is changing hands, and prices continue to depend altogether upon size of order and terms of payment. For ordinary business makers continue to ask $18 at maker's mill. There is a probability that for a good-sized order and favorable terms of payment some makers would shade this price. Other makers, however, seem to regard $18 as the stopping place, and are inclined to refuse business at anything under that figure.

Steel Rails.—After a shut down of some months, the Edgar Thomson mill has again resumed, though not to full capacity. It is stated that enough orders are on hand to insure about 15 days' operation. It is now pretty generally admitted that $29 does not represent the actual price on which orders are based, but that the price is shaded more or less, according to conditions. The Light Rail department of this plant is also in partial operation.

Ferromanganese.—We continue nominal quotation of $55 at maker's mill for domestic.

Muck Iron.—With Billets at $18, there is very little chance for Muck Bar, and there is practically nothing doing. We make nominal quotation of $20.50 at buyer's mill.

Wire Rods.—There continues to be a very fair movement in Rods, and most of the mills have about all the business for October that they can handle. For November and December delivery $26 at maker's mill is asked. A deal involving some 4000 or 5000 tons for delivery into next year is pending and may be closed before this week is out.

Structural Material.—Considering the fact that the active building season is about over, the demand keeps up fairly well. Of course no large orders are being placed, but the tonnage from the small buyers is fairly large. We quote as follows: Beams up to 15 inches, 1.50¢ @ 1.60¢, according to order. Angles and Universal Plates, 1.60¢ @ 1.65¢; Tees, 1.75¢.

Plates.—From a large maker we have reports of a slightly better demand, but none of the mills have enough business to give them full employment. It is in this department that prices have been cut to an unusual degree. For ordinary lots mills quote about as follows: Tank, 1.50¢; Shell, 1.65¢ @ 1.70¢; Flange, 1.80¢; Fire Box, 2.50¢ @ 4.50¢, according to quality. The quotation on Tank Steel continues to be shaded more or less for desirable business.

Merchant Steel.—Buyers are placing their orders a little more freely, although some of the largest buyers who have heretofore placed their orders for season requirements before this time have as yet done nothing in this direction. The small buyers are also placing orders a little more freely, and it is evident that stocks are very low. Prices are ruling about as follows: Open Hearth Spring Steel, 1.85¢ @ 1.90¢; Bessemer Machinery, 1.65¢ @ 1.75; Toe Calk, 1.90¢ @ 2¢; Tool Steel from 5½¢ upward, according to quality.

Bars.—It is evident that mills in the Mahoning Valley have but little hope of starting up in the near future. Within the past week one concern there has discharged its entire office force, while another has notified its employees to seek work elsewhere, owing to the uncertainty as to when they will start up. In the Pittsburgh district mills are getting a fair share of work, but some of it is taken at prices that must represent a loss. We quote Steel Bars at 1.35¢ at mill, with Bar Iron extras. This price is occasionally shaded to some extent for good orders. Bars in the Valley are held at 1.35¢, half extras, and this price is also shaded slightly for desirable orders.

Wire Nails.—The demand for Wire Nails continues fairly active, and prices are a shade firmer. For close delivery mills are obtaining $1.30 from jobbers, while to the smaller trade jobbers are charging $1.40 @ $1.45. Cut Nails are also in fair demand, and the market is represented by the quotation of $1 @ $1.05 at mills for the usual average. Through a typographical error, the quotation on Cut Nails in our issue of October 5 appeared as $1.05 on a 30¢ average. It should have read on a 50¢ average.

Barb Wire.—There is a fair demand, but with most of the mills in operation there has developed an unusually severe competition to secure business, which has weakened prices to some extent. For ordinary business we quote Four-Point Galvanized at $2.25 in carload lots, but for desirable orders this price has been slightly shaded recently. Painted is held at 40¢ less than above price in carload lots. Plain Wire we quote at $1.50 for good sized orders.

Connellsville Coke.—For the week ending Saturday, October 7, there were in the Connellsville region 5464 ovens in blast, and 12,026 idle, with a total estimated production for that week of 37,186 tons. Furnace Coke is in light demand, and is held at $1.10 in tons of 2000 pounds, f.o.b. cars in Connellsville region. Foundry Coke is quoted at $1.50 to dealers and $1.65 to consumers.

St. Louis.

(By Telegraph.)

Office of *The Iron Age*, Bank of Commerce Building, St. Louis, October 18, 1893.

Pig Iron.—Continued dullness prevails in the Iron market. Sales run from carload to 100-ton lots, and seem to grow less daily. Prices are lower and there is nothing in the immediate future to build on for any advance. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	$13.00 @ $13.25
Southern Coke, No. 2 Foundry	11.50 @ 11.75
Southern Coke, No. 3 Foundry	10.75 @ 10.95
Southern Gray Forge	10.25 @ 11.50
Southern Car Wheel	17.25 @ 17.75
Lake Superior Car Wheel	16.50 @ 17.00
Ohio Softeners	16.00 @ 16.50
Missouri Charcoal, No. 1 Foundry	12.75 @ 13.25

Bar Iron.—There is very little demand either from store or mill, and while mills are running, they are not working full time. Prices are slightly

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lower, as follows: Lots from mill command 1.47½¢ @ 1.50¢. Jobbers ask 1.62½¢ @ 1.67½¢ for lots from store.

Barb Wire.—Trade has fallen off somewhat since our last report. Jobbers quote Painted at $2.05 @ $2.10, while mill price in carloads to jobbers is $1.95 @ $2. Galvanized commands the usual advance. The immediate outlook is not encouraging.

Wire Nails.—The demand for Wire Nails is satisfactory, but prices cannot be called so. There are rumors of some low prices which, while not entirely substantiated, are doubtless true. Mills quote $1.45 @ $1.50 in carload lots to jobbers, which would doubtless be shaded in large quantities.

Rails and Track Supplies.—A fair amount of business is reported in this department. Prices unchanged. Steel Rails are nominally quoted at $30 @ $31. Old Iron Rails are dull at $15, but no sales are reported at this figure.

Pig Lead.—There appears to be no bottom to this metal and 3.17½¢ is now freely quoted for this month's delivery. There is no speculative interest in the market, and so far as consumers are concerned, they are only buying as their absolute needs require.

Spelter.—The market continues in the unsettled condition noted in our last report. Offerings are made at 3.25¢ @ 3.30¢, without, however, inducing any buying. Until legitimate consumption makes its appearance any advance seems out of the question.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, October 18, 1893.

There has been very little change in the general features of the Pig Iron market during the week; the transactions have been restricted to supplying the current wants of the jobbing foundries and the stove works, but the purchases of the latter are not large, seldom running over 200 tons at any one time, and frequently much less; there has been no large demand for forward delivery, and while the stronger Iron companies in the South are not urging sales, and, in fact, have withdrawn from the market, because they have sold as far ahead as they care to, yet there are indications that almost any kind of Pig Iron could be bought for spot cash about as low as it has ever sold in a regular way, although it seems certain that there is no margin of profit in its manufacture. There are so many furnaces out of blast in the South and West that with even a small increase in the demand there would soon be a scarcity of Iron, but there appears to be no prospect for such an increase in the early future, especially if the Senate does not pass the Silver Purchase Repeal bill. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$12.75 @ $13.00
Southern Coke No. 2	10.75 @ 11.00
Southern Coke No. 3	10.25 @ 10.50
Ohio Soft Stone Coal, No. 1	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2	14.50 @ 14.75
Lake Superior Coke No. 1	15.00 @ 15.25
Lake Superior Coke No. 2	14.00 @ 14.25
Hanging Rock Charcoal, No. 1	18.50 @ 19.00
Hanging Rock Charcoal, No. 2	17.50 @ 18.00
Tennessee Charcoal, No. 1	14.00 @ 14.25
Tennessee Charcoal, No. 2	13.00 @ 13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @ 18.00
Lake Superior Car Wheel and Malleable	17.00 @ 17.25

Forge.

Gray Forge	9.75 @ 10.00
Mottled Coke	9.50 @ 9.75

The Mahoning Valley

YOUNGSTOWN, OHIO, October 17, 1893.

A market report when there is practically no market is something of an anomaly. No such period of dullness had ever occurred in the Mahoning Valley; business is absolutely lifeless and the controversy between the employers and the employees of the mills intensifies the situation. Not a mill in the valley is running and but two furnaces. Various attempts have been made to adjust the labor difficulties between the mill owners and the Amalgamated Association, but so far without avail. The mill owners object to signing an absolute scale running until July 1, 1894, giving as a reason that work is being done in other mills, notably at Pittsburgh, without any fixed period, and our mill owners feel that they might not be able to compete if tied up with a contract, which might be higher than others pay. There is but little business going for the mills at present, and the little work that is being done our mill owners and, of course, the workmen are losing, and the trade is gradually drifting elsewhere. A suggestion has been made that the scale be signed for a shorter term, or subject to a 60 or 90 days' notice, and this seems to meet with favor and may prove a solution of the troubles. Much ado is made by the local papers here for political effect, but this cuts no figure whatever in the minds of the proprietors. It is an expensive luxury keeping a plant idle, ranging all the way fron $300 to $500 per month for each and every mill, and the problem is being considered from a purely business standpoint, and with no reference whatever to the political outlook.

Pig Iron.—No. 1 Foundry for softening purposes is in limited demand and the little sold brings from $13 to $13.25 ℔ ton at the furnace; No. 2 grade, $12 @ $12 25. No. 1 strong Foundry is quoted at $12.50 ℔ ton at the furnace, and No. 2 $11.50. Mill Iron ranges at $11 and a shade less, delivered at the mills. A recent sale netted the furnace $10.85 and an offer of $10.75 at the furnace was refused. Southern Iron has been practically knocked out from this market. An occasional stray lot of Southern Mottled Iron is offered here, but not enough to cut any figure.

Finished Products.—Bar Iron ranges from 1.35¢ to 1.40¢ rates, and Sheet Iron 2.60¢ for No. 27 gauge. The stocks at the mills are badly broken up and it is difficult to fill orders.

Financial.

Considered as a whole there has been little or no change in the financial situation during the past week. Uncertainty remains the dominant feature. Senatorial action on the Silver Purchase Repeal bill is not appreciably nearer, and rumors of compromise still prevail, while the feeling of assurance in the ultimate triumph of unconditional repeal waxes weaker from day to day. It is true that the repeal bill is not defeated yet. There is still a chance that it may pass, but the reports from Washington are not encouraging, nor are they calculated to infuse confidence into the business community. The failure of the continuous session last week to force action on the bill had a decidedly depressing and unsettling effect in Wall street, as well as in the London market, causing a tumble in prices of stocks and bonds, with steady selling of securities on both home and foreign accounts.

The influence of the same abortive effort on the New York banks was also marked. These institutions had been, until Friday, offering freely large sums of time money on collaterals at easy rates. On that day, however, the offerings were withdrawn, as, notwithstanding the fact that the banks are amply furnished with surplus funds, they do not care to let any portion of their reserves go beyond their easy control while the fate of the repeal bill remains uncertain.

That a robust element of hope still exists in Wall street is proved by the remarkable way in which the values of securities have, on the whole, been maintained, in the face of delay and discouraging reports from Washington, continued unfavorable returns of railroad earnings and rumors of difficulties in various quarters. Although the majority of stocks on the list display a decline from the quotations of a week ago, yet the decline has been comparatively small, and nearly all securities still rule materially higher than they did a couple of months ago, showing an underlying strength that was lacking during the recent panic.

Money continues to flow into the coffers of the New York banks from the interior at the rate of nearly $1,500,000 a day. Saturday's statement of the Associated Banks showed an increase in surplus reserve of $5,267,325, bringing the amount held in excess of legal requirements up to very nearly $34,000,000. The increase in deposits during the week was $12,260,300, and the net gain in cash $8,332,400, of which $6,006,700 was specie. Loans were increased $2,374,200. To counterbalance the large inflow of money, the demand for currency from the South to move the cotton crop is beginning to be felt by the New York banks, and some heavy remittances have been made in that direction during the present week. The banks are, at the present time, rapidly canceling their Clearing House loan certificates, the amount of which outstanding in New York has been reduced to a little over $5,000,000. Outstanding Boston loan certificates are practically wiped out.

The publication of the official statement of condition of the national banks on October 3, made to the Comptroller of Currency, exhibits in a very gratifying manner the strength of those institutions, and generally shows material improvement to have been made over the conditions reported on July 12, the date of the last returns. The figures of the national banks of this city reveal remarkable strength, considering the storm and stress to which those institutions were exposed in the summer.

Deposits, which had fallen from $242,800,000 on May 4 to $218,800,000 on July 12, had risen to $227,300,000 on October 3. Loans, which were $310,700,000 on May 4 and $309,100,000 on July 12, were $283,600,000 on October 3. Specie, which was $63,900,000 on May 4 and $55,300,000 July 12, was $75,600,000 October 3. The continued depletion of the Treasury gold reserve, which has run down to $84,500,000, is causing serious consideration, on the part of the Treasury officials, of measures to build the reserve up again, and it is thought that the amount will not sink much lower.

The aggregate loss of railroad earnings on 131 roads during September was 9.77

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%, as compared with 13 % in August, a reduction which does not fulfill the sanguine expectations formed previously. The roads show, too, a loss for the nine months of the year, which is almost without precedent, and which reflects most substantially the general business depression, notwithstanding an increase in passenger traffic shown by the trunk lines carrying World's Fair visitors. *Bradstreet's* reported another increase in the number of failures during last week, which are placed at 406 in the United States, against 365 in the preceding week and 191 in the corresponding week of 1892. Twenty-nine of these failures were with capital in excess of $20,000 each

On the Stock Exchange the volume of transactions has been narrow and the trading mainly of a "professional" character. Cordage stocks were in demand and strong on Thursday, owing to the announcement that the Reorganization Committee had reached an agreement with the security corporation, whereby the latter had assented to take $6,000,000 first preferred stock for an equal amount of bonds. The position of the stock was further strengthened by a rumor that the committee had at length overcome all difficulties in the way of a rehabilitation of the property, and that they would presently publish the looked for statement of the status of the company. Friday saw a sharp decline in stocks and bonds on the news of the continuous session *fiasco* at Washington. Grangers and Industrials fell from 2 to 3 points, and the majority of other securities followed suit; but the week closed with a slight recovery all round. On Monday stocks were stronger, with very light dealings. Rumors current in regard to Atchison caused a sharp drop in that stock. Tuesday's market was feverish and irregular, clearly reflecting the existing condition of financial uncertainty. "Bear" attacks caused a drop in grangers, but Reading stocks, which had been depressed in the expectation of foreclosure on the Spezer loan, rallied on rumors of a satisfactory arrangement in the matter having been arrived at. The announcement of the Union Pacific receivership on Friday had absolutely no effect on stock in the market, the event having been previously discounted. The following list exhibits the extreme fluctuations of the more active stocks during the week under review, with the closing prices on October 19:

	Highest.	Lowest.	Closing, Oct. 11.
Am. Sugar Ref.	91⅝	88¾	91⅞
Atchison, T. & S. Fé	19¼	16¾	18⅜
Balt. & Ohio	69	65⅛	65¾
Chicago Gas	60⅛	57⅞	59⅜
Chic., B. & Q.	80¾	77⅛	78¾
Chic., Mil. & St. Paul	59½	56¾	58⅛
Chic., Rock Isl. & Pac.	64¼	59¾	61½
Del., Lack & Western	157	151	155⅞
Gen. Electric	44⅜	42½	44
Lake Shore	123⅛	119¾	121
Louisville & Nashville	46	44	46
Manhattan	126	122¼	125
Missouri Pacific	22¾	20¾	22
Minnesota Iron, asked	....	....	60
National Lead, Common	26½	25¾	26¼
New York Central	102½	100	100½
N. Y., L. E. & Western	14¼	13¼	14¼
Northern Pacific, Pfd.	22	18¾	22
Philadelphia & Reading	18¼	16	17½
Richmond & West Pt., Terml	3	2⅝	2¾
St. Paul & Omaha	35¼	33	34
Union Pacific	17¾	15⅝	17½
Western Union	82⅛	80¼	82⅛

Call loans continue extremely easy. Rates have been quoted at from 1½ % to 2½ %, the last loan being at the lower figure. Business in the loan market is, however, of very limited proportions, owing to the absence of speculation on the Stock Exchange, and the supply of loanable funds is largely in excess of the demand. The absence of demand for accommodation also rules in the market for time loans, where there is an abundant supply at 3½ % @ 4 % for 60 days and 4 % @ 4½ % for three to four months, on mixed collaterals readily marketable. Commercial paper continues quiet and the demand light. A few sales have been negotiated with out of town institutions on the basis of 6 % @ 8 %, according the character of the indorsements.

Sterling exchange, which stiffened toward the close of last week on unfavorable news from Washington, has lost again this week, rates being reduced on Tuesday. The market is narrow and steady, and the supply of cotton bills fair, with small inquiry from remitters. Actual rates for sterling are quoted as follows: 60 days', $4.82¼ @ $4 83; demand, $4.84¼ @ $4.85; cables, $4.84¾ @ $4.85¼; commercial, $4.81½ @ $4 81¾. Domestic exchange on New York is quoted as follows: New Orleans, commercial 150 discount, bank par; Charleston, buying ⅛ @ 3/16 discount selling par; San Francisco, sight 17½; telegraph 27½ premium; Savannah, buying ¼ discount, selling ⅛ discount @ par; St. Louis, 90 premium; Boston, 20 @ 15 discount; Chicago, 80 to 85 premium.

Government bonds are weaker. A sale of $3000 4s coupon at 111⅜ was noted on Tuesday. Closing quotations were as follows:

	Bid.	Asked.
2s, 1891, registered	98	...
4s, registered	110¾	111⅜
4s, coupon	110¾	111½
Cur. 6s, 1895	102	.....

The railway and miscellaneous bond market has been weak and irregular, with narrow volume of business and declining prices.

Bar silver closed in London at 33¾ pence ℔ ounce, and in New York at 73¾¢ ℔ ounce. Treasury purchases on Tuesday were 142,000 ounces of silver at $0.7340 ℔ ounce. The total purchases thus far this month are 808,000 ounces. Exports of silver during the week have been heavy. Apparently India's demand for the metal has not been appreciably reduced by the recent suspension of free coinage in that country. Since January 1 London has sent more silver to India and to China than in the first nine months of 1892.

The total amount of anthracite coal sent to market during the week ending October 7 was 1,004,666 tons, an increase of 13,095 tons as compared with the corresponding week of last year. The total amount of anthracite mined thus far this year is 32,284,765 tons, an increase of 724,407 tons, as compared with the corresponding period of last year.

Metal Market.

Copper.—Exports continue liberal, and deliveries on home trade orders are fairly large. Between the two a considerable portion of the product of various concerns has been taken up, and with general trade conditions in better shape than they are at present the market would probably show stronger tone. It happens, however, that there is more than enough Copper to go around, and prices are soft in consequence, although showing no radical change. In remote instances 10¢ is quoted for Lake Superior Ingot, but there have this week been more sellers than buyers at 9¾¢, and rumor had it that sales were made at as low as 9⅝¢, net cash. Other varieties of the metal have suffered to a certain extent. Thus Electrolytic went at as low as 9¼¢, although some brands were held at ¼¢ more, while 9½¢ seems to have become top price for ordinary casting stock in round lots. It was rumored that some sales of the latter have been made at 9⅜¢ on net cash terms.

Pig Tin.—Comparatively little Tin has changed hands in a speculative way during the past week, but the market has gained somewhat in tone, although purchases by distributors and consumers have been on a rather moderate scale. The improvement, such as it is, may be attributed chiefly to the fact that the burdensome surplus of weak holders has been weeded down to narrow proportions, and that operators who control the bulk of stock have been disconcerted little, if at all, by adverse continued heavy movement of Tin from the primary sources of supply to Europe. Straits shipments during the first half of the month, it was advised, amounted to 1450 tons, including 1125 tons to Great Britain and 325 tons to the Continent, against 1275 tons during the corresponding period last year. Some few lots have been sent from Europe to this market, but not enough to have any decided influence upon the situation here. Bids were raised on Tuesday to 20.90¢, net cash, for prompt or current month delivery, but at the close of the week the buying spirit was exceedingly tame, and bids above 20.80¢ were strictly the exception.

Pig Lead.—There has been a further decline in prices and the market has had a depressed appearance. Consumers purchased indifferently, while other buyers virtually did nothing. At from 3.50¢ down to 3.30¢ probably 500 tons changed hands, with 150 @ 200 tons at the lowest figures. With Western markets quite as low, relatively, the position at the close was the reverse of encouraging. Bids of over 3.25¢ for carload lots delivered here were strictly the exception. At 3.35¢ the offering was fairly free at the close.

Spelter.—Prices for ordinary Western brands have fallen about 0.20¢, or to about 3.55¢ @ 3.60¢. This brings the cost of the metal down to an unusually low point, and, according to most calculations, leaves very little, if any, margin of profit to producers. Despite this, it does not appear that either consumers or dealers manifest any inclination to buy except as imperative wants necessitate, and exporters are not doing enough to relieve the situation. Hence a rather demoralized market and little chance of improvement in the immediate future, unless production be curtailed considerably.

Antimony.— For ordinary jobbing quantities there has been a fair demand, but the market is otherwise slow and prices are easy. We quote at 9½¢ @ 9¾¢ for Hallett's, 10¢ @ 10½¢ for L. X., and 10½¢ @ 10¾¢ for Cookson's, in round lots.

Tin Plates.—There has been a fitful demand in which ordinary Cokes shared the best, and sales to a very fair extent were made for prompt delivery and near future shipment. Prices for Cokes are quite firm, but bright Charcoals and Ternes barely hold their own. Spot quotations are as follows: Coke Tins — Penlan grade, IC, 14 x 20, $5.30; J. B. grade, do., $5.45; Bessemer full weight, $5.40; light weights, $5 for 100 lb, $4.85 @ $4.90 for 95 lb, $4.70 @

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$4.75 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60; Siemens Steel, IC basis, $5.65; IX basis, $6.75 @ $7. Charcoals—Melyn grade, IC, $6.35 @ $6.37½; Crosses, $8; Allaway grade, IC, $5.60; Crosses, $6.75; Grange grade, IC, $5.75; Crosses, $6 85. Charcoal Ternes—Worcester, 14 x 20, scarce; do., 20 x 28, $11.35; M. F., 14 x 20, $7.35; do., 20 x 28, $14.75; Dean grade, 14 x 20, $5.30 @ $5.37½; do., 20 x 28, $10.50 @ $10.60; D. R. D. grade, 14 x 20, $5.15; do., 20 x 28, $10.10; Alyn, 14 x 20, $5.32½ @ $5.35; do., 20 x 28, $10.40; Wasters —S. T. P. grade, 14 x 20, $4.75; do., 20 x 28, $9; Abercarne grade, 14 x 20, $4.60; do., 20 x 28, $8.87½.

The monthly production of Copper in the United States since July, 1892, has been as follows, the first column giving the aggregate returns from the reporting mines, which include the principal Lake, Montana and Arizona producers; the second being the metal from pyrites and from a number of smaller outside sources, being estimated:

American Product.

1892.	Reporting mines. Gross tons.	Outside sources. Gross tons.	Total. Gross tons
July.....	9,294	924	10,218
August	10,807	870	11,677
September.	9,710	994	10,704
October....	9,668	1,289	10,957
November.	9,888	1,036	10,924
December..	9,872	1,174	11,046
Total six months	59,239	6,287	65,526
1893.			
January...	9,187	989	10,176
February..	8.213	1,042	9,245
March.....	9,065	1,321	10,386
April ...	11,775	1,042	12,817
May.....	12,706	1,042	13,748
June.....	11,524	1,042	12,566
Total six months	62,470	6,478	68,938
1893.			
July.....	11,049	1,042	12,091
August.....	11,745	1,042	12,787
September.	11,750	1,042	12,792

The product of the foreign reporting mines and the United States exports were as follows:

1892.	Foreign reporting mines. Gross tons.	1892.	United States exports. Gross tons.
July.....	6,358	July	3,450
August.....	6,883	August.....	1,545
September.....	5,478	September....	1,458
October.....	6,476	October.....	3,144
November.....	6,789	November.....	3,897
December.....	7,666	December.....	4,486
Total six months...	39,655	Total six months...	17,980
1893.		1893.	
January.....	5,736	January.....	3,171
February.....	6,762	February.....	1,815
March.....	6,896	March.....	2,334
April.....	6,913	April	3,450
May.....	6,806	May.....	4,482
June	7,935	June.....	5,109
Total six months...	41,048	Total six months...	20,361
1893.		1893.	
July.....	6,095	July.....	7,181
August.....	7,057	August.....	9,127
September...	6.303	September....	16,131

New York.

Office of *The Iron Age*, 96-102 Reade street, New York, October 18, 1893.

Pig Iron.—The market continues featurelesss and exceedingly dull. We quote Northern brands $14 @ $15 for No. 1; $13 @ $14.25 for No. 2; $12.25 @ $12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, $13.25 @ $14.25 for No. 1; $12.25 @ $13.25 for No. 2; $11.50 @ $12.25 for No. 3; $11.75 @ $12.25 for No. 2 Soft, and $12.25 @ $12.50 for No. 1 Soft. Gray Forge is $11.25 @ $12.

Spiegeleisen and Ferromanganese.—In the imported material the market is excessively dull. The Rail mills are supplied with material for a long time to come, at the present rate of consumption, while in Ferromanganese domestic takes the whole of the trade west of the Allegheny Mountains. We quote: Foreign Spiegeleisen. nominally, for 10 % @ 12 %, $21.50 @ $22, and 20 % $25 50 @ $26, on cars, Jersey City, and Ferromanganese, $55 50 @ $56.

Billets and Rods.—The domestic Billet market is weaker, and the same is true of Wire Rods. On foreign material there is no business, and little chance of any in the near future so long as the home product is so very low. We quote nominally: Domestic Billets, $20.50 @ $22.50, and foreign Billets, $28 @ $28.50, tidewater; domestic Wire Rods, $29 @ $29.50, and foreign Rods, $39.50 @ $40, tidewater.

Steel Rails.—Business continues very light. Some conception of the condition into which the Rail mills have been forced by the bad times is afforded by the fact that in the month of September the deliveries by all the mills in the association aggregated only 32,000 tons. The normal quantity should be five times that amount. Prices are entirely nominal. It is well known that the official price of $29 was cut on a recent small order, and it is not denied that if there were any business worth fighting for buyers could get more liberal terms. The meeting of the association last week did not lead to the rupture which many predicted so confidently. No action of immediate influence upon the market was taken.

Track Material.—Small lots are selling at the following prices: Spikes, 1.80¢ @ 1.90¢; Fish Plates, 1.45¢ @ 1.60¢; Track Bolts, Square Nuts, 2.25¢ @ 2.40¢, and Hexagon Nuts, 2.40¢ @ 2.50¢, delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—No business of any consequence is coming up in this and tributary markets. We quote nominally: Beams up to 15 inch, 1.75¢ @ 2¢; 20-inch, 2¢ @ 2.25¢, for round lots; Angles, 1.75¢ @ 1.90¢; Universal Mill Plates, 1.65¢ @ 1.90¢; Tees, 2¢ @ 2.15¢; Channels, 1.80¢ @ 2¢, on dock. Steel Plates are 1.60¢ @ 1.70¢ for Tank; 1.75¢ @ 1.90¢ for Shell; 2¢ @ 2.15¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.55¢ @ 1.9¢, on dock, and Common, 1.45¢ @ 1.55¢; Soft Steel Bars are 1.50¢ @ 1.70¢; Scrap Axles are quotable at 1.70¢ @ 2¢, delivered; Steel Axles, 1.70¢ @ 1.90¢, and Links and Pins, 1.70¢ @ 1.80¢; Steel Hoops, 1.75¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ ₰ 45 lb bundle, at mill.

Old Material.—We quote: Old Iron Rails, $13 @ $14; Old Steel Rails, $8 @ $9, and Wrought Scrap $9 @ $11.

Frank L. Fremont, 446 West street, New York, in announcing that he has made a voluntary assignment, on the 14th inst., conveys to the trade the information that he has retained his old connections with the Pencoyd Iron Works for the sale of their Beams and Structural Shapes, and has made arrangements with other mills to represent them in this market. He proposes, therefore to continue his regular mill business.

The Wellman Iron & Steel Company of Chester, Pa., have failed. A judgment for $64,000 was entered by the Delaware County National Bank of Chester, execution was issued and the sheriff has taken possession. The suit was brought on three notes, aggregating $64,000, with Richard Peters, Jr., Samuel T. Wellman and John P. Crozer, all officers of the company, as indorsers. The concern were capitalized at $1,000,000, and have over $1,500,000 invested in their plant alone.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

London, Wednesday, October 18, 1893.

In the market for Pig Tin there has been very little movement. Consumers have purchased sparingly and outside speculators have held aloof in view of the large stock here and heavy shipments from the East. Prices have not varied more than 5/. At the close Straights were quoted at £78. 2/6 for prompt and £78. 12/6 for three months' futures, with the market very quiet.

Copper has also been flat, and Merchant Bars declined to £41. 10/ for prompt delivery. Warrants continue weak owing to low figures at which fine metal is being sold. Speculative interest is almost *nil* pending decision regarding the Silver question in the United States. Dealers have, however, purchased cash lots quite freely at the low prices. Toward the close of the week more interest in futures was manifested, but the demand was quickly met, and the market gave way on reports of heavy American shipments, together with selling orders from that quarter. English smelters have reduced their prices owing to keen competition from American Ingots. Prices quoted at the close were £41. 10/ for Merchant Bars, prompt delivery, £41. 17/6 for three months' futures, and £45. 5/ for Best Selected English. Spot stocks decreased 459 tons during the first half of the month, and the visible supply is made to appear 61 tons less. Chili charters were 1200 tons.

In prices of Tin Plate there has been no radical change. Demand has slightly improved, but business at the quarterly meetings was not equal to anticipations owing probably to nearness of auction sales in London and Liverpool, which seem to have had a weakening effect. Work has been suspended at the Midland Works, Morriston. Liverpool quotations are as follows:

IC Charcoal, Alloway grade.....12/9 @ 13/3
IC Bessemer Steel, Coke finish. ...11/6 @ 11/9
IC Siemens " " " .....11/9 @ 12/
IC Coke, B. V. grade, 14 x 20.....11/6 @ 11/9
Charcoal Terne, Dean grade.....11/3 @ 11/6

Pig Lead has met with slow sale and the market is weak with £9. 10/ about the best price for Soft Spanish.

Spelter continues in limited demand, and the market is flat, with sellers at £16. 15/ for ordinary Silesian.

In the market for Iron and Steel business has not improved and prices all along the line continue low and irregular. Last dealings in warrants were at 42/3 for Scotch, 34/3 @ 34/6 for Cleveland, and 44/6 for Hematite.

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American Pig Iron for England.

A good deal of talk is being made over a trial shipment of 400 tons of pig iron from Anniston, Ala., to Derby, England. We believe that judgment in the significance of this should be suspended until one point has been cleared up. We sent dispatches of inquiry bearing on this point at the time of the earliest announcement of the shipment, but have not yet received a reply. The point in question is whether the iron is charcoal or coke iron. If it is the former, the matter has no significance whatever. For a good many years there have been occasional shipments of charcoal iron to England, which is used for special purposes, the quantity not exceeding a few hundred tons a year. If it so happened that this iron was sold by some furnace which had not done the business before, the transaction has formed the basis of a good deal of idiotic writing. We have had the opening of a new era burst upon us. We have begun to play once more, as we did during the last century, at making English ironmasters uncomfortable with our iron exports into their home markets, &c.

If, however, the shipment of Woodstock iron is the product of the coke furnaces at Anniston, then indeed it is curious, and indicates well the trying condition into which our iron trade has fallen. There may be some little glory in the pioneer transaction, but we fear that that is all there is in it. We trust, and in that feeling present and prospective shippers of American pig iron to England will probably join us heartily, that our own home market may soon return to its normal condition, when such high pressure outlets are not needed.

Bids for Gunboats Opened.

Bids for the construction of gunboats Nos. 7, 8 and 9, authorized at a cost of $400,000 each by the current Naval Appropriation act, were opened at the Navy Department Tuesday. The bids were as follows:

Maryland Steel Company of Baltimore.—Gunboat No. 7, $380,000; either gunboat No. 8 or No. 9, $380,000; gunboat No. 7 and either gunboat No. 8 or No. 9, $758,000; gunboats Nos. 8 and 9, $750,000; all three gunboats, $1,110,000.

John H. Dialogue & Son of Camden, N. J.—All three gunboats, $1,186,000.

Union Iron Works of San Franscisco.—Gunboat No. 7, $400,000; either gunboat No. 8 or No. 9, $385,000; gunboat No. 7, and either gunboat No. 8 or No. 9, $785,000; gunboats Nos. 8 and 9, $700,000; all three gunboats, $1,100,000.

Coronado Foundry and Machine Company of Coronado, Cal.—Gunboat No. 7, $372,000.

Bath Iron Works of Bath, Maine.—Gunboat No. 7, $425,000; either gunboat No. 8 or No. 9, $468,000.

Newport News Shipbuilding and Dry Dock Company of Newport News, Va.—Gunboat No. 7, $290,000; either gunboat No. 8 or No. 9, $306,000; gunboat No. 7 and either gunboat No. 8 or No. 9, $585,000; gunboats Nos. 8 and 9, $575,000; all three gunboats, $840,000.

All of the foregoing bids are for the construction of the vessels in accordance with plans prepared at the Navy Department. Bids for construction under plans of the bidder were submitted as follows:

Union Iron Works.—Gunboat No. 8 or No. 9, $377,000; for both, $684,000; for all three, $1,084,000.

Bath Iron Works.—Gunboat No. 7, $368,000; either No. 8 or No. 9, $382,000; gunboats Nos. 8 and 9, $754,000.

The Newport News Company are the lowest bidders in each instance.

Sheet Mill Labor Troubles.

Probably before this article gets into print a settlement will be reached between sheet mill operators and their employees. The basis of this supposition is the knowledge of the writer that members of the Amalgamated Association have begun to realize that they have been very near downfall, and they are anxious to make such concessions as will enable them to retain the good will of manufacturers and help keep the association together. The men are now taking a common sense view of the matter, which has had its origin in a desire for self protection. The handwriting on the wall told them that they would receive harsh treatment from employers in the years to come if they failed to accommodate themselves to present circumstances, and an acceptance of the 10 per cent. reduction will be the probable result of negotiations now pending. Sheet mill men have always been faithful adherents and ardent supporters of the association. If serious differences are allowed to exist between them and manufacturers, and should the majority of sheet mills become non-union, the days of the Amalgamated Association would be numbered. From information of a semi-public character it appears that the more conservative members will cast their vote and use their influence to secure an acceptance of the manufacturers' terms. Circulars asking for a vote on the subject are now in the hands of the lodges, and an early announcement of the result is expected. So far as is known at this writing, the mills having given notice of 10 per cent. reduction are: New Philadelphia Iron & Steel Company, New Philadelphia, Ohio; Ætna-Standard Iron & Steel Company, Bridgeport, Ohio, and Geo. W. Johnson, New Castle, Pa.

Trade Publications.

CRANES FOR MERCANTILE USES, as designed and built by the Industrial Works of Bay City, Mich., are illustrated and described in a catalogue just received. These include locomotive cranes of several different types and capacities, traveling and stationary jib cranes, electric overhead traveling cranes, hand power overhead travelers, pillar, transfer and jib cranes, &c. The cranes described make use of steam, electricity, power derived from shafting or that given by hand, as may be most convenient or desirable. The catalogue is handsomely illustrated with half-tone engravings and drawings of these cranes.

THE APPLETON MFG. COMPANY of Philadelphia send out a catalogue descriptive of their Challenge emery wheels and polishing machinery, to the manufacture of which a specially equipped establishment is exclusively devoted. They mention single and double, wet and dry grinding machines, universal grinding machines, cutter, surface and drill grinders and polishing and buffing machinery. Their twist drill grinder is so designed that it determines the correct angle and clearance for each individual size of drill, grinds all the lips exactly alike, and is so simple and easily operated that a boy can handle it.

JAMES SIMPSON & CO., LIMITED, of Grosvenor Road, Pimlico, London, England, have issued a catalogue, or rather book, in which they describe the Worthington pumping engines built by them and give the results of some independent tests recently made of their engines, and also describe some of their own leading designs. Although they first heard of the Worthington high duty engine in 1886 they are now pumping 501,000,000 gallons daily with this pump. The trials referred to are of great value and are as follows: Report by Professor Unwin of trial at West Middlesex Water Works, Hampton. Report by Osbert Chadwick of trial at West Middlesex Water Works, Hammersmith. Report by T. F. Parkes of trial at Lambeth Water Works, Ditton. Report by Osbert Chadwick of trial at Grand Junction Water Works, Kew. Report by Mr. Goodman of competitive trial at Grand Junction Water Works, Kew. Report by Mr. Van Ysselstein on the New Sewage Engines at Rotterdam. Report by Mr. Van Ysselstein of trial at the Westelijk, Stoomgemaal, Rotterdam.

A VERY ELABORATE ILLUSTRATED CATALOGUE on wire rope has been published by the Broderick & Bascom Rope Company of St. Louis, Mo. It is stated that in order to meet the increasing demand for their ropes they have erected a new factory which has been thoroughly equipped with the latest and most improved machinery, principally of their own design. They are enabled to manufacture rope of any size and length, up to 100 tons weight, in one continuous piece, without splicing either the strands or rope, and with absolute uniformity of lay under equal tension on each wire and without twisting the individual wires. They supply steel ropes with a guaranteed breaking strain of from 60,000 to 300,000 pounds per square inch.

WE HAVE RECEIVED from the Edward P. Allis Company of Milwaukee, Wis., a large and handsomely gotten up book which, it is stated in the introduction, is not intended either as a catalogue of machinery or as an elaborate description of their plants. It is designed to give a fair idea of the establishment and the high character of its products. To assist in this direction the following statements are made: Actual floor space in buildings, 17 acres; average number of men employed, 1500; average monthly pay roll, $75,000; approximate value of manufactured products per year, $3,000,000; average output in castings per month, 3,300,000 pounds. It is also mentioned that the establishment built the largest stationary steam plant and also the largest pumping engine in the world; first introduced in the United States the triple and quadruple expansion stationary engines, and the first triple expansion pumping engines; built the largest flour mill in the world, and introdued the roller process of flour making in American mills. The book contains many half-tone engravings of their works and of the machinery made by them.

At a meeting of the freight agents of the railroads operating between Pittsburgh and the Mahoning Valley, held in Pittsburgh last week, a reduction was made from 6 to 5½ cents per 100 pounds, in carload loads, on Iron from the Mahoning and Shenango valley points to Pittsburgh and points taking Pittsburgh rates.

D. T. Miller has succeeded John Hutzen as superintendent of the rail and blooming mills of the Edgar Thomson Steel Works, at Bessemer, Pa. Mr. Hutzen retires to take the position of boss over all the rollers—a new position recently created.

At last the gigantic forging press of the Bethlehem Iron Company, the largest and most powerful in the world, has been started. The press has been erected in the extension to the building of the famous 125-ton steam hammer. The press is rated at 14,000 tons, and is operated by 12,000 horse-power engines.

Chicago dispatches announce that J. O. Hughes of Hughes & Patterson, rolling mill proprietors, of Philadelphia, died in that city of apoplexy yesterday.

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HARDWARE.

Condition of Trade.

BUSINESS on the whole shows little or no improvement during the past week. Some houses report a fairly active trade, but most jobbers and manufacturers do not give quite so favorable advices. There is certainly an important diminution in the volume of business this season as compared with last year. Seasonable goods are most active, but a good deal of complaint is made concerning the lateness of trade, which is, perhaps, explained in part by the fact that exceptionally fine weather has generally prevailed. It is not thought, however, that even in these lines the volume of business will be up to the average. Prices are, with a few exceptions, without change, but the undertone of the market is not strong, and it is expected that if present conditions continue there will be a tendency toward lower values.

Chicago.

(*By Telegraph.*)

The Shelf Hardware trade has fallen off again, very much to the discouragement of jobbers, who hoped and expected that the improvement noted last week would continue. It seems, however, to have been but a spurt with no lasting qualities. Some attribute the falling off to the very mild weather experienced during the greater part of the week, and have a slight hope that a recurrence of cold weather will again stimulate the demand. Others, however, are inclined to believe that the fall trade is now about over, and that from this time forward orders will only come in in small quantities as merchants run out of stock. The character of the trade is unchanged. Such orders as are being received are for broken lots, causing very much more than the usual trouble in packing. Western Hardware merchants continue to visit the fair in large numbers and are frequent visitors at the wholesale houses, but their visits are not attended with very much business. The Heavy Hardware trade was considerably better last week than during previous weeks. The improvement in business has been principally in the demand for Iron and Steel. It does not indicate a better condition of trade among the usual patrons of Heavy Hardware jobbers, as a considerable part of this business comes from large consumers who ordinarily buy from mills.

St. Louis.

(*By Telegraph.*)

There continues to be a steady increase of small orders and in the way of winter goods fairly good trade is expected. Retailers continue to hold back orders and buy only as their absolute needs require. Wire Nails and Barb Wire are weaker and inclined to go lower. Stove goods, such as Coal Hods, Stove Boards, Stove Pipe, &c., are generally in good demand. While staple goods are only ordered in moderate quantities, collections are in good shape and continue to improve. Jobbers are pretty generally agreed that unless the Senate shortly repeals the purchasing clause of the Sherman bill the business for the balance of the year will be gone beyond recovery. Numerous telegrams and letters have been sent urging repeal, without, however, producing any effect. Until something is done in this direction any improvement is out of the question.

New Orleans.

A. BALDWIN & CO.—The situation of business in this section of the country shows a decided improvement for the past two weeks and seems to be getting around to its natural basis, as we can readily see by the orders we are receiving from sections of the country where we did not look for an improvement for some little time.

The improvement in the movement of the cotton crop and also the early arrivals from the sugar section have brought orders and customers, who are buying more liberally than we anticipated. The holding back principle, waiting for developments, has about passed away, and they begin to realize that it is the better policy to replenish their stocks and endeavor to get some share of the business moving. The volume is not very large, but it is such a vast improvement over the past 90 days that we are inclined to feel brighter anticipations as to the future.

The late storm in this section has caused considerable demand for almost everything in the building line, and some of the stocks are becoming quite broken. Altogether the situation is certainly much brighter and more hopeful for the future than we have had for a number of months past.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—The first two weeks of October have not shown the expected increase in trade over the last two weeks of September. They have held their own, however, and the month at the present rate will show a fair increase over September. We are of the opinion that had action been taken some three weeks ago by those who have the country's finances in charge the very pronounced improvement would have continued and the result have been a good fall trade. It is now, however, too late for much recovery, and we will have to be content with only a fair amount of business. The Northwest has not as yet reached that point when a business equal to that of the year before is satisfactory. It must show a marked increase to be satisfying, and failure in this regard is a disappointment. Our disappointment is greater, therefore, when we contemplate an actual falling off.

We think we are correct in placing the blame for this condition on the shoulders of those who have been sent to Washington to look after our interests. The principle that the majority must rule seems to-day to have received a severe blow and we do not know how widespread an effect it will have on future legislation. We think the proper policy to be one of extreme conservatism until something definite is known. Our present activity is largely in the direction of laying in stock for winter consumption made necessary by the present low navigation rates of freight. Collections the past week have been almost good.

Portland, Ore.

CORBETT, FAILING & ROBERTSON.—The situation in this territory has grown rather worse than better since our last. In Eastern Oregon and Washington the harvest this year, owing to a backward spring, was from three to four weeks late. The early rains have caught more than half the wheat not cut, and a large portion of the cut not threshed. The farmers and warehousemen have been accustomed to stacking the sacked grain on platforms heretofore, as a little snow would not damage it. The rain has so soaked the sacks that they are now bursting, and liable to sprout the wheat. The damage to wheat, as now reported, will amount to a large sum, and, coming in addition to the low prices, will make collections very hard.

Omaha.

LEE-CLARKE-ANDREESEN HARDWARE COMPANY.—Business has gradually assumed fairly large proportions, and now appears to have settled down to a steady thing. When business has about reached its normal condition, an improvement can hardly be expected every week, but it is enough to ask that it hold its own. The present volume is as large as could be reasonably expected under the conditions prevailing in the country, though taking it as a whole it is not on a par with what it was this time a year ago. Comparing the present season with two years ago, no occasion

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will be found for fault finding with the present volume of business. It has been our opinion right along that the West would recuperate from the recent financial upheaval sooner than the East. Business in this part of the country is dependent more upon the farmers than upon the manufacturers, and fortunately the farmers have fair crops and are in a satisfactory financial condition. The products of the soil are sufficiently abundant and the market good enough to insure a fair amount of money in general circulation, and hence a reasonably good business in both a wholesale and retail way may be looked for.

Louisville.

W. B. BELKNAP & Co.—Business is increasing somewhat in volume; that is to say, orders are a little more numerous and decidedly larger individually. The country is so bare of goods that the natural wear and tear of consumption calls for a good deal of material to replace that which is worn out, even if there were not a single new project in sight.

Some articles on the list are strong and not in overabundant supply, such as Sheet Iron, which is firm at an advance of $1 or $2 over the lowest price reached during the summer.

Bar Iron, too, has a little backbone, but this is due largely to the fact that so many of the mills are shut down and stocks broken. With anything like production on the usual scale there would be a greatly overstocked market and consequent demoralization.

There is a better demand for Wire and Wire Nails, but prices so far on these articles have shown no recovery.

The continued cheapening of the raw material, Pig Iron, Steel Billets, &c., is likely to prevent any marked advances.

Ammunition and Loaded Shells are particularly scarce. Factories are evidently far behind their orders on these goods, and no matter if business is dull it is evident that the sportsmen will take to the woods as usual this season.

Game is rather abundant, and hunting is as near military service as many of the great army of unemployed want.

The dilatory tactics in the Senate are disgusting the people here. The reproach of Wall street—viz., excess of wealth—can scarcely fall on us, but we seem as helpless as the rest of the country to bring about anything better. One of our Senators, Lindsay, has done his best (and that is very good), but the obstructionist is a much harder man to deal with than the reformer.

Baltimore.

CARLIN & FULTON.—Trade, like the season, is in the "sere and yellow leaf," and though according to the calendar the autumn has but partly gone, yet from a business point of view the fall is almost over.

How the bright hopes of a country, based upon expected intelligent legislation, upon abundant harvests, upon a dearth of goods, upon a desire for trade, have been realized can be best answered by the ledger of every manufacturer and merchant throughout the land, by the idle mechanics in our streets, by the impoverished farmers, and the diminished incomes of widows and orphans.

The child at school should have another page added to his history, recording the shameful fact that in the Senate of the United States are to-day men sworn to perform their duty to the Constitution and laws of this whole country, who, deaf to all appeals for patriotic action, to all petitions and remonstrances which have been sent from one end of the country to the other, deliberately defy public opinion and through a strained and ridiculous pretense of Senatorial courtesy, insult the sober common sense of the whole nation.

The idea that in the chief legislative body of this country no question at issue can be brought to the test of a vote, while there is a minority, no matter how small, to object, is simply preposterous. This is a matter involving the greatest interests of this Republic, and while to-day it is a question of silver, to-morrow it may be anything else; and if the supposed local interests and influence of one small section can dominate and dictate to every other section as it sees fit, the House of Representatives may as well spare itself the trouble of framing any tariff bill, unless they give the Republican party credit for more forbearance and forgetfulness than has ever been accorded them heretofore.

Without discussing the effects of a revision of the tariff by the present Congress, whether for good or bad, we do not believe from the present condition of affairs that the trade throughout the country need consider it at all, for if the silver bill cannot be repealed by a majority which exists in the Senate, a tariff bill cannot be passed with the majority uncertain.

It is almost useless to talk about prices; they have been well sustained for the reason that there has been no room for reduction and preduction has been limited by the factories either remaining idle or running upon half time.

Collections have improved somewhat, but we must remember that obligations, the result of purchases, have been remarkably small.

The responsibility for the future improvement of trade rests upon the Senate of the United States, and we wait upon it.

Boston.

BIGELOW & DOWSE.—This market is without change. Prices are being maintained and the volume of business doing is a slight improvement over the past month; but there is considerable falling off if compared with last year.

Everything is done on a very conservative basis. Stocks are being replenished only to complete assortments. Every one is waiting for Congress to do something that will establish confidence. Until such time as they choose to act the merchant must wait While they are waiting they are thinking how little interest politicians take in the welfare of the country, and if the time is not fast approaching when the merchants will come to the front and insist upon their right to a larger representation in the national Congress.

At a meeting of the Boston Iron and Hardware Club, the past week, the name was changed to the "New England Iron and Hardware Club." The membership is rapidly increasing and every wholesale dealer throughout New England, every Hardware and Iron house in Portland, Maine, are now members. The meetings thus far have been very satisfactory and promise good results.

All the dealers in Manchester and Concord, N. H., have joined the case and carting agreement, to take effect November 1.

Cleveland.

THE W. BINGHAM COMPANY.—Trade since our last has shown a slight improvement, but is still behind that of last year at this time. All orders contain more or less seasonable goods and are evidently very carefully made up. The demand for Wire and Nails has fallen off and prices are correspondingly weak. City retailers report trade as slightly improved, as many factories that have been closed entirely are starting up on half or three-quarter time. Money is somewhat easier and collections are fair.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Investigation into the results of the jobbing Hardware houses in our city during the last two weeks shows trade has gradually moved from the low valley of depression to higher ground, where it remains, and although not likely to reach the summit of successful trade at one bound a gradual further ascent is anticipated.

There are many reasons why the sale of Hardware should be above the level of many other kinds of merchandise, although now persons in that line are slow to engage in new enterprises; but work already begun in building operations will likely be completed, consequently Hardware in that line will be required during the fall; besides, mechanics with employment must have the necessary tools and worn out Agricultural Implements will be replaced. These are quite as necessary as the paper upon which our daily or weekly press is printed.

Insufficient supply of funds in the vaults of our banks and trust companies no longer obstructs the channel of trade. Banks now far exceed their reserve limit and have a large surplus beyond.

There are several reasons for this being the case. First, country banks, instead of being large debtors, now show credit balances. Currency has been unlocked from private vaults and released from hiding places, and many of the manufacturing industries, especially in our own city, being either closed or working on partial time only, having gradually made collections of outstanding accounts, and not using them as heretofore for their weekly pay rolls, this money remains in bank on call until the prospect for trade brightens sufficiently to guarantee resumption of their factories. But the financial scare has largely abated.

The increase in deposits in the banks of New York, Boston and Philadelphia of nearly $40,000,000 and the reduction of the combined clearing house certificates of those three cities of about $40,000,000 within a limited period naturally makes a great difference in the financial condition, and this showing has astonished many of those who have asserted there was insufficient money for business purposes.

The present circulation shows over $25 *per capita*, which is greater *per capita* than any country outside of France, and at the present time, for present requirements, with diminished trade in manufacturing, really more than actually required, for the present

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reduction of trade is estimated to be not far from $100,000,000 per month from enforced idleness.

There has been considerable complaint that, notwithstanding this large increase of surplus, the banks still refuse to loan their funds other than in the most conservative manner. There is, however, good and sufficient reason for this. They naturally desire to feel fully secure in their loans and discounts, and when they look upon the large number of industrial and mercantile failures throughout the country during the last three months, a conservative policy seems to them necessary; besides stocks, offered as collateral, as yet show no guarantee of stability.

Collections, as well as trade, have improved, although the former not to the extent desired, nor to the extent necessary for requirements of those who have been so leniently disposed toward those who still have accounts unpaid.

The improved monetary conditions of banking institutions throughout the country, regardless of the continued struggle in the Senate over the repeal of the silver purchasing clause, show conclusively that that law was not the sole cause of our financial embarrassment. Had it been, the financial conditions which existed in May and June would have grown more severe with each succeeding monthly purchase, and would have been aggravated by the continued agitation and increased uncertainty of its repeal (without some compromise being coupled with its passage.)

We intimated in an article in *The Iron Age* as early as August 3 that the reduction of the Government surplus was the chief and important factor of our financial troubles. Perhaps the greatest financial error President Cleveland ever made was during his former administration when he advocated the reduction of the Government surplus in order to save a small amount of interest. Although a mistake in theory, it became a popular cry, which both political parties adopted.

Popular opinion is usually correct after due consideration, but popular opinion is frequently impulsive in its demands before the facts and results are properly understood of what might be the natural results of reduction in case of decreased exports and increased importation, or a sudden call upon us from abroad for gold.

The seductive reason given for the surplus reduction was the saving of a few million dollars in interest, say three per cent. on $150,000,000, or, net, $4,500,000 per annum. While that effort in itself was commendable, but in the effort to save this sum (small in comparison with our expenditures) it was a mistaken policy, through which our country has lost hundreds of millions through failures and enforced idleness, and to-day we are compelled to look upon the humilitating spectacle of having encroached upon the $100,000,000 reserve, which has been reduced to but a little over $86,000,000, or ten per cent. on the dollar of our outstanding demand liabilities, with probably a continued decrease, owing to the monthly expenditures in excess of receipts.

It is simply impossible to continue in good credit at home or abroad with this absurd surplus, and provision must be made at an early date to have it restored. If this is not done we are liable at any time to undergo a repetition of our present financial troubles.

The Bank of England, which is looked upon world wide as an institution worthy of example, holds in reserve from 48 to 50 per cent. of outstanding indebtedness, and our own national banks of central reserve cities—*i. e.*, New York, Chicago and St. Louis—are compelled by an Act of Congress to hold 25 per cent of reserve, in addition to which they hold, as further security, discounted bills receivable usually to two-thirds of their deposits, which at ordinary times can, if necessary, be rediscounted through other banking institutions in case of immediate want.

Neither banking institutions, manufacturers nor jobbers, who conduct their business with intelligence, would ever risk their credit on such small and unsafe reserve as our Government adopted. It was this small reserve surplus in the vaults of the United States Treasury (it was then $106,000,000 free gold) which caused foreign distrust of our ability to continue gold payments, and hence flooding our market with securities to be redeemed. It was not alone our paying out $3,000,000 per month. This amount alone was small in comparison to the large drain that was being made upon us from the fact that balance of trade was against us.

President Cleveland doubtless realized the mistaken theory of our surplus reduction; indeed, tacitly admitted it in his special message calling Congress together, and deserves very great credit for the patriotic manner in which he presented the case before Congress. "A wise man is always open to conviction. Fools only never change their opinion." He is known to be eminently sound on financial questions, and especially sensitive regarding our financial national credit.

In 1879, when the Secretary of Treasury, John Sherman, resumed specie payments, the cash in the Treasury was $382,450,695.96, and the Government receipts beyond expenditure were then sufficient to accumulate an additional surplus at the rate of $20,000,000 each fiscal year, with our demand liabilities not far from one-half of the present outstanding demand liabilities.

At that time there were some pessimists who doubted the Government's ability to sustain specie payments, yet this same element now advocate a monthly increase of indebtedness when we hold but 10 per cent. in gold to pay present indebtedness.

It is therefore no wonder that foreign nations were uneasy early in the season when the balance of trade was so many millions against us and sold our securities. Indeed, there were some predictions that $50,000,000 of silver certificates might be collected on foreign account and gold demanded for the same. What a sweep that would have been against our Government surplus; but owing to the fortunate circumstances of our having wheat, corn and cotton to export, coupled with the fact that foreign nations no longer required gold to further increase their reserve, the finances of our country have been able to recuperate.

The necessity of the repeal of the law compelling us to call upon our already depleted treasury for gold each month to buy silver we do not need daily grows more important, especially as our surplus is being daily reduced, and the Senate has not yet shown itself competent to master the situation.

It was intimated early in the present session by men of experience that the prospects were not bright for the repeal of this law, basing their opinion on the fact that both President Harrison and President Cleveland, before he was elected, favored the repeal of this law at the last session of Congress.

It is now known that there has been quite an undercurrent unfavorable to repeal of Senators who desired to be looked upon as favorably inclined toward the President, but who are free coinage men at heart, and assume a desire for repeal which does not exist, and who have no desire to reach a vote without something else equally favorable could be tacked on to the measure.

The delay affords an opportunity for some of the so-called majority (who profess to favor the law) to defeat it, unless a compromise is effected.

We are at the present time suffering less from the silver purchasing clause than we are from expending beyond our receipts, as the construction placed upon the indefiniteness of the law by Secretary Carlisle affords him the opportunity to purchase only that amount of silver at a price designated by him, based on London quotations at the time his offer was made.

There is no question that President Cleveland has the power to add to the gold reserve by selling bonds so far as is necessary to retain either the Government credit or the $100,000,000 surplus, but as both he and Secretary Carlisle oppose that measure and refused the offer made early in April by New York bankers, they naturally prefer waiting for some action of Congress advising the sale of bonds to increase our Treasury surplus, which undoubtedly must be done at an early date if we desire to sustain our national credit.

Notes on Prices.

Wire Nails.—The Wire Nail market is in about the same condition as for the past week or two, and without evident improvement. There is, however, perhaps a slight increase in the demand, but orders are not placed with any freedom. Prices are substantially as at our last report—namely, $1.30 for carload lots at mill. This quotation is quite general, and is but slightly shaded in exceptional cases, so that anything below this figure may be regarded as somewhat under the market. Some business is being done in anticipation of an early closing of navigation, but this fact has not as much effect as usual, inasmuch as the trade are very conservative in their purchases, and even the low prices ruling are not sufficient inducement to secure the placing of liberal orders.

Chicago, by Telegraph.—Manufacturers of Wire Nails report a considerably better inquiry and numerous sales of round lots. Quite a number of jobbers through the Northwest have realized the fact that navigation will close within the coming month and are now placing contracts in order to receive stock at the low freight rates prevailing by the water routes. The demand is also based to some extent on the very low prices ruling for Wire Nails and the belief that they are selling either at or below cost. They reason that this will compel a heavy curtailment of production in the near future and that it may possibly be followed by an advance in price. The inquiries and sales are for the most part for the month of November, but in some cases cover the whole period in-

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tervening to the close of the year. There are some buyers who would like to contract at present prices for shipments running into next year, but manufacturers are not willing to make such terms. Prices on factory lots are still quoted at $1.40 to $1.45, Chicago, but these rates have been shaded on the largest quantities sold. Small lots from stock are quoted in a regular way at $1.55, but a large part of the trade is done on the basis of $1.50.

Cut Nails.—The volume of business in Cut Nails is light, but there has been no weakening in prices. The Eastern market is represented by the quotation of $1 base on carload lots at mill and manufacturers are indisposed to make concessions, except in special cases. There are indications of a disposition on the part of Western mills to strengthen their prices somewhat, and in some cases extreme quotations have been withdrawn. As a result of this condition some of their most recent quotations name a slightly higher base or require a better average. This is not regarded as indicating the probability of an advance or any radical improvement in the tone of the market, but is rather a result of the conservative disposition on the part of the mills, who desire to obtain more remunerative prices. Small lots from store in New York are quoted at $1.25 to $1 30.

Chicago, by Telegraph.—The Cut Steel Nail trade is hardly in as active condition as the Wire Nail trade. Orders are still confined to small quantities, on which manufacturers continue to quote $1.20 @ $1.25. Jobbers quote small lots from stock at $1.30.

Barb Wire.—The Barb Wire market continues weak and there is only a moderate volume of business. Manufacturers are desirous of securing orders and are going to the relatively small trade to a larger extent than usual, their business with the jobbers being this season comparatively light. Quotations are on a basis of $2.25 to $2.30 for Four-Point Galvanized, at mill, but these figures are sometimes slightly shaded. Painted is held regularly at 40 cents less.

Chicago, by Telegraph.—The Barb Wire business shows no improvement. Manufacturers are sending out their travelers and endeavoring to secure what trade they can, but reports thus far are not encouraging. Jobbers are doing very little in this branch of trade, and state that such business as is going is still handled almost entirely by manufacturers. Quotations are repeated on carload lots of ordinary Galvanized Barb Wire at $2.40 and Glidden at $2.50. Less than carload lots of ordinary Galvanized are quoted at $2.55.

Hardware Shelf Boxes.—We give below the price-list of A. H. Green, successor to S. H. Green, 22 Park place, New York, covering the line of Lock Corner Wood Boxes which he is manufacturing for the trade. These Boxes, it will be observed, are made so as to be interchangeable. The sizes given below are outside measurement and without covers. The list is as follows, subject to a discount of 50 per cent.:

No.	Long.		Wide.		High.	Each.
1.....	10½	x	3	x	3⅛.....	$0.07
2.....	10½	x	4½	x	3⅛.....	.08
3.....	10½	x	6	x	3⅛.....	.09
4.....	10½	x	9	x	3⅛.....	.13
5.....	10½	x	12	x	3⅛.....	.16
7.....	10½	x	18	x	3⅛.....	.24
22.....	10½	x	4½	x	7	.11
23.....	10½	x	6	x	7	.14
24.....	10½	x	9	x	7	.18
25.....	10½	x	12	x	7	.24

To parties fitting up with new shelving Mr. Green suggests that if each division is made 36 inches wide, 7 inches between shelves and 10½ inches front to back, these boxes will completely fill them, either of one size or a variety of sizes in the same shelf. All the above sizes are carried in stock. Special sizes are also made to order in quantities of 50 and upward of a size.

A Screw case containing 80 drawers, furnished with chestnut knobs, is also made, the price being $7.50 each, net. The size of the case is as follows: 29½ inches high, 25½ inches wide and 8¼ inches front to back. Each drawer is intended to hold at least 1 gross of Screws.

Clippers.—Coates Clipper Mfg. Company, Worcester, Mass., whose Improved Barbers' Clippers were illustrated in a recent issue, are selling their Horse and Barbers' Hair Clippers from the following list, which is subject to a discount to the trade of 25 per cent.:

No.	Each.
2, One-hand Fetlock Animal Clipper.	$2.00
4, Flat Spring Standard Toilet "	2.50
6, Spring Adjustable Toilet "	3.50
7, " Razor Toilet Clipper.	2.50
9, Two-hand Fetlock " . .	2.25
19, " Newmarket pattern Clipper	2.00
24, Adjustable Spring Bent Clipper....	3.00
27, " " " Razor Clipper.....	3.00
29, Hand-Power Horse Clipper...	50.00
31, Adjustable Spring Toilet Clipper..	2.50
Adjustable Spring Toilet Clipper with sweat roll.....	3.00
31-0, Adjustable Spring Razor Toilet Clipper....	2.50
Adjustable Spring Razor Toilet Clipper, with sweat roll.....	3.00
31-2, Adjustable Spring ¼-inch cut Clipper.....	3.00
31-3, Adjustable Spring 5-16-inch cut Clipper.	3.50
39, Two-Hand Anti-Friction Horse Clipper.....	3.00
41, Nulaval Toilet Clipper	2.00
50, Steam, gas, water or electric power Clipper..	75.00

Stove Truck.—The Lock Frame Stove Truck, manufactured by Randall & Ward, Le Roy, N. Y., and described in a recent issue, is sold to the trade at $15 per dozen for the wood and $18 per dozen for the steel.

Sheet Zinc.—The market for Sheet Zinc continues without change. The exceptionally low prices which are now ruling are due principally to the low price of Spelter and the inactivity of both the Spelter and Sheet Zinc markets. The demand for Sheet Zinc is, however, somewhat stimulated by the reduced prices which are now prevailing, but the trade are not disposed to purchase much beyond their early requirements.

Cordage.—Within the past week there has been no quotable change in the price of Cordage, but the market is weak, and somewhat lower quotations can be obtained in special cases.

Glass.—Interest centers in the wage question rather than in the unchanged condition of the Glass market. It is reported that the Indiana Window Glass manufacturers representing 540 pots ask the Wage Committee to demand a greater reduction in wages than was asked by the committee at the last conference. This action was taken in view of the continued depression and unsatisfactory outlook for business, and the further decline in the price of imported Glass. Pittsburgh, Pa,, manufacturers are represented as being prepared to stand by the Indiana Glass manufacturers in demanding a further reduction of wages. At the present time it is understood that there are something like 120 pots in operation throughout the country, but that none of these factories are members of the National Window Glass Association. Jobbers report the demand about the same, orders being for small quantities, and that orders are filled with imported Glass when American Glass of the desired sizes cannot be obtained. Grinders and polishers are at work on rough Plate Glass in manufacturers' hands to supply the demand, and there seems a probability of Plate Glass factories starting up before the first of the year. Quotations on all kinds of Glass are unchanged.

Export Notes.

THOMAS COOPER is now in charge of the Sydney and Melbourne offices of the Geo. F. Eberhard Company, having arrived out at Sydney July 21. Mr. Cooper has long been in the Australian trade, acting for a well known house in the colonies, but coming to Chicago on account of the exposition went back as one of the representatives of the Eberhard Company. He reports trade in somewhat better condition, and orders received by the New York branch through commission houses here indicate he is stimulating business to a satisfactory extent.

James E. Halsey, one of the oldest Hardwaremen in New York, sailed for Europe October 16 as the representative of Chas. B. Rouss on an extended trip through England, Germany, Sweden and Switzerland on business connected with the above concern.

E. Ahuja, one of the partners of Browne, Beeche & Co., Valparaiso, has returned to Chili. The above concern is but another name for the well-known house in this city of Hemenway & Browne, who are among the best known

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drawers of South American exchange on Europe, having exported goods to the West Coast since 1829, largely on their own regular line of vessels.

Standard Axe & Tool Works, Ridgway, Pa., are now represented in New York, Boston, Philadelphia, Pacific Coast and for export trade by Geo. F. Eberhard Company, 64 William street, New York. One grade of their Axes is known as the Black Eagle Brand, made of steel refined by a special chemical process. In addition to this brand a line of other Axes is made by the Standard Works.

New York merchants doing business with Australia refer to the last mail from that country as more satisfactory than those which have preceded it for some time, and look for even better results in the mail to arrive. Houses here supplying goods for Cuban consumption advise us of a considerable slacking off in trade with the Antilles; that while doing something all the time there is less snap to business than earlier in the year.

The Transvaal South African gold output steadily increases month by month, that for August, 1893, being 136,069 ounces as officially announced. The 1892 output was 1,250,000 ounces. With gold at $16 per ounce this is a handsome export item of itself. Recently some 350 miners from Australia have arrived in two bodies; the influx of population from all sources continues to increase at a rapid rate; one raiload to the coast was completed in 1892 and two others will be completed in 1894.

World's Fair Awards.

The awards in Group 119, manufactures, including Vaults, Safes, Hardware, Edge Tools and Cutlery, are as follows:

Illinois—Chicago—William D. Gibson, Springs; Knickerbocker Ice Company, Ice Cutting and Distributing Tools: Chicago Spring Butt Company, Spring Hinges and Butts, Sliding Door Hinges; Wolf, Sayer & Heller, dried beef Cutters.

Pennsylvania — Philadelphia — McCaffrey File Company, Files and Rasps; Miller Lock Company, five awards, Padlocks, keyless Cabinet Locks, Night Latches, keyless Cabinet and Post Office Box Locks, Padlocks for railroad switches; Fayette R. Plumb, four awards, Edge Tools, Hammers, Sledges, Railroad, Miners' and Blacksmiths' Tools; Henry Disston & Sons, 31 awards, Files of every description for every purpose, Cross-Cut Saws, Hand Saws, Back Saws, Butcher Saws, Plumber Saws, Buck Saws, Hack or Machinist Saws, Pruning Saws, Compass Saws, Keyhole Saws, Plasterers' Trowels, Bricklayers' Trowels and tools, Carpenters' Squares, Carpenters' Bevels, Carpenters' Gauges, Spirit Levels, Machinists' Straight Edges, Machinists' Squares, Machinists' Rules, Wire Gauges, tools for keeping Saws in order, Saw Sets, Trammels, Hammers and Swage Bars, Straight Edges, Anvils, Gummers, Cane Knives, Post Hole Diggers, Screw Drivers.

Massachusetts—Boston—Atlas Tack Corporation, Tacks and Brads; Blount Mfg. Company, three awards, Door Checks, Springs and Stops, Sash Locks; Norton Door Check & Spring Company, automatic Door Checks and Springs; Simonds Mfg. Company, Fitchburg, three awards, Crescent ground Cross Cut Saw, Saw Sets; Barney & Berry, Springfield, Ice and Roller Skates; Northfield Knife Company, Northfield, Pocket Cutlery; Oliver Ames & Sons' Corporation, North Easton, four awards, Shovels, Spades, Scoops, Drainage Tools; Washburn & Moen Mfg. Company, Worcester, Builders' Hardware; J R. Torrey Razor Company, Worcester, Razors; J. S. Thompson Mfg. Company, Waltham, Rivets for Shoe, Harness, Trunks, &c.; Charles Buck, Millbury, Edge Tools; Buck Bros., Millbury, Light Edge Tools, Chisels; Coburn Trolley Track Mfg. Company, Holyoke, Parlor, Barn and Fire Door Hangings; Snell Mfg. Company, Fiskdale, Boring Tools.

Rhode Island—Providence—American Screw Company, Wood and Machine Screws, Bolts and Rivets; Nicholson File Company, Files and Rasps, Filers' Specialties; Rhode Island Tool Company, four awards, Nuts, Wrenches, Turn Buckles, Drop Forging.

Connecticut—Russell & Erwin Mfg. Company, New Britain, four awards, Builders' Hardware, House Furnishing Goods, Screws, Bolts, Nails and Carpenter Tools; Eagle Lock Company, Terryville, Locks; G. J. Capewell, Hartford, three awards, combined Hammer and Nail Puller, improved Nail Puller, combined Hammer and Nail Puller; Hobart B. Ives & Co., New Haven, Sash Locks; Stanley Rule & Level Company, New Britain, Carpenters' Tools; Stanley Works, New Britain, Builders' Hardware.

New York—New York City—James Bardsley, Spring Hinges and Door Knobs; C. E. Jennings & Co., six awards, Augers, Bits, Drawing Knives, Saws, Planes, Carpenters' Tools; Kearney & Foot Company, Files and Rasps. Brooklyn—Bommer Bros., Spiral Spring Hinges; Wilson Bohannon, five awards, Locks, Padlocks, Switch Locks, Door Locks, Handles and Night Latches; N. Stafford, Stafford Coin Registering Bank.

Ohio—Cincinnati Tool Company, Cincinnati, Tools; Geneva Tool Company, Geneva, Hand, Farming and Garden Tools; Smith & Buckingham, Mount Vernon, Umbrella Locks; the Christy Knife Company, Fremont, Bread, Carving, Cake and Paring Knives; Clauss Shear Company, Fremont, three awards, Shears, Scissors, Bread, Cake and Paring Knives and Carvers; Van Wagoner & Williams Company, Cleveland, double and single Spring Hinges.

Other States—Withington & Cooley Mfg. Company, Jackson, Mich., Farm and Garden Tools; J. C. White, Waseca, Minn., Nail counter; E. T. Barnum, Detroit, Mich., Cheese Safes, Jail Cells; Stover Mfg. Company, Freeport, Ill., five awards, book holders, Hinges, Sash Pulleys and Locks, dictionary and book holders, double-acting Spring Hinges; J. H. Sternbergh & Son, Reading, Pa., five awards, Bolts, Rivets, Nuts, Washers, Screws; E. C. Atkins & Co., Indianapolis, Ind., three awards, Cross Cut Saws, Hand Saws, miscellaneous Saw Tools; Severance Nail Machinery Company, St. Paul, Minn., Nails and Spikes; Josiah J. Deal, Canton, Ohio, Combination Locks; C. S. Osborne & Co., Newark, N. J., Hammers, Plumbers' and Saddlers' Tools; David Maydole Hammer Company, Norwich, N.Y., Hammers; L. A. Baker & Co., Elgin, Ill., Shingle Nail Machine; William Rose & Bros., Sharon Hill, Pa., Mechanics' Tools; De Mars Sash Lock Company, Albuquerque, Minn., Sash Locks; Grand Rapids Brass Company, Grand Rapids, Mich, Furniture Trimmings; Iowa Farming Tool Company, Fort Madison, Iowa, Hand Farming Tools, Hoes, Rakes and Forks; Lynch Mfg. Company, Madison, Wis., Lock Buckles; Hatch Cutlery Company, Milwaukee, Wis., Shears, Scissors, Pocket Cutlery and Knives.

In Group 117, Department of Manufactures, which covers Wire Goods and Screens, Perforated Sheets, Lattice Work, Fencing, &c., the following awards are announced:

Massachusetts—Clinton—Clinton Wire Cloth Company, five awards, Wire Cloth, Fancy and Galvanized Wire, Wire Nettings, Fencing, Wire Lath; Translucent Fabric Company, Translucent Fabrics, Transoms; Washburn & Moen Mfg. Company, Worcester, flat Steel Springs, round, angular and convex Card Wires, round Wire Springs.

Illinois—Chicago—N. P. Wilson, Horseshoes; United States Wire Mat Company, Decatur, Ill., Galvanized and Brass Wire Mats and Matting.

New Jersey—Trenton—Trenton Iron Company, three awards, Iron and Steel Wire, Telephone and Telegraph Wire, Spring Weaving Transparent Steel and Music Wire; New Jersey Wire Cloth Company, three awards, Wire Lath, Floor, Ceiling; John A. Roebling's Sons Company, Wire Rope, Cloth.

New York—Tiffany Glass & Decorating Company, New York, Glass and Metal Lath Work for windows, &c.

Ohio—The Baackes Wire Nail Company, Cleveland, Steel Billets; the Jones National Fence Company, Columbus, Wire Fencing.

Connecticut—Gilbert & Bennett Mfg. Company, Georgetown, Wire Cloth, Fencing and Fire Proofing.

Michigan—E. T. Barnum, Detroit, Wire and Iron Fences.

Maine—E. T. Burrowes & Co., Portland, Wire Window Screens, Screen Doors.

New England Iron and Hardware Association.

THE REGULAR MEETING of the Boston Iron and Hardware Club was held Tuesday, October 10. It was decided to change the name of the club to the New England Iron and Hardware Association. The meeting was a pleasant and successful one, and the work of the association is progressing very satisfactorily. The credit bureau is referred to as working well, and gratification is also expressed that the case and cartage agreement is being carried into effect without serious difficulty and with but little opposition from the retailers.

WILLIAM H. QUINN of W. H. Quinn & Co., 103 Chambers street, New York, was nominated for State Senator by the Republican Senatorial Convention, which met October 16 in Brooklyn. Mr. Quinn is well known as the New York representative of several leading Hardware manufacturers, and is a member of the Hardware Club.

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Trade Items.

GEORGE M. EDDY & CO., 345 to 353 Classon avenue, Brooklyn, N. Y., have a very complete display of Tape Measures in the northeast gallery, Column E, of the Manufactures Building, at the World's Fair. The exhibit is arranged in a handsomely furnished cherry showcase, and comprises a great variety of winding Tapes and spring Tapes of many sizes and in metal and leather cases, elegantly finished. The also exhibit Steel Tapes, loose Tapes of many kinds, Tailors' Measures, &c.

C. H. TUCKER, JR, agent, 114 liberty street, New York, is representing as heretofore the entire line of goods made by the Wiley & Russell Mfg. Company, Greenfield, Mass., including Taps, Screw Plates, Tap Wrenches, Punches, Reamers, Mandrels, Swage Blocks, Tire Shrinkers, Drilling Machines, hand and power Bolt Cutters, &c. A full stock of these goods is carried by Mr. Tucker, who refers to this practice as having in the past brought him much business, owing to the promptness with which the goods can be supplied.

S. S. RASER, 40 North Sixth street, Philadelphia, announces, October 2, that he has purchased the entire Key stock of the late Geo. W. Pierce Company, and has removed it to his store, where he will carry on that line in connection with his present business. Mr. Raser states that he will be prepared to furnish many special Keys not usually found in stock. He is also equipping a plant for the manufacture of these goods. Mr. Raser will continue to handle Dog Collars and Muzzles, Roller and Ice Skates, Bicycle Sundries, Iron Toys, Silver Plated Ware, &c.

MERIDEN BRONZE COMPANY, 30 Park Place, New York, have lately supplemented their assortment of fine Lamps which are now offered for this fall's trade by the addition of a line of high-grade banquet Lamps, with cut and decorated Venetian glass columns, both in crystal and different shades of green. The metal parts are gold plated. The Venetian glass portion has been brought here on importation orders and this company, we are told, were granted the exclusive privilege of mounting these particular designs. There is also on exhibition a number of examples of fine decorated Japanese Pottery, mounted in solid brass, both plain and gold plated. This ware can be had incorporated in either banquet or piano Lamps.

ATTENTION IS DIRECTED to an advertisement in this issue of P. & F. Corbin, New Britain, Conn., and New York, in which liquid Door Checks and Springs are shown. For these goods the manufacturers claim easy adjustment, adaptability to all requirements, attractive appearance, satisfactory action and durability. The submersion of the Springs in lubricant is referred to as diminishing the friction incident to Springs when working against each other in a dry state. The lubricant thus adds to the efficiency of the device and to the ease with which doors are opened and closed upon which the Checks and Springs are used.

WILEY & RUSSELL MFG. COMPANY, Greenfield, Mass., have enlarged their line of full mounted Lightning Screw Plates by the addition of a number of sets. These goods are put up in hinged wooden boxes in sets of five to nine sizes, with a stock to each die. The dies run in size from ¼ to 1 inch, with corresponding taps included in each set, five sets being put up in this manner. Each die is fitted permanently and rigidly in its own stock, with adjustment for wear or to make bolts fit tight or loose, permitting of the die wanted being at once available; and also allows every die in the set to be used at the same time, if necessary. Another feature of this arrangement is that every stock is proportioned to the strain likely to be put upon it, suited to the die it holds. These goods, we are advised, are offered at approximately 10 per cent. less than the former style, and that the quality of the die is the same. C. H. Tucker, Jr., 114 Liberty street, New York, as agent, carries these goods in stock.

JOHN J. WIRTNER, secretary of the Geo. F. Eberhard Company, is here from San Francisco, getting posted on new goods for the present season and visiting some of the factories represented by his company. Incidentally he visited the Chicago Exposition on his way East.

H. D. HULL, dealer in Hardware, Troy, N. Y., has doubled the size of his store since it was damaged by fire in July, 1892, and is adding some lines of goods not carried before.

W. R WALKLEY, New York manager of Peck, Stow & Wilcox Company, addressed the Hardware dealers at their dinner given October 11 in the United States Hotel, Boston. He spoke nearly an hour to about 65 people, among other things calling attention to the responsibility resting on the young men of this country during the next decade, not omitting to incorporate in his remarks some of his poetry prepared for the occasion. The address was greatly enjoyed by those who listened to it, and was heartily applauded.

S L. ALLEN & Co., 1107 Market street, Philadelphia, have improved their line of Flexible Flyers, and have entirely remodeled their line of Flyer Sleighs. They have also added a new line of Flyer Coasters to their list, which they make in five sizes, from 30 to 48 inches in length.

THE STANLEY TACK WORKS, Belleville, Ill., have recently added to their line of tacks and small Nails a full line of Staples and double-pointed Tacks, which they furnish bright, blued coppered, galvanized and tinned. The assortment of Staples thus manufactured includes Steel Spring, Bed Spring, Electricians', Clamp, Hoop, Poultry Netting, Blind, Tube, Broom, Pail, &c.

IN OUR ISSUE of 5th inst., in referring to the Mowers of the Dille & McGuire Mfg. Company, Richmond, Ind., we mentioned that in the neighborhood of 50 of these machines were in use on the World's Fair Grounds. This statement was inaccurate inasmuch as the precise number of McGuire's Diamond Lawn Mowers furnished the Fair was 105. The company advise us also that their Mower was the only one officially used on the grounds.

WEBSTER R. WALKLEY, director and New York manager of the Peck, Stow & Wilcox Company, was nominated for alderman of the twentieth ward in Brooklyn, on the Republican ticket, by the Aldermanic Convention of the second district, which assembled Monday, October 16, at 151 Lawrence street in that city. As the ward is normally Republican by a large majority the nomination is regarded as equivalent to an election.

CLENDENIN BROS., 111 South Gay street, Baltimore Md., are manufacturing a line of flat head improved brass Shoe Nails, referred to in their advertisement in this issue. The fact that these Nails are an improvement on those in general use is emphasized. These goods are put up, as shown in the illustration, in ¼ pound papers and telescope boxes of one dozen each; also in ¼ pound packages and in bulk, including all the regular sizes from ⅜ to ⅝. The firm also make corrugated brass Shoe Nails, and strive to give customers greater value by carefully sorting all the Nails. In addition to these goods they have a capacity for turning out 400 Soldering Coppers per day, making a specialty of the finish. They advise us that the finish is such that the Coppers hold their color for a long time on the jobbers' shelves, a fact which is appreciated by buyers. A specialty is made by this concern of brilliant finish cold rolled copper, to take the place of specially finished copper, without any extra cost than for ordinary finish.

N. R. STREETER & Co, Groton, N. Y., have recently made some changes in their business, by which its scope have been widened and their line of manufactures extended. They have lately put on the market some new goods, among which are Streeter's Sensible Mincing Knives of improved and special designs in one, two and six blades. They are also manufacturing the well-known Mrs. Potts' Sad Irons, together with an original improvement of their own on these goods, which they designate as Streeter's Sensible Cold Handle Pottstown Iron. The manufacture of their Streeter's Cold Handle Sensible Irons is continued, so that the firm's line of Irons is very complete. They are also making a novelty in the way of a Can Opener, known as the New Sprague. The Can Opener is entirely of metal, with the blade secured in the handle, and is nickel plated (dead finish) only. The point is made that the blade fits the slot closely, which causes it to cut tin easily. Some time since we announced that C. M. Avery, who is well known to the trade, had become the direct representative of N. R. Streeter & Co. Since then they have placed the marketing of their goods and the direction of their salesmen in his hands. Mr. Streeter will resume his trips to the Pacific Coast, and personally take charge of the interests of the firm west of the Rocky Mountains.

IN HIS ADVERTISEMENT appearing in Special Notices in this issue, J. H. Hillman, manager of the Pittsburgh Sales Agency, 8 Wood street, Pittsburgh, Pa., announces that that concern is now engaged in the sale and reorganization of manufacturing plants of various kinds. The statement is made that examinations and reports on properties are made and references furnished on application. We are advised that this firm during the past three months have met with considerable success, having effected the sale of three manufacturing properties, and are now conducting negotiations for the sale of a fourth one.

JOHN H. GRAHAM & Co., 113 Chambers street, New York, and New Departure Bell Company, have been appointed exclusive selling agents for the United States for the Lucas Bicycle Lamps, manufactured by Joseph Lucas & Son, Little King street, Birmingham England. They will carry a full line of

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these Lamps at the above address, including the Holophote King of the Road, the Alumophote, the King's Own, the Kinglet, the King of the Road, the Pioneer, the Orient, the Club, the Pathfinder, &c.

THROUGH AN ERROR in *The Iron Age* of October 5 Andrews & Dawes were referred to as located at St. Johnsbury, Va., instead of Vermont. The firm have recently fitted up a store at St. Johnsbury, Vt., and are enjoying a good business. The store is 18 x 98 feet in size, with plate glass windows and all the modern improvements. Particular attention is given to window dressing, and their display attracts much attention, as it exceeds anything in this line that has been attempted in the town. The firm make a specialty of Cutlery, which they job and of which they carry a large stock. The shelves are fitted with boxes finished in Southern pine for Shelf Hardware, and a number of showcases are devoted to Cutlery and Tools.

Price-Lists, Circulars, &c.

THE FRED. J. MEYERS MFG. COMPANY, Covington, Ky.: Wire and Iron goods of every description, Bird Cages, Wire Cloth, genuine Hunter Sifters, Iron Fencing and Railing, Iron Shutters, Roof Cresting and Architectural Iron Work, Conductors' Punches, Hardware Specialties, &c. Their fall supplement, which is the first catalogue issued since the disastrous fire of March 5, 1893, by which their entire plant was completely destroyed, illustrates a portion of their goods with descriptions and list prices. A discount sheet accompanies the catalogue.

THE BUCHER & GIBBS PLOW COMPANY, Canton, Ohio: Columbian Catalogue of Gibbs' Imperial Plows. The front and back covers of the catalogue are printed in colors on tinted paper, showing among other things Plows on exhibition at the World's Fair dating from 1776 to 1893. The catalogue gives illustrations and descriptions of Plows, Harrows, Roller and Pulverizer.

COATES CLIPPER MFG. COMPANY, Worcester, Mass: Coates' Clippers. Their catalogue illustrates power Clippers for animals, both hand and machine; parts and pieces of Clipper; counter and shaft; detail of flexible shaft; one-hand Fetlock Clippers, center-tension Magic Horse Clipper, Toilet Clippers, straight and bent, and Coates' Finger-Nail Cutter and Cleaner. Under the head of Motors suitable to run their power shaft are shown the Olin Gas Engine, Tuerk Water Motor, Crocker Wheeler Electric Motor, Kane's Regon Vapor Engine, and Lamb's adjustable animal power.

JULIUS ANDRAE, 225 West Water street, Milwaukee, Wis.: Electrical supplies. The aim in preparing the catalogue and price-list, it is stated, has been to make it complete in every particular, and at the same time compact and convenient to handle. Only those articles have been listed which have proven of practical value, and the catalogue has not been incumbered with useless material. The book contains 128 pages, the first part being devoted to Electrical House Goods, and the second part to Electric Light supplies.

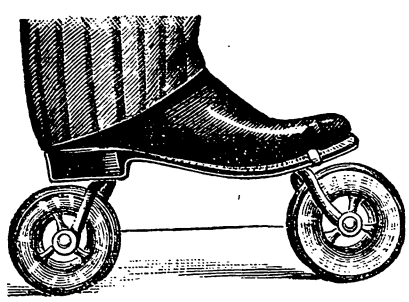
MERIDEN BRITANNIA COMPANY, Meriden, Conn.; New York; Chicago; San Francisco; London, England; Hamilton, Canada: Gold and Silver Plate. Their catalogue, No. 40, contains 130 pages, with handsomely designed cover, and finely illustrated on superior quality of paper. The illustrations show an assortment of their recent productions and most desirable patterns, without attempting to represent their line complete. The scale to which the illustrations are made is given under each heading to assist in determining the actual size of the articles. For convenience of sending telegraph orders a code word in backets is attached to each price. The catalogue is filled with handsome designs in hollow and flat ware, toilet articles, desk bric-a-brac, &c.

THE ENTERPRISE MFG. COMPANY, Philadelphia, Pa.: A supplement for insertion in their May catalogue opposite page 48, covering Detachable Meat Hooks made under Charlton's patent.

T. F. WELCH & Co., 65 Sudbury street, Boston: Hardware and Tools, Gears and Gear Cutting. Their illustrated price-list for 1893-94 includes Gears, Chain Wheels, Knurls or Milling Wheels, Steel Wire Springs, pure Aluminum Graduated Rules, Lathe Dogs, Bench Lathes, Countershaft, Iron Pulleys, Thumb Screws, Hand Drilling Machine, Jewelers' Hand Drill Machine, Adjustable Hangers, &c. The manufacturers state that they have facilities for doing small work in metal, such as is required in experimental work, or in repairs of scientific and philosophical instruments.

Pneumatic Road Skates.

THE INCREASING USE of pneumatic tires is indicated in the accompanying cut, which shows them applied to Roller Skates. The Skates are arranged to clamp or strap on the soles of shoes like ordinary Skates, but the rollers are fitted with pneumatic



Pneumatic Road Skates.

tires. The rollers are fitted with ball bearings, and run noiselessly; the rollers being 3½ inches in diameter, the tires 2 inches, and the average weight of each skate is 2¾ pounds. It is stated that the Skates meet all the requirements of road traveling, hills being surmounted and descended, while rough places are rendered smooth by the resiliency of the tire. The Skates are being made, we understand, by J. H. Wilson & Co, 9-13 High street, Kirkcaldy, Scotland.

Huntington-Hopkins Co.

SOME inaccurate and misleading reports have been published in the newspapers of the Pacific Coast, and have obtained some currency throughout the country, to the effect that Huntington-Hopkins Company of San Francisco are retiring from business. These reports, which go into some detail, mentioning the withdrawal of the prominent members of the company and the selling of the company's business to other houses, are referred to as entirely erroneous. We are advised that no such changes have been determined upon and that the company expect to continue in business, maintaining their position as one of the leading jobbing Hardware houses of the country.

Death of William T. Nicholson.

AS WE GO to press we learn of the sudden death yesterday, from apoplexy, of William T. Nicholson, President of the Nicholson File Company, Providence, R. I. This intelligence will be received with sincere sorrow by the trade. Fitting reference to Mr. Nicholson's career as a business man and a manufacturer of exceptional ability and prominence we defer to our next issue.

Humason & Beckley Mfg. Company's Catalogue.

HUMASON & BECKLEY MFG. COMPANY, New Britain, Conn., and 80 Chambers street, New York, have just issued a catalogue, 8½ x 10¾ inches in size, containing 112 pages, bound in stiff cloth covers. The catalogue represents the Hardware and fine Pocket Cutlery manufactured by them, and includes illustrations, descriptions and list prices of Hammers, Saw Sets, Belt Punches, Cheese and Butter Tryers, Wrought Iron and Brass Spring Bolts, Rail Screws, Bright Iron and Brass Wire Goods, Wrought Goods, Ox Yoke Bow Pins, Box and Cotton Hooks, Nut Crackers, Corkscrews, Pocket Cutlery, &c. Some 22 pages are devoted to full size cuts of Corkscrews, which line has been enlarged and the designs improved. For the full sized illustrations and descriptions of Pocket Cutlery 48 pages are required. The makers state that the entire line of H. & B. Cutlery consists of about 600 numbers, and the illustrations are so clear that customers can order with even more facility from the catatogue than from samples.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

In the market for Paints and Colors the experience has been variable, a good volume of business being reported in some departments, while in others the movement continues slower than usual at this season of the year. Upon the whole, the conditions are about the same as they were a week ago and the outlook is without suggestion of any decided change in the immediate future. The cost of production of White Lead and domestic Oxide Zinc is undoubtedly reduced by the decline in prices of crude material. To some extent this fact, along with competition incidental to a quiet period, prompts concessions on prices of several specialties, but quotations for leading staples

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are remarkably well maintained and the appearances are that distributors have thus far contended quite successfully against the several adverse market conditions. Compared with that of the preceding week, the volume of business has made a favorable showing in most departments.

White Lead.—Outside brands, otherwise the products of corroders who stand entirely independent of the combine, are still selling at irregular prices, with 5½¢ the rule for round lots of dry Lead, and 6¢ for Lead in Oil. With Pig Lead at 3.35¢ @ 3.40¢ here, this shows a handsome profit. The manufacturers of mixed Leads and other cheap pigments put their prices correspondingly low, and while their old list has been continued in force by the National Company, it is claimed that special rates are still being made in quarters where competition is keenest. In short, the market is quite as ragged as it has been at any time during the past month or six weeks and the prospects are the reverse of encouraging for immediate improvement, since buyers operate in an extremely conservative manner.

Red Lead.—Dealings in foreign brands have been on a moderate scale and the demand from leading consumers is at present rather slow. The smaller buyers have purchased sparingly as well, and, upon the whole, the market has shown less spirit than usual at this season of the year. Practically the same remarks apply to the market for domestic product. Prices are no lower, but the market shows rather soft tone, particularly for the foreign brands.

Litharge.—The movement in low grade product employed in manufacturing industries continues moderately active and sufficient to keep prices quite steady. Higher grades that are used chiefly in the Paint trade do not fare relatively as well, as far as sales are concerned, but the business passing is chiefly at old prices.

Orange Mineral.—Barely the average purchases have been made during the past week, and the market at present is quiet. Prices are rather soft, but show no radical change.

Zincs.—Crude material is very cheap and leaves manufacturers of Oxide to fill contracts at prices somewhat below popular quotations. That special rates are made in remote instances is not improbable, but manufacturers generally quote the old range and claim that new orders are sufficient to keep the market in very good form. Foreign brands are quoted as before, but some jobbers still shade the official list a trifle.

Colors, &c.—Some lines of dry Colors used by grinders and in other manufacturing lines have been taken to a very fair extent, but the movement does not appear to be above the average for the season. The finer class of Dry and Oil Colors have met with merely routine sale, and trade in ready mixed Paints, with few exceptions, is represented as being somewhat disappointing, with prices low and irregular for other than strictly high grade goods.

Chalk, Whiting, &c.—Block Chalk has been quiet, and prices remain without change. Whiting has met with rather freer sale, but supplies are ample, and business is effected easily at old prices.

Oils and Turpentine.

Few changes in prices have taken place, but those few were in the direction of a higher level, and it is only in the instance of some few minor articles that the undertone of the market is not firm. Speculation is tame, export buyers are extremely conservative, and home distributors are moving cautiously in the absence of incentives to operations on a broad scale. It would seem, however, that distribution is sufficiently large to prevent anything in the nature of burdensome accumulation at first hands, and to this extent the conditions are more favorable for an upward turn in prices than for movement in the opposite direction.

Linseed Oil.—For the present, there is no lower quotation than 40¢ for local brands of raw Oil manufactured from American Seed, and on Western brands 39¢ is the popular quotation. Some of the non-combine brands of Western product could, however, probably be secured at 38¢ on net cash terms. Sales have been moderate and the demand at present is of strictly routine nature.

Cotton Seed Oils.—Western consumers have purchased quite freely of both crude and refined Oil for shipment in tank cars direct from the mills. Exporters have purchased sparingly, since foreign markets are well supplied. In other directions the movement has been commonplace. Such as it was, however, the movement served to turn a downward tendency in prices, and at present the market shows fairly firm tone, with prices standing just about as they were a week ago.

Lard Oil.—Prices have stiffened still further and 75¢ @ 77¢ is now the range of price for strictly prime present make Oil, with only out of town brands offered at the inside rate. Purchases are restricted with each advance in price and at the moment there is merely a routine business passing.

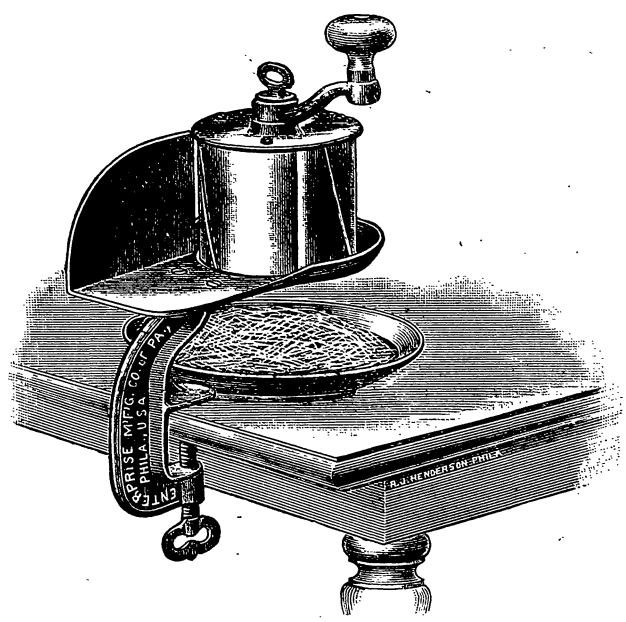
Fish Oils.—Further liberal sales of crude Sperm Oil have been made in the New Bedford market, but the movement has had no perceptible influence upon prices for refined product in the New York market. Whale Oils in general are quiet and unchanged. The same report will fittingly apply to Menhaden Oils and Cod Oil, there being merely routine movement.

Miscellaneous.—Common Oline Oil in barrels has been selling at about 60¢ on the spot and 55¢ @ 58¢ for future shipment, which prices indicate a rather soft market. Cocoanut Oils are offered rather more freely, with the effect of weakening prices to about 5¾¢ for Ceylon and 6¼¢ for Cochin in round lots. Mineral Oils are selling in routine way only, chiefly at old prices.

Spirits Turpentine.—The market is decidedly firmer under the influence of reports of better demand at various points and alleged reduction in the supply available for immediate shipment. Sales were made at 29¢ for regular and 29½¢ for machine barrels.

Enterprise New Slaw Cutter No. 94.

The Enterprise Mfg. Company of Philadelphia, Pa., are putting on the market a slaw cutter, as herewith shown. In operation the article to be sliced is placed on the platform, being fed or pushed gradually against the revolving cylinder, which contains three knives, the sliced product falling into a receiver underneath. The cutter is intended especially for family use, but also for hotels, restaurants, provision dealers, farmers, &c. The manufacturers recommend the cutter for slicing potatoes—Saratoga chips, for instance—onions, cabbage, cucumbers, citron, &c., and for general slicing purposes.



Enterprise New Slaw Cutter No. 94.

THE WESTERN STEEL PROTECTED GLOVE MFG. COMPANY of Chicago have, at Column O 50, Machinery Hall, World's Fair, a novel exhibit, as well as one which attracts a great deal of attention in the shape of machinery for manufacturing gloves or mittens protected by steel staples. The leather of which the glove is to be made is first cut out. Then the machine takes the steel wire from the spool, and forming a staple over a steel form, it passes down and drives the staple through the leather, clinching it on the reverse side. The glove is fastened upon a frame which moves automatically as each staple is clinched, thus giving it a uniform appearance. They also have a second machine on exhibition, which sews the glove together by means of a steel wire and strap around the thumb, thus rendering it doubly durable. They use oil tanned calfskins entirely, and staples over the front of the hand and on the fingers make the goods very desirable for workmen having rough materials to handle.

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The League Chainless Safety.

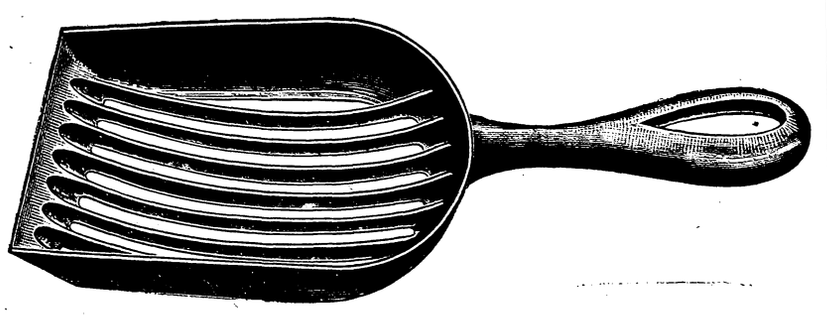
The accompanying cut represents the League chainless safety, manufactured by the League Cycle Company, Hartford, Conn. Instead of the usual chain and sprocket two bevel gears, adjusted on ball bearings, whose teeth are accurately cut by a special process, are incased in neat dust proof aluminum boxes in the center of the crank shaft bracket. To one of the gears is attached a shaft that passes through the rear fork of the frame to the rear wheel, where it engages the teeth of two more gears, also incased in dust proof boxes. It is remarked that the gears are accurately adjusted, run in oil and are entirely concealed from view. The manufacturers claim for the wearing qualities of the gears that they will not break and that they will outwear the rest of the machine, also that there is no possibility of their getting out of alignment under the same proper usage as the ordinary chain and sprocket wheel receives. It is further explained that, in case of an accident, a side thrust coming against the vital part, the force would meet with more resistance owing to its coming in contact not only with the rear tubing of the frame, but also with the shaft concealed within; and that, should an accident occur, which would cripple an ordinary machine for use and occasion a long walk home, with the chainless safety it would not deprive the rider of the use of the wheel, though the force of the contact—meeting with the resistance already noticed—should spring the frame out of alignment for any reasonable amount of space. The manufacturers state that their wheel runs as easily as any in the market, climbs hills with one third less labor and saves the rider the trouble and expense incident to loose and gritty chains. The machine is offered as high grade in every respect, and has the indorsement of experienced wheelmen as to its practicability.



The League Chainless Safety.

Coal Shovel and Sifter.

N. R. Streeter & Co., Groton, N. Y., are offering a coal shovel and sifter, as illustrated herewith. The shovel is made of cast iron, nicely jappaned, 9½ inches long including the handle, and 4⅛ inches wide in the widest place. The openings between the ribs are about $\frac{3}{16}$ inch, making it especially very valuable where pea coal is used. The shovel is designed for removing unburned coal from a stove or range when the fire has gone out, instead of dumping the whole mass, as the coal can be taken from the top of the fire box and sifted without raising dust. The point is made that enough coal can often be saved in this way to run a fire from after breakfast until the fire is needed at noon. The shape of the shovel is such that coal can be taken from between the magazine and the fire pot of a parlor or heating stove, a feature which will be appreciated by those whose fire has gone out with the magazine full of coal. The shovel is designed to retail for 10 cents.



Coal Shovel and Sifter.

Pneumatic Oil Can.

Nail City Stamping Company, Wheeling, W. Va., for whom the Ross & Fuller Association, 33 Chambers street, are agents, are offering the Nail City Pneumatic 5-gallon oil can. The can is made of heavy galvanized iron, to hold 5 gallons of oil, the oil being forced from the can by atmospheric pressure. By pressing down a plunger, the air forces the oil out by way of the spout, and when the pressure is released the oil ceases to flow. The spout, which is curved at the end, is jointed at the can, and when filling a lamp it is turned down to a horizontal position, so that the lamp is filled without lifting it from the table on which the lamp and can stand. The spout is also reversible, and when reversed the can, it is stated, is vapor proof, thus preventing the escape of gasoline or other vapors from the can. The point is made that the absence of a faucet for drawing lessens the liability of the oil or gasoline being tampered with by children.

The Merrill Heater.

Among the lamp stoves which are at present on the market that recently brought out by Randall & Becton of 19 India street, Boston, Mass., is illustrated in the accompanying cut, and is known as the Merrill. From an inspection of the engraving it will be seen that, generally speaking, the device consists of an ordinary fountain lamp, on the top of the chimney of which is supported a shallow drum formed of two dished disks, joined at their outer edges and presenting the appearance shown. The top disk is perforated near its outer edge with nearly 300 small openings for the discharge of the heated air. The material employed is aluminum, which does not tarnish with use and which greatly resembles silver in its appearance. The lower disk is made of nickel plated brass with an opening for the introduction of the chimney top and is corrugated so as to allow for expansion and contraction. The drum is suspended upon the chimney top by means of hooks, which can be adjusted to suit varying sizes. A nickel plated collar loosely incloses the top of the chimney and permits the entrance of cool air into the drum, thus increasing the circulation. The manufacturers state that the device will not break chimneys nor cause soot or smell. They also claim that by the use of the Merrill heater the current of air is retarded in its upward progress, superheated and discharged in tiny streams into the surrounding atmosphere. The principal object of the construction employed is claimed to be the warming of the greatest volume of air in the shortest possible time.



The Merrill Heater.

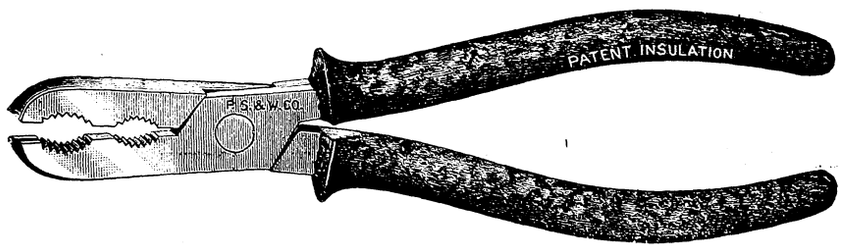
Valves as applied to gas, water or steam fittings are commonplace enough, but such a contrivance in operation on

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a horse is unusual. A horse belonging to Abeel Bros., iron merchants, 190 South street, was found to have a difficulty or obstruction in the head, which prevented him from obtaining a sufficient quantity of air through the regular channel. To supplement the supply of air it was found necessary to insert a metal valve consisting outwardly of a thin metallic disk about 2 inches in diameter, in which was a ¾-inch round hole. This was placed some 15 to 18 inches down from the throat. Inside the disk was the necessary mechanism, with a counter flange to keep it in place.

Insulated Gas Pliers.

Peck, Stow & Wilcox Company, Southington, Conn., and 27 Chambers street, New York, are introducing insulated gas pliers, as illustrated herewith. The insulation with which the handles are covered is molded mica, mica being, it is understood, one of the best insulators known to modern science. The manufacturers state that the pliers will insulate against 1500 volts of electricity or even more; and that the mica will not chip or come off. The pliers are made in one size—7 inch—and are designed as a protection to those working

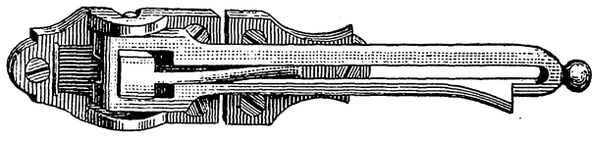


Insulated Gas Pliers.

about gas fixtures which are connected with electric wires.

Combined Door Lock and Ventilator.

The Brooklyn Specialty Company, 166 Pierrepont street, Brooklyn, N. Y., are offering this door lock with safety attachment and ventilator combined, as shown herewith. It consists of a plate and swinging hasp, which is screwed on the door jamb, and a plate and stationary bolt, which is screwed on to the door, in the positions shown in the cut. On the plate under the end of the hasp is a flat steel spring which holds the hasp at any angle and yet allows it to be moved by hand or by the action of the bolt as it slides along in the groove of the hasp as the door is opened or closed. For ventilation, notches on the under side of the head of the bolt engage with the offset near the outer end of the hasp. In this manner the door may be held open 4 or 5 inches. As long as the bolt is within the groove of the hasp any person outside the door is prevented from entering. When it is not desired to use the lock the hasp



Combined Door Lock and Ventilator.

may be swung back against the jamb, thus giving a person on the inside full control of the door, either to open or lock it without inconvenience and with the least effort. The hasp is 5½ inches long; the entire lock is nickel plated, neat in appearance and can be used on either right or left hand doors. The lock is designed as a substitute for the chain bolt, and the manufacturers claim that it is easily attached to a door, that there is no swinging chain to deface the door or jamb and that it is positive in its action.

Automatic Steam Coffee Cooker.

Wilmot Castle & Co., Rochester, N. Y., manufacture a coffee pot on the same principle that is embodied in their Arnold automatic steam cooker. Fig. 1 shows a general view of the pot, while

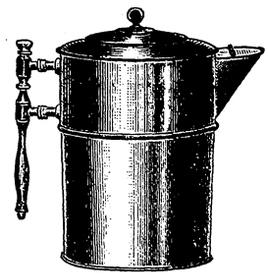


Fig. 1.—Automatic Steam Coffee Cooker.

Fig. 2 shows a sectional view through the pot and the steam cooking attachment. It is pointed out that coffee cooked with

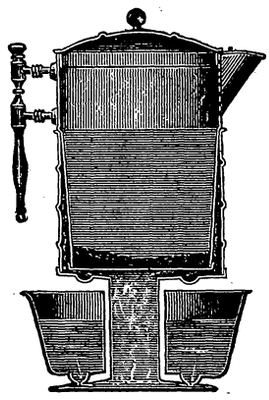


Fig. 2.—Sectional View through Pot and Steam Cooking Attachment.

steam at an unvarying temperature of 210° cannot boil, and it is therefore much better and more wholesome. The steam generated in the tin vessel under the pan rises around the coffee pot and drips back into the reservoir. Extra pots are used for tea, which, the manufacturers claim, should be prepared in the same manner. Urns for boarding houses and small hotels are also made on the same plan.

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Current Hardware Prices.

OCTOBER 18, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓@33⅓&10%
Excelsior....₩ doz $10.00.....50&10&2%
North's ..... list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Eagle Anvils, ₩ ℔ 9¢.....15@15&5%
Peter Wright's.....11@11⅓%
Armitage's Mouse Hole.....10%@11¢
Am. Wrought, Horse shoe brand..11@11⅓%
Trenton.....10@10⅓%
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co..... 33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise $3.00.....40&10%
Star .....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—

Common Augers and Bits.....70@70&10%
Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....50%
Russell Jennings' Augers and Bits.25&10%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
Snell's Bits.....60&5%
C. E. Jennings' & Co., No. 10, extension lip 40%
C. E. Jenning' & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32⅛ quarters, No. 5, $5; No. 30, $3.50.25%
Lewis' Patent Single twist.....45%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
L'Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....15%
Cincinnati Bell-Hangers' Bits.....30&10

Bit Stock Drills—

Morse Twist Drills..... .50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $18.....35@40%
Stearn's No. 2, $48.....20%

Gimlet Bits—

Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25....40&10%
Bee .....25@25&5%
Double Cut:
Shepardson's.....45@45&10%
Ct. Valley Mfg. Co.....30&10%
Hartwell's.....₩ gro.,$10.00..40&10%
Douglass'.....40&10%
Ives.....60@60&10%

Hollow Augers—

Ives' }
French, Swift & Co. (Beecher) } 33⅓@33⅓ &10%
Douglass' }

Bonney's Adjustable, ₩ doz $48.....50%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood s .....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....25@25&10%
Snell's.....25@25&10%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@ 1.40
Awls, Handled Brad....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00	$7.50
First qual., other brands	6.50 to 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1 ..3¼¢@4¼¢, No. 2, 5¢@6¢ } 3% cash
Nos. 7 to 14.....60&10%
Nos. 15 to 28.....47½%
Nos. 19 to 22.....70%
Concord Axles, loose collar.....4½¢@6¢
Concord Axles, solid collar.....5½¢@7¢
National Tubular Self Oiling..... 33⅓%@33⅓&5%

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

No.	2000	20	30
Chatillon, ₩ doz	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel..... ...₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10¼-in., $1.80; 12-inch, $2.00; 13¼-inch, $2.50; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Dover.....₩ doz $1.00@$1.20
Duplex (Standard Co.).....₩ doz $1.00
Dover (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)... ₩ doz. $3.50
Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ $4.50
Improved Acme (H. & R. Mfg. Co.).... ₩ gro. $9.00
Silver & Co..... .....₩ doz $5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10%
Dodge, Genuine Kentucky....70@70&10%
Texas Star.....60&10@50&10&5%

Door—

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. & E. Mfg. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%

Electric—

Wollensak's.....20%
Bigelow & Dowse.....20%

Hand—

Light Brass.....70&10@70&10&5%
Extra Heavy.....70%
White.....70%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Miscellaneous

Call.....45@50%
Farm Bells.....₩ ℔ 3¢&3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Molders'.....40&10@50%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....75@75&10%
Standard.....70&5@70&10%
Extra.....60&10@60&10&10%
N.Y.B.&P. Co., Carbon.....60@60&5%
N.Y.B.&P.Co., Diamond..... 50@50&5%
N.Y.B.&P.Co., Para.....40@40&5%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron.60@60&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks 25%
See also *Machines, Hoisting.*

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....80@80&5%
Genuine Eagle, Norway, list Oct. '84.... 80&5@80&10%
Eagle, Norway, list Oct. '84 80&10@80&15
Phila. pattern, list Oct. 7, '84..... 80%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....80&10%
Bolt Ends, list Jan. 1, 1890.....80&10%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wrought Square.....70&10@75%
Wr't Shutter, all Iron, Stanley's..... 60&10@60&10&10%
Wr't Shutter, Brass Knob.....50&50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%
Wr't B. K.Flush, Common.....55&10%

Stove and Plow—

Stove.....60&10@60&10&10%
Plow.....60&10&50@60&10&10%
R. B. & W., Plow..... .55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16 '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Ives' Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20%
Clark's.....33⅓@35%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔ .....2¾¢

Boxes, Miter.

Spliker's Excelsior, 3 in. $7.50, 4 in $8 50, 5 in. $13.00, 6 in. $15.00.....20%

Braces—

American Bit Brace and Tool Co.,
Nos. 10, 12, 20..... ....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber s.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew s,
Nos. 25, 27 and 30.....60&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Bail, American.....$1.00@$1.10
Fray's Genuine Spofford's...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123. 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Davis Patent.....50&10%

Brackets—

Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Heuls' Self-Basting	Inch	9	10	9x11
	Per doz	$4.50	5.50	6.50

New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....₩ doz. $12, 50%
Queen City 33⅓%

Buckets, Well—

Galvanized—

Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers.*

Butts—

Brass—

Wrought Brass.....80@50&10%
Cast Brass, Tiebout's..... 50%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad..... 50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts..... } 75@75 &10%
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....

Wrought Steel—

Fast Joint, Narrow.....
Fast Joint, Lt. Narrow..... } List Jan. 2, 1893, 40@40&10%
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Indide Blind, Light.....
Loose Pin.....
Bronzed Wrought Butts.....50@50&10

Cages, Bird—

Hendryx, Brass or Enameled..... 50&10%
Hendryx, Wood..... .....40&10%

Calipers—See *Compasses*

Calks, Toe—

Gautier, One Prong, Blunt..... 5½@6¢
Burke's One Prong, Blunt..... 5½@6¢
Burke's, Two Prong, Blunt..... 7½@8¢
Burke's, One Prong, Sharp... 6½@7¢

Can Openers—See *Openers. Can.*

Cans, Milk—

S S. & Co.: 5-gal., $3.00; 8-gal., $4 40; 10-gal., $4.75 each..... 40&10

Cans, Oil—

Galvanized Blue Band, 5 gal., Tip-Top, ₩ doz, $12.00
Galvanized Blue Band, 5 gal , Faucet, ₩ doz., $8.00
Galvanized Blue Band, 1 gal., ₩ doz.$2.25
Glass Oil, Friend.....₩ doz.$2.75

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co. ₩ 1000
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.... 47@50¢
Musket. Waterproof, 1-10's..... 50@53¢
G. D. ..... 27@30¢
S. B. Genuine Imported..... ..... 45¢
Eley's E. B..... 56@58¢
Eley's D Waterproof, Central Fire. $1.60

Primers—

Berdan Primers, $1.00..... 2%
B. L. Caps (Sturtevant Shells) $1 00... 2%
All other Primers, $1.20... ..... 2%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.. ... 25%

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

Rim Fire Cartridges .....50@5&2%
Rim Fire Military..... .....15&2%
Cent. Fire, Pistol and Rifle..... 25&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed..... } Brass.....55@55&10%
Plate..... } Others....60@60&10%
Shallow Socket... }
Deep Socket.....40&10%
Martin's Patent (Phœnix).45&10@50&10%
Tucker's Patent, low list 45%
Payson's Anti-friction..... 70@70&10%
Payson's Truck.....60@60&10%
Yale Casters, low list..... 45%
Yale, Gem..... 70%
Giant Truck Casters..... 35%
Stationary Truck Casters..... 50&10%
Socket Truck Casters..... 50@50&10%
Gwinner's Common Sense..... 45%
Gwinner's Hercules..... 45%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised May, 1893.....60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.50	3 40	3.25

Less than cask lots, add½¢@¾¢ ₩ ℔.
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12 1892. 60@60&10%
Covert Halter..... 60&2%
Cover tTraces..... 35&2%
Cover tHeel Chain..... 50&2%
Galvanized Pump Chain.
5 ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.75
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔ .....₩ 100 ℔ $7.00
Oneida Halter Chain..... 60@60&5%
Jack Chain, Iron and Brass, list July 10, 1893..... 6¢ &10%
Barnes' Reinforced Sash .... 60&10¢
Barnes' Victor Sash..... 65¢

Chalk

See also Crayons.
White, case lots.₩ gr 50¢; small lots, 52¢
Red, case lots...₩ gr 67¢; small lots, 72¢
Blue, case lots...₩ gr 75¢; mall ots 80¢

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Chalk Lines—See *Lines.*

Checks, Door—
Unity 50%

Chisels—
Socket Framing and Firmer
P. S. & W. ..... }
New Haven ..... }
Witherby ..... } 75&10@75&10&10%
Mix ..... }
Ohio Tool Co. ..... }
Douglass ..... 75@75&5%
Buck Bros 30%
Merrill ..... 60&10@60&10&5%
L. & I. J. White ..... 30@30&5%

Tanged and Miscellaneous.
Tanged Firmers ..... 50@50&10%
Butchers' ..... $4.75@$5.00 to $
Spear & Jacksons' ..... $5 to $
Buck Bros 30%
Cold Chisels, fair quality, ₩ lb ...14@16¢

Chucks—
Beach Pat. ..... each, $8.00 ..... 20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury ..... each, $6.00, 30@30&5%
Syracuse, Balz Pat. 25%
Graham Patent 33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.
Victor $8.50, 25%
Combination 40%
Universal 40%
Independent 40%

Churns—
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.

Clamps—
R. I. Tool Co.'s Wrought Iron 25%
Adjustable, Cincinnati ..... 15&10%
Adjustable, Hammers ..... 15@15&5%
Adjustable, Stearn's ..... 30@30&10%
Stearn's Adjustable Cabinet and Corner ..... 30@30&10%
Cabinet, Sargent's ..... 70&10%
Carriage Makers', Sargent's .. 75@75&5%
Carriage Makers', P., S. & W Co.. 40&10%
Eberhard Mfg. Co. ..... 40&5@40&10%
Warner's ..... 40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenter's, Cincinnati ..... 25&10%
Barnes' Machinists' Clamps 33⅓%

Cleavers, Butchers'—
Bradley's ..... 25@30%
L. & I. J. White ..... 20&5%
Beatty's ..... 40@40&5%
New Haven Edge Tool Co.'s 40%
P., S. & W. ..... 33⅓&5@33⅓&10%
Foster Bros. 30%
Schulte, Lohoff & Co. ..... 40@40&5%

Clips—
Norway, Axle, ¼ & 5-16 ..... 55&5&5%
2d grade Norway Axle, ¼ & 5-16... 65&5%
Superior Axle Clips ..... 66⅔&5@70%
Norway Spring Bar Clips, 5-16... 60&5&5%
Wrought Iron Felloe Clips ..... ₩ lb, 5½¢
Steel Felloe Clips ..... ₩ lb, 5¢
Baker Axle Clips 25%

Cloth and Netting, Wire
—See *Wire, &c.*

Cockeyes 50%

Cocks, Brass—
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.).... 60&2@60&10

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—
Chapman Mfg. Company, new list.... 40%
Medford Fancy Goods Co. ..... 40&10@50%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list 40%
Brass, Pope & Steven's list 40%

Combs, Curry—
Fitch's ..... 50&10@50&10&10%
Rubber, per doz., $10.00 ..... 25%
American Curry Comb Co. ..... 33⅓&40%
Kohler's Magic Oscillating... ₩ doz., $2.00
Kohler's Humane ..... ₩ doz., $1.75

Compasses, Dividers, &c.
Compasses, Calipers, Dividers. 70@70&10%
Bemis & Call Co.'s
Dividers 65%
Compasses ..... 50&5%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Calipers, Double 65%
Calipers, Call's Patent Inside 55%
Excelsior 50%
Stevens & Co.'s ..... 25&10%
Starrett's
Spring Calipers and Dividers.... 25&10%
Lock Calipers and Dividers 25%
Combination Dividers 25%

Coolers, Water—
S. S. & Co.: 2-gal., $2.00; 3-gal., $2.50; 4-gal., $2.75; 6-gal., $3.40 each.... 33⅓%

Coopers' Tools—
See *Tools, Coopers'.*

Cord—

Sash—
Common ..... ₩ lb, 8½@9¢
Patent, good quality ..... ₩ lb, 10@11¢
White Cotton Braided, fair.. ₩ lb, 23@24¢
Common Russia Sash ..... ₩ lb, 12½@13¢
Patent Russia Sash ..... ₩ lb, 13½@ 14¢
Cable Laid Italian Sash ..... ₩ lb, 19@20¢
India Cable Laid Sash.... ₩ lb, 11½@12¢
Silver Lake—
A quality, White, 50¢ 25%
A quality, Drab, 55¢ 25%
B quality, White, 30¢ 10%
B quality, Drab, 35¢ 10%
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab.. 39¢
Semper Idem, Braided, White.... 27@28¢
Egyptian, India Hemp, Braided ..... 26¢
Massachusetts, White ..... 29¢
Samson—
Braided, White Cotton ..... ₩ lb, 37¢
Braided, Drab Cotton ..... ₩ lb, 42¢
Braided, Italian Hemp ..... ₩ lb, 40¢
Braided, Linen ..... ₩ lb, 56¢
Tate's Solid Braided—
Hercules, White ..... ₩ lb, 25¢
Hercules, Drab ..... ₩ lb, 30¢
Economy, Drab ..... ₩ lb, 27¢
Economy, White ..... ₩ lb 22¢
Ossawan Mills—
Braided, Giant, White, ₩ lb 30¢... 20%
Braided, Giant, Drab and Fancy, ₩ lb 35¢ ..... 10¢
Braided, Crown White, ₩ lb, 50¢... 50%
Braided, Crown Drab and Fancy, ₩ lb 5¢ 30%

Wire Picture—
Braided or Twisted ..... 80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers Nut—
Table (H. & B. Mfg. Co) 40%
Blake's Pattern, ₩ doz., $2.00 ..... 10%
Turner & Seymour Mfg. Co. 50%
Acme.
Japanned, ₩ gro., $30 ..... 50%
Nickel Plated, ₩ gro. $30 ..... 10%

Cradles—
Grain ..... 50&2@50&5&2%

Crayons—
White Crayons, ₩ gross ..... 7@8¢
D. M. Stewart Mfg. Co.:
Metal Workers', ₩ gross, $1.75 ..... 25%
Rolling Mill, ₩ gross, 2.50 ..... 25%
Railroad, ₩ gross, 2.00 ..... 25%
Soapstone Pencils, ₩ gross, 1.00 ..... 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—
See *Combs, Curry.*

Curtain Pins—
See *Pins, Curtain.*

Cutters—

Meat—
Dixon's, ₩ doz. ..... 40@40&5%
Nos. 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Woodruff's, ₩ doz. ..... 40@40&5%
Nos. 100 150
$15.00 $18.00
Hale's, ₩ doz. 70%
Nos. 11 12 13
$27.00 $33.00 $45.00
American 30%
Nos. ..... 1 2 3 4 B 5
Each $5 $7 $10 $25 $50 $60
Enterprise 25%
Nos. 10 12 22 32 42
Each $3 $2.50 $4 $6 $15
Little Giant, ₩ doz. ..... 40&10@50%
Nos. 305 310 312 320 322
$35.00 $48.00 $44.00 $72.00 $68.00
Triumph No. 505, ₩ doz., $21.00.. 25@30%
Miles' Challenge, ₩ doz. ..... 45@45&10%
Nos. 1 2 3
$22.00 $30.00 $40.00
Home No. 1, ₩ doz., $26.00 ..... 55&10%
Draw Cut, each:
Nos. 5 2 6 8
$50 $75 $80 $225 ..... 20@25%
Beef Shavers (Enterprise) 20%
Chadborn's Smoked Beef Cutter, ₩ doz., $66.00

Slaw and Kraut—
Tucker & Dorsey Mfg. Co.:
Slaw Cutters, 1 Knife, ₩ gross... $21.00
Slaw Cutters, 2 Knife, ₩ gross... 30.00
Kraut Cutters 40%

Tobacco—
Champion ..... 20&10@30%
All Iron ..... ₩ doz., $4.25
Nashua Lock Co.'s.. ₩ doz., $18.00, 50@55%
Wilson's 55%
Sargent's ..... ₩ doz., $24.00, 55&10
Acme ..... ₩ doz., $20.00, 40%

Washer—
Smith's Pat.... ₩ doz., $12.00, 20&10&10%
Johnson's ..... ₩ doz., $11.00, 33⅓%
Penny's.. ₩ doz.,, Pol. $14; Jap'd, $16, 55%
Appleton's ..... ₩ doz., $16.00, 60&10%
Bonney's ..... 30&10%
Cincinnati ..... 25&10%

Diggers, Post Hole, &c.—
Samson, ₩ doz., $34.00 ..... 25@25&10%
Fletcher Post Hole Augers, ₩ doz., $36.00, 20@20&10%
Eureka Diggers ..... ₩ doz. $12.00@$13.00
Vaughan's Post Hole Auger, ₩ doz., $8.50@$9.50
Kohler's Little Giant ..... ₩ doz., $18.00
Kohler's Hercules ..... ₩ doz., $14.00
Kohler's Invincible ..... ₩ doz., $12.00
Kohler's New Champion .... ₩ doz., $8.00
Scheidler ..... ₩ doz., $18.00
Cronk's Post Bars, ₩ doz., $60.00, 50&5@50&10%
Gibb's Post Hole Digger .... ₩ doz., $15.00
Gibbs' National ..... ₩ doz., $12.00
Gibbs' Columbia ..... ₩ doz., $13.00
Gibbs' Imperial ..... ₩ doz., $7.50
Shimer's Hollow Handle.. ₩ doz., $24.00, 50%
Gem, Improved ₩ doz.,, $9.00@$10.00 net

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers.
Money, ₩ doz. ..... $18@$20
Waddel's Improved, ₩ doz. $15.00

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Blacksmiths' ..... each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Breast, P. S. & W. ..... 40&10%
Breast, Wilson's ..... 30&5%
Breast, Millers Falls ..... each $3.00, 25%
Breast, Bartholomew's .... each $2.50 25&10@40%
Ratchet, Merrill's ..... 20@20&5%
Ratchet, Ingersoll's 25%
Ratchet, Parker's ..... 20@20&5%
Ratchet, Whitney's ..... 20&10%
Ratchet, Weston's ..... 20@25%
Ratchet, Moore's Triple Action.... 25@30%
Ratchet, Curtis & Curtis 30%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00 ..... 20&10%
Automatic Boring Tools ..... $1.75@$1.85
Chicopee Automatic Drill ..... 20&10%
Goodell Automatic Drills ..... 40&5%

Twist Drills—
Cleveland ..... 50&10&10%
Diamond, W. & B. ..... 50&10&10%
Graham's Pat. Groove Shank. 50&10&10%
Morse ..... 50&10&10%
New Process ..... 50&10&10%
Standard ..... 50&10&10%
Syracuse (Metal list) ..... 50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Douglass Mfg. Co. ..... 20@20&10%
Disston's 50%
Buck Bros. 30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles ..... 65&10%
No. 86 ..... 70&10%
Sargent & Co.'s
No. 1, Forged Blade ..... 60&10&10%
Nos. 20, 40 and 60 ..... 66⅔&10&10%
P. S. & W 70%
Knapp & Cowles
No. 1 ..... 60&20@70%
No. 2 ..... 60&10&10@70&5%
No. 3 ..... 60&5@60&10%
Nos. 4 and 00, Acme and Ideal... 50&5@50&10&5%
Stearns' ..... 25&10&5%
Gay & Parsons 35%
Champion ..... 25&10%
Clark's Pat. ..... 30@33⅓%
Ellrich's Socket and Ratchet.. 25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense.. ₩ doz., $6.00, 25&10%
Syracuse Screw-Driver Bits.... 30&30&5%
Screw Driver Bits ..... ₩ doz., 50@75¢
Screw Driver Bits, Parr's.. ₩ gross, $6.25
Fray's Hol. Handle Sets... No. 3, $12.00, 45%
Cincinnati ..... 25&10%
Brace Screw Drivers ..... 25&10%
Buck Bros.' Screw Driver Bits.... 27½&5%
Goodell's Automatic 50%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
C. T. Williamson Wire Novelty Co.... 50%

Egg Beaters—See *Beaters, Egg*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF. FF.

	46 gr.	150 gr.	F. FF.
Kegs, ₩ lb	4½¢	5 ¢	2½¢
½ kegs, ₩ lb...	4¾¢	5½¢	2¾¢
¼ kegs, ₩ lb...	5 ¢	5½¢	3 ¢
10-₩ cans, 10 in case	6 ¢	6½¢	5 ¢
10-lb cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—
Door Lock.... Same dis. as Door Locks.
Brass Thread ..... 60@60&10%
Wood 25%

Expanded Metal—
List No. 5.
Lathing 10%
Fencing, Painted Sheets 20%
Netting, Painted Sheets 20%
Door Mats, Galvanized 25%
Window Guards, Paneled 15%
Tree Guards, Paneled 15%

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Mackrell's, ₩ doz., $1.00 ..... 20@20&10%
Van Sand's Screw Pat, $15 ₩ gr.. 60&10%
Van Sand's Old Pat., $15 ₩ gr.... 55&10%
Austin & Eddy No. 2008 ..... ₩ gr., $9.00
Security Gravity ..... ₩ gr., $9.00
Zimmerman's ..... 50&10%

Faucets—
Fenn's 40%
Fenn's Cork Stops 33⅓%
Star 60%
Frary's Pat. Petroleum 60%
B. & L. B. Co.
West's Lock, Open and Shut Key.. 50%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list. 60%
Metallic Key, Leather Lined.... 60&10@60&10%
Cork Lined ..... 70&5@70&10%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots.... 50&10%
John Sommers'
Peerless Best Block Tin Key 40%
IXL, 1st quality, Cork Lined 50%
Diamond Lock 40%
Perfection Fla. Red Cedar (in boxes) 40%
Boss Metallic Key 50%
Reliable Cork Lined 60%
O. K. Western Pattern Cork Lined.. 50%
No Brand, Red Cedar (in bbls.).. 50&10%
Western Pattern Metal Key 40%
No Brand Metal Key 60%
Self Measuring
Enterprise, ₩ doz., $36.00 ..... 20%
Lane's ₩ doz., $36.00 ..... 25&10%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—
Derby and Cincinnati ..... 45&5%
Brewster ..... 50&5%

Files—

Domestic—
Nicholson Files, Rasps, &c. 60&10&5@60&10&10%
Nicholson (X.F.) Files 25%
Nicholson's Royal Files (Seconds).... 75% (extra prices on certain sizes.)
American ..... 66⅔&10@66⅔&10&5%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Arcade ..... 60&10&10@70%
Eagle ..... 60&10&10@70%
Other makers, best brands.. 60&10&5@70%
Fair brands ..... 70&10@70&10&10%
Second quality ..... 80@80&5%
Heller's Horse Rasps ..... 50&10@60%
McCaffrey's Horse Rasps ..... 50&10%
Chelsea Horse Rasps, Hand Cut.. 50&10%
Arcade Horse Rasps.... 60&10@60&10&5%
Trojan Horse Rasps ..... 60&10&5%

Imported—
Butcher ..... Butcher's list, 20%
Stubbs ..... Stubb's list 25@30%

Fixtures, Grindstone—
Sargent's Patent ..... 70&10%
Reading Hardware Co. ..... 30&10%
P., S. & W. Co. ..... 50&10%
Moore's 55%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Hay, Manure, &c. Asso. List, 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—

Saw—
White Vermont ..... ₩ gro., $9.00@$10.00
Red, Polished and Varnished.... ₩ doz., $1.50, 25%

Screen, Window and Door—
Porter's Pat. Window and Door Frame, 33⅓&10%
Warner's Screen Corner Irons.. 33⅓&10%
33⅓&10%
Stearns' Frames and Corners. 25@25&10%
Cortland ..... 40@40&5%
Phillips' Window Screen Frames, 50@50&5%
Bonanza Window Screens.. 50&5@50&10%
Empire Fancy Screen Doors, ₩ doz .. $12

Freezers, Ice Cream—
White Mountain ..... 60@60&5%
Granite State ..... 65@65&5%
Arctic ..... 70@70&5%
American 60%
Buffalo Champion ..... 65@65&5%
Shepard's Lightning ..... 65@65&5%
Gem 65%
Blizzard 70%
Double Action Crown 60%
Crown 60%
Star 60%
Peerless ..... 60&10%
Giant 60%
Zero 70%
Boss and Pet ..... 60&10&10&10%
Keystone, P., D. & Co., each, $1.60.... 20%
Standard ..... 60@60&5%
Standard Double Action ..... 60@60&5%
Good Luck ..... 65@65&5%
Model ..... 60@60&5%
Confectioners' Machine 50%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fruit Pickers—
See *Pickers, Fruit.*

Fry Pans—See *Pans, Fry.*

Funnels—
Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro. 30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz. 25%

Furnaces, Soldering—
Burgess No. 3 Gem tin reservoir .. $7.00
Burgess No. 3 Gem, Copper reservoir. $8.50
Clayton & Lambert No. 1 Fire-Pot, complete $6.00

Fuse—Dis. 12½@15%. ₩ M 1000 ft
Common Hemp Fuse, for dry ground. $2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr.. 4.80
Triple Taped Fuse, for very wet gr. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water. 12.00

Gates, Molasses—
Stebbin's Pattern ..... 80&10@80&10&5%
Stebbin's Genuine ..... 60&10&10%
Stebbin's Tinned Ends ..... 40&10%
Lincoln's Pattern ..... 70@70&10%
Weed's ..... 20&10%
Boss, ₩ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 ..... 60&10&10%

Gauges—
Marking, Mortise, &c. ..... 60&10%
Starrett's Surface, Center and Scratch, 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 20&10%
Barrett's Comb. Roller Gauge.... ₩ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale ..... ₩ doz.. $5.00
Without Scale ..... ₩ doz., $4.00
Wire, Wheeler, Madden & Co. 10%
Wire, Morse's 25%
Wire, Brown & Sharpe's ..... 10@20%
Wire, P., S. & W. Co. ..... 10&10%

Gimlets—
Nail and Spike ..... 50&10&5%
Eureka Gimlets ..... 60&10%
Diamond Gimlets ..... ₩ gr $5.00
Double Cut, Shepardson's ..... 45@45&5%
Double Cut, Ives' ..... 60@60&5%
Double Cut, Douglass' ..... 40&10%

Glue—
Le Page's Liquid ..... 25@25&5%
Upton's Liquid 35%
Improved Process ..... 25@25&5%
Dodd's Liquid Glue ..... 25@25&5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Fraser's ..... Keg ₩ lb 4¢, Pail ₩ lb 5¢
Fraser's, in boxes ..... ₩ gr $9.50
Dixon's Everlasting, in bxs. ₩ doz 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting... 10-lb pails, ea. 85¢
Lower grades, special brands ₩ gr $5.50@$7.00
Axleine, tin boxes ..... ₩ gross $12.00
English Coach, wooden boxes ..... ₩ gross $8.50
English Coach, 5-lb tin pails. ₩ doz, $3.50
Tiger, wooden boxes ..... ₩ gross $7.00
Tiger, 5-lb tin pails ..... ₩ doz $2.85

Grindstones—
Family, regular list 60%
Family, Cleveland Stone Co. 20%

Grindstone Fixtures—See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
Sewing, Brass Fer. ₩ gr. $1.75
Pat. Sewing, Short. ₩ doz. ..... 45@50%
Pat. Sewing, Long ..... ₩ doz $1.20
Pat. Peg, Plain Top. ₩ doz. ..... 40@45%
Pat Peg Leather Top. ₩ doz 45@50%

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Halters—
Covert's Rope, Jute.....60&10&10&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ½-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....85&5&2%
Covert's Saddlery Works Halters...33⅓&%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓&%
Covert's Saddlery Works Handy Web Halters.....33⅓&%

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.
Humason & Beckley.
Atha Tool Co.
Verree.....50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting..50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles, new list.....25&10
Peck, Stow & Wilcox.....35@40%
Sargent's.....40@40&10%

Heavy Hammers and Sledges—
3 ℔ and under...℔ 40¢ } 75&10@75&10 &5%
3 to 5 ℔.....℔ 36¢ }
Over 5 ℔.....℔ 30¢ }
Wilkinson's Smiths.....10½¢@11¢℔ ℔

Handcuffs and Leg Irons
—See *Police Goods.*

Handles—
Cross-Cut Saw Handles—
Atkins', new list.....40%
Champion.....15%
Ely's Perfection.....℔ doz., $3.00
Sensible.....40%

Iron, Wrought or Cast—
Door or Thumb.

Nos	0	1	2	3	4
Per doz.	$0.90	1.00	1.08	1.35	1.50

60&10&10%
Roggin's Latches.....℔ doz 30¢@35¢
Bronze Iron Drop Latches..℔ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Barn Door, ℔ doz $1.40.....10&10%
Chest and Lifting.....70&70&10%

Wood—
Saw and Plane.....40&10@50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Brad Awl.....℔ gr $2.00
Hickory Firmer Chisel, ass'd. ℔ gr 4.50
Hickory Firmer Chisel, large. ℔ gr 5.00
Apple Firmer Chisel, ass'd...℔ gr 5.00
Apple Firmer Chisel, large...℔ gr 6.00
Socket Firmer Chisel, ass'd..℔ gr 3.00
Socket Framing Chisel, ass'd.℔ gr 5.00
} 40&10@50%
J. B. Smith & Co.'s Pat File.....50%
File, assorted.....℔ gr 2.75
Auger, assorted.....℔ gr 5.00 } 50%
Auger, large.....℔ gr 7.00
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....℔ set $1.25
Pat. Auger, Swan's.....℔ set $1.00
Hoe, Rake, Shovel, &c.....60@60&5%

Hangers—
Barn Door, old patterns.....70@70&5%
Barn Door, New England.....70@70&5%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Steel Track.....55%
Champion.....60&10%
Climax Anti-Friction.....55%
Zenith for Wood Track.....55%
Sterling.....50&10@60%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Kidder's.....50@50&10%
Boss.....60&10@60&10&5%
Best Anti-Friction.....60&10@60&10&5%
Duplex (Wood Track).....60&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Ideal.....50&10@50&10&5%
Terry's Solid.....50&10@60%
Terry's Shield.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Cronk's Patent, Steel Covered.....50&10%
Carrier Steel Anti-Friction.....50&10%
Richards'.....30@30&10%
Lane's New Standard.....50@50&5%
Lane's Standard.....50&5@50&10%
Lane's Parlor.....40%
Warner's Pat.....20&10&10%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....35&10&10%
Cincinnati Nos. 1, $2.25; 3, $2.50; 4, $2.50.
Paragon Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15.....40&10@50%
Chicago Anti-Friction.....30&10%
Star.....40&10@40&10&5%
Barry.....50%
Interstate.....50&10@60%
Pendulum, Payson's.....40@40&10%
Moody.....45%
Economy, $6.00.....50&10%
Perfection.....50&10@50&10&5%
Lundy, Steel Parlor.....40%
Matchless.....50&10%
Magic.....45&10%
Wild West.....45&10%
Moore's Elevator.....33⅓&%
Moore's Baggage Car Door.....33⅓&%
Moore's Railroad.....55%

Harness Snaps—See *Snaps.*

Hatchets—
American Axe and Tool Co.
Blood's.
Hunt's.
Hurd's
Mann's
Peck's
Underhill's
} 40 & 10 @ 40 & 10 &5%
Fayette R. Plumb
C. Hammond & Son
Kelly's.
Buffalo Hammer Co.
Sargent's & Co
P. S. & W. Co
Schulte, Lohoff & Co.
Ten Eyck Edge Tool Co.
} 50 @ 50 &10%
Collins.....10%

Hay and Straw Knives
See *Knives.*

Hinges—
Blind Hinges—
Parker.....75@75&10%
Huffer.....50%
Clark's Nos. 1, 3, 5, 10 and 50.....80&5@80&10%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 12, 13.75@75&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's.
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible.....70&10&5@75%
Clark's, Lull & Porter, Nos. 0, 1, 1¼, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—
Western.....℔ doz $4.20, 60@60&10%
N. E.....℔ doz $7.80, 60@60&10%
N. E. Reversible ℔ doz..$5.60, 6(@60&10%
Clark's, Nos. 1 2, 3.....60&10&5%
N. Y. State.....℔ doz $4.90,60@60&10%
Automatic.....℔ doz $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—
Geer's Spring and Blank Butte....40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's Japanned.....35%
Bommer's All other Kinds.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent Checking.....15%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem and Star.....20%
Oxford.....20%
Royal.....66⅔%
Reliable.....60%
Champion.....60%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ℔ gro., $30.....50&5%
Samson.....60@60&7½%
Wiles', No. 1, ℔ gro., $16; No. 2.....$13
Devore, No. 1.....℔ gro , $13.00
Rex.....℔ gro., $13.00
Freeport.....℔ gro., $12.00
New Idea Nos. 1 and 10....℔ gross $13.00
New Idea Dbl. Acting.....45%
Ideal No. 3.....℔ gross $10.00
Stearns' Noiseless Floor Hinge, ℔ set, $5.00.....20&10@30%
Extra 5@10% often given.

Wrought Iron Hinges—
List February 14, 1891.
Strap and T.....50&10@50&10&10%
Corrugated Strap and T.....50&10&5%
Screw Hook and Strap { 6 to 12 in., ℔ ℔.. 4¢ / 14 to 20 in., ℔ ℔..3½¢ / 22 to 36 in., ℔ ℔.. 3¢
Screw Hook and Eye.... { ½ in., ℔ ℔ 7½¢ / ⅝ in., ℔ ℔ 5½¢ / ¾ in., ℔ ℔ 4½¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 252 and 254 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges { 8, 10 & 12 in., ℔ ℔.....5¢ / "Providence" { over 12 in. ℔ ℔.....4¢

Hoes—
Eye—
D. & H. Scovil.....20%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat } 60&5
Am. Axe and Tool Co., S. & O. Pat..... } @60&10%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—
Garden, Mortar, &c.....70@70&5&2%
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%
Magic.....℔ doz $4.00

Hog Rings and Ringers—
See *Rings and Ringers—*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow-Ware—
See *Ware, Hollow.*

Holders—
Bag—
Sprengle's Pat.....℔ doz $18....60%

Bit—
Extension.
Barber's, ℔ doz $15.00.....40@40&10%
Ives, ℔ doz $20.00.....60&5@60&10%
Diagonal.....℔ doz $24.00, 40%
Angular.....℔ doz $24.00, 40&5%

File and Tool—
Bals Pat.....℔ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—
Motley's Adj. Sash, Medium Size.....℔ doz $1.20, 40%

Hooks—
Cast Iron—
Bird Cage, Sargent's List ...
Bird Cage, Reading .....
Clothes Line, Sargent's list .
Clothes Line Moore's.....
} 60&10&10%
.....70%

Clothes Line, Reading list, 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading, 50&10@50&10&10%
Coat and Hat, Moore's.....70%

Wrought Iron—
Cotton.....℔ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....80%
Tassel and Picture, T. & S. Mfg.Co....50%
Wrought Staples Hooks, &c. See Wrought Goods

Wire—
Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....80&15@80&20%
Atlas, Coat and Hat.....65%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Bright Wire Goods—See Wire.

Miscellaneous—
Grass, No. 2, $2.00; No. 3, $2.10; No. 4, $2.25
Nolin's Grass.....℔ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—
See *Shoes, Horse.*

Hose, Rubber—
Competition, Fair quality.....75@75&10%
Competition, Low Grade.....80@80&10
Standard.....70&10&70@10&5%
Extra.....60&10@60&10&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40&5@50%
N. Y. B. & P. Co., Dundee.....60@60&5%
Cotton Garden, ¾ in., coupled:
Fair Quality, ℔ ℔.....7¢
Good Quality, ℔ ℔.....8½¢

Huskers—
Blair's Adjustable.....℔ gr $8.00
Blair's Adjustable Clipper.....℔ gr 7.00
Hubbard's Solid Steel.....℔ gr 4.50

Indurated Fiber Ware—
See *Ware, Indurated Fiber.*

Irons.
Sad—
From 4 to 10, at factory....℔ 100 ℔, $2.30@$2.40
Self-Heating.....℔ doz $8.00
Self-Heating Tailors'.....℔ doz $18.00
Mrs. Potts' Sad Irons, per set:

No.	50	55	60	65
Small lots	.90	.85	1.05	.95

Crown Improved.....60&10%
Ideal Irons, new list...50&10@50&10&10%
Salamander Irons.....25%
B. B. Sad Irons, ℔ ℔.....3@3¼¢
Chinese Laundry (N.E.Butt Co.).8½¢, 15%
New England.....5¢, 20@20&5%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓&%
National Self-Heating.....30%

Soldering—
Soldering Coppers.....℔ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886, 35&2%
Tinker's Dread..℔ doz $1.75; ℔ gro. $18

Pinking—
Pinking Irons, ℔ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—
Daisy.....33⅓&%
Victor.....33⅓&%
Lockport.....40%

Kettles—
Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Stamped Brass Kettles.....℔ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—
Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.
Wilson's Butcher Knives, List Dec 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AA A1 Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....25@30%
Ames' Shoe Knives, ℔ doz $1.50, 15@20%
Moran's Shoe and Bread.....20@20&10%
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—
Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—
Witherby.....
P., S. & W.....
Mix.....
New Haven.....
} ...75@75&10&5%
Merrill.....60&10@60&10&5%
Douglass.....75&75@5%
Watrous.....15&10@25%

L & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓&%
Wilkinson's Folding.....25@25&5%

Hay and Straw—
Lightning, from jobbers....$8.00@$9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle...℔ doz. $11.00@$11.50
Heath's.....℔ doz. $13.00@$ 3.50
Nolin's Hay.....℔ doz. $7.00@$8.00

Mincing—
Am. (2d quality), ℔ gr., 1 blade, $7
2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ℔ doz., Single, $2; Double $3 45@50%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable....℔ doz. $3.00, 33⅓&%

Knobs—
Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nicke..l....$2.00@$2.25
Drawer, Porcelain....60&10@60&10& 0%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885..40%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....℔ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladders.
Davies Extension and Single..... 20&5%

Ladies—
Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, P., S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—
Tubular—
Regular, with Guard.....℔ doz $3.50
O. K., with Guard.....℔ doz $3.75
Side Lift, with Guard.....℔ doz $4.00
Square Lift, with Guard.....℔ doz $4.25
Anti-Friction, with Guard..℔ doz $4.5
Brass Plated, Sq. Lift, Guard.℔ doz $5.5
Cop. Plated, Sq. Lift, Guard..℔ doz $ 5.

Bull's Eye Police—
2¾-inch regular.....℔ doz $3.60
3-inch regular.....℔ doz $3.90
2¾-inch flash light.....℔ doz $4.00
3-inch flash light.....℔ doz $4.50

Lawn Mowers—
See *Mowers, Lawn.*

Leaders, Cattle—
Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—
See *Squeezers, Lemon.*

Lifters, Transom—
Wollensak's:
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Class 3 and 4, Brass.....50%
Skylight Lifters.....35%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....60@60&10%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—
Cotton and Linen Fish.....50%
Chalk.....60%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ℔ gro.....25%
Mason's Linen, No. 3½, $1.50; No 4, $2.00; No 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes..Nos. 18 19 20
100 ft..... $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..℔ doz $7.50..20%
Ossawan Mills, Chalk, Twisted, 60%; Chalk, Soft Braided, 50% Chalk, Braided, 25%.

Links, Open—
Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—
Cabinet—
Eagle, Gaylord Parker and Corbin... } List, March '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Champion Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&10%
Champion Cab. and Combin....33⅓&%
Yale.....net prices
Romer's.....25%

Door, Locks, Latches, &c
R. & E. Mfg. Co., list Mar.20, 1889..... } 60&10@70% Much lower net prices oft made
Mallory, Wheeler & Co., list July, '88..... }
Sargent & Co., List 1, '88 }

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Britain, Graham & Mathes, list Jan. 1890.....60&10&10%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Warner's Burglar Proof, ₩ doz. $8.00, 50%

Elevator—

Moore's.....33⅓%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list.....50&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505.....15%
A. E. Deitz.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₩ doz $9, 50@50&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Scandinavian.....90&40%
E. T. Fraim's Keystone Scandinavian, 1010 line.....90&40%
120 line.....90&25%
109 line.....65%
510 line.....70&10%
225, 610 and 209 lines.....70%
All other numbers.....50&5%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker, Barry & Co.
No. 1010 line.....90&5%
No. 41 line.....50%
No. 61 line.....60%
No. 21 line.....80%

Sash, &c.—

Clark's No. 1, $10; No. 2, $8 ₩ gr.....33⅓%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₩ gr $4.00
Common Sense, Nickel Plated.....₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10&10%
Huguenin's Sash Balances.....25&5&2%
Huguenin's New Sash Locks.....25&5&2%
Ives' Patent.....60&10&5@60&10&10%
Fish Liesche's pat.), No. 100, ₩ gr., $8; No. 105, ₩ gr., $10.....50%
Davis Bronze, Barnes Mfg. Co.....60%
Champion Safety list January, 1893.70&5%
Securfty.....70%
Giant, list Jan., 1892.....70&5%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—

See *Tools, Lumber.*

Lustro—

Four-ounce bottles.....₩ doz, $1.75; ₩ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas		$5.50	$6.75	50%
Snell's, Rice's Pat...		5.50	6.75	40&10&10%
Jennings'		5.50	6.75	.50@50&5%
Other Machines..		2.25	2 50	
Phillip's Patent with Augur		7.00	7.50	
Millers Falls			7.50	.25%
Boss, Carpenters'		3.60		
Boss, Ship Bldrs'.		3.85		

Fluting—

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3½-inch Rolls, $2.15.....35%
Eagle, 5½-inch Rolls, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6 50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal, ₩ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25.....30%
Shepard Hand Fluter, No. 85, per doz $16.50.....40%
Shepard Hand Fluter, No. 110, ₩ doz $11. 0.....40%
Shepard Hand Fluter No. 95, ₩ doz $3.00.....40%
Combined Fluter and Sad Iron, ₩ doz $15.00.....30%

Hoisting—

Moore's Hand Hoist, with Lock Brake.20%
Moore's Anti-Friction Differential Pulley Block.....20%
Moore's Rope Differential Pulley Block.....60%
Energy Mfg. Co.'s.....25%
See also *Blocks.*

Washing—

Anthony Wayne, ₩ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American.....₩ doz $36.00
Western Star ₩ doz, No. 2, $36; No. 3 $30
Weisell.....₩ doz $54.00
Fair and Square.....₩ doz $42.00

Mallets—

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks—Regular list.

60&10@60&10&5%

Measures

Standard Fibreware, No. 1, peck ₩ dozen, $3.50; ½-peck, $3.00

Meat Cutters—

See *Cutters, Meat.*

Menders, Harness—

Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—

Box and Side, List, Jan. 1, 1888..60@60&5%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%
Waddel's New Box Mills, Ideal Brand, New List.....60%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Best Machines: 10-in., $4; 12-in., $4.50; 14-in., $5; 16 in., $5.50; 18-in., $6.
Low-Grade Machines: 10-in. $3; 12-in., $3.25 14-in., $3.50 each

Muzzles—

Safety.....₩ doz, $3.00, 25%

Nails.—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92.....85&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
American	9¼	9¼	9¼	9¼	9¼	....net
Ausable	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	.30&5%
Essex	28¢	2¢	25¢	24¢	23¢	40&10&50%
Lyra	9¼	½	9¼	9¼		.....net
Snowden	9½	½	9½	9½	9½	.....net
Standard	23¢	21¢	20¢	19¢	18¢	.....35%
Vulcan	23¢	21¢	20¢	19¢	18¢	.....25%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
C. B. K	25¢	23¢	22¢	21¢	21¢	40%
A. C	25¢	23¢	22¢	21¢	21¢	40&10%
Maud S	25¢	23¢	22¢	21¢	21¢	50&10&5%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&2%
Champion	25¢	23¢	22¢	21¢	20¢	10&10&10%
Capewell	19¢	18¢	17¢	16¢	16¢	...10&5%
Anchor	23¢	21¢	20¢	19¢	18¢	.....35%
Western	23¢	21¢	20¢	19¢	18¢	.....50%
Empire Bronzed						.....13@14 ₩ ℔

Picture—

Brass Head, Sargent's list.....60@60&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list.40&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.	
Hot Pressed	5.80¢	6.50¢	off list
Cold Punched	5.00¢	5.10¢	off list

In packages of 100 ℔, add 1-10¢ ₩ ℔, net; in packages less than 100 ℔, add ½¢ ₩ ℔, net.

Oakum—

Best or Government.....₩ ℔ 6¾@7¼¢
U. S. Navy.....₩ ℔ 5¾@6¢
Navy.....₩ ℔ 5¢@5¼¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Steel, Draper & Williams.....50%
Wilmot & Hobbs Mfg. Co., Steel Anti-Rust.....60%

Openers, Can—

Messenger's Comet.....₩ doz $3.00, 25%
American.....₩ gross $2.75@$3.00
Duplex.....₩ doz 25¢, 15@20%
Lyman's.....₩ doz $3.75, 20%
No. 4, French.....₩ doz $2.25, 55@60%
No. 5, Iron Handle.....₩ gr $6.00, 45@50%
Eureka.....₩ doz $2.50, 10%
Sardine Scissors.....₩ doz $2.75@3.00
Star.....₩ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 66⅔@70%
Excelsior, No. 1 $2.50; No. 2, $1.50.....40%
World's Best ₩ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₩ doz $3.00.....55&5%
Domestic, ₩ doz $2.00.....45%
Champion, ₩ doz $2.00.....50%
Moore's.....70%

Packing, Steam—

Rubber—

Standard, fair quality.....70@70&10%
Inferior quality.....75@80%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₩ ℔ 80¢.....25@25&5%

Miscellaneous—

American Packing.....10¢ 11¢ ₩ ℔
Russia Packing.....14¢ ₩ ℔
Italian Packing.....13¢@14¢ ₩ ℔
Cotton Packing.....15¢@17¢ ₩ ℔
Jute.....7¢@8¢ ₩ ℔

Palls—

Creamery—

S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 ₩ doz.....5%

Galvanized—

	Quarts	10	12	14	
Hill's Light Weight, ₩ doz.		$2.75	3.00	3.25	
Hill's Heavy Weight, ₩ dz.		3.00	3.25	3.75	
Sidney Shepard & Co.		2.50	2.75	3.00	
Central Stamping Co.		2.50	2.75	3.00	
Iron Clad		2.50	2.75	3.00	
Fire Buckets		2.75	3.25	3.50	

Buckets—See Well Buckets.

Indurated Fiber Ware

Star Pails, 12 qt.....₩ doz $4.20
Milk, 14 qt.....₩ doz $5.40
Stable, 14 qt.....₩ doz $6.00 } 25%
Fire Pails, deep.....₩ doz $4.80
Fire Pails, round bottom.₩ doz $5.40

Standard Fiber Ware—

	Plain.	Deor'd
Water Pails, 12 qt., ₩ doz.	$3.15	$3.75
Dairy Pails, 14 qt., ₩ doz.	3.75	4.25
Fire Pails, No. 1, 12 qt., ₩ doz	3.75	
Fire Pails, No. 2, 14 qt., ₩ doz	4.25	
Sugar Pails	5.50	6.00
Horse Pails	4.50	
Buggy Pails	3.50	
Slop Jars (bal. trap)	7.50	8.50
Chamber Pails, 14 qt	6.00	7.00

Pans—

Dripping—

Small sizes.....₩ ℔ 5½¢
Large sizes.....₩ ℔ 5¢
Silver & Co. (Covered).....40%

Fry—

Standard List:

No.	0	1	2	3	4
₩ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
₩ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....66⅔%

Dust—

Steel Edge, No. 1.....₩ doz $1.75

Roasting and Baking—

Columbian, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each.....60&10%

Paper and Cloth—

Sand and Emery—

List April 19, 1886.....50&10@50&10&10%
Sibley's Emery and Crocus Cloth.....30%

Parers—

Apple—

Advance.....₩ doz $4.75
Baldwin.....₩ doz 5.25
Bonanza.....each 5.00
Daisy.....₩ doz 4.00
Dandy.....each 7.50
Eclipse.....₩ doz 4.00
Eureka, 1888.....each 16.00
Family Bay State.....₩ doz 12.00
Favorite.....₩ doz 5.00
Gold Medal.....₩ doz 4.00
Ideal.....₩ doz 4.00
Improved Bay State....₩ doz 27.00@30.00
Little Star.....₩ doz 4.50
Monarch.....₩ doz 13.50
New Lightning.....₩ doz 5.50
Oriole.....₩ doz 4.00
Penn.....₩ doz 3.00
Perfection.....₩ doz 4.00
Pomona.....₩ doz 4.00
Rocking Table.....₩ doz 6.00
Turn Table.....₩ doz 4.50
Victor.....₩ doz 13.50
Waverly.....₩ doz 4.00
White Mountain.....₩ doz 4.00
Reading 72.....₩ doz 4.25
Reading 78.....₩ doz 7.00

Potato—

White Mountain.....₩ doz $4.50
Antrim Combination.....₩ doz $5.50
Hoosier.....₩ doz $13.50
Saratoga.....₩ doz $5.50

Pencils, Soapstone—

See *Crayons.*

Pickers, Fruit—

Prize Fruit Pickers.....50%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10&5@60&10&10&5%

Picture Nails—

See *Nails, Picture.*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co.'s, $17 and $18.....60&10%
Peck, Stow & W. Co.....50&10@50&10&5%

Escutcheon—

Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List April 13, 1893.

1¼ and under, Plain.....57½&10%
1¼ and under, Galv.....50&10%
1½ and over, Plain.....67½&10%
1½ and over, Galv.....57½&10%
Boiler Tubes, list Oct. 24, 1892.....65&10%
Casing, list Nov. 16, 1892.....52½&10%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%
Cold Drawn Seamless Steel Tubing..50%

Planes and Plane Irons—

Wood Planes—

Molding.....40&10%
Bench, First quality.....45&10%
Bench, Second quality.....50&10%
Bailey's (Stanley R. & L. Co.).....50&10%

Iron Planes

Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steers' Iron Planes.....50@50&5%
Meriden Mal. Iron Co.'s.....50@50&5%
Davis' Iron Planes.....50@50&5%
Bimningham Plane Co.....60@60&5%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....50@50&5%
Sargent's.....60@60&10%
Standard Tool Co.....50@50&5%

Plane Irons—

Butcher's.....$5.00@$5.25 to ;
Buck Bros.....80

Auburn Thistle.....
Ohio.....
Sandusky.....
} .30&10@30&10&10%
L. & I. J. White.....25%
Stanley R. & L. Co.....50&10%

Plates—

Felloe.....₩ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent.....60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in, $21.00 ₩ doz.....40%
Humason & Beckley Mfg. Co. 50@50&10%
Lindsay's Giant.....33⅓%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated. 60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P., S. & W. Cast Steel.....50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₩ doz, $12.00...30&5%
Cronk's 3 in., $15.00; 10 in.....$20
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels

Regular List.....75&10@75&10&10%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Cook's.....40&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis Inclinometers.....10&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₩ doz. No. 1, $6.00; No. 2, $9.00.....33⅓%
Silver & Co., 6-Ring, ₩ doz, $4.00; 3-Ring.....$2.00

Pokes, Animal—

Bishop s I. X. L.....₩ doz $6.00
Bishop's Monarch.....₩ doz $4.50
Bishop's Pioneer.....₩ doz $4.00
Bishop's American.....₩ doz $3.00
Eagle, Double Stale.....₩ doz $5.75
Eagle, Single Stale.....₩ doz $3.75
Buckeye, Single Stale.....₩ doz $2.75
Bolding.....₩ doz $6.00
Metallic Horse Poke.....₩ doz $6.00

Police Goods—

R. I. Tool Co., Handcuffs, $15.00 ₩ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₩ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₩ doz, $48.00; Nickeled, $57.00; 3 hands, Polished, ₩ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish—

Metal—

Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Stove—

Joseph Dixon's.....₩ gro, $6.00, 10%
Gem.....₩ gro, $4.50, 10%
Gold Medal.....₩ gro. $6.00, 25%
Lustro.....₩ gro, $4.75
Ruby.....₩ gro, $3.75
Rising Sun, 5 gro lots.....₩ gro, $5.50
Dixon's Plumbago.....₩ ℔ 8¢
Boynton's Noon Day.....₩ gro, $13.00
Parlor Pride Stove Enamel, ₩ gro.
Yates' Liquid, 2 3 5 10 gal ₩ gal...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ₩ ℔ 12½¢
Jet Black.....₩ gro $3.50
Japanese.....₩ gro $3.50
Fireside.....₩ gro $2.50
Diamond O. K. Enamel.....₩ gro $10.00
Bonnell's Liquid Stove Polish ₩ gro $9.00
Bonnell's Paste Stove Polish ₩ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₩ gro $6.00
Crown Paste.....₩ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ₩ ℔ 12¢
Black Flag.....₩ gro $7.20
Black Flag, 5 and 10 ℔ pails. ₩ ℔ 12¢
Black Flag, liquid, in bottles, ₩ gro $8.00
Diamond Rock Nickel Cleaner, ₩ gro $10 20
Raven Liquid, 6 oz. bottles..₩ gro $8.00
Raven Liquid, 8 oz. bottles..₩ gro $9.00
Raven Water Polish, large boxes.....₩ gro $7.20
Raven Paste in 5 lb. pails (cases of 6 pails), ₩ ℔ 10¢

Poppers, Corn—

Round or Square,
1 qt.....₩ doz $1.00; ₩ gr $8.00
1½ qt.....₩ doz $1.00 ₩ gr $9 00
2 qt.....₩ doz $1.50 ₩ gr $14.00

Post Hole and Tree Augers and Diggers—

See *Diggers, Post Hole, &c*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Powder—

In Canisters—

Fine Sporting, 1 ℔ each.....$0.90
Duck, 1 ℔ each......60
Rifle, 1 ℔ each......3
Rifle, ½ ℔ each......18

In Kegs—

Rifle, 25-℔ kegs.....$3.50
Rifle, 12½-℔ kegs.....2.00
Rifle, 6¼-℔ kegs.....1.15
Duck, 25-℔ kegs.....11.00
Duck, 12½-℔ kegs.....5.75
Duck, 6¼ ℔ kegs.....3.00

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....25%
Lenis.....₩ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....₩ doz $2.75

Pruning Hooks and Shears—See *Shears.*

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Pullers Nail—
Scranton ..... ₩ doz., $18.00, 33⅓%
Giant, No. 1 ..... ₩ doz., $18.00, 10%
Giant, No. 2 ..... ₩ doz., $15.00, 10%
Pelican ..... ₩ doz., $9.00, 25%
Eclipse ..... ₩ doz., $24.00, 40%
Economy ..... ₩ doz., $6.00

Pulleys—
Hot House, Awning, &c. ..... 60⅓@70%
Japanned Screw ..... 60&10&10%
Brass Screw 70%
Japanned Side ..... 60&10&10%
Moore's Side, Anti Friction 50%
Moore's Ceiling or End, Anti-Friction 40%
Moore's Dumb Waiter, Anti-Friction 50%
Moore's Electric Light 33⅓%
Japanned Clothes Line ..... 60&10%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 60&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5 70 ..... 50%
Hay Fork, "F" Common and Patent Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating 60%
Hay Fork, Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00 ..... 40%
Shade Rack 45%
Tackle Blocks—See Blocks.
Shepard's Niagara, No. 25.. ₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense 60%
Empire 60%
Ideal, Nos. 2, 4, 10 & 15 } 30% less 1¢ ₩ Acme } doz net.
Star }
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. .. ₩ doz. 22¢ net.

Pumps—
Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers ..... 67½@70%
Pitcher Spout, Cheaper G'ds .. 75@75&10%

Punches—
Saddler's or Drive, good.. ₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive. 50&5%
Bemis & Call Co.'s Springfield Socket..65%
Spring, good quality .. ₩ doz., $2.50@$2.60
Spring, Leach's Pat 15%
Bemis & Call Co.'s Spring ..... 50&5%
Bemis & Call Co.'s Check 55%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44 ..... 55%
Tinners' Hollow Punches, P., S. & W. Co ..... 20&2%
Rice Hand Punches 15%
Avery's Revolving 40%
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches ..... 20&2%
Niagara Solid Punches 55%

Rail—
Sliding Door, Wr't Brass.... ₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron.. ₩ ft., 7¢
Sliding Door, Iron, Painted.. ₩ ft., 4¢, 40%
Barn Door, Light. In. ½ ⅝ ¾
Per 100 feet..... $2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet..... $3.15 2.70 3.25 Net
Terry's Steel Rail ..... ₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot ..... 50&2%
Carrier, double braced, Steel Rail, ₩ foot ..... 3½@4¢
Lundy Parlor Door, Planed Edge, ₩ ft. 7¢
Moore's Steel Rail ..... 25&10%
Moody Steel Rail ₩ ft., 5¢ 45%

Rakes—
Cast Steel, Association g'ds.. 70@70&5&2%
Cast Steel, outside g'ds, ... 70@70&5&2%
Malleable ..... 70@70&5%
Gibbs' Lawn Rake ..... ₩ doz., $4.90
Gibbs' Canton Lawn Rake.. ₩ doz., $3.75
Gibbs' Acme Lawn Rake.... ₩ doz., $4.75
Gibbs' Favorite Lawn Rake. ₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1. ₩ doz., $4.90; No. 2, $3.40
Oneida Lawn Rake ..... ₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razors—
J. R. Torrey Razor Co. 20%
Wostenholm and Butcher, $10 to $2.... 10%
Jordan's AAA1, new list ..... Net
Jordan's Old Faithful, new list ..... Net
Galvanic ..... ₩ doz., $15.00
Electric Cutlery Co. ..... Net
Campbell Cutlery Co. 50%

Razor Strops—
See *Strops, Razor.*

Registers —
Moore's Japanned 75%
Moore's Electroplated 75%
Moore's Bronze Finishes 70%
Moore's Solid Bronze 65%
Moore's Stove Pipe 33⅓

Rings and Ringers—
Bull Rings—
Union Nut Co 55%
Sargent's ..... 75&10%
Hotchkiss' low list 30%
Humason, Beckley & Co.'s ..... 70&10%
Peck, Stow & W. Co.'s.. 50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers ..... ₩ doz $2.00
Top of the Hill Rings ..... ₩ doz $1.25
Hill's Improved Ringers ..... ₩ doz $1.25
Hill's Old Style Ringers ..... ₩ doz $1.12½
Hill's Rings ..... ₩ doz $3.00
Hill's Rings ..... ₩ doz bxs $1.00
Perfect Rings ..... ₩ doz bxs $1.50
Perfect Ringers ..... ₩ doz $2.15@$2.25
Blair's Hog Ringers ..... ₩ doz $2.00
Blair's Hog Rings ..... ₩ doz 90¢@$1.00
Champion Ringers ..... ₩ doz $2.00
Champion Rings, Double ..... ₩ doz $2.25
Brown's Ringers ..... ₩ doz $2.00
Brown's Rings ..... ₩ doz $1.15@$1.25
Electric Hog Rings ..... ₩ doz boxes $1.50
Electric Hog Ringers ..... ₩ doz $2.00
Major Rings ..... ₩ doz $1.25
Major Ringers ..... ₩ doz $2.00

Rivets and Burrs—
Norway Iron, list Nov. 17, '87.... 60&10%
Second quality 70%
Copper ..... 60@60&10%
Coppered Iron, Betina Brand.. .. 50&5%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—
Stair, Brass ..... 25@30%
Stair, Black Walnut ..... ₩ doz 40¢

Rollers—
Barn Door, Sargent's list. .... 60&10&10%
Acme Moore's Anti-Friction 55%
Union Barn Door Roller.... ..... 70%
Moore's Barn Door Stay 50%
Thompson Mfg. Co.'s Lawn Rollers .. 30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ¼@½¢ on large lots; terms, 1½% for cash.
Manila, 7-16 in. diam. and larger ₩ ℔ 8½¢
Manila ..... ⅜ in. ₩ ℔ 9 ¢
Manila ..... ¼ and 5-16 in. ₩ ℔ 9½¢
Manila, Tarred Rope ..... ₩ ℔ 8 ¢
Manila, Hay Rope, Medium .... ₩ ℔ 8½¢
Sisal ..... 7-16 inch and larger ₩ ℔ 6½¢
Sisal ..... ⅜ in. ₩ ℔ 7½¢
Sisal ..... ¼ and 5-16 in. ₩ ℔ 7½¢
Sisal, Hay Rope ..... ₩ ℔ 6½¢
Sisal, Tarred Rope ..... ₩ ℔ 6½¢
Sisal, Medium Lath Yarn ..... ₩ ℔ 6½¢
New Zealand..7-16 in. & larger ₩ ℔ 6½¢
New Zealand ..... ⅜ inch, ₩ ℔ 6¾¢
New Zealand..¼ and 5-16 inch, ₩ ℔ 7½¢
New Zealand, Hay Rope ..... ₩ ℔ 6½¢
New Zealand, Tarred Rope ..... ₩ ℔ 6 ¢
Cotton Rope ..... ₩ ℔ 18½@16¢
Jute Rope ..... ₩ ℔ 6½@7¢

Wire—
List February, 1892. All kinds 45%

Rules—
Boxwood ..... 80&10&10@80&10&10&10%
Ivory ..... 50&10%
Starrett's Steel Rules and Straight Edges ..... 25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—
See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*
Note.—Extra 5@10% often given.

Saws—
Disston's Circular ..... 45@45&5%
Disston's Cross Cut, list Jan. 1, '93. 40&10%
Disston's Hand 25%
Woodrough & McParlin.
Hand, Panel and Rip ..... 25&10%
Cross Cuts, list Jan. 1, 1893 ..... 45&10%
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip ..... 30&10%
Cross Cuts, list Jan. 1, 1893 ..... 45&10%
Atkins' Circular ..... 50&10%
Atkins' Cross Cuts, new list 40%
Atkins' Mulay, Mill and Drag ..... 50&10%
Atkins' One-Man Saw 40%
Atkins' Wood Saws 40%
Peace Circular and Mill ..... 45@45&5%
Peace Hand Panel and Rip ..... 25@25&5%
Peace Cross Cuts, list Jan. 1, '93.. 45&10%
Richardson's Circular and Mill. 45@45&5%
Richardson's X Cuts, list Jan. 1, '93. 45&10%
Richardson's Hand, &c ..... 25@25&5%
C E. Jennings & Co.'s 25%

Hack Saws—
Griffin's, complete ..... 40&10@50
Griffin's Hack Saw Blades ..... 40&10@50
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—
Lester, complete, $10.00 ..... 25%
Rogers, complete, $4.00 ..... 25%
Barnes' Builders' and Cab Makers' $15, 25%
Barnes' Scroll Saw Blades 35%

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—
Hatch, Counter, No. 171, good quality, ₩ doz $18.00@$19.00
Hatch, Tea, No. 161.... ₩ doz $6.50@$7.00
Union Platform, Plain ..... $2.10@2.20
Union Platform, Striped ..... $2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls ..... 30@30&10
Riehle Bros.' Platform 40%

Scale Beams—
See *Beams, Scale.*

Scissors, Fluting 45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.00 ..... 30&10%
Box, 1 Handle ..... ₩ doz $2.00
Box, 2 Handle ..... ₩ doz $3.00@$4 00
Defiance Box and Ship ..... 20&10%
Foot ..... 50&10@60%
Ship, Common ..... ₩ doz $3.50
Ship, R. I. Tool Co. 10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—
See *Drivers, Screw.*

Screws—
Bench and Hand—
Bench, Iron ..... 55&10@55&10&10%
Bench, Wood, Beech ..... ₩ doz $2.25
Bench, Wood, Hickory ..... 20&10%
Hand, Wood ..... 25&10@25&10&5%
Hand, Grand Rapids, list 35%

Coach, Lag and Hand-Rail—
Lag, Blunt Point, list Jan. 1, 1890 ..... 80@80&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 ..... 80@80&5%
Hand Rail, Sargent's ..... 70&10%
Hand Rail, H. & B. Mfg. Co. ..... 70&10@75%
Hand Rail, Am. Screw Co. 75%

Jack Screws—
Jack Screws, Millers Falls list. 50@50&10%
Jack Screws, P., S. & W. 35%
Jack Screws, Sargent 70%
Jack Screws, Stearns' ..... 40@40&10%

Cork—
Humason & Beckley Mfg. Co. .40&10@50%
Williamson's ..... 33⅓@33⅓&5%
Williamson's Forged Worm, Applewood Handle, ₩ doz., $5.00; Rosewood, $5.50 ..... 40%
Detroit Cork Screw Co. 33⅓%

Machine—
Flat Head Iron 65%
Round Head Iron 60%

Wood—
List January 1, 1891.
Flat Head Iron ..... 70% } Extra 10& 10% often given.
Round Head Iron 65%
Flat Head Brass 70%
Round Head Brass 65%
Flat Head Bronze 70%
Round Head, Bronze 65%
Rogers' Drive Screws 82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—
Grain ..... 40&5@40&10%
Grass ..... 40&10&50%

Scythe Snaths—
See *Snaths, Scythe.*

Sets—
Awl and Tool—
Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00 ..... 60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9 ..... 45%
Millers Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18 ..... 25%
Henry's Combination Haft... ₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 ..... 30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50.. 70&10&5%

Nail—
Square ..... ₩ gr. $4.00@$4.25
Round ..... ₩ gr. $3.25
Buck Bros. 27½%
Cannon's Diamond Point... ₩ gr. $12, 20%

Rivet—
Regular list 70%

Saw—
Stillman's Genuine.... ₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $6.50 ..... 55@55&10%
Common Lever ..... ₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00 ..... 40&20%
No. 11, $16.00 ..... 40&20%
Nos. 3 and 4, Cross Cut, $23.00.. 40&20%
No. 5, Mill, $31.00 ..... 40&20%
No. 10, $15.50 ..... 40&20%
Leach's.. No. 0, $8.00; No. 1, $15.. 15@20%
Nash's ..... 20&10@20&10&10
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 45%
Bemis & Call Spring Hammer ..... 30&5%
Bemis & Call Co.'s Plate 20%
Bemis & Call Co.'s Cross Cut ..... 30&5%
Aiken's Genuine ..... $13.00, 60@60&10%
Aiken's Imitation ..... ₩ doz $3.00@$3.25
Hart's Pat. Lever 20%
Disston's Star 25%
Leopold ..... 40&10@50%
Atkin's Lever ..... ₩ doz No. 1, $6.00
Atkin's Criterion ..... ₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 ..... 40&10@50%
Avery's Saw Set and Punch 50%
Kohler's Royal ..... ₩ doz $7.00
Kohler's Giant Royal ..... ₩ doz $12.00
Crescent ..... ₩ doz $3.00
Lloyd's Acme ..... ₩ doz $15, 40&10%
Taintor Positive ..... ₩ doz $18, 50%

Sharpeners, Knife—
Larkins'.
Applewood Handles... ₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%

Shaves, Spoke—
Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) ..... 40&10%
Stearns' ..... 30&10%
Cincinnati ..... 25&10%
Goodell's ₩ doz. $9.00 ..... 25%

Shears—
American (Cast) Iron.. 75&10@75&10&5%
Barnard's Lamp Trimmers.. ₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears 33⅓%
Cast Steel Trimmers:
First quality ..... 80@80&10%
Second quality ..... 80&10@80&10&10%
Acme Cast Shears ..... 10&10%
Diamond Cast Shears 10%
Clipper ..... 10&10%
Victor Cast Shears ..... 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Hatch Cutlery Co., Solid Steel Forged. 60%
Davenport Cutlery Co. ..... 60@60&10%
Clauss brand, Japanned 70%
Clauss brand, Nickeled, same list 60%
Galvanic 3½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co ..... Net
Campbell Cutlery Co., Jap'd 75%
Nickel Plated 65%

Tinners' Snips—
Wrt. Handles, Steel Blades. ..20@20&10%
Niagara Snips and Shears. ...20&10%
Cast Handles, Laid with Steel 40%

Pruning Shears and Hook
Disston's Combined Pruning Hook and Saw ..... ₩ doz. $18.00, 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 20&10%
E.S.Lee & Co.'s Pruning Tools. 50&10@70%
Pruning Shears, Henry's Pat. ₩ doz. $3.75@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₩ doz $12.00
Dunlap's Saw and Chisel, ₩ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co. 60%
Levin Pruner No. 1, $15.00 ₩ doz 40&3%
Levin Pruner No. 2, $21.00 ₩ doz.. 40&3%

Tinners', &c.—
Shears and Snips (P. S. & W.) ..... 20@25%
Snips, J. Mallinson & Co. 33⅓%

Sheaves—
Sliding Door—
M. W. Co., list July, 1888. ...50&10@60&5%
R. & E., list Dec. 18, 1885 ..... 55&20%
Corbin's list ..... 60&10&2%
Patent Roller ..... 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 ..... 60&2%
Moore's Anti-Friction 50%

Sliding Shutter—
R. & E., list Dec. 18, 1885 ..... 60&10&2%
Sargent's list 70%
Reading list ..... 60&10&10%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list) ..... 20&10&2%
Prize ..... 40&2%
Star, Club, Rival and Climax Brands.. 33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge.. 33⅓&10&2%
Selbold's Comb. Shot Shells ..... 15&2%
Brass Shot Shells, 1st quality ..... 60&2%
Brass Shot Shells, Club, Rival, Climax 65&2%

Shells, Loaded—
Standard List, July 19, 1890 ..... 40&10&10@40&10&10&5% 7% cash, 10 days.

Ship Tools—
L. & I. J. White ..... 20&5%

Shoes, Horse, Mule, &c.
Horse—
Burden's, Perkins', Phœnix, Standard, Diamond State, Bryden's Boss and Crescent, at factory $4.00
Bryden's Frog Pressure, at factory .$5.00

Mule—
Add $1 ₩ keg to above prices.

Ox Wrought—
Ton lots ..... ₩ ℔ 9¢
1000 ℔ lots ..... ₩ ℔ 9½¢
500 ℔ lots ..... ₩ ℔ 10¢

Shot—
Small lots.
Drop, up to B, 25-℔ bag.... $1.45
Drop, up to B, 5-℔ bag..... .35
Drop, B and larger, 25-℔ bag 1.70
Drop, B and larger, 5-℔ bag ..... .40
Buck and Chilled, 25-℔ bag 1.70
Buck and Chilled, 5-℔ bag .40
Dust Shot, 25-℔ bag 2.00
Dust Shot 5-℔ bag ..... .45
In ton lots a discount of 5¢ ₩ bag (25 ℔) is made, and 2½¢ for cash.

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885 ..... 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron ..... 50&10%
Griffith's C. S. ..... 60@60&5%
Griffith's Solid C. S. R. R. Goods. 20%
St. Louis Shovel Co. ..... 20@20&7½%
Hussey, Binns & Co. ..... 15@25%
Hubbard & Co. ..... 20@20&7½%
Lehigh Mfg. Co. ..... 50&10%
H. M. Myers Co. 30%
Payne Pettebone & Son ..... 33⅓ &5%
Remington's (Lowman's Pat.) 40&10@50%
Rowland's Black Iron.. 50&10@50&10&5%
Rowland's Steel ..... 60&5@60&10%
Terra Haute Shovel & 25%

Shovels and Tongs—
Iron Head ..... 60&10@60&10&5%
Brass Head ..... 60&10&10%

Sieves and Sifters—
Mann's Tin Rim ..... 50&25%
Buffalo Metallic, S. S. & Co. 50&25&2%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $21 00
Electric Light.. ₩ doz $1.50; ₩ gro $15 00
A. & W. Sifters ..... ₩ gr $15.00
Hunter's Genuine. ₩ doz $1 75, ₩ gr $16.50
Hunter's Imitation ..... ₩ doz $1.75; ₩ gr $15.00

Sieves, Wooden Rim—
	Iron	Plated
Mesh 18, Nested, ₩ doz.	$0.80	$1.00
Mesh 20, Nested, ₩ doz.	.95	1.10
Mesh 24, Nested, ₩ doz.	1.15	1.25

Sinks, Wrought Steel—
Columbus, Painted or Unpainted. 30@30&10%
Columbus, Galvanized and Enameled. 50@50&10%
New Era, Painted ..... 40&10@50&5%
New Era Galvanized and Enameled.. 60&10&10@70&5%

Skeins, Thimble—
Western list ..... 7@5&5@75&10%
Columbus Wrt. Steel.. Special net prices
Coldbrookdale Iron Co. 60%
Seneca Falls Pattern 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

Slates—
School, by case.... .....40@40&10%
Large lots ..... 40&10&5@50%

Slaw Cutters—See *Cutters.*

Sleds Hand—
Tubular Steel ..... ₩ doz. $24&50%.00, 40 (Lots of 6 doz. 50%)

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Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.)....65%
Fitch's Bristol)....50&10%
Hotchkiss....10%
Andrews....50%
Sargent's Patent Guarded....70&10&10%
German, new list....40&10%
Covert....50&10&5&2%
Covert, New Patent....50&10&5&2%
Covert, New R. E....60&10&5&2%
Covered Spring....60&10&10%
Covert's Saddlery Works' Triumph.33⅓&5
John Trotz Snaps....75&75&5%
Kelley & Woolworth's Steel Harness...50&10@60%

Snaths—

Scythe....50&2@50&5&2%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₱ doz., No. 5, $8; No. 5X, $9
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—

See Shaves, Spoke

Spoke Trimmers—

See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid table and Tea, Cen. Stamp. Co.'s list....70&10%
Buffalo, S. S. & Co....33⅓&2%

Silver Plated—

4 months or 5% cash 30 days:
Meriden Brit. Co., Rogers....40&15%
C. Rogers & Bros....40&15%
Rogers & Bros....40&15%
Reed & Barton....40@40&5%
Wm. Rogers Mfg. Co....40, 15&5%
Simpson, Hall, Miller & Co....40, 15&5%
Holmes & Edwards Silver Co....40, 15&5%
L. Boardman & Son....50&12½%

Miscellaneous—

Holmes & Edwards Silver Co.:
No 07 Mexican Silver....50&10&5%
No 30 Silver Metal....50&10&5%
No 24 German Silver....50&10&5%
No 50 Nickel Silver....50&5%
No 40 Nickel Silver....50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal....50&10&5%
18% Rogers' German Silver....60&5%
22% Rogers' Nickel Silver....50&5%
German Silver....50@50&5%
German Silver, Hall & Elton..50&5% cash
Nickel Silver....50&5@50&10&5% cash
Brittannia....60@60&5%
Boardman's Nickel Silver, list July 1, 1891....60&7½&5%
Boardman's Brittannia Spoons, case lots....60&5% cash

Springs—

Door—

Torrey's Rod, 39 in....₱ doz $1.20@1.2
Warner's No. 1, ₱ doz $1.50; No. 2, $3.40....55@55&10%
Gem (Coil), list April 19, 1886....20%
Star (Coil), list April 19, 1886....20&10%
Victor (Coil)....60&10@60&10&5%
Champion (Coil)....60&10@60&10&10%
Cowell's, No. 1, ₱ doz $18.00; No. 2, $15.00....50@50&10%
Rubber, complete, ₱ doz $4.50....55&10%
Hercules....50@50&10%
Phœnix....33⅓&

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll....60&10@60&10&10 or net prices
Cliff's Bolster Springs....25%

Squares—

Steel and Iron....
Nickel-Plated....} ..80&10&10@80&25%
Try Square and T Bevels....60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares....25%
Avery's Flush Bevel Squares....40%
Avery's Bevel Protractor....50%

Squeezers—

Fodder—

Blair's....₱ doz $2.00
Blair's "Climax"....₱ doz $1.25

Lemon—

Porcelain Lined, No. 1....₱ doz $6.00....25&30%
Wood, No. 2....₱ doz $3.00, 35%
Wood, Common....₱ doz $1.70@1.75
Duniap's Improved....₱ doz $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz....25&10%
Jennings' Shear....₱ doz $2.50
The Boss....₱ doz $2.50
Dean's....No. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant....50@50&5%
King....40&5%
Hotchkiss Straight Flash...₱ doz $12.00
Silver & Co. Glass....₱ gro. $9.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Barbed Blind, ¼ in. and larger. ₱ ℔ 7@7½¢
Barbed Blind, ¼ in....₱ ℔ 8@8½¢
Fence Staples, Galvanized. } Same price
Fence Staples, Plain. } as B'rb Wire
Grand Crossing Tack Co.'s list....75&10%

Steelyards....40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods....35%
Butterfield's Goods....35%
Lightning Screw Plate....25@30%
Reece's New Screw Plates....25@30%
Reversible Ratchet....30%
Gardner....25%
Green River....25@30%

Stops, Bench—

Morrill's, ₱ doz, No. 1, $10.00; No. 2, $11.00....40&20%
Hotchkiss'....₱ doz, $5, 10@10&10%
Weston's. No. 1, $10, No. 2, $9, 25&10&5%
McGill's, ₱ doz $3....10%
Cincinnati....25&10%
Terrell's Nos. 1 and 2, ₱ doz., $3; No. 3, $3.60....30%
Millers Falls....25%
Stearns'....20&10%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892....33⅓%
Cleveland Stone Co., list Nov. 1892..33⅓%

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₱ ℔....8¢
Sand Stone....5¢
Turkey Oil Stone, 4 to 8 in....80¢ } 40 @ 40&10%
Turkey Slips....$2.00
Lily White Washita....60¢
Rosy Red Washita....60¢
Washita Stone, Extra....50¢
Washita Stone, No. 1....40¢
Washita Stone, No. 2....30¢
Lily White Slips....90¢
Rosy Red Slips....90¢
Washita Slips, Extra....80¢
Washita Slips, No. 1....70¢ } 33⅓@33⅓&10%
Arkansas Stone, No. 1, 3 to 5½ in., $2.80
Arkansas Stone, No. 1 5½ to 8 in., $3.50
Lake Superior....₱ ℔ 13¢
Lake Superior Slips....₱ ℔ 20¢

Stove Polish—

See *Polish, Stove.*

Stretchers Carpet—

Cast Steel, Polished....₱ doz $2.2
Cast Iron, Steel Points....₱ doz 75@80¢
Socket....₱ doz $1.75
Bullard's....25@25&10%

Strops, Razor—

Genuine Emerson....60@60&5%
Imitation "...₱ doz $2.00, 20&10&5%
Torrey's....20%
Badger's Belt and Com....₱ doz $2.00
Lamont Combination....₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50%
Electric Cutlery Co....Net
Campbell Cutlery Co....Net

Stuffer, Sausage—

Miles' Challenge, ₱ doz $20....50@50&5%
Perry....₱ doz, No. 1, $15.00; No. 0, $21.00....50&5@50&10%
Draw Cut No. 4, each $30.00....20%
Enterprise Mfg. Co., list Jan 17, '93..25%
Silver's....40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5....₱ doz $17.00
Bissell No. 8....₱ doz $20.00
Bissell, Grand....₱ doz $36.00
Standard....₱ doz $24.00
Domestic....₱ doz $21.00
Domestic, No. 2....₱ doz $22.00
Grand Rapids....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic....₱ doz $15.00
Improved Parlor Queen,
Nickeled....₱ doz $27.00
Japanned....₱ doz $24.00
Excelsior....₱ doz $22.00
Garland....₱ doz $18.00
Parlor Queen....₱ doz $24.00
Housewife's Delight....₱ doz $15.00
Ladies' Friend....₱ doz $15.00
Ladies' Friend No. 2....₱ doz $16.00
Advance....₱ doz $18.00
Our Leader....₱ doz $19.00
Triumph....₱ doz $20.00
Supreme....₱ doz $22.00
Easy, Jap'd, ₱ doz $22.00; Nickel, $24.00
Gilt Edge....₱ doz $24.00
Acme....₱ doz $26.00
Imperial....₱ doz $26.00
Grand Republic....
Jap'd, ₱ doz $30.00; Nickel, $33.00
Banner....
Jap'd, ₱ doz, $22.00; Nickel, $24.00
The Star....₱ doz $21.00
Reliable....₱ doz $22.00
Rapid, Jap'd, ₱ doz, $22.00; Nickel, $24.00
Our Own....₱ doz $27.00
Model....₱ doz $27.00

Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months....₱ doz $1.00
10 dozen in 6 months....₱ doz $2.00
Except on L.F., when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co....30%

Swings—

Davies Lawn....25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued....66⅔%
American, Tin'd and Cop'd....70%
Steel, Bright and Blued....66⅔%
Steel, Tinned and Coppered....70%
Swedes Iron, Blued....72½%
Swedes Iron, Tinned....75%
American Iron Tacks, Domestic.66⅔%
Swedes Iron Tacks—
S. S., Blued....66⅔%
S. S., Tinned....70%
Lanc., Blued....55%
Lanc., Tinned....60%
Gimp and Lace Tacks—
S. S., Blued....62½%
S. S., Tinned....66⅔%
Lanc., Blued....55%
Lanc., Tinned....60%
Basket and Trimmers' Tacks—
Lanc....52½%
S. S....55%
Hungarian Nails....60%
Common and Patent Brads....55%
Leathered Tacks....10%
Brush Tacks, S. S....60%
Looking Glass Tacks, S. S....35%
Picture Frame Points, S. S....35%
Finishing Nails....60%
Trunk and Clout Nails—
Blued....65%
Tinned or Coppered....67½%
Basket Nails....60%
Chair Nails....52½%
Cigar Box Nails....45%
Tin Capped Nails....50%

Extra discount 25&2%

Miscellaneous—

Double Point....90&10@90&10&10%
Wire Carpet Nails....50&10%
Claw Handle Carpet....₱ gross $4.00
Bonnie Blue....₱ box $1.50
Bill Nye Brad Box....4 00
Parisian Gilt Nails, cartoon....50
Home Tacks, No. 50 ₱ case (12 cartons), $36.00; No. 100, ₱ case (12 cartons), $72.00.... } 60&2%
Home Nails, No. 200, ₱ case (12 cartons), $30.00; No. 400, ₱ case (12 cartons), $60 00.....
Upholsterers' Nails....50&10%

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list....50&10%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each....50&10&5%

Tapes, Measuring—

American....40@40&10%
Spring....40%
Chesterman's, Regular list....25@30%

Thermometers—

Tin Case....80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list....50&10&5%

Tinners' Shears, &c.—

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's....20%
Barton's....20@20&5%
L. & I. J. White....20&5%
Albertson Mfg. Co....25%
Beatty's....30%
Sandusky Tool Co....30@30&5%
Shaves Cincinnati Tool Co....20%

Lumber—

Ring Peavies, "Blue Line"..₱ doz $20.00
Ring Peavies, Common....₱ doz $18.00
Steel Socket Peavies....₱ doz $21.00
Mall. Iron Socket Peavies...₱ doz $19.00
Cant Hooks, "blue Line"....₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks....₱ doz $18.00

Saw—

Atkins', new list....40%

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse....40@40&5%
Oneida Pattern....75@75&10%
Game, Blake's Patent....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₱ doz holes, 9@10¢
Mouse, Round Wire....₱ doz $1.50 10%
Mouse, Cage, Wire....₱ doz $2.50 10%
Mouse, Catch-'em-alive..₱ doz $2.50 15%
Mouse, Bonanza....₱ doz 0.90@$1.00
Rat, Decoy....₱ gr $10.00, 10%
Ideal....₱ gr $10.00
Cyclone....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 75¢; in full cases, ₱ doz. 60@65¢
Hotchkiss Imp. Rat Killer...₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer....₱ gro $15.00
Dandy....₱ doz., $1.75
Waddel's Go Bang, ₱ gro....$12.50

Fly—

Harper, Champion or Paragon....₱ doz. $1.75, ₱ gro. $16.50
Balloon, Globe or Acme....₱ doz. $1.50, ₱ gro. $13.50

Triers—

Butter and Cheese....25%

Trimmers, Spoke—

Bonney's....₱ doz $10.00, 50%
Stearns'....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'....₱ doz $9.00, 20%
Cincinnati....25%

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering....15%
Disston's Br'k and Plastering..25@25&10%
Peace's Plastering....25@25&5%
Clemen & Maynard's....20@20&5%
Rose's Brick....15@20%
Brade's Brick....25%
Worrall's Brick and Plastering....20%
Garden....70%
Cleves' Angle Trowel, ₱ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list....40%
Thompson Mfg. Co....40%
Barnes' Barrel Trucks....40%
Daisy Stove Trucks, Improved pattern, ₱ doz. $18.00

Tubes. Boiler—

See Pipe.

Twine—

Flax Twine—

	BC.	B.
No. 9, ¼ and ½ ℔ Balls....	25¢	31¢
No. 12, ¼ and ½ ℔ Balls....	22¢	30¢
No. 18, ¼ and ½ ℔ Balls....	20¢	29¢
No. 24, ¼ and ½ ℔ Balls....	20¢	29¢
No. 36, ¼ and ½ ℔ Balls....	18¢	28¢

No. 264 Mattrass, ¼ and ½ ℔ Balls, 52@54¢
Chalk Line, Cotton, ½ ℔ Balls....25¢
Mason Line, Linen, ½ ℔ Balls....55¢
2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine)....15½¢
3-Ply Hemp, 1 ℔ Balls....16@16½¢
3-Ply Hemp, 1½ ℔ Balls....15@15½¢
Cotton Wrapping, 5 Balls to ℔. 15@16¢
2, 3, 4 and 5 Ply Jute, ½ ℔ Balls....10¢
Wool....6½¢@6¾¢
Paper....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz. 18¢

Vises—

Solid Box....50&10@60%

Parallel—

Fisher & Norris Double Screw....15&10%
Stephens'....25@30%
Parker's....20@25%
Wilson's....55%
Howard's....40%
Bonney's....50%
Millers' Falls....40@40&10%
Trenton....40&5@40&10%
Merrill's....15@20%
Hollands'....35@40%
Sargent's....70&10%
Backus and Union....40%
Double Screw Leg....15&10%
Prentiss....20@25%
Simpson's Adjustable....40%
Moore's....20%
Massey Quick Action....20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00....40&10@50%
Stearn's....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises....33⅓&35%
Hopkins'....₱ doz $17.50, 10%
Reading....40&10%
Wentworth....20&10%
Economy, ₱ doz., Nos. 110, $10.00; 120, $15.00....50&10&10&5%

Miscellaneous—

Phœnix Vises....33⅓%
Phœnix Hand Vises....₱ doz $3.60, 33⅓%
Cowell Hand Vises....20%
Bauer's Pipe Vises....10%
Cincinnati....25&10%
Enterprise Pipe Vises....each $3.00, 40%
Massey Combination Pipe Vise....40%

Wads—Price Per M.

U.M.C.&W.R.A.—B. E., 11 up..	68¢	Dis 20&2%
U.M.C.&W.R.A.—B. E., 9&10..	82¢	
U.M.C.&W.R.A.—P. E., 8.....	96¢	
U.M.C.&W.R.A.—B. E., 7.....	$1.10	
U.M.C.&W.R.A.—P. E., 11 up.	1.15	
U.M.C.&W.R.A.—P. E., 9&10..	1.50	
U.M.C.&W.R.A.—P. E., 8.....	1.70	
U.M.C.&W.R.A—P. E., 7.....	1.80	
Eley's B. E., 11 and larger...	$1.70@$1.75	
Eley's P. E., 12 to 20.....	$3.00@$3.25	

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow-

Stove Hollow-Ware—
Ground....60&10@60&10&10%
Unground....65&10@70&5%
White Enameled Ware—
Maslin Kettles....70&10@75%
Boilers and Saucepans....60@60&5%
Tinned Boilers and S'pans....60@60&5%
Rustless Hollow Ware....50@50&5%
Gray Enameled Ware—
Stove....50%
Maslin Kettles....60@60&10%
Boilers and Saucepans....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889....33⅓&5% } Extra 10% on some leading articles.
Ironclad Enameled Ware....dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	.55¢	60¢	65¢	75¢

Standard Fiber

	Per Doz. Plain.	Decorated
Wash-Basins, 10½ in....	$1.80	$2.00
Wash-Basins, 12 in....	2.00	2.50
Keelers, 11¼ in....		3.50
Cuspidors....		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure....	3.50	
Half-peck Measure....	3.00	

See also Pails.

Indurated Fiber.

Spittoons No. 2, ₱ doz....$6.00
Basins, Ringed, ₱ doz., No. 2....2.80
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), ₱ nest....$5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest....$2.55 } 25%
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest....$1.50
Liquid Measures, pt., qt., 2 qt. and funnel (4 pieces), ₱ set....$1.20

See also Pails.

Silver Plated, Hollo

4 mo. or 5% cash in 30 day:
Reed & Barton....
Meriden Britannia Co....
Simpson, Hall, Miller & Co.... } 40&5%
Rogers & Brother....
Hartford Silver Plate Co....
William Rogers Mfg. Co.... } 40&5&5%

Washers—

Size hole.....	5-16	⅜	½	5/8 to 1¼
Washers.....	5½	4½	3½	2¾

In lots less than 200 ℔, ₱ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Washer Cutters—

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Iron....₱ ℔ 3½¢
Steel....₱ ℔ 3¾¢

Weights, Sash—

Solid Eyes....₱ ton, $18.00@19.00

Well Buckets Galvanized—See *Buckets, Well Galvanized.*

Wheels, Well—

8 in., $2.00; 10 in. $2 50; 12 in., $2.75

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Whips

American Whip Co.: Length.	4½	5	6½	6	6½	7	7½	8 ft.
X. L. Whalebone Driving	$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone	....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whale bone	....	....	11.00	12.00	13.00	15.00	....	....
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors	....	....	....	6.00	...	....	....	....
Americus, 93 Pen Whip	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106	....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No. 103	....	....	3.75	4.00	....	...	....	....

Per dozen.

A large variety of cheaper grades.....50¢@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....₩ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Wire and Wire Goods—

Iron—

Market,

Br. & Ann., Nos. 0 to 18, 75&10@75&10&5%
Cop'd, Nos. 0 to 18.75&5%
Galv., Nos. 0 to 18 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18 ...70@70&10%

Extra 5@10% often given and net prices often made on large lots.

Stone,
Br. and Ann'd,
Nos. 16 to 18.... 80%
Nos. 19 to 26.... 80&5%
Nos. 27 to 36.... 82½&5%
Extra 10% often given.
Tinned Broom Wire, 18 to 21, ₩ ℔....4½¢
Galvanized Fence .....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Ossawan Mills, An'ld and Tinned on Spools.....60&10%
Ossawan Mills, Brass and Copper on Spools.....50&10%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass 50%
Cast Steel Wire 50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported....60@70¢ ₩ ℔

Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....85&10@85&10&10%

Wire Cloth and Netting—

Painted Screen Cloth ₩ 100 ft.....$1.75
Galvanized Wire Netting.....75@75&10%

Wire Barb—

See Trade Report.

Wire Rope—See *Rope, Wire.*

Wrenches—

American Adjustable 40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine .....50@50&10%
Coes' "Mechanics'".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l.. 75&10@80%
W. & B. Diamond.....

Bemis & Call's:
Pat. Combination Bright .....40&5%
Pat. Combination Black.....40&10%
Merrick's Pattern.....45%
Brigg's Pattern.....30&10%
Cylinder or Gas Pipe.....45&5%
No. 3 Pipe.....55%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz., $4.00, 40%
Webster's Pat. Combination 25%
Boardman's.....30%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Eagle.....50&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70@70 &5%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrencher.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes

Am. Wringer Co.'s list, July 1, '93..2% cash
Colby Wringer Co., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list July 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1890..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	40
Linseed, City, boiled	..	@	43
Linseed, Western, raw	38	@	40
Lard, City, Extra Winter	75	@	77
Lard, City Prime	..	@	75
Lard, City, Extra No. 1	..	@	50
Lard, City, No. 1	..	@	45
Lard, Western, prime	..	@	75
Cotton-seed, Crude, prime	34	@	36
Cotton-seed, Crude, off grades	32	@	34
Cotton-seed, Summer Yellow, prime	39	@	40
Cotton-seed, Summer Yellow, off grades	36	@	37
Sperm, Crude	70	@	..
Sperm, Natural Spring	75	@	77
Sperm, Bleached Spring	80	@	82
Sperm, Natural Winter	81	@	82
Sperm, Bleached Winter	86	@	88
Whale, Crude	..	@	..
Whale, Natural Winter	48	@	..
Whale, Bleached Winter	..	@	51
Whale, Extra Bleached	..	@	52
Sea Elephant, Bleached Winter	..	@	..
Menhaden, Crude, Sound	35	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed	39	@	40
Menhaden, Bleached W'ter	..	@	43
Menhaden, Extra Bleached	..	@	46
Tallow, City, prime	..	@	60
Tallow, Western, prime	..	@	55
Cocoanut, Ceylon	5½@		5¾
Cocoanut, Cochin	6½@		6¾
Cod, Domestic	38	@	40
Cod, Foreign	42	@	45
Red Elaine	44	@	46
Red Saponified ₩ ℔	4¼@		4¾
Bank.....per gal	38	@	..
Straits	39	@	..
Olive, Italian, bbls	58	@	60
Neatsfoot, prime	75	@	80
Palm, prime, Lagos ₩ ℔	7¾@		8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....per gal	7	@	7½
Black, 29 gravity, 15 cold test	7½@		8
Black, 29 gravity, summer	6	@	6½
Cylinder light, filtered	14	@	16
Cylinder, dark, filtered	10	@	13
Paraffine, 23½ @ 24 gravity	11	@	12
Paraffine, 25 gravity	10	@	11
Paraffine, 28 gravity	7½@		8
Paraffine, red	10½@		10½

Paints and Colors—

Barytes, Foreign, ℔ ton	$22.00	@	24.00
Barytes, Amer. floated	29.00	@	32.00
Barytes, Amer. No. 1	16.00	@	18.00
Barytes, Amer. No. 2	13.00	@	15.00
Barytes, Amer. No. 3	11.00	@	12.00
Blue, Celestial ₩ ℔	6	@	8
Blue, Chinese	40	@	50
Blue, Prussian	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½@		1
Brown, Vandyke, Amer	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk	2.75	@	..
Carmine, No. 40, in boxes or barrels	2.85	@	..
Carmine, No. 40, in ounce bottles	3.75	@	..
Chalk, in bulk ₩ ton	1.75	@	2.00
Chalk, in bbls. ₩ 100 ℔	33	@	40
China Clay, English ₩ ton	13.00	@	18.00
Cobalt Oxide, prep'd	9.00	@	11.00
Cobalt Oxide, black, lots 100 ℔	1.90	@	....
Cobalt Oxide, black, less 100 ℔	1.96	@	....
Green, Paris, in bulk	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs	10½@		11
Green, Paris, small pack	12	@	17
Green, Chrome, ordinary	6	@	12
Green, Chrome, pure	22	@	25
Lead, Eng., B.B. white	8½@		10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔	7	@	7¼
Kegs, lots 500 ℔ to 5 tons	6½@		6¾
Kegs, lots 5 tons to 12 tons	6⅜@		6⅝
Kegs, lots 12 tons and over	6¼@		6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price	..	@	½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	..	@	2½
Lead, Red, bbls. and ½ bbls	6	@	7
Lead, Red, kegs	6¼	@	7¼
Litharge, kegs	6¼	@	7¼
Litharge, bbls. and ½ bbls	6	@	7

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35	@	1½
Ocher, French Washed	1½@		2½
Ocher, German Washed	1¼@		3
Ocher, American	½@		1½
Orange Mineral, English	8½@		9
Orange Mineral, French	10	@	10½
Orange Mineral, German	8½@		9
Orange Mineral, American	8¼@		8¾
Paris White, English Cliff-stone	1.00	@	1.15
Paris White, American	65	@	75
Red, Indian, English	5½@		7
Red, Indian, American	2	@	6½
Red, Turkey	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American ₩ 100 ℔	1.00	@	1.10
Red, Venetian, English	1.20	@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔	4	@	5
Sienna, Ital., Burnt Lumps	1½@		3½
Sienna, Ital., Raw, Powd	4½@		5½
Sienna, Ital., Raw, Lumps	1¾@		3½
Sienna, American, Raw	1½@		1¾
Sienna, American, Burnt and Powdered ₩ ℔	1¼@		1¾
Talc, French	..	@	1¼
Talc, American	1¼@		1⅜
Terra Alba, Fr'ch. ₩ 100 ℔	95	@	1.25
Terra Alba, English	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered ₩ ℔	3½@		4
Umber, Turkey Bnt. Ln	2¾@		3
Umber, Turkey, Raw and Powdered	3¼@		..
Umber, Turkey, R'w Lumps	2¾@		2¾
Umber, Turkey, Bnt. Amer	1¼@		1⅝
Umber, Turkey, R'w Amer	1¼@		1¼
Yellow, Chrome	10	@	25
Vermilion, American Lead	11¼@		12
Vermilion, Quicks'er, bulk	57	@	..
Vermilion, Quicks'er, bags	58	@	..
Vermilion, Quicksilver sm'r pkgs	62	@	..
Vermilion, English Import	85	@	90
Vermilion, Imitation, Eng	8	@	35
Vermilion, Trieste	90	@	92½
Vermilion, Chinese	92½@		95
Whiting Common, ₩ 100 ℔	37½@		42½
Whiting Gilders'	45	@	55
Zinc, American, dry ₩ ℔	4	@	4¾
Zinc, French, Red Seal	7⅜@		..
Zinc, French, Green Seal	9	@	..
Zinc, French, V. M. X	..	@	7
Zinc, Antwerp, Red Seal	7¼@		..
Zinc, Antwerp, Green Seal	7¾@		..
Zinc, German, L. Z. O	6¾@		7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over	10¾@		11½
lots less than one ton	11	@	11½
Zinc, V. M. in Poppy Oil, Red Seal	..	@	..
lots of 1 ton and over	10	@	10½
lots of less than 1 ton	10¼@		10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort	25	@	30
Black, Drop, English	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory	8	@	15
Blue, Chinese	35	@	40
Blue, Prussian	20	@	45
Blue, Ultramarine	12	@	18
Brown, Vandyke	7	@	12
Green, Chrome	8	@	13
Green, Paris	16	@	18½
Sienna, Raw	7	@	14
Sienna, Burnt	7	@	14
Umber, Raw	7	@	10
Umber, Burnt	7	@	10

Putty—

In barrels and ½ bbls	.01¾@		.01¾
In tubs	.01¾@		.01¾
In tin cans	.01½@		.02½
In bladders	.01¾@		.02½

Spirits Turpentine

In regular bbls	..	@	29½
In machine bbls	..	@	30

Glue—

Low Grade ₩ ℔	8	@	10
Cabinet	12	@	14
Medium White	13	@	15
Extra White	17	@	20
French	10	@	22
English	10	@	15
Irish	12	@	..

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

OCTOBER 18, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:
¾ to 2 in. round and square.. } ₩ lb 1.80 @ 1.90¢
1 to 6 in. x ⅜ to 1 in.... }
Refined Iron:
¾ to 2 in. round and square. }
1 to 4 in. x ⅜ to 1½ in.... } ₩ lb 1.90 @ 2.00¢
4½ to 6 in. x ⅜ to 1 in. }
1 to 6 in. x ¼ and 5-16. ₩ lb 2.10 @ 2.20¢
Rods ⅜ and 11-16 round and sq. ₩ lb 2.00 @ 2.10¢
Bands 1 to 6 x 3-16 to No. 12.... ₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price. ₩ lb.... 3.00¢
Burden's "H. B. & S." Iron, base price.... ₩ lb.... 2.80¢
"Ulster"... ₩ lb.... 3.00¢
Norway Bars... 3.75 @ 4.00¢
Norway Shapes... 4.50 @ 5.00¢

Merchant Steel from Store—

Per lb

Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots... 2½¢
Best Cast Steel, base price in small lots. 8 ¢
Best Cast Steel Machinery, base price in small lots... 5 ¢

Sheet Iron from Store—

Black—

Best Refined Iron.

Nos. 14 to 20... 3 @ 3⅛¢
21 to 24... 3¼ @ 3⅜¢
25 to 26... 3⅜ @ 3½¢
27... 3½ @ 3⅝¢
28... 3⅝ @ 3¾¢

Common ¼¢ less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 16... 2½ @ 2⅝¢
" " " 18 to 20... 2⅞ @ 3¢
" " " 21 to 24... 3⅛ @ 3¼¢
" " " 25 to 26... 3⅜ @ 3⅝¢
" " " 27 to 28... 3⅝ @ 3¾¢

Best Bloom Sheets, ¼¢ extra over above prices.
Best Bloom, Galvanized, jobbing dis. 70 @ 70&5%
Ordinary Bessemer, ⅛¢ @ ¼¢ lower than above prices.

Russia, Planished, &c.

Genuine Russia, according to assortment... ₩ lb 12¢ @ 13¢
Patent Planished... ₩ lb A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel... ₩ lb, 8½¢

English Steel from Store—

Best Cast... ₩ lb 15 ¢
Extra Cast... ₩ lb 16½ @ 17 ¢
Swaged, Cast... ₩ lb 16 ¢
Best Double Shear... ₩ lb 15 ¢
Blister, 1st quality... ₩ lb 12 ¢
German Steel, Best... ₩ lb 10 ¢
2d quality... ₩ lb 9 ¢
3d quality... ₩ lb 8 ¢
Sheet Cast Steel, 1st quality... ₩ lb 15 ¢
2d quality... ₩ lb 14 ¢
3d quality... ₩ lb 12½¢
R. Mushet's "Special"... ₩ lb 48 ¢
" " Annealed... ₩ lb 75 ¢
" " "Titanic"... ₩ lb 20 ¢

METALS—

Tin—

Per lb

Banca, Pigs... 22¢
Straits, Pigs... 21¢ @ 21½¢
Straits in Bars... 22⅛¢

Tin Plates—

Duty: 2.22¢ ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade. IC, 10 x14.. @ $6.50
" " " IC, 12 x12.. @ 6.75
" " " IC, 14 x20.. @ 6.50
" " " IC, 20 x28.. @ 13.00
" " " IX, 10 x14.. @ 8.50
" " " IX, 12 x12.. @ 8.75
" " " IX, 14 x20.. @ 8.50
" " " IX, 20 x28.. @ 17.00
" " " DC, 12½x17.. @ 6.00
" " " DX 12½x17.. @ 8.00
Allaway Grade... IC, 10 x14.. @ 6.00
" " IC, 12 x12.. @ 6.25
" " IC, 14 x20.. @ 6.00
" " IC, 20 x28.. @ 12.00
" " IX, 10 x14.. @ 7.50
" " IX, 12 x12.. @ 7.75
" " IX, 14 x20.. @ 7.50
" " IX, 20 x28.. @ 15.00
" " DC, 12½x17. @ 5.50
" " DX, 12½x17.. @ 7.00

Coke Plates—Bright—

Steel Coke. -IC, 10 x 14, 14 x 20.. $5.40 @ $5.50
10 x 20.. @ 8.50
20 x 28.. 11.50 @ 12.00
IX, 10 x 14, 14 x 20.. @ 7.00
BV Grade -IC, 10 x 14, 14 x 20.. @ 5.50

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade. -IC, 14 x 20... @ $5.65
20 x 28... @ 11.00
IX, 14 x 20... @ 6.40
20 x 28... @ 12.80
Abecarne Grade. -IC, 14 x 20... @ 5.55
20 x 28... @ 10 75
IX 14 x 20... @ 6 40
20 x 28... @ 12.80

Tin Boiler Plates—

IXX, 14x 26... 112 sheets. @ $13.55
IXX, 14 x 28... 112 sheets. @ 14.50
IXX, 14 x 31... 112 sheets @ 16.00

American Terne Plates.—Apollo.

IC, 14 x 20... $6.25
IC, 20 x 28... 12.50
IX, 14 x 20... 7.25
IX, 20 x 28... 14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot—

Lake... @ 11 ¢
Ansonia grade Arizona... @ 10½¢
Ansonia grade Casting... @ 10 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 25 %, according to size of order. Stubs' gauge standard.

Not wider than	Not longer than	And longer than	Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
			Weights per sq. foot and prices per pound.							
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	...
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅜ inch diameter and over, ₩ lb 22¢
Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

Per lb.

14 ounce to square foot and heavier... 26¢
12 ounce and up to 14 ounce to square foot... 27¢
10 ounce and up to 12 ounce... 29¢
Lighter than 10 ounce... 32¢
Circles less than 8 inches diameter, 2¢ ₩ lb additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned... ₩ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each... 8¢
Tinning sheets on one side, 30 x 60 each... 30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each... 15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each... 12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each... 12¢
Tinning sheets on one side, other sizes, per square foot... 2½¢
For tinning both sides double the above prices.

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier... 24¢ ₩ lb
14 oz... 25¢ ₩ lb
12 oz... 27¢ ₩ lb

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

July 6, 1892. Net.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional
Brazed Brass Tubing. (To No. 20 inclusive.)
Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive... 35¢
Plain, above 3 inch... 40¢
Plain, 5-16 inch... 45¢
Plain, ¼ inch... 60¢
Plain, 3-16 inch... $1.00
Plain, ⅛ inch... $1.50
Fancy Tubing, Brass, to No. 20, inclusive... 43¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.
Discount from list... 30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 / 10	in. 10 / 12	in. 12 / 14	in. 14 / 16	in. 16 / 18	in. 18 / 20	in. 20 / 22	in. 22 / 24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.2	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 / 26	in. 26 / 28	in. 28 / 30	in. 30 / 32	in. 32 / 34	in. 34 / 36	in. 36 / 38	in. 38 / 40
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0.30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.62
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1 50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2 00
No 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

— % discount.
Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

	Per lb.		Per lb.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No. 10	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclus. ve... 17¢ ₩ lb
Over 3½ to 5 inches inclusive... 18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight

¼ to 3½ inches inclusive... 18¢ ₩ lb
Over 3½ to 5 inches inclusive... 19¢ ₩ lb

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb
Western Spelter... 4½¢@4¾¢
Bertha (pure)... 8¢@8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.
600 lb casks... 5¾¢@6¢
Per lb... 6½¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.
American Pig... 4¢@4.10
Bar... 4¼¢
Pipe, subject to discount 20%... 6¼¢
Tin-Lined Pipe, subject to discount 20%... 15¢
Block Tin Pipe, subject to discount 20%... 37½¢
Sheet, subject to discount 20%... 7¢
Old Lead in exchange, 3¼¢ ₩ lb.

Solder—

½ @ ½ (Guaranteed)... 13½¢ @ 14½¢
No. 1... 11½¢ @ 12½¢
Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson... ₩ lb 11 ¢
Hallett's... 10½¢

Aluminum—

Duty: 15¢ ₩ lb.
No. 2 grade metal, in ton lots... ₩ lb .75
No. 1 (guaranteed to be 98 % pure and over), in ton lots... ₩ lb .90
Lots less than 1 ton... 10¢ ₩ lb additional.

Old Metals—

Prices Paid in New York.

Heavy Copper... ₩ lb 7½¢
Light and Tinned Copper... ₩ lb 6½¢
Heavy Brass... ₩ lb 5½¢
Light Brass... ₩ lb 4½¢
Lead... ₩ lb 3 ¢
Tea Lead... ₩ lb 2 ¢
Zinc... ₩ lb 2¾¢
No. 1 Pewter... ₩ lb 14 ¢
No. 2 Pewter... ₩ lb 7 ¢
Wrought Scrap Iron... ₩ gross ton $10.00
Heavy Cast Scrap... ₩ gross ton 8.00
Stove Plate Scrap... ₩ gross ton 5.00
Burnt Iron... ₩ gross ton 3.00

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THE IRON AGE

THURSDAY, OCTOBER 26, 1893.

A 1200 Horse-Power Turbine for Niagara.

Another large water wheel has just been shipped to Niagara Falls by James Leffel & Co. of Springfield, Ohio. It is a duplicate and of nearly the same power as one which was shipped some six months ago to the Cliff Paper company and is intended for the same parties. The wheel is of the new type, on horizontal shaft, and is known as the James Leffel double discharge turbine, with a heavy iron center. The wheel will connect direct to the wood grinding machine. The company have just completed a very original and unique design of wheel plant for another New York company. It comprises four wheels in one system, being a quadruple wheel of 1000 horse-power, to operate under a 40 foot head.

Baltimore had last week a practical illustration of the dangers lurking in overhead electric wires, when a large blaze, which spread to the jail and entailed some loss of life, was started by electric wires being blown together during a gale. The cross currents burned out the wires, which fell and set fire to adjoining wood work.

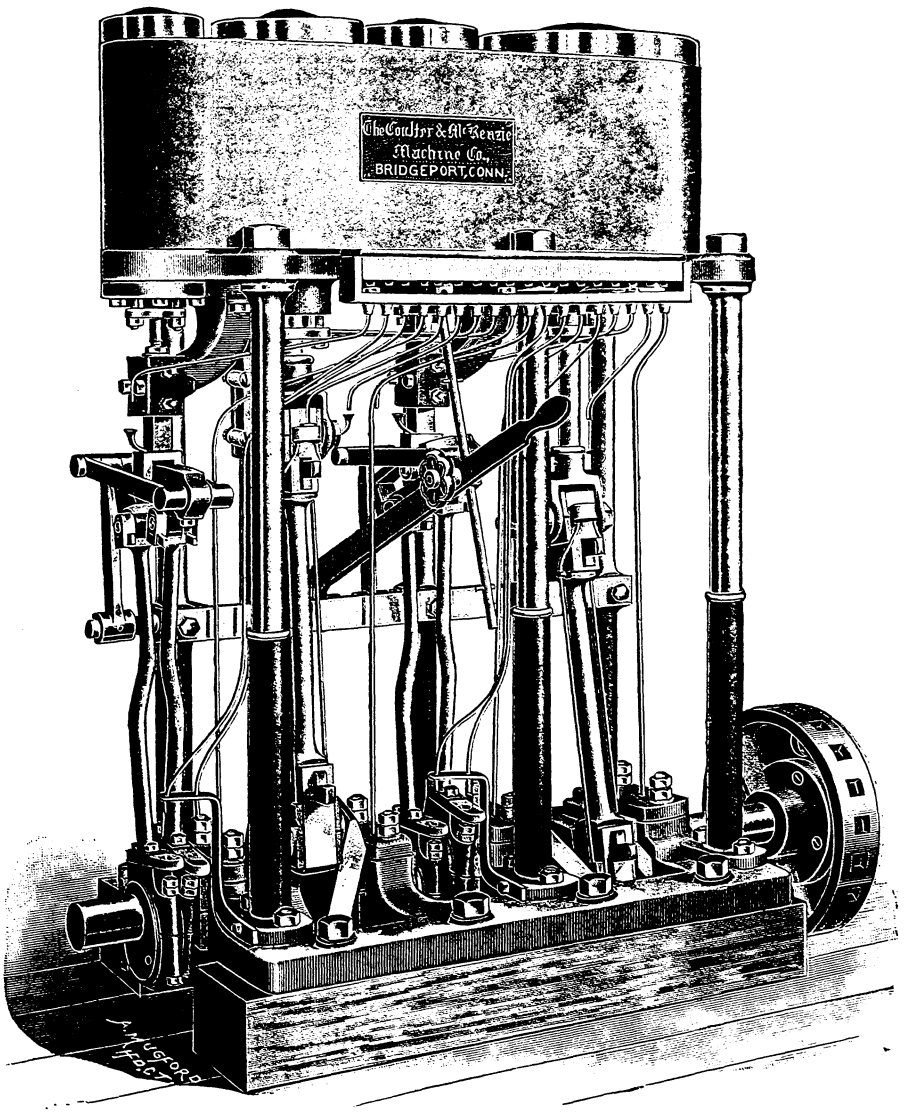
A large deal in lumber is reported from Bangor, Maine, between 10,000,000 and 15,000,000 logs having been sold a few days ago to a syndicate for $100,000 to $150,000 cash. The price was $8 to $10 per 1000, the lowest known since the war.

The Steam Yacht "Dream."

Our illustrations show the most essential features of what is stated to be the largest and fastest steamboat ever built in Bridgeport, Conn. It was designed for G. W. Hills, proprietor of the *Evening Post* of that city. It is 60 feet long over all, 12 feet beam and 5 feet depth and draws 20 inches forward and 3 feet 4 inches aft.

The power required is supplied by water tube boiler of the Herreshoff type, which is of ample size and is fed by a Marsh steam pump. A Worthington double acting vacuum pump controls a keel condenser consisting of 48 feet of 3 inch pipe.

The engine, as shown in the prospective view and in the sectional drawings, Figs. 3 and 4, is a fore and aft compound, designed and built by the Coulter & McKenzie Machine Company of Bridgeport. It is capable of furnishing 75 horse-power, and will turn a 3 foot screw of 4 feet 7 inches pitch 250 turns per minute with 100 pounds of steam. The high pressure cylinder



THE STEAM YACHT "DREAM."—*The Engine.*

the entire weight being 30 tons. The water will be conducted to the wheel from a canal at the top of the cliff by an 8-foot pipe, extending downward until it reaches the mill, located near the foot of the cliff. The water will enter the cylinder casing of the wheel from below, passing upward a few feet, filling the case, and thus obtaining the head pressure. The amount of head will be about 130 feet; the wheel being some 67 inches in diameter, a speed of 225 revolutions will be obtained and almost or quite 1200 horse-power developed. The runner is made of bronze,

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is 6 inches in diameter, the low pressure 12 inches and the stroke 9 inches. Both cylinders, as shown plainly in Fig. 3, are cast in one piece. The exhaust from the high pressure cylinder passes around that cylinder and into the low pressure valve, thus making a receiver and jacket in one and permitting the passage of steam to the low pressure cylinder without piping.

The pistons are fitted with a sectional Dunbar packing, consisting of a solid center, or "bull" ring, on each side of which is fitted an L-shaped ring and a square ring, as shown in Fig. 5. These rings are cut in three or four segments, as may be desired, and are adjusted so as to break joints. The rings are pressed against the walls of the cylinder by means of round wire springs of a diameter equal to the inside width of the rings. This construction insures even and sufficient pressure of the rings against the cylinder.

The valves are of the balanced piston

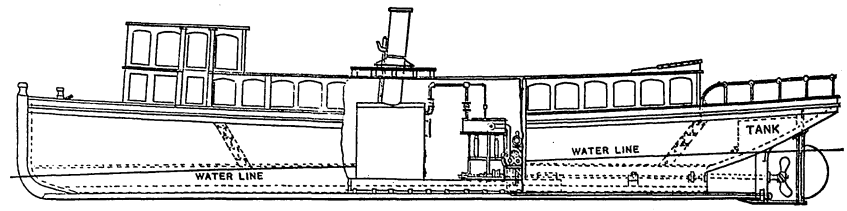


Fig. 2.—Longitudinal Section.

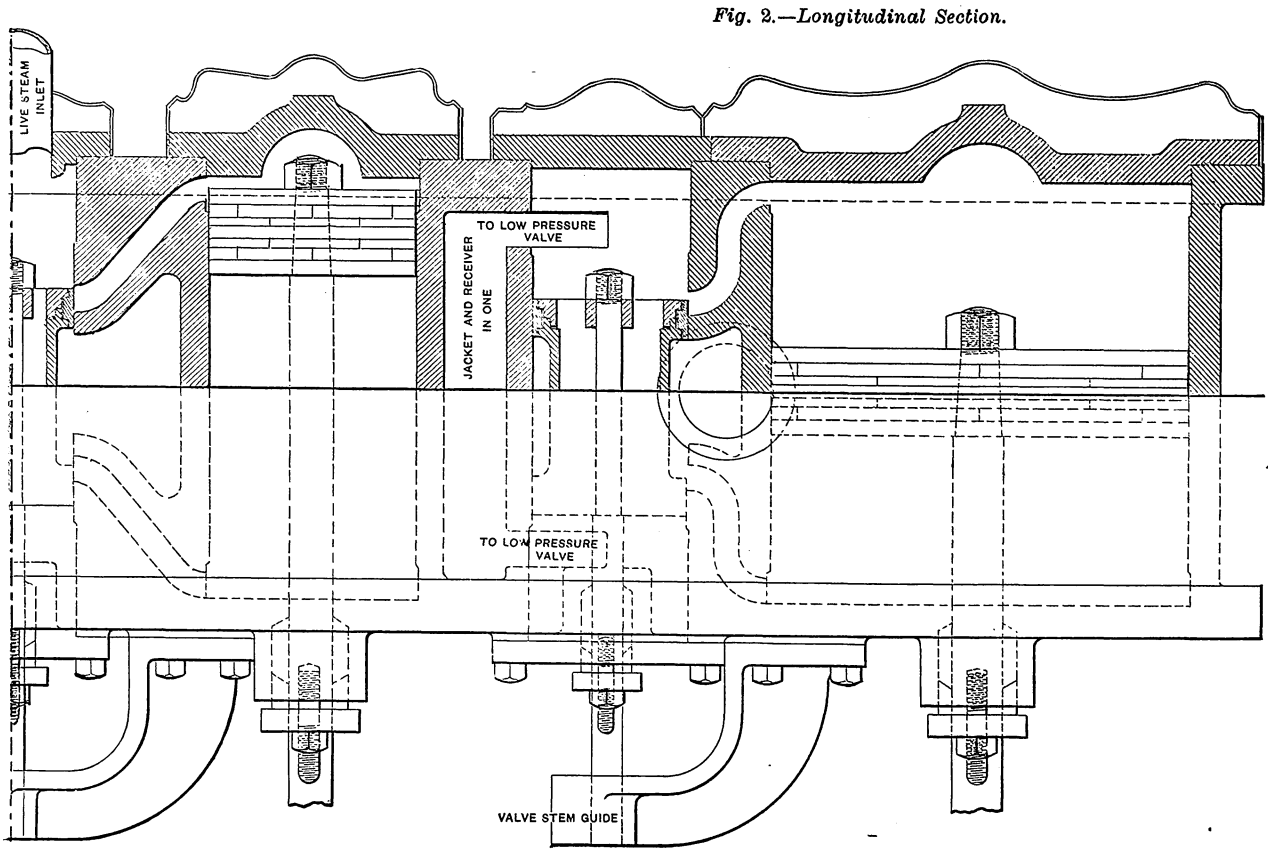


Fig. 3.—Vertical Section through Cylinders.

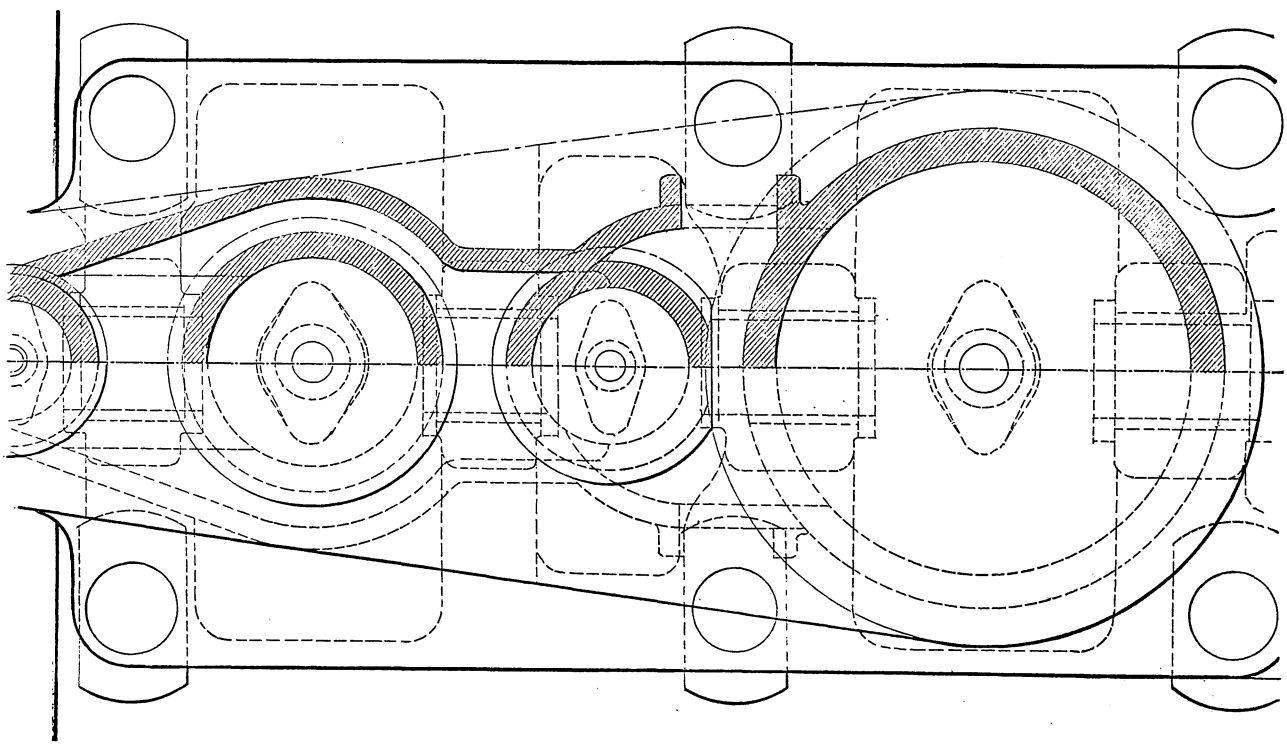


Fig. 4.—Sectional Plan of Cylinders.

THE STEAM YACHT "DREAM."

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type, made up of a center and two end pieces held together by the valve stem and fitted with a steam tight ring on each end. The live steam enters on the top of the valve, passes through the center and enters the cylinder from each end, the exhaust steam passing around the center, as will be understood from Fig. 3. The valves are operated by a Stevenson link motion, the connections of which have every adjustment. The link blocks are bronze bushed, with a hardened and ground steel bush working on a hardened steel pin. The links are made in halves and bolted together.

The cylinders are supported upon six steel columns which are securely fastened to a substantial cast iron bed piece, making a frame which permits ready access to every part of the engine for repairs or adjustment.

All the rods, connections and links have every means of adjustment for taking up wear. The shaft is of steel 3¼ inches in diameter and has bearing surface of 18 inches on the bed. The crank pins are 2¾ inches in diameter by 3 inches long, and are set at an angle of 90 degrees. The shaft is fitted with a fly wheel which is also used to balance the two cranks and forms one-half of the coupling connecting the wheel shaft. The cylinders and their heads are neatly incased with German silver covers.

The propeller shaft is fitted with a patented roller thrust bearing of new design, shown in Figs. 6 and 7. It consists of a box casting, in which are fitted two bearings, one on each end. Centrally between these bearings is a thrust collar clamped rigidly to the shaft. On each side of this thrust collar is a loose steel collar having four projecting arms or studs on which rollers are loosely mounted. The thrust of the shaft is received by these rollers, which are turned slightly rounding on the face so as to overcome the sliding motion that would occur if they were flat. One set of these rollers acts when in head motion and the other when in back motion. The box containing this bearing is filled with oil, so that the parts are constantly lubricated and friction is reduced to a minimum.

On the front and bottom of the cylinders is a reservoir for oil, under which there is fitted a trough holding 18 separate pipes which carry the oil to the different bearings. All the bearings are also provided with separate oil holes to be used in case of need.

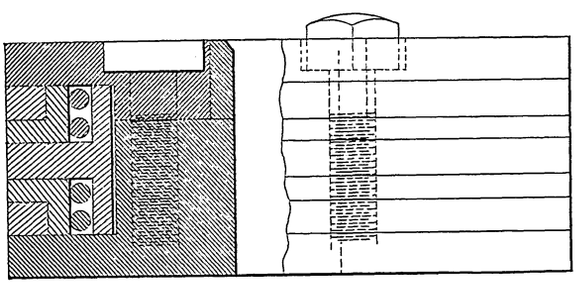


Fig 5.—Section Showing Piston Packing.

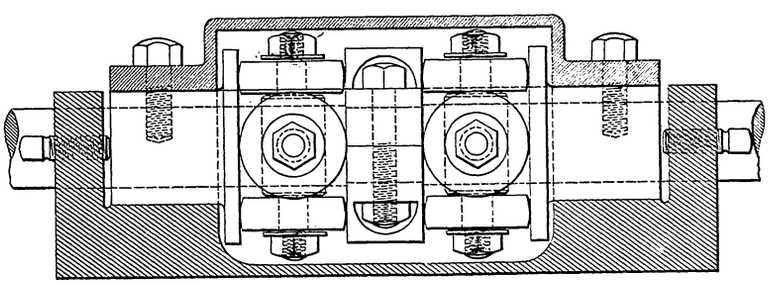


Fig. 6.—Longitudinal Elevation of Thrust Bearing.

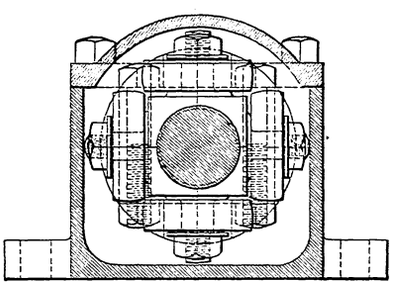


Fig. 7.—Cross Section of Thrust Bearing.

THE STEAM YACHT "DREAM."

The unofficial speed trial of the United States cruiser "Columbia," the first of the new triple screw commerce destroyers, took place outside the mouth of the Delaware River on October 18, and resulted in the attainment of the very satisfactory record of 21.5 knots an hour. The contract speed was 21 knots; and it is anticipated by the builders that this speed will be exceeded, on the official trial, by a knot or a knot and a half. The Cramps, therefore, are certain of securing a substantial premium.

The fact that several non-union rolling mills west of the Alleghenies are having their puddling done for $4 per ton is troubling those operators who signed a $5 scale several weeks ago. They have asked their workmen to make a concession, but so far none of them have signified their willingness. They say that they are sorry to learn that their employers cannot compete with non-union mills, but they do not offer the requisite remedy.

Some of the English newspapers print a letter from Thomas Hampton, Grangeville, Millhouses, near Sheffield, in which claims are advanced in behalf of a new steel process. The absence of any data concerning the details of the process is striking. The simple statement is made that the pig is blown in the lime lined Bessemer converter, and that the point of the method is the elimination of sulphur from the desiliconized and decarbonized metal during the after blow.

WORLD'S FAIR NOTES.

The display of steam pumps in Machinery Hall is extensive, as might be expected. In the center of the building a large water tank has been located for the purpose of supplying adjacent exhibitors who desired to display their apparatus in operation. The tank lies below the level of the floor and thus presents an opportunity for some spectacular features in the delivery of streams from numerous nozzles. While most of the pump exhibits are grouped about this tank, some very prominent manufacturers have located elsewhere, notably Henry R. Worthington of New York, whose great display of pumping machinery has been previously described in these columns. The Worthington pumps are in regular use supplying water for the general purposes of the exposition. There are other manufacturers whose pumps are found in use in the power house attached to Machinery Hall, no attempt being made at a display on the floor of the building. Among these may be named the Barr Pumping Engine Company of Germantown Junction, Philadelphia; Battle Creek Machine Company of Battle Creek, Mich.; George F. Blake Mfg. Company of New York; Blakeslee Mfg. Company of Duquoin, Ill.; Boyts, Porter & Co. of Connellsville, Pa.; M. T. Davidson of Brooklyn; Deane Steam Pump Company of Holyoke, Mass.; Hall Steam Pump Company of Pittsburgh; Knowles Steam Pump Works of New York; Lawrence Machine Company of Lawrence, Mass.; Smedley Mfg. Company of Dubuque, Iowa; Snow Steam Pump Works of Buffalo, N. Y.; Sulzer-Vogt Machine Company of Louisville, Ky.; Joshua Thomas of Cleveland, Ohio; Wainwright Mfg. Company of Boston; N. A. Watson of Erie, Pa; Wilson-Snyder Mfg. Company of Pittsburgh. The descriptions of regular exhibits are appended.

John H. McGowan Company

of Cincinnati, Ohio, and Richmond, Va., have taken unusual pains in fitting up an attractive display at Columns K and L 36. In the center of this large space they have erected a fountain with a glass dome, under which a constant stream of water is forced in a circular sheet by one of their twin lever valve pumps. Other pumps are in operation discharging streams of water in the great central tank. The pumps displayed comprise a number of patterns—direct acting, duplex, and crank and fly wheel types. There are also air pumps and hydraulic presses. The twin lever valve used in the company's duplex

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pumps is a special device for which strong claims are made of positive action, securing exact work by both levers. It has been made to conform as nearly as possible to the action of the governor of a steam engine. The full power of the stroke is secured and provision is made to compensate for natural wear. A Glide direct acting pump is shown, which is a new pattern but recently brought out. In this the slide valve is actuated by a steam moved piston that reverses only at the completion of the stroke of the main piston. There are no outside valve movements. Suction and force pipe openings are on both sides, except in the case of the 10-inch stroke pumps, which have a T discharge on top that can be turned in any direction. The company have just bought the patterns, machinery, &c., for deep well pumps of the Bradford Well & Pump Company of Cincinnati, and will hereafter manufacture a line of such pumps in addition to their regular patterns. Some of the company's pumps are also at work in the boiler house.

Laidlaw-Dunn-Gordon Company

of Cincinnati, have a large working exhibit at Column I 33. There are 12 pumps in all, of which one is a compound 14 x 20 inches and 12 x 18 inches, throwing 2,000,000 gallons in 24 hours; six are standard duplex pumps of different sizes, ranging from 14 x 8 x 10 inches down to 4½ x 2¾ inches. One is a single direct acting, 10 x 6 x 12 inches; two are deep well pumps, one of these being 8 inches diameter by 36 inches stroke and the other 5 x 24 inches; one is a fire pump 14 x 7 x 12 inches, throwing two streams into the great central tank from 1½ inch nozzles, discharging 500 gallons per minute. The company also have some of their pumps at work in the boiler house.

Joseph Menge

of New Orleans, La., shows a remarkably effective pump for certain classes of work at Column I 34. It consists merely of a bucket wheel, 20 inches in diameter by 6 inches in width, run by a belt, with a lifting capacity of 300,000 gallons per hour. It is adapted to irrigation or drainage purposes, and as shown in Machinery Hall, discharges a volume of water like a miniature Niagara.

Buffalo Steam Pump Company

of Buffalo, N. Y., at Column K 29, exhibit a number of duplex pumps, some of which are in operation. There are also single direct acting pumps, single cylinder air pumps and jet condensers. In this exhibit the water is pumped into an elevated tank which is used as a reservoir to show the action of a large hydraulic ram made by Rife's Hydraulic Engine Mfg. Company of Roanoke, Va. This ram forces a remarkably large stream of water through the top of a tall pipe. The company claim to manufacture hydraulic rams of larger capacity than any others in the world.

A. S. Cameron Steam Pump Works,

foot of East Twenty-third street, New York, have a large exhibit at Column K 31, while some of their pumps are also in active service in the boiler house. Pains are taken in this exhibit to show the system on which the Cameron pumps are built. Caps are removed and the interior mechanism is exposed, showing that there are very few working parts. In addition to regular patterns, there are long stroke pumps for rolling mills or other service in which heavy continuous pumping is required; double plunger pumps, for feeding boilers under heavy pressure; mining pumps of the double plunger pattern; vertical mining pumps, for use in sinking or recovering shafts; direct acting vacuum pumps, for sugar refineries, glue factories, &c., and sugar refiners' vacuum pumps with fly wheel.

Gould Mfg. Company

of Seneca Falls, N. Y., are large exhibitors of pumps at Column B 47, also at J 28, in Machinery Hall, besides the boiler house, in Electricity Building, &c., but their exhibits have been previously described in these columns.

Geo. E. Nye

of 74 and 76 West Washington street, Chicago, makes an interesting exhibit at Column K 30. The Nye pump is of peculiar appearance, consisting of two rectangular chambers mounted on a tripod. These chambers are of cast iron. There are no pistons, but the pump is operated by the formation of a vacuum through the condensation of the exhaust steam. A small condensing chamber is placed in the rear of the two rectangular chambers. The parts are very simple, steam being admitted by a balanced automatic valve on the top of the chambers, while the suction and delivery ports are covered by four common claque values. But little floor space is occupied, and a very small amount of steam is used. One of the pumps shown in operation works admirably with the supply pipe valve almost closed. It works so smoothly that it requires no bolting down, and it will pump from 40 to 60 per cent. of sand without injury. The exhibit includes a pump with a capacity of 1000 gallons per minute, which is the largest kept in stock. Larger sizes are made on special orders, from patterns on hand.

The Downie Pump Company

of New Brighton, Pa., make an exhibit at Column L 35 of pumps for deep wells. Their pumps are intended specially for artesian wells, but are adapted to any water service where the supply is obtained from wells. These pumps are shown in operation, and comprise double and single-acting for steam, belt or wind power.

Miller Steam Pump Company

of Dixon, Ill., make an exhibit at Column K 35 of duplex pumps for boiler feeding. One of these, 7 x 4½ x 8 inches, is shown in operation. Other pumps in the display, but not steam connected, cover much larger capacities. They are intended for either hot or cold water. The plunger is of new design, and there are other special features. Pumps of this company's make are also in use in the boiler house.

The Stilwell-Bierce & Smith-Vaile Company

of Dayton, Ohio, occupy a large space at Column J 37 in the display of their pumps and other specialties. A number of Smith-Vaile steam pumps of large capacities are shown, also Victor turbine wheels, the Stillwell live steam purifier, and the Stillwell close heater. This is a "still" exhibit, none of the machinery being shown in operation. Smith-Vaile pumps are, however, in use in the boiler house. The company have branch offices at 63 South Canal street, Chicago, and 112 Liberty street, New York.

Union Mfg. Company

of Battle Creek, Mich., make an interesting exhibit at Column S 30 of their Burnham and Frost pumps. The Burnham pumps shown are direct acting, boiler feed or pressure tank or light service, deep well and vacuum. The special feature of these pumps is an automatic device for creating a steam cushion to insure a uniform travel of the piston under varying degrees of load. The Frost boiler feed pumps shown are so constructed as to utilize the waste heat of the exhaust steam in heating the water on its way to the boiler. With this pump, therefore, the engine is not robbed of its power, as the exhaust steam is condensed and returned to be again used. R. J. Dillon & Co., 25 West Lake street, Chicago, are exclusive Northwestern agents for these pumps.

The Turner Machine Company

of 35 West Fourteenth street, New York, exhibited at Column I 34 rotary pumps, air compressors, painting machines and ice making machines. A rotary pump is at work pumping water on the coils of an ice making machine. This pump is of peculiar type, combining the qualities of a steam engine, water motor, fluid pump, air motor, vacuum pump and air compressor. Unlike all other rotary machines, the blade or gate is in contact with the casing or cylinder continuously. The shaft being set eccentric carries the drum, which in turn receives the blades or gates and permits them to slide back or forth as it revolves. These blades are connected by pins or bars piercing the shaft, so that they are practically solid from side to side. The casing is not a true circle but a curve made to accommodate the eccentricity, thereby gaining a practically solid piston moving in a rotary track without springs or valves. A positive air blower of small size is shown which is guaranteed to compress to 30 pounds in a steady blast. It is said to be the only rotary machine made that will do this work. Other sizes are made which will compress up to 300 pounds. One is at work compressing ammonia at 120 pounds in connection with an ice machine. An interesting part of the exhibit is one of the painting machines used in painting World's Fair buildings. The company's air compressor was used in operating this machine at the time, which was the first occasion of its application on a large scale to the painting of buildings.

The Deming Company

of Salem, Ohio, have a fine exhibit of steam and hand pumps at Column K 33, which has already been described in these columns. The display of hand and windmill pumps is worthy of notice in this connection. There are quite a number of exhibits of this character.

The Hayes Pump & Planter Company

of Galva, Ill., make a very good display at Column L 34. Their specialty is double cylinder pumps for hand or power. These are shown in a variety of sizes, some being in operation. There is also an array of force and windmill pumps of different styles arranged attractively. The company manufacture three and six cylinder power pumps for service in pumping a large volume of water.

Sandwich Enterprise Company

of Sandwich, Ill., make an exhibit at Column K 35. The special feature of this exhibit is an aërating pump, which

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has but recently been brought out, for the purpose of purifying cistern water. It is an iron pitcher pump with the valves so arranged that they can be reversed by suitable levers. When reversed the pump works down instead of up and forces air into the cistern through the perforations in the lower part of the pipe. The reversing operation is almost instantaneous. The pump is shown in operation attached to a glass tank filled with water. Other pumps shown are windmill and force pumps in a variety of patterns.

Bucket Pump Company

of 441 Plum street, Cincinnati, also show purifying cistern pumps at Column K 29. One of these is in operation, with a dummy appropriately clad as a farmer's boy attached to the crank, so that he is constantly in motion, attracting much attention. The tank has glass sides to permit the aëration of the water to be seen. This pump has a series of buckets which conduct a supply of air into the water whenever the pump is at work.

H. Dickinson & Son

of Lowell, Lake County, Ind., exhibit another water purifying pump at Column L 34 This pump is composed of an endless chain, along which at regular intervals galvanized iron buckets are attached. Each of these cups is perforated at the bottom to allow the gradual escape of air from it as it goes bottom upward into the water. The bottom wheel is of such construction that it becomes an agitator also and assists in purifying the water. One of these is shown in operation in a glass inclosed tank.

The Rider Engine Company

of Walden, N. Y., have a very fine exhibit at Column K 36 of Rider and Ericsson hot air pumping engines. Many of these are in operation, the air being heated by gas jets. Some of them are used to force water to a considerable elevation. Familiar as these engines have now become in most sections of the country, the exhibit is constantly surrounded by groups of eager observers to whom the motive power is a deep mystery. The company have branch offices at 37 Dey street, New York, and 88 Lake street, Chicago.

The Penberthy Injector Company

of Detroit, Mich., make one of the prettiest exhibits to be found in Machinery Hall. It is located at Column N 24. Here the company have erected an ornamental booth having a cornice of oil cups, while the front railing is composed of injectors and ejectors neatly woven together, combining strength and beauty, the different parts being alternately gold and silver plated. A small engine and boiler built by the Lenox Machine Company of Marshalltown, Iowa, stand in the rear of the exhibit, equipped with Penberthy injector, ejector and oilers ready for use, but owing to the usual heat of Machinery Hall it has not been found desirable to keep the plant in operation. Attractively arranged on pyramidal shelves are handsome specimens of Safety wrist-pin oilers, XL injectors, IXL spring cover oilers and Pemberthy injectors in a wide range of sizes. The company have only been in business seven years, but in that brief period they have put in use over 70,000 of their injectors, and are now shipping them all over the world. Their popularity is largely due to their simplicity. They can be very easily taken apart to be cleaned and as readily put together again.

The Detroit Lubricator Company

of Detroit, Mich., also have a very pretty display at M 25. They have erected a handsome booth, the front of which is inclosed by a railing made of pipe fittings and hot water valves, the latter being so arranged that the hand wheels make effective decorations. The exhibit is composed of a great variety of locomotive and stationary lubricators, glass and brass oil cups, low water alarms and hot water valves. Among these are the Detroit improved cylinder lubricator, triple cylinder lubricator, air pump lubricator, automatic sight feed lubricators in several styles for various uses, glass body oil cups with index and sight feed, plain cylinder lubricators, plain brass oil cups, the Garfield automatic injector and quick opening radiator valves with and without union. These are arranged on show stands made of nickel plated tubing. The stands are tastefully designed, having numerous branches, some straight and others curved, to which goods are attached, resplendent in polished brass and nickel. Five awards have been bestowed on this company, covering their locomotive and stationary lubricators, glass and brass oilers, low water alarms and hot water valves. A medal and diploma were awarded their locomotive lubricator.

Schaeffer & Budenberg

of 66 John street, New York, make a fine display of their specialties at Column K 25. Quite a large space is here inclosed, on one corner of which they have erected an ornamental iron post fitted with a clock having faces on two sides, which are surrounded by several gauge faces, while a gilt eagle graces the top. A large vertical glass case in the center of the space contains specimens of many kinds of gauges, ranging from the largest sizes to the most diminutive ones. Among these are the new Columbian and Metropolitan pressure recording gauges for either fluids or gases. On shelves and stands are exhaust steam injectors, steam jet pumps, Holt's reducing valves and Acme steam traps.

Ashton Valve Company

of Boston exhibit at Column M 27 a great variety of safety valves, comprising pop safety valves for all sorts of boilers, noiseless safety valves for locomotive and marine boilers, relief valves for pumps and stand pipes and pressure and vacuum gauges. These are arranged on a large pyramid of shelves in the center of the space and on stands and shelves along the sides.

Hancock Inspirator Company

of Boston exhibit inspirators and ejectors at Column K 33. Numerous specimens of these devices for both locomotive and stationary boilers are shown on stands and platforms, and a practical exhibit is also made of two inspirators attached to a boiler and tank as in actual service. In connection with this exhibit specimens are shown of the Tripp metallic packing.

L. Schutte & Co.

of Philadelphia exhibit at Column M 26 a variety of their specialties, such as exhaust steam induction condensers, Korting's Universal double tube injectors, Universal syphons, hydraulic valves, &c. The special feature of this display is a 20-inch induction condenser, which is so large that a stairway has been built for visitors to reach the top of it. This condenser is intended for a 20-inch exhaust pipe.

The Notham Mfg. Company

of New York and Chicago have a large display at Column M 26 of oil cups for locomotives and stationary engines, injectors, ejectors, and other steam goods. The specimens of oil cups shown cover a very great range of sizes, from huge ones to the smallest kind in practical use.

Roe Stephens Mfg. Company

of Detroit, Mich., exhibit as the central feature of their display at Column M 29 a huge model of one of their Scott pop safety valves. It is mounted on a large platform, and is a conspicuous object in that portion of Machinery Hall. Grouped about the base of this structure are a great variety of specimens of Orme pop valves, Scott safety valves, check and gate valves, angle globe valves, Goldsmith throttle valves, &c.

Fisher Governor Company

of Marshalltown, Iowa, show at Column M 24 a full line of the now well-known Fisher steam pumping engine governors, gravity governors and reducing valves. Fourteen sizes of steam pump governors are shown, adapted to all the various uses and purposes for which steam pumps are used. Their function is to save the engineer the constant care of the throttle and to insure a uniform pressure at all times. In this way overpressure is prevented, which leads to the bursting of mains or hose during fire duty or of pipes or tanks or the flooding of floors. They are in growing use on hydraulic freight or passenger elevators. Two governors are shown for hydraulic pressure pumps, also three sizes of governors for fire pumps and steam pumps on automatic sprinkler systems, as well as those sizes of gravity governors for steam pumps filling elevated open tanks for elevator, house or factory use. The gravity governor automatically starts and stops the pump as may be necessary to keep the water at the hight desired in the tank. Three sizes are further shown of reducing valves for steam, gas or air, which reduce initial pressure to any lower point desired and hold it uniformly.

Trimont Mfg. Company

of Roxbury, Mass., make an exhibit at Column M 31 of their Trimo wrenches. These wrenches are made with removable pipe jaws in a variety of sizes adapted to all classes of work. The Trimo combination wrench shown has double jaws, projecting on opposite sides, one set for plain work and the other for pipe.

The Brass & Iron Works Company

of Fostoria, Ohio, have a comprehensive exhibit at Column K 28. It covers a variety of tapping machines for tapping street mains, which are shown applied to pipes in position for work; a large number of well finished brass valves and couplings, and an array of special pipe fittings. These fittings are intended for use on iron pipe without cutting threads, and on lead pipe without the use of solder. The device is an ingenious one and accomplishes its purposes effectively. Another exhibit is a well drilling machine, with engine and tools complete, which stands ready to sink a well for natural gas, oil or water. There is also shown a line of Able's patent gate valves for water works service.

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The Construction of Steamboats Navigating the Western Waters of the United States.—II.*

BY JOHN M. SWEENEY, WHEELING, W. VA.

In the steam engineering department the rules of the United States Board of Supervising Inspectors of Steamboats adopted in 1873 work radical changes in construction. These rules, about coincident with the introduction of steam boiler plate, based the allowable working pressure of steam upon the tensile strength of the material. Now, a high steam pressure is the great desire of every boatman's heart, and at once the greatest tensile strength obtainable was demanded. Seventy thousand pounds was generally adopted, but in some few cases 80,000 pounds was attempted. The amount of carbon, however, required in such plates at that period of steel plate development produced some very unsatisfactory results, and the further action of the supervisors requiring a reduction in area of at least 50 per cent. for plate 0.26 inch thick has brought the commercial product down to about 65,000 tensile strength.

Many reflections are cast upon the plan of boiler and furnace in use on the boats under discussion; and no doubt to the outsider, who never stood over a steam boiler with 200 to 225 pounds pressure on it all day, the forms used seem very crude and wasteful of fuel; but the fact remains that, while many radical changes have been proposed and attempted, the result has generally been a speedy return to the accepted form.

In the first place, a furnace construction which will generate 90 or 100 pounds of steam working pressure with the greatest fuel economy will not generate 180 to 200 pounds with the greatest fuel economy; in fact, it usually will not generate the last pressure at all. Change of form is absolute, and ordinarily that form of furnace which makes the desired result with the least manipulation gives the best economy.

The plan of boiler most in use is the externally fired return flue type, shell 40 inches diameter, 24 feet long; two return flues 13 inches, sometimes 14 inches, diameter; shells 0.26 inch thick; flues 0.29 or 0.3 inch, when made in rings 24 inches long; rivet holes drilled, and longitudinal seams double riveted. This boiler receives certificates from the Government inspectors allowing, for 70,000 T. S., a maximum working pressure of 182 pounds, being one-sixth the ultimate bursting strain of the shell; but nothing has yet been devised to prevent the operators from exceeding this limit, and 200 to 225 pounds is frequently maintained.

There is always a disposition to do a little more work, particularly with towboats. The numerous pier bridges and dams placed in the river in recent years incite preparation to meet the demands in "running" them, and nothing comes nearer doing this than a "wad" of steam at the proper time. Fifteen years ago, with iron boilers of no defined tensile strength, 160 pounds was "big steam." Now the facts are as stated.

The evaporative duty of these boilers is about 7 pounds of water per pound of coal, and when compared, on a basis of the foot-pounds of work done per pound of fuel, show favorably with any water craft. The demand made upon boilers using the water of these silt-bearing streams is very heavy, and imposes conditions under which other forms, although possibly of better fuel duty, fail in points of service and steadiness.

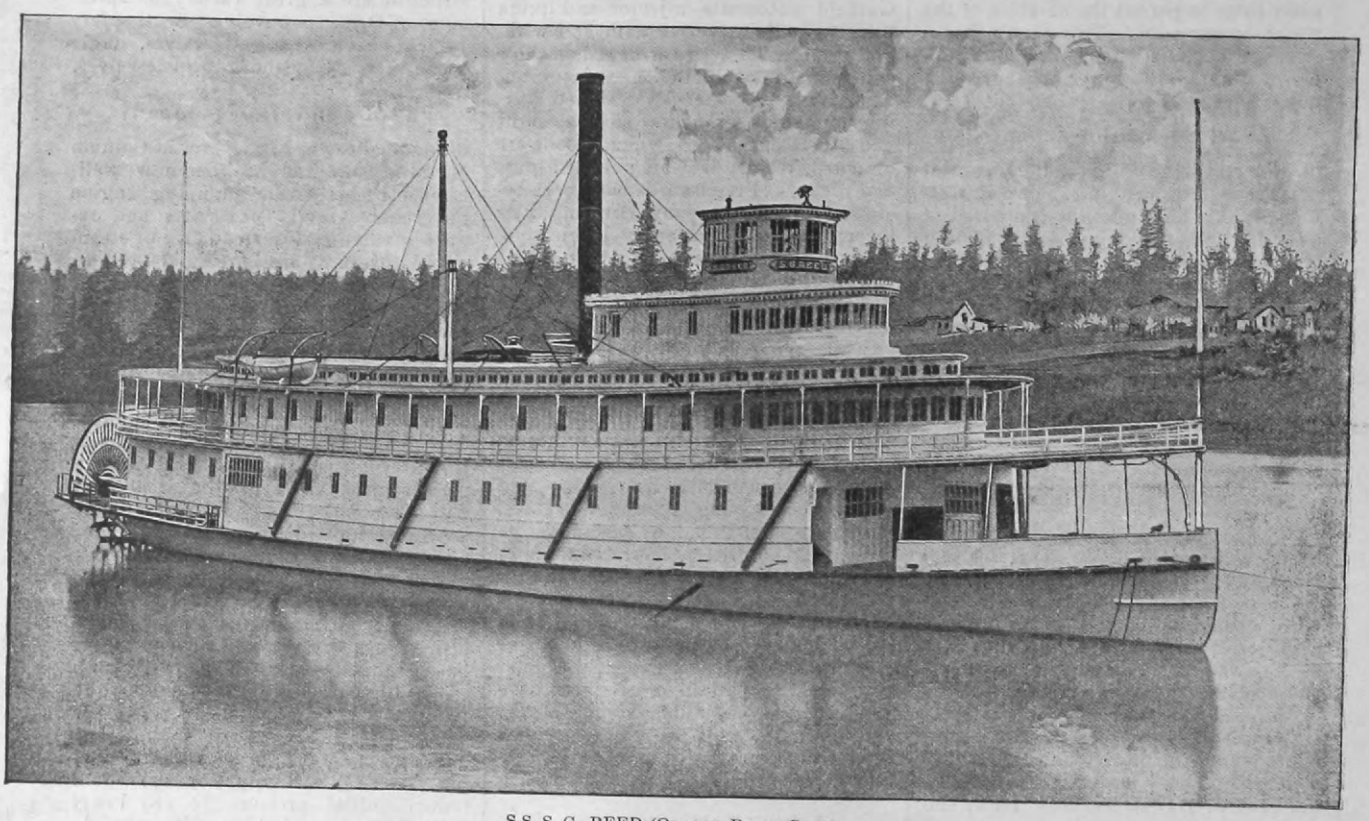
Much indrect harm is done by a requirement of the supervising inspectors that a water space of at least 3 inches should be preserved between the flues and shell, and between the flues themselves. Previous to this enactment about 1½ inches of space was the practice. The men who made these boilers had always used a 14 inch flue in a 40-inch shell, and they knew no other proportions. As a consequence, in order to comply with the new law, they raised the flues in the shell sufficiently to secure the required 3 inches of water space, and thereby vastly diminished the steam space, as well as curtailed the surface for the elimination of the steam.

There is one other form of boiler almost as popular as the double flued. The shell, 42 inches diameter, contains six 8 inch flues, in two rows of three each, the one flue immediately above the other. This gives easy access to every part for cleaning and repair, and steams very well. One such boiler 18 feet long, 210 square feet heating surface, 20 square feet grate surface, is supplying two engines 10 inches diameter, 48 inch stroke, at an initial pressure of 170 pounds. The engines indicate an average of about 170 horse-power, and fuel consumption is 500 to 600 pounds per hour, or a result of 3 to 3½ pounds of coal per horse-power per hour.

Several cases of compounding have given a better result than this, but always at greater first cost, large additions in weight and cost for maintenance, and have generally been succeeded by direct high pressure in the next boat built by the same owners.

The large increase in working pressures of late years has demanded greater strength in the machinery and fastenings, and also in the hull construction, but the increase in weight has not been proportionate to the increased power developed, and the service has thereby been improved.

In a paper read before the American Society of Mechanical Engineers by the writer of this paper, and from which some



S.S. S. G. REED (OREGON RIVER BOAT).
175 feet long, 32 feet beam, 6 feet hold.

* From a paper read at the World's Engineering Congress before the Division of Marine and Naval Engineering and Naval Architecture. The proceedings of this division will be published in a bound volume by John Wiley & Sons, New York.

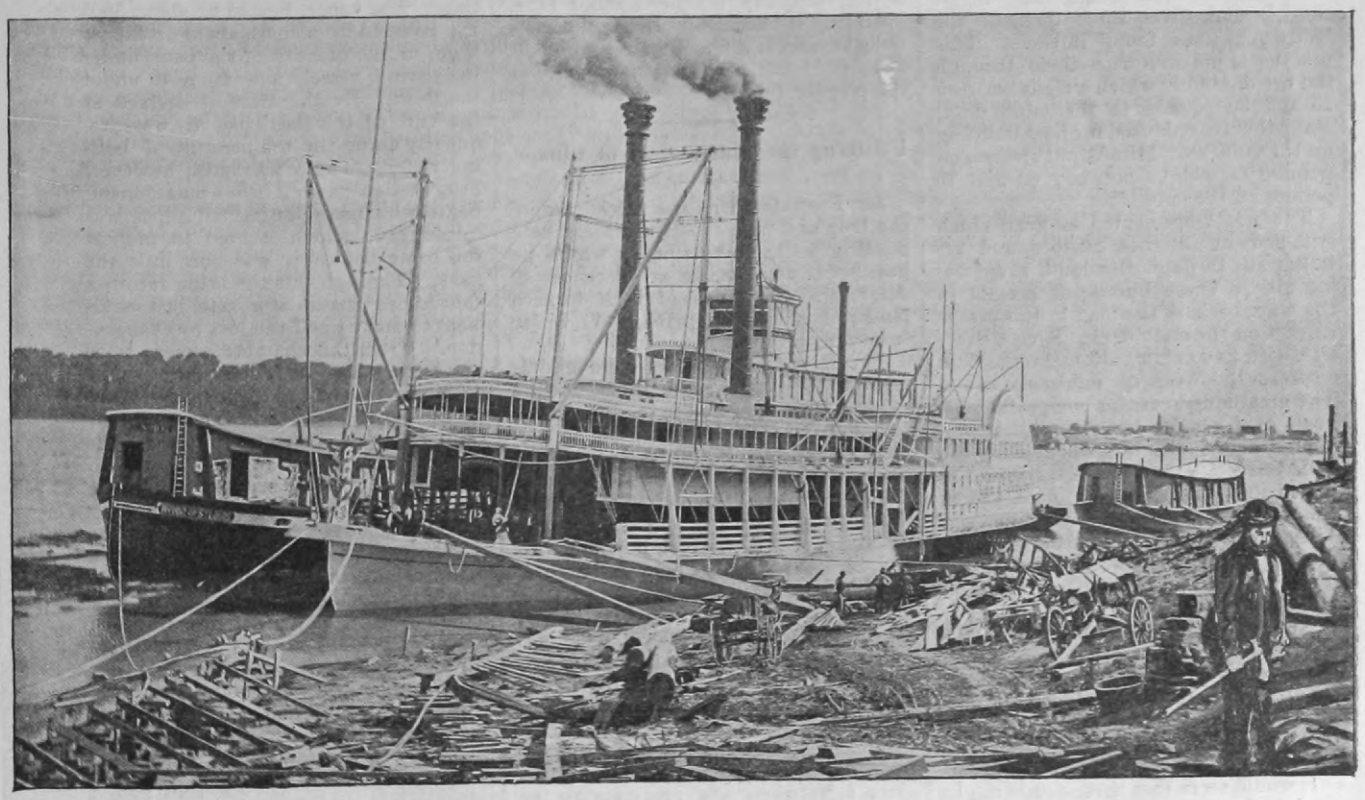
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of the data herein are taken, an opinion was expressed that the improvement in the navigation of the Western waters of the United States would be found in the adoption of composite built boats, the frames and sides above the light draft line being of steel, the bottom and sides, up to the light line, of wood.

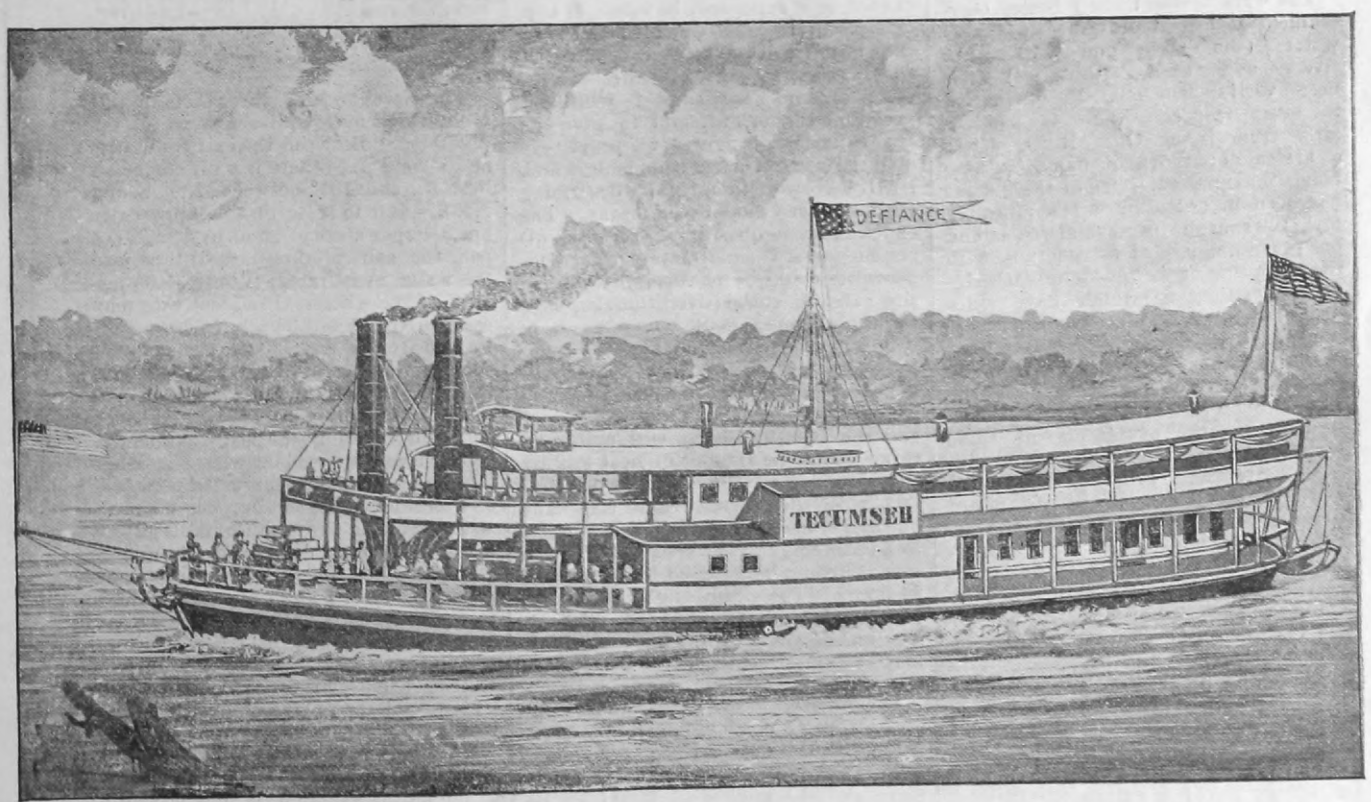
Since this opinion was given in the paper named several boats of this construction have been built, one by the writer, which has been entirely successful in general results, although open for future improvements in detail.

The mistakes, if any, have been in the direction of the use of too heavy steel for the frame construction. It has long been accepted as an axiom by Western boatmen that a stiff boat would not be so speedy under the same conditions as the same boat were she limber; but the results so far obtained by composite construction explode this idea entirely, speeds which have been obtained with the stiff construction being in every case better than with the limber boat.

Reference has been made to the fact that light construction is essential for this class of craft, and that in undertaking to develop an excessive amount of power, in proportion to the displacement or buoyancy of the boat, bad results have been obtained. For this reason the hull construction must be with a large number of dead flat frames in



S.S. CITY OF HICKMAN.
Howard's Shipyard, Jeffersonville, Indiana.



S.S. TECUMSEH.
Made the trip from New Orleans to Louisville, in 1826, in 8 days and 4 hours.

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order to preserve buoyancy. On some of the rivers of the Pacific Slope, especially the Oregon and Willamette, boats have been constructed on much better model and easier lines than any on the waters flowing into the Gulf of Mexico.

The accompanying engraving represents one of these boats, the "S. G. Reed," and gives some idea of the really fine lines found in them. This practice is possible with them through the use of timber which weighs between 25 and 30 pounds to the cubic foot, while the live oak used for boat building on the Ohio and Mississippi rivers and tributaries weighs between 60 and 70 pounds to the cubic foot.

The boat represented is very much stiffened by the use of fore and aft bulkheads through the hold, there being nine. These bulkheads are not in the way, because the load in this case is carried on the main deck. Such a practice with live oak would make the boat entirely too deep in minimum draft. The greater first cost for composite built boats over wooden boats is all that prevents their rapid introduction in the Ohio and Mississippi rivers, but it is to be hoped that this will not long stand in the way of their general introduction. There can be no question that the greater first cost is now justified in the long life and diminished cost of maintenance and repairs.

Not only is steel production diminished in cost, so that angles and shapes are coming into more general use for all purposes, and this increased output further assists to lessen the cost, but live oak timber is becoming less accessible, and is increasing in first cost.

It would seem that these causes ought soon to produce a result which would equalize the present cheapness of wood boats over composite boats at no distant date.

The work of the United States Government in the improvement of these waters (the Ohio and Mississippi rivers and their tributaries) has been vastly beneficial to navigation in every respect. This is particularly true of the Ohio River, where a system of movable dams is now being inaugurated. One of these dams has been in operation a few miles below Pittsburgh for several years, and has given unqualified satisfaction, with the exception of a few details in original construction, which have since been remedied. The second of these dams has now been authorized by Congress, and must necessarily lead finally to a complete system throughout the river. Such facilities will give a new impetus to the navigation of these waters, and an immense demand for increased tonnage will be the result. Through these means will no doubt come an intelligent improvement in respect to hull and machinery construction, with closer attention to fuel economy. The evolution is slow, but it is being evolved, and the time is not far distant when radical changes may be hoped for.

Since the preparation of this paper the writer is indebted to Capt. Ed. J. Howard, proprietor of Howard's shipyard, at Jeffersonville, Ind., opposite Louisville, Ky., on the Ohio River, for a photograph of the steamer "City of Hickman," and also for a photograph, made from a woodcut in Captain Howard's possession, of the steamboat "Tecumseh." Cuts of these boats are hereto appended, as indicating the change in dimensions and appearance between the two extremes of time, 1826 and 1892. The "Tecumseh" was built at Cincinnati, Ohio, in 1826; was a single engine boat, and had the sleeping accommodations for passengers in the hold. She was a celebrated boat at the time, because of the fact that she made the run from New Orleans to Louisville in something over eight days. The "City of Hickman" is the property of the Anchor Line, operating between St. Louis and New Orleans, and is a fine illustration of the excellent boats used in that service at the present time.

Utilizing the Waste Heat of Cinder.

Sir Lowthian Bell has placed before the Iron and Steel Institute some data relating to the experiments which he has been conducting at Clarence, to utilize the waste heat of blast furnace cinder for boiling brine. We quote from it as follows:

The recent experiments were undertaken to ascertain whether the heat in the exhaust steam and that in the slag, taken together, may not be suscepible of useful application. My experience so far does not permit me to estimate with sufficient precision the actual amount of the heating value of either. That of the steam will depend on how much, if any, of its latent heat remains in what, more or less, is not steam properly so-called, but is chiefly vesicular water. Of the heat in the slag, I have, by plunging it into water, ascertained that during the time occupied in running it into the wagons for ease of transport a considerable quantity of its original heat has disappeared, but this will be a varying quantity, according to the time which elapses between the slag leaving the furnace and being applied to do work. Under any circumstances, the temperatures obtainable for direct application cannot be very high, because the steam cannot, it is supposed, be much, if anything, above 100° C. (212° F.), and the heat in the slag can only be slowly extracted. In the present state of our knowledge I will not, because I cannot, attempt to give you any satisfactory figures to prove the quantity of heat at our command, which I will leave you to infer by describing what has been done by its means. The experiments in question have been directed toward ascertaining what temperatures could be obtained by passing the exhaust steam over the slag balls during a time, be it remembered, in which it was performing its work and by so much being cooled. This will depend, of course, on the relative weights of steam and slag employed, and the rapidity of the current of the former, and the amount of heat lost by the latter before it is exposed in contact with the steam. Eight slag balls on their respective wagons were placed in a chamber, and the steam of 16 to 20 tons of water was passed over them in 24 hours. The steam might be heated considerably above 500° or 600° F. Within the limits which necessarily it may be most convenient to observe in such a system of recovering heat otherwise lost, we must endeavor to apply it where possible to such purposes as can be served with heat of moderate intensity. Such an instance can, I think, be found in the industry recently established at Middlesborough—viz., that of producing salt from brine. It was, indeed, from experience at the Clarence Works in the evaporation of brine that the idea of utilizing the heat daily going to waste at the blast furnaces suggested itself. In order to ascertain the precise rate at which steam superheated in the way alluded to performed its work, three pans, each 25 feet long by 21 feet broad, were erected. Under the first, eight hot balls were placed in two rows, iron doors were then closed and the exhaust steam admitted into the two compartments occupied by the slag. The vapor, heated to about 500° F., passed into a space about 18 inches high, of the breadth of the pan, under the second vessel, and from it under the third. By the time it arrived at the end of this last pan it was frequently under the temperature of boiling water. There was still, however, heat enough passing into a small chamber in which a coil of small pipes was introduced, which served to preheat the brine before it was run into the pans. Through this the brine ran in a continuous stream at a rate just sufficient to make good the loss by evaporation. From this chamber a mere trace of vapor made its appearance at the outlet; indeed, occasionally there must have been an influx of air caused by a vacuum due to the perfect condensation of the steam. So far as the figures at my disposal enable me to calculate, a furnace producing 500 tons per week may be regarded as probably being able to evaporate a quantity of brine equal to about 75 tons of salt or perhaps more. Taking one month when the average temperature of the superheated steam left the three pans, it had, after performing its duty under each, the temperatures stated, while the brine it had heated stood at the figures given in the following table:

	No. 1 pan.	No. 2 pan.	No. 3 pan.
	Fahr.	Fahr.	Fahr.
Superheated steam at exit.	375°	212°	210°
Brine in pan.....	155°	149°	152°
Brine entering.....	198°	198°	198°
Proportions of salt obtained, per cent.....	35.96°	64.04°	=100°

There are two or three facts in this table which may require a word of explanation. Between the exit from first and second pans there is a difference of 163° F., and 165° between No. 1 and No. 3. But in spite of this apparently much larger absorption of heat in No. 1 pan, the salt produced, and therefore the water evaporated, is only 35.96 per cent. of the whole. Practically we may assume Nos. 2 and 3 each to have performed respectively 32.02 per cent. of the duty. Now, it is clear that whatever may have been the condition, in a calorific point of view, of the exhaust steam on entering the slag chamber, it has become, by contact with the slag, true steam of a very high temperature, and besides this has become charged with latent in addition to the sensible heat it contains. It is no doubt due to this latent heat being transferred to the brine that Nos. 2 and 3 pans are enabled to perform nearly as much work as the pan which is first in the series. It will be further observed that the brine, which enters at 198°, notwithstanding its constant absorption of heat from the steam passing under the pan, falls in temperature from 40° to 50° F. This is partly due to the cooling influence due to the act of evaporation, but probably still more to the fact that the experimental apparatus had no roof, and in consequence the surface of the brine was cooled by radiation and by the wind passing over its surface.

A New York firm is constructing an electric launch for the Grand Duke Alexis of Russia.

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The Center Blast Tuyere Cupola.*

BY THOMAS D. WEST, SHARPSVILLE, PA.

The economy that is possible if two or more rows of tuyeres could only be made to force the blast to the center of the cupola and at the right elevation, caused me two or three years ago to give thought to the subject and to desire to get nearer the theoretical figure than present cupolas were doing if it could be possible.

One plan after another suggested itself until the idea of a center blast came to me. Having two cupolas in our shop, I thought I would experiment with the smaller, which is 40 inches inside diameter.

The experiment in this small cupola resulted so favorably that we concluded to try the plan in our large cupola in connection with the outside tuyeres, which we did after the plan illustrated by the cut herein shown. Before starting in to use this bottom center blast tuyere, we were not safe in trying to do better than one to seven or eight in fuel, as our metal came all from pig iron and had to "come down hot." With the combination of the center blast and outside tuyeres we found we could obtain hot metal with one to ten or eleven, and I would state that the one to ten and eleven iron was often much hotter than the one to seven or eight melted with the old process, and it would often come so hot it would take considerable scrap to cool it off before it would be wise to pour the metal. To say it would be as hot as stove molders would often care to use it would probably be the best way to convey an idea of its heat, and it might be well to state that the metal would be hotter at the end than at the beginning of the heat. The cupola men liked to use the device, as it made the work of chipping out and daubing up the cupola so much easier than in the old system, for in fact there would often be very little of such work to do. In my experimenting there were several plans tried, but the one recommended later on is the best and last one I am using with this system. It cannot but be evident that with such a plan the blast is conveyed to the center of the cupola or body of fuel, where it should be to achieve the greatest results, and if the theoretical point in perfect combustion is ever to be reached it will be by some such system. Not only does this plan save fuel, but also the lining of cupolas, while the present methods or principles now used for accomplishing economy in fuel do so at a sacrifice to the lining; so much as to make it in many cases a question if there is any economy in using "upper tuyeres."

A is an outside tuyere box made of ¼ inch wrought boiler plate, so as to make it light for dropping purpose. It is bolted only to one half or section of the "drop doors." C is a hinged cover having a hole for the bar cap supporter D. At E is a one and one quarter hole stopped by a little pivot swinging valve, so that if through the peep hole B any leakage should be seen, this valve could be swung back to let the metal or refuse run out. It will be noticed that the tuyere box A is made of a taper, so that should slag iron or refuse drop down into it, it could be readily relieved. The cylinder at F is made of an inner and outer ring of ¼ inch boiler plate. The space G is filled with fire clay. H shows angle iron, of which there are four pieces, for the purpose of supporting the round iron rings I. These and the angle irons are for holding and preventing the bagging of the fire clay, which is daubed on over them to protect the cylinder F from the melting heat of the cupola. This clay would be put on after the cylinder is placed in position inside of the cupola, and dried by the burning up of the bed. It would be the better plan to have two cylinders, so as to have one all the time on hand for drying in an oven. One heat gave us trouble through lack of care when half through by the metal getting through the clay to the iron rings. K is a clay cap having a cast iron prickered casting, as shown at M. The clay or ganister used for forming this cap K and daubing over the cylinder F should be of the best quality. The 1½-inch bar shown at D is in two sections, so as to enable its being pulled out before "dropping the bottom."

In cases where cupolas stand high the bar might often be worked in one piece, In placing the cap K on the cylinder my first plan was to let it rest down upon it and then after the blast was on and the iron commenced to melt the jack screw R would be raised, thereby lifting, of course, the bar H and the cap K to make any width of opening at S for the admittance of the blast that would be thought wise. The raising of this cap up against the pressure of coke and iron gave us trouble at one heat through breaking off of the clay at the outer rim of the cap, so that after the cast was about two thirds over the heat in the cupola had melted the casting M so as to cause a leakage down into the tuyere. We then tried another plan by letting the cap rest on three pieces of fire brick, one of which is seen at X, as done in the 40-inch cupola; these being equally divided, the blast would have ample room to find space for entrance between the top of the cylinder F and the cap K, as at S. In order to prevent the blast from entering this tuyere ere the iron commenced melting we used a damper, as seen at Fig. 2, which would be placed up in the cylinder F at a point about level with H and which consisted of a jointed bar the same as seen at D, having at its end a round piece of ½-inch boiler plate, as at O, having prickers riveted into it for the purpose of holding clay to keep the damper from getting hot and also bring the clay down when the damper would be removed or the blast allowed to enter the cupola. This arrangement, of course, did not require any jack screwing. We simply had the bar D protrude below the tuyere box cover G about 2 inches, so that a swinging catch attached to this cover supported the rod D, and in removing this damper we simply knocked the catch away and the damper fell down, bringing its clay with it. Of course, with this arrangement of damper, the center supports or guides P P for the bar D, when the raising plan was used, were removed. This plan was a decided improvement over raising the cap and worked all right. The reason for it not being desirable to admit the blast through the center tuyere ere the iron commenced to melt was, in the first place, to have the bottom outside tuyeres get the carbonic acid gas well started from the lower fuel before admitting oxygen to combine with the carbon oxide created in the fuel above the bottom tuyeres, upon the same principle that it is desirable to do so with upper outside tuyeres. In the second place, it greatly aids in preventing the tuyere hanging up when the bottom is dropped, with very large heats.

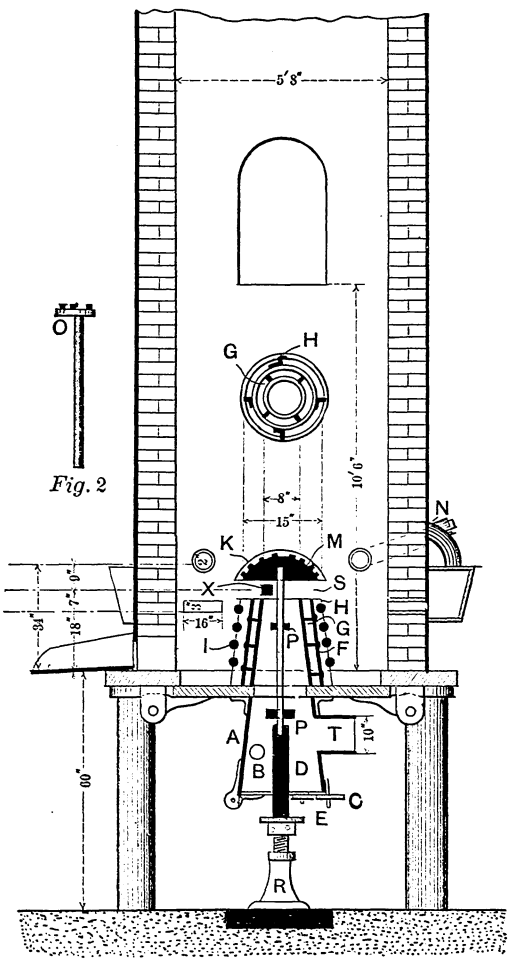


Fig. 2

THE WEST CENTER BLAST TUYERE.

The cap K, as shown, was made larger in diameter than the cylinder F, so as to prevent the dropping metal from falling or getting into the opening at S during the heat. It will be noticed that the point of entrance for blast at S is higher than the bottom outside tuyeres. This is done to achieve the end accomplished by upper outside tuyeres in admitting oxygen to combine with the carbonic oxide in turning it to carbonic acid gas, thereby making more complete combustion.

In making connections for the blast with the center tuyere box A, conditions will vary the plan to be adopted.

*From a paper read at the meeting, October 18, of the Western Foundrymen's Association.

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The attachable pipe coming to this tuyere and connected at T should be an independent one coming directly from the main blast pipe, and not from any of the side tuyeres or wind boxes, and a damper should be arranged in this main side branch pipe so that the pressure of the center blast can be regulated independent of the outside blast. The cupola shown has 12 outside tuyeres, six of them being lower tuyeres 3 x 16 inches, and six of them upper tuyeres 2 inches in diameter. The width of opening for the center blast admitting of air was about 2½ inches. In "dropping the bottom" after very heavy heats we sometimes found that the center tuyere would hang up, but by a little rapping on its protruding end with bars it would come down, and leave a good "dump" or "bottom dropped cupola." In using this tuyere by itself or in combination with outside tuyeres it is essential in large heats to flux a cupola well and run the slag off. By letting slag remain in the cupola it readily chills around the tuyeres and thereby causes "bunging" or "hanging up," and it might be well also to state that the outside tuyeres should be kept well open so that the blast can find easy delivery to the end of the heat through them. At the start the blast should not pass through the center tuyere with any more force than necessary to counterbalance the inside wind pressure. The blast is delivered from a No. 9 Sturtevant fan.

If this system should be adopted in cupolas that are to run steady over ten hours, like those at steel works, I would like to hear of some one trying the cylinder F (instead of as here shown), having it constructed of all fire brick, every other course being tied with a thin plate of boiler or cast iron, the edges of which standing back, so as to be protected by a covering of clay. These rings should not be over ⅝ inch thickness. The idea is to make sure of the heat not causing any cracks to occur in the brick tuyere or burn the edges of the rings while the blast is on. By well tying the brick work or "breaking its courses" it might stand well without the use of the iron rings. I have tried an all fire clay cylinder tile baked in a fire brick kiln, but it did not prove a success, as it was cracked and gave us trouble from leakage. For ordinary cupola work, I know that with care and judgment the plan here illustrated, and having two cylinders as above suggested, could be made to work successfully, and all who try it will find they can save fuel and the cutting of their lining. The latter with some firms is a very costly affair. Of course, in starting in to try this system one is not expected at the very first heat to charge with a radical change in using less fuel, but gradually trying less every heat until they find by trial just how low they can get. At the start you can at least depend on reducing the bed in bulk whatever the bulk of your center tuyere may occupy, and between charges have 20 per cent. less fuel. I know that in our 68-inch cupola we reduced the bed after trials from 3000 to 2100 pounds, and in charges from 900 down to 500. The iron we place on the bed is 8000 pounds, and between charges 6000 pounds, and, as stated in first part of paper, our heats run from 50 to 70 tons. We are still experimenting in this line, but as business has been so dull for the last three months, there has been but little opportunity to go ahead and compute the results.

A remarkable coincidence in this experimenting is that after I had been laboring with the new system, thinking the idea was alone with myself, a letter came from the far North showing that another foundryman was likewise experimenting—Thomas H. Widdowson of Mankato, Minn., who wrote me on this subject after I had been at work upward of a year.

In the discussion Mr. Widdowson stated that in his experiments the melting was faster and hotter. Mr. West made the point that the use of the center tuyere allows of using a lighter blast, and added the following detail to those contained in the paper: "The cupola I used for my experiments was 44 inches in diameter and I put in upper tuyers, about four of them, about 10 inches above the lower tuyeres. I found in experimenting that when the blast was cut off you could hardly get near the charging door. The men in charging would throw their iron in and jump back. We opened the upper tuyeres and the flame would die down." Mr. Widdowson and Mr. Moore agreed that founders usually use too much blast.

The Western Foundrymen.

The regular meeting of the Western Foundrymen's Association convened Wednesday evening, October 18, 1893, at 225 Dearborn street, Chicago, Ill., H. S. Holly in the chair. The secretary reported that in answer to about 50 letters which he had sent out to the different foundrymen, to find out what the feeling was on the question of establishing a laboratory and having a chemist, he had received letters from the following firms: The Edward P. Allis Company, Milwaukee, Wis.; Webster, Camp & Lane Machine Company, Akron, Ohio; Lane & Bodley Company, Cincinnati, Ohio; Rogers, Brown & Merwin, Chicago, Ill.; S. Obermayer & Co., Cincinnati, Ohio; Hurlbut Mfg. Company, Racine Junction, Wis.; South Milwaukee Malleable Iron Works, Milwaukee, Wis.; Walburn-Swenson Company, Chicago, Ill.; Joliet Stove Works, Joliet, Ill.

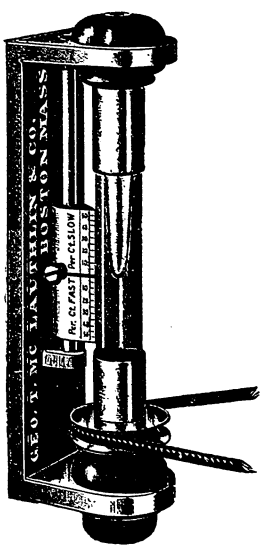
The secretary also made the following report: "At the last meeting the association also instructed the secretary to procure prices for the establishment of a laboratory and prices from chemists for taking charge of a laboratory. From informal inquiries I find it will cost $350 to $500 to equip a laboratory, and of course the rent of the room would be added to that, which, with the running expenses, would amount to about $200 to $250 a year, making a total of about $750 a year. I have received propositions from George Ellis of Chicago, R. N. Hubbard of Columbus, Ohio, and William Molin of New York, to do the work for the association, Mr. Hubbard offering his services for $1200 per year, Mr. Molin for $2000, Mr. Ellis proposing a price per determination and H. O. Chute a $1 rate, providing 25 members agree to take five determinations per month."

The question was debated at length by William Moore of the Joliet Stove Works, Mr. Gardner, Thomas D. West, Mr. Holly, H. O. Chute and others. It was moved and supported that the secretary be instructed to advise those from whom he had received bids that the association was not at the present time in a position to consider the matter of a common laboratory or common laboratory work.

The following applications were received for membership in the association and were unanimously elected: Connorsville Blower Company, Connorsville, Ind.; J. H. Williams, manager Manning, Maxwell & Moore, Chicago, and the Wrought Iron Bridge Company of Canton, Ohio. A paper was then read by Thomas D. West of Sharpsville, Pa., entitled "Progress in the Science of Melting in Cupola Construction," which, with a summary of the discussion which followed, we print elsewhere.

The McLaughlin Speed Gauge.

The accompanying engraving represents in one-quarter size a speed gauge which is entirely different from the usual speed or revolution counter. It is placed in a nearly vertical position and is run at about 3000 revolutions per minute by a small cord or by light friction. It can be placed in any location where motion can be conveyed to it. The standard speed point of the index plate is set at the point of the inverted air cone, and the upper lines indicate the per cent. slower, and those below the per



Speed Gauge.

cent. faster, than standard. The glass cylinder is not quite filled with liquid. As the cylinder is revolved the liquid is thrown to the sides by centifugal force and the bubble of air is extended down the center. At very high speed this bubble would assume the form of a perfect cylinder, and at lower speed would be cone shaped, the position of the apex or lower end of the cone being controlled directly by the speed. It is therefore evident that when properly adjusted the device will very accurately indicate the speed and will show, by the movement of the point of the cone, the slightest variations. This gauge is made by George T. McLaughlin & Co. of 120 Fulton street, Boston, Mass.

During a conference recently held between the operators and employees of a sheet rolling mill, the question of a 10 per cent. reduction in wages was being discussed. One of the workmen stated in effect that it would avail nothing if the concession was granted, as the manufacturers would immediately give the advantage to the consumer. "No, indeed," answered the manufacturer, "we cannot do that; if we do we must close our works; the consumer received that advantage long before we called you to this office to help us in our dilemma."

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World's Fair Awards.

Copper and Its Alloys.

In Group 51, embracing copper and its alloys, the awards are:

Connecticut—Waterbury — Randolph & Clowes, three awards, collection of sheet copper and brass, collection of brazed brass tubes and moldings, seamless drawn copper tubes.

Massachusetts—Washburn & Moen Mfg. Company, Worcester, copper in ingots, bars and rolled alloys and products.

Maryland—Baltimore—Baltimore Copper Company, refined copper; Old Dominion Copper Company, display of copper ores.

Michigan—Calumet & Hecla Mfg. Company, Calumet, battery sands; Tamarack, Jr., Mine, Houghton County, copper bearing conglomerate.

Utah—Cactus Mining Company, Frisco, collection of copper bullion.

Grinding and Polishing Substances.

In Group 45, comprising grinding, abrading and polishing substances, the awards are:

Pennsylvania — Pittsburgh — Pittsburgh Crushed Steel Company, four awards, crushed steel, steel emery, putty powder, rouge; Tanite Company, Stroudsburg, emery, corundum tripoli, and rotten stone; the Carborundum Company, Monongahela, carborundum.

Missouri—American Tripoli Company, Carthage, Tripoli rock filter, disks and plates.

New York—Daniel Lynch, Minerva, N. Y., garnet (massive); Herman Behr & Co., New York City, flint, emery papers, pumice and rotten stone.

North Carolina—Dr. C. D. Smith, Franklin, collective exhibit of corundum.

Ohio—Ohio Grindstone Company, Cleveland, grindstones.

England—Beckmann & Co., London, emery wheels, slabs, files and hones.

Pumps, Engines and Mining Apparatus.

In Group 62, which comprises pumps, engines, and apparatus used in mining, for pumping, draining and hoisting, the following awards are made:

Illinois—Chicago—M. C. Bullock Mfg. Company, three awards, portable hoists, single and double drum, double cylinder, drums, winches and quarry hoists, Simplex gas engines; Chicago Iron works, hoisting engine for flat rope; Crane Elevator Company, two steam hoisting engines; Raymond Bros., wind motor; Fraser & Chalmers, three awards, collection of machinery and apparatus for the mining, reduction and smelting of ore, mining cage, single cylinder drum hoist, Riedler mining pump (deep); the American Well works, Aurora, sinking pump, double drum.

New York—New York City—Ingersoll Sargeant Drill Company, air head for rock drill, piston, cold air compressor; Rand Drill Company, high pressure air compressor; duplex straight line air compressors; Henry R. Worthington, four awards, Lehigh Mine pump, two central packed plunger pumps, one sinking pump, duplex plunger pump; Goulds Mfg. Company, Seneca Falls, deep mine pump.

Indiana—The P. H. & F. M. Roots Company, Connorsville, portable forges, blacksmith blowers, rotary force pump blowers, gas exhauster.

Missouri—Cookson Mfg. Company, Kansas City, Lewis patent rotary valve, duplex steam pumps.

Ohio—Leffel, James & Co., Springfield, water wheels, boiler and engines; Webster, Camp & Lane Machine Company, Akron, complete mining and hoisting machine.

Pennsylvania—Oil Well Supply Company, Pittsburgh, domeless boiler.

Scales, Weights and Measures.

For Group 112 of manufactures, including scales, balances, water meters, weights and measures, the awards are:

Illinois — Chicago — Fairbanks & Co., Standard scales, measures and weights, hopper, abbatoir, suspension, packing house, stock, platform, counter, railway track, weighmasters' beams, iron dealers' bullion, cloth, prescription, postal and bank scales, paper beams, automatic night register, general exhibit, and Fairbanks' automatic cement tester.

New York—Buffalo—Buffalo Scale Company, eight awards, combination beam for hay scales, Dormant, Columbian and Boston platform scales, fancy latch for platform scales, reverse acting meat beam, patent Boston market scales, patent testing machine. New York City—Springer Torsion Balance Company, scales and balances; Neptune Meter Company, water meters; H. R. Worthington, water, oil, molasses meters; Mogul Mfg. Company, three-spring scales; Springfield Scale Company, automatic druggists' prescription scales. Brooklyn — Thomson Meter Company, water meters; National Meter Company, water meters.

Ohio—Kirk & Bailey, Cincinnati, bicycle grindstones.

Massachusetts—Dorsey Mfg. Company, South Boston, water meters.

Pennsylvania—Metric Metal Company, Erie, spring scales; Henry Troemner, Philadelphia, counter scales.

Machinery.

Illinois — Chicago — Bishop & Babcock Company, air compressing and pumping appliances; H. W. Caldwell & Son, screw conveying machinery; Chicago Belting Company, leather belts; Chicago Raw Hide Mfg. Company, raw hide belting, raw hide rope, raw hide lacing; Chicago Fireproof Covering Company, steam pipe covering; Chapman Valve Mfg. Company, straightway valves, heavy union flanges recessed for lead, automatic indicator for sprinkler valves, fire hydrants; E. G. F. Colles & Co., upright pressure heater; Crane Elevator Company, freight elevating and hoisting machinery; Aermotor Company, pneumatic pump; Anti-Friction Metal Company, anti-friction metal; Andrews, Johnson & Co., fan engines; William Baragwanath & Son, steam jacket feed and water heater; Crane Elevator Company, horizontal and vertical double cylinder steam reversing engines; Crane Company, brass and iron valves and cocks for steam, gas and water, special hard metal valves and engine trimmings; Crane Company, screwed and flanged fittings; Dake Engine Mfg. Company, engines adapted for direct attachments to dynamos, pumps, fans and blowers; Dodge Mfg. Company, chain oiling bearings; Dodge Mfg. Company, special dynamo pulley, wood bushing system; Excelsior Heating Company, Excelsior open feed water heater; Exhaust Ventilator Company, exhaust fans for removing hot air and steam; Fraser & Chalmers, four cylinder triple expansion condensing Corliss engine, exhibited without condenser; Goodsell Packing Company, piston rod packings for steam and other joints, sheets and rings with and without wire cloth insertion, metallic piston rod packing; Globe Light & Heat Company, machine for the manufacture of gas from gasoline for fuel and illuminating; Hawley Down Draft Furnace Company, down draft furnace; Hayes Pump & Planter Company, hand power pump; Frank Hennebohle, pressure valves; Jewell Filter Company, filter; H. W. Johns Mfg. Company, Chicago and New York, asbestos packings and coverings, vulcabeston, consisting of sheets, gaskets, rings and special forms used in connection with electrical locomotives, other machinery; I. F. Kearns & Co., pop safety valves and relief valves; W. H. Lahman, Lahman-Kirkwood shaking and dumping grate bars; Liquid Carbonic Acid Company, carbonating machinery; Link Belt Machinery Company, transmission of power by manila rope; Charles Munson Belting Company; leather belting; National Supply Company, fuel oil burner; George E. Nye, steam vacuum pumps; Olmstead & Co., drive well points; Rice & Whitacre, reversing engine; Rice & Whitacre, hot water and steam heating boilers and Kriebel engine; J. A. Roebling's Sons Company, sheaves and cables for transmission of power; Stirling Company, water tube steam boilers; Stillwell-Bierce & Smith-Vaile, open feed water heater; Stillwell-Bierce & Smith-Vaile, live steam purifier; Charles A. Schieren, perforated leather belting; United States Car Company, shafting; Webster Mfg. Company, gas engines, rubber belt conveyors and perfected arrangement for driving pulleys by endless ropes; Cortez F. Wilson, oil tanks with pump; Warren, Webster & Co., Williames vacuum system of steam heating and Webster vacuum feed water heater and purifier; George H. Hitchcock, Danville, adjustable stuffing box; Bates Machine Company, Joliet, Bates Corliss engines; American Well Works, Aurora, collection of pumping and well appliances.

New York—New York City—Abendroth & Root Mfg. Company, special riveted pipes; Abendroth & Root Mfg. Company, sectional water tube boiler; American Leather Link Belt Company, leather link belting; Babcock & Wilcox Company, model water tube boilers and details; Ball & Wood Company, high speed engines; Cameron Steam Pump Works, pumps; Consolidated Safety Valve Company, valves; Conover Mfg. Company, independent steam engine condenser; Lidgerwood Mfg. Company, hoisting engines for mine or contract service, bridge erection and in the operation of wire rope tramways; C. W. Hunt Company, steam engines, governors for steam hoisting engines; Ingersoll-Sargeant Drill Company, air compressor; Knowles Steam Pump Works, double acting triplex pump; New York Safety Steam Power Company, automatic cut off engine; Rider Engine Company, hot air pumps for supplying water to residences, hotels, &c.; Willman Brothers, automatic continuous "spray system" carbonating apparatus; Westinghouse, Church, Kerr & Co., upright tandem compound engines, single action high speed compound engine, collective exhibit of steam engines, steam loops; Wheeler Condenser Company, surface condensers; L. J. Wing & Co., "Wing's" disk fan; Henry R. Worthington, marine feed water heater, large check and foot valves for water works purposes, air compressor and beer racking pump; James R. Floyd & Sons, Ogden quick moving valve for gas mains, self sealing mouthpiece, valve indicator; Fuel Economizer Company, flue heater to heat feed water for boilers; John Mathews Apparatus Company, carbonating machinery; New York Belting & Packing Company, rubber belting, display of rubber packing, gaskets, balls, rolls, hose and tubing; Henry R. Worthington, horizontal triple expansion engine, four cylinder vertical triple expansion engine, vertical compound engine, underwriters' fire pumps, low duty pumps, Admiralty feed pumps, automatic feed pumps, wrecking pump, independent jet condenser and pumps, pressure pumps for mining and elevator service, ammonia pump, duplex water motor, steam accumulator combined with duplex pump, general exhibit of pumping machinery. Brooklyn—Clonbrook Steam Boiler Works, boilers; Conrad Carlson, platform and hod elevator; M. T. Davidson, compound boiler feed pumps. Buffalo—Lake Erie Engineering Works, 1000 horse-power vertical compound engine; National Meter Company, gas engines; Buffalo Steam Pump Company, steam pumps; Yawman & Erbe, Rochester, exhibit of bottle washing and rinsing machines, trucks and tanks; B. W. Payne & Sons, Elmira, improved Corliss engine; Goulds Mfg. Company, Seneca Falls, triplex power pumps for boiler feed; Electric Pipe Bending Company, Harrison, round, flat, oval and special forms of pipe coil; E. C. Fasoldt, Albany, air compressors for physicians' use; Eddy Valve Company, Waterford, straightway valves for water and steam, fire hydrants.

Massachusetts — Boston — Ashton Valve Company, pop safety valve; Hancock Inspirator Company, inspirators for feeding steam boilers; Hersey Mfg. Company, rotary pumps; A. D. Puffer & Son, bottling machinery, soda water apparatus; Tripp Metallic Packing Company, metallic packing for piston rods and valve stem; James W. Tufts, corbonating machinery; Wainwright Mfg. Company, surface condenser and feed water heaters; Walworth Mfg Company, brass and iron valves, cocks and fittings for steam, water and gas, sections of Mills' sectional cast iron boiler. Worcester—Washburn & Moen Mfg. Co., apparatus for the transmission of power; Otis C. White, adjustable expansion movement in ball and socket joints as applied to machinery.

California—San Francisco—Golden State & Miners' Iron Works Company, steam engines; Pelton Water Wheel Company, Pelton water wheel.

Colorado — Davis-Creswell Mfg. Company, Denver, plumbers' and steam fitters' supplies.

New Hampshire—Concord—Page Belting Company, link and leather belting.

Louisiana—New Orleans—Joseph Menge, centrifugal lift pump for lifting water in huge volume; Henderson, Thoans & Gordes, absorption ice and refrigeration machine.

Maryland—Baltimore—Gandy Belting Company, stretched cotton duck belts, Zell improved water tube safety boilers.

Michigan—Battle Creek Machinery Com-

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pany, Battle Creek, Marsh steam pump; Shaw Electric Crane Company, Muskegon, electric traveling crane; Union Mfg. Company, Battle Creek, steam boiler feed pumps and artesian or deep well pumps.

Minnesota—St. Paul—American Hoist & Derrick Company, contractors' machinery; James Boyd, hand and horse power hoists and elevators.

Missouri—Heine Safety Boiler Company, St. Louis, safety water tube steam boilers.

New Jersey—New Brunswick—National Iron Works Company, rocking and dumping grate; National Water Tube Boiler Company, water tube boilers and standard rocking grate bars.

Connecticut—G. H. Bushnell & Co., Thompsonville, filter presses; J. F. Case Engine Company, New Britain, 20 horse-power engine; Hay en & Derby Mfg. Company, Bridgeport, injectors; National Pipe Bending Company, New Haven, National feed water heater; Yale & Towne Mfg. Company, Stamford, differential pulley blocks, screw blocks, safety double lifts, pillar cranes, safety hoisting winches, crabs, sustaining tripods, electric traveling crane.

Indiana—Anthony H. Bryan, Evansville, automatic hot and cold water elevator and distributor; Flint & Walling Mfg. Company, Kendalville, pumps; Reeves Pulley Company, Columbus, wood split pulleys; South Bend Pulley Company, South Bend, wood split pulley.

Iowa—Red Jacket Mfg. Company, Davenport, force pump; Sioux City Engine Works, Sioux City, Sioux City Corliss engine.

Ohio—Cincinnati—J. H. McGowan & Co., general exhibits of pumps, &c., back pressure valves, gate valves, sprinklers, hydraulic tobacco machine; William Powell & Co., eight feed lubricators and engine grinding valves; Laidlaw & Dunn Company, pumping machinery.

Buckeye Iron & Brass Works, Dayton, high pressure improved hydraulic power pump, brass valves and fittings, iron body valves; Cleveland Faucet Company, Cleveland, pumps; Deming Co., Salem, rotary and other pumps, hand piston pumps, hydraulic rams, well digging tools, hydraulic pumping motors; Hoppes Mfg. Company, Springfield, live steam feed water purifier, exhaust feed water heater; Falls Rivet & Machine Company, Cuyahoga Falls, ring oil bearings, friction clutch, couplings for driving pulleys; Jeffery Mfg. Company, Columbus, chain elevators; Morgan Engineering Company, Alliance, steam hammer, overhead traveling crane; Brass & Iron Works Company, Fostoria, gate valves, pipe fittings; Buckeye Engine Company, Salem, simple engines, medium speed, high speed, tandem compound, cross compound condensing, triple expansion four cylinder condensing engines, exhibit of an engine cut away through cylinder, steam chest and valves; Norwalk Iron Works Company, South Norwalk, air compressors; Vulcan Brass Company, Cleveland, hydraulic and hand pressure beer pumps and faucets.

Pennsylvania—Philadelphia—Alexander Bros., leather belting; Hugo Bilgram, smooth running glass; Otto Gas Engine Works, Otto gas engine and gasoline engine; L. Schulte & Co., injectors, steam jet system pumps, jet pump, artesian well system pumps, hydraulic valves, steam trap, automatic eductor and plain eductor, exhaust steam induction condenser; William Sellers & Co., electric traveling crane injectors, Rick bottle cleansing machine, bottle washing and rinsing machine in combined operation; R. D. Wood & Co., Philadelphia, Camden valve and turbine wheel. Pittsburgh—Oil Well Supply Company, Mogul stationary engines, exhibit of brass and iron valves and fitting for Klein & Lays patent pipe line tongs; Phœnix Iron Works Company, Meadville, Dick & Church tandem compound engine. Erie—Jarecki Mfg. Company, Limited, exhibit of brass goods and iron fittings; Stearns Mfg. Company, automatic high speed engine, Gill water tube boilers; Z. A. Watson, Excelsior boiler feeder; Ball Engine Company, 500 horse-power cross high speed compound condensing engine; Bethlehem Iron Company, South Bethlehem, propeller shafts and model of 125-ton steam hammer; A. B. Farquhar Company, Limited, York, 75 horse-power Corliss engine. Waynesboro—Frick & Co., ice making and refrigerating machinery, portable boiler and steam engine. Harrisburg—Harrisburg Foundry & Machine Company, Ideal tandem compound engine; Keasby & Mattison Company, Ambler, pipe covering; J. H. McEwan Mfg. Company, Ridgeway, tandem compound steam engine; Boyts, Porter & Co., Connellsville, single direct acting steam pump; Cyrus Chambers, Jr., Overbrook, model of steam engine made of silver and gold; Downie Pump Company, Valencia, artesian well pumps.

Rhode Island—Providence, Mason, Volney & Co., hoisting machinery, friction clutches; Providence Steam Engine Company, compound steam engine.

Vermont—Montpelier, L. P. & D. Transmitter Company, system of transmitting power.

Virginia—Cardwell Machine Company, Richmond, exhibit of pumps.

West Virginia—Charles Ward, Charleston, water tube marine boilers.

Wisconsin—William Wenzel, Appleton, Converse centriful pumps; Williams Engine & Clutch Works, Beloit, friction pulley; Otto Zwietutch, Milwaukee, carbonating and bottling machinery, seamless portable steel fountains.

In Group 50, comprising aluminum and its alloys:

Joseph M. Hirsch, Chicago, electroplating of aluminum upon iron, zinc, copper, wood; Deutsch Oesterrich Mannes Rhorer, Berlin, Germany, seamless Mannesmann pipes of aluminum.

Boring and Drilling Tools, &c.

In Group 61, for boring and drilling tools and apparatus for breaking ore and coal, the following awards were announced:

Illinois—Chicago.—Eugene Moreau, rock drilling tools; M. C. Bullock Mfg. Company, drills, drilling machinery, Gadder heading machine, Stine-Smith mining machine, Mitchell long wall machine, rock drills; F. C. Austin Mfg. Company, portable rock drilling machine, steel jetting well; Sullivan Machine Company, swivel head channel, drilling machinery; American Well Works, Aurora, well boring, jetting and drilling machine, well auger; Peoria Coal Drill Works, Peoria, coal cutting and mining machine.

Ohio.—Beal's Mining Core Drill Company, Elyria, core drills and tools; Star Drilling Machine Company, Akron, drilling machines; Jeffrey Mfg. Company, Columbus, electric coal mining machines, electric rotary coal drill and ironclad motor, air power rotary coal drills.

New York—John Suydam, Albany, metal flexible joint; Rand Drill Company, New York, rock drills and Derby bit; The Ingersoll Sargeant Drill Company, New York, adjustable tunnel column, clamp and crescent, battery; Ingersoll-Sargeant Drill Company, New York, drills and coal mining machines.

Iowa—Morgan, Kelly & Taneyhill, Waterloo, well-drilling machinery.

Pennsylvania—Oil Well Supply Company, Pittsburgh, well drilling tools, machinery and apparatus, working models, and drilling rigs.

Munitions of War, &c.

In the Department of Manufactures, Group 113, the following awards were announced for munitions of war, weapons, &c.:

Connecticut—Winchester Repeating Arms Company, New Haven, four awards, for small arms, military, sporting and hunting fire arms, ammunition, cartridge reloading implements; Ideal Mfg. Company, New Haven, four awards for implements for reloading cartridges, shells for rifles, pistols and shot guns, powder flasks, bullet molds; Bridgeport Gun Implement Company, Bridgeport, three awards for gun implements, Foster auger bits, loading machinery of all kinds; Parker Bros., Meriden, breech loading shotguns; Colt's Fire Arms Mfg. Company, Hartford, fire-arms; Union Metallic Cartridge Company, Bridgeport, metallic ammunition; the Marlin Firearms Company, New Haven, sporting and hunting firearms.

New York—Burgess Gun Company, Buffalo, N. Y., sporting and hunting firearms; Francis Baumerman, New York, two awards for repeating shotguns and rifles and riot guns; Lefever Arms Company, Syracuse, N. Y., automatic hammerless guns; Remington Arms Company, Ilion, N. Y., military and sporting firearms.

Smith & Wesson, Springfield, Mass., revolvers.

Louis Jordan, Chicago, Ill., sporting and hunting guns, hand made.

Illinois—Chicago—American Screw Company, heading machine, threading machine; Vulcan Iron Works, drop hammers and pile caps; Charles H. Besley & Co., oil cups; Crane Company, pipe tools; Capitol Mfg. Company, Adams automatic bolt threading machine, Cook universal die adjusting automatic bolt threading machine, Capitol combination pipe and rod threading and cutting off machine, Cook full automatic nut tapping machine; Canedy Otto Mfg. Company, blowers and forges, drills, screw plates, pincers and clamps; Farquhar Heating Company, hand riveting machine; International Steel Post Company, machine for making metallic fence posts; A. J. Oehring, multiple drilling machine; John E. Walsh, gasoline torches for soldering and brazing; Yankee Machine Works, twist drill grinder for drill grinders; W. F. & John Barnes Company, Rockford, drilling machines and iron and wood working machinery.

New York—Brooklyn—E. W. Bliss & Co., power presses, seaming machines and gang slitters; J. H. Williams & Co., forgings and wrenches; Stiles & Parker Press Company, punching presses and drop hammers; Merrill Bros., drop hammers; Capital Machine Tool Company, Auburn, quick-acting vises; Gleason Tool Company, Rochester, Gleason engine lathes. Buffalo—Keystone Mfg. Company, patent nonpareil wrenches; Niagara Stamping & Tool Company, machine tools. Manning, Maxwell & Moore, New York, machine tools and machines for working metals; D. Saunders Sons, Yonkers, machines for cutting and threading pipe; Westcott Chuck Company, Oneida, scroll and drill chucks.

Ohio—Cleveland—Bardon & Oliver, Monitor lathe for brass work; Cleveland Twist Drill Company, machine tools; Acme Machinery Company, threading machines; Standard Tool Company, exhibit of twist drills, fluted drills, reamers, drill sockets, arbors, mandrels, taps, milling cutters, chucks, gauges, screw driver bits; VanWagoner & Williams Company, wrought steel vises; Warner & Swasey, machine tools and process for arranging and cutting the teeth of spur wheels.

Hamilton—Niles Tool Works Company, turret head screw machine, exhibit of iron working tools, heavy machine tools; Long & Allstatter Company, boiler sheet and horizontal punching machine, multiple punching machine, angle iron punching machine. Dayton—Buckeye Iron & Brass Works, power feed turret forming lathe, automatic hexagon milling machine; National Machinery Company, Tiffin, bolt cutting, heading and tapping machines; Lodge & Davis Machine Tool Company, Cincinnati, machine tools; Christy Knife Company, Tremont, machines for manufacturing knives; Brass & Iron Works Company, Fostoria, tapping machine; Wells Machine Works, Toledo, combined arrangement for threading and cutting pipes.

Pennsylvania—A. Falkenau, Philadelphia, machine tools, power tool grinder; Jarecki Mfg. Company, Erie, pipe cutting machinery combined with engine; Newton Machine Works, Philadelphia, cold sawing machine; R. D. Wood & Co., Philadelphia, hydraulic machinery, shearing, punching and riveting machinery, lifting apparatus for riveting.

Connecticut—Hartford—Billings & Spencer Company, machinists' tools and drop forgings, box opener; Pratt & Whitney Company, collection of machine tools, standard measuring machines and standard gauges, miscellaneous small tools for machinists' use; A. D. Quint, turret drill. Southington—Peck, Stow & Wilcox Company, tinsmith tools, bench tools, meat cutter, and machine for cutting and folding tin. Bridgeport—Armstrong Mfg. Company, pipe threading machinery; Curtis & Curtis, thread machine, die stock; Hendy Machine Company, Torrington, planers, engine lathes, pillar shapers; E. Horton & Sons Company, Windsor Locks, chucks; Charles Parker Company, Meriden, machinists' vises.

Delaware—Wilmington—Hilles & Jones Company, shears and punches, No. 4 plate planing machine and No. 4 vertical milling machine.

Massachusetts—Boston—American Tool Company, brass finishing lathe and oil separator; George H. Eaton & Co., power presses; Walworth Mfg Company, machine for tapping street main under pressure. Hyde Park—Brainard Milling Machine Company, No. 12 and 14 tool room milling machine, No. 1, 3, 4½ standard universal milling machine, upright plain milling machine, horizontal plain milling machine, long feed milling machine, can cutting machine, small milling cutter grinder, gear cutting machine; Hurlbut, Rogers Machine Company, South Sudbury,

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cutting off and centering machines; Morse Twist Drill Machine Company, New Bedford, twist drills, taps and dies, milling cutters, reamers and chucks; Prentice Bros., Worcester, screw cutting engine lathes and upright drilling machines; John Stark, Waltham, lathes.

Colorado—Wiswall & Davis, Longmont, automatic blacksmith foot hammer.

Maryland—Detrick & Harvey, Baltimore, open side planers.

Michigan — Fox Machine Company, Grand Rapids, shapers; Leland, Falconer & Norton Company, Detroit, double grinders with patented watering devices; Morton Mfg. Company, Muskegon Heights, key way cutters.

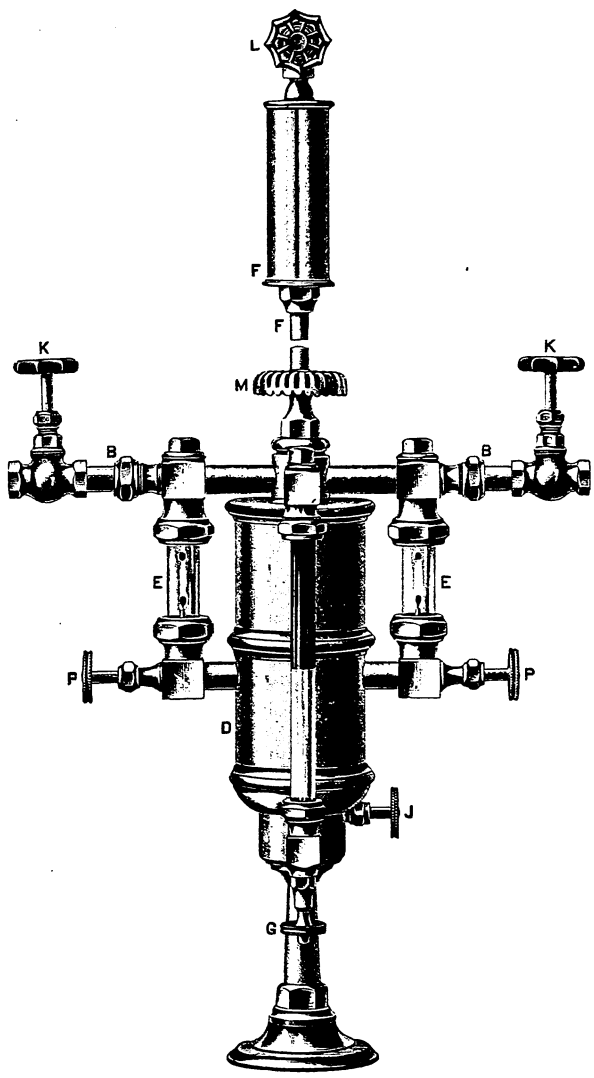
New Hampshire—Nashua—Flathers & Co., screw machine, screw cutting engine lathes, planing machine and hand reaming machines.

Refrigerators and Hollow Ware.

Illinois—Chicago—Wickes Refrigerator Company, tile lined refrigerator room; Vienna Enamel Stamping Company, three awards, enameled steel ware, kitchen utensils, wainscotings; Belding Mfg. Company, household, grocers' and butchers' refrigerators; Paul Dalmicks, four awards, butchers' supplies, ice box, counter, block, meat sack; G. M. Shirk Mfg. Company, refrigerators, cabinets; Adams & Westlake, cans; D. R. Sperry & Co., Batavia, four awards, kettles, farm boilers, caldrons, drug mortars.

Indiana—Summit Refrigerator Company, Michigan City, refrigerators and sideboard refrigerators; Fred A. Wilke, Richmond, portable china kilns for firing decorated china and glass.

Ohio—Wagner Mfg. Company, Sidney, nickel plated cast iron ware.



THE SEIBERT DOUBLE SIGHT FEED LUBRICATOR.

New Jersey—Trenton—Clark, Fisher & Co., anvils, vises, and anvils and vises combined; Ferracute Machine Company, Bridgeton, cutting presses. Newark—Chas. Sloan & Co., small bench lathes and attachments; Gould & Eberhardt, combination drill and tapping press; new type gear cutter. Plainfield—Pond Machine Tool Company, lathes and boring machines, 42-inch car wheel or tire lathe for turning tires on their own axles, planers.

Rhode Island—Providence—Beaman & Smith, heavy standard milling machine, No. 2 standard drilling and boring machine, No. 1 horizontal spindle drilling and boring machine; Brown & Sharpe Mfg. Company, universal milling machine, exhibit of machine tools, universal grinding machine; Darling, Brown & Skarpe, tools for accurate measurement; J. M. Carpenter Tap & Die Company, Pawtucket, taps and dies.

Wisconsin—Gisholt Machine Company, Madison, turret lathes, tool grinding machines, machine tools.

Connecticut—Chapman Mfg. Company, Meriden, four awards, hardware specialties, silver, gold and nickel tea bells, sleigh and telephone bells, dog collars.

Wisconsin—Otto Zuietusche, Milwaukee, onyx and marble soda water fountain, sundry supplies; Wisconsin Refrigerator Company, Eau Claire, refrigerators and sideboard refrigerators; Jacob J. Volhath Mfg. Company, Sheboygan, enameled cast iron ware and sheet iron ware.

Michigan—Grand Rapids—Grand Rapids Refrigerator Company, refrigerators, sideboard refrigerators; John Matthews Company, refrigerators; Alaska Refrigerator Company, Muskegon, three awards, refrigerators, ice chests, beer cooler; E. T. Barnum, Detroit, vases; Mrs. M. M. Harris, Detroit, refrigerator, the "M. M. Harris."

Pennsylvania—Griswold Mfg. Company, Erie, five awards, cast iron hollow ware, store furniture, house furnishing goods, cuspidors, post boxes; Charles Lippincott & Co., Philadelphia, soda water apparatus.

Massachusetts—Boston—A. D. Puffer & Sons, soda water apparatus and all appliances; Smith & Anthony Stove Company, kettles; James W. Tufts, Chelsea, soda water apparatus and appurtenances; the Low Art Tile Company, art tile soda fountain, soda fountains: Paul J. Daemicke, Butcher Boy cooling room; Wolf, Sayer & Heller, butcher cooler; National Key Opening Can Company, key opening can.

Minnesota—The Hurd Mfg. Company, Duluth, refrigerators.

New York—Northern Refrigerator Company, refrigerators and all fixings; Iron Clad Mfg. Company, tinned, galvanized and enameled household or kitchenware, steel soda fountains, rotary ash sifters, utensils, cold handles, soda fountains, enameled sheet metal ware.

Maryland—Keen & Hagerty, Baltimore, tinned, stamped and japanned ware.

The Seibert Double Sight Feed Lubricator.

This lubricator, made by the Seibert Cylinder Oil Cup Company of 53 Oliver street, Boston, Mass., is intended for compound and other engines, and is made with special reference to the use of heavy oils. It is furnished with short, large sight feed glasses, and a long glass in front for showing the hight of oil in reservoir or oil cup. At the bottom of the sight feed glasses there are valves, P P, placed to shut off the oil feed in case the glass gets broken. The condensing pipe A and the discharge pipe B being connected with the steam pipe C, the pressure in both pipes is equal, but the steam entering pipe A condenses and fills pipe F with water, and the weight of this column of water causes the oil in the reservoir D to pass out through pipe B, and thus into the steam pipe, as fast as the water from pipe F is fed into the reservoir by valve J. The oil forced from the reservoir passes down through a tube from the top of the reservoir to the bottom of the sight feed glass, and is there discharged into the water with which the glass is filled, and can be seen as it passes to the cylinder, rising drop by drop through the water. The quantity of oil being used is thus seen at a glance and the feed regulated. The oil is fed in just the quantity needed continuously, and passing into the steam pipe vaporizes and lubricates all of the internal parts of the engine.

The Philadelphia Warehouse Company report a falling off in their business with the iron trade, owing to the general depression and the curtailment of production. A leading feature of their business has been the storing or warehousing of iron, either in the pig or manufactured, as collateral for advances made by them. Under their plans storage is provided in any section at cost price, so that holders may have the advantage of pecuniary assistance with cheap storage, on a margin which will not advance the price of the material to an unreasonable extent.

A steamship of a new type arrived in the port of Philadelphia a few days ago from England. She is the British steamer "Mexican Prince," built at Wallaend, England, and arranged on a convertible principle, whereby the vessel is enabled to carry general or liquid cargoes at very short notice. She has every requisite for loading and discharging any class of products that would ever require conveyance across the sea.

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Anti-Friction Ball Bearings.*

BY GEORGE F. SIMONDS.

The fundamental principle on which balls are now used in bicycles is not correct. In the present style of bearing :

1. The balls are loose and must be handled singly.

2. Each ball is required to sustain both the weight and end thrust.

3. But two rows of balls can be used, one row at each end of the bearing.

4. On account of the principle on which it is constructed the balls and bearing surfaces wear away.

5. There must be a means of adjustment on account of this wear.

In the double cage bearing these conditions are reversed. The balls are confined in cages, and readily and safely handled ; one set of balls carries the weight, while another set takes the end thrust ; any required number of balls can be utilized; properly made, there is practically no wear, and as there is no wear of the parts no adjustment is necessary.

The statement that there is practically no wear to a ball bearing when designed and constructed on the correct principle will undoubtedly be questioned, but as long use shows no change in the measurement of the size of the balls and bearing surfaces, and as the oil with which they are lubricated is not materially discolored, the claim would seem to be justified.

The bevel cage bearing was originated to take the place of the present style of bearing for light work only, for utility and for economy in construction. It is superior to the present style of bearing, in that the balls are carried in cages, and that they run on plane bevel surfaces in place of grooved bevel surfaces. The bevel cage bearing will come into use where the work is very light and where the greatest economy in construction is necessary. The double cage bearing will be generally adopted in those classes of vehicles and machinery where the best is wanted, and economy in use and permanency are in demand.

In subsequent remarks on the bearings themselves reference is made to the double cage bearings only; in the manufacture of the bearings, to double and single cage bearings.

The shafting and parts of the machinery in a small manufactory were started on these bearings in August, 1891, and have been in constant use since. Several carriages have been mounted on them, and a brougham so constructed has been on the streets of this city for the past 30 days. A street car constructed with bearings with $\frac{3}{8}$-inch balls, after constant use for five months, 16 hours per day, showed no wear whatever. Balls that were applied between plane surfaces under heavy pressure measured the same at the end of four years as when first put at work. Several bicycles, ridden constantly for two seasons, developed marked superiority over the old construction. Many instances can be cited showing the practicability and value of the bearings.

When the proper principles for the bearings had been discovered, and the designs perfected, but a beginning had been made looking to their general introduction. A ball bearing, to be of lasting commercial value, must be absolutely accurate and reliable. Perfect spheres were indispensable, and they had never been commercially produced, and the balls and bearing surfaces were required to be of a temper always uniform and reliable, and by no known processes could these results be attained. A small shop was erected in which a force of skilled men have been employed for the past 20 months, and steel balls are now made of absolute sphericity, alike one with another, and with great economy, and a system has been developed for making tempered articles uniform in quality, with a great saving in cost over existing methods for doing similar work. The accuracy and efficiency of the new system of making spheres will be appreciated when it is stated that balls $\frac{1}{8}$ $\frac{1}{32}$ and $\frac{1}{64}$ inch in diameter have been ground from pieces of steel, cylindrical in form, so that they do not vary $\frac{1}{10000}$ inch from perfect spheres or from each other in size.

As the patents covering these various processes and devices are not yet all issued, detailed descriptions must in some cases be withheld, but enough can be made known to convey a general idea.

The new system for making tempered articles is covered by a series of patents under the following titles:

The metallurgical furnace.

The tempering oven.

The double bath hardening process.

The process for hardening rings and sleeves.

By this system Bessemer or open hearth steel is used, carrying about ten points of carbon and costing from 2 to 3 cents per pound, in place of machinery or tool steel, carrying from 30 to 150 points of carbon, and costing from 6 to 16 cents per pound.

By the ordinary hardening process, the quick cooling of a tool made of high carbon steel throughout causes warping and breaking, and has been a source of untold trouble to workers of steel for all time. It is customary in hardening, when the tool needs to be very hard, to cool the article in water or brine, which cools quickly; this secures the desired hardness, but the sudden cooling sets up unequal strains throughout the article, causing the warping and breaking. When extreme hardness is not required, or when an article cannot safely be dipped in brine, it is cooled in a slow cooling medium, like oil. This hardens to some extent and makes the article tough and with less liability to fracture.

To largely overcome these difficulties the double bath hardening process was devised, by means of which the article is plunged into brine and instantly transferred into oil without coming in contact with the air. By means of this device, which I now use for hardening all articles, all the advantages are gotten of both the quick and slow cooling processes now in use, and with much less liability of fracture, and in many cases it is not necessary to afterward draw the temper.

There have always been more or less articles made from iron or steel of low carbon and treated to the process known as case hardening. This process, as heretofore practiced, has made the surface, as a rule, hard for only a slight depth; to use the expression as generally applied in this connection, "skin deep." Greater depth than this is at times secured, but with no certainty of results. By means of the furnace to which I now refer, the ancient and well known cementation, case hardening process is brought under complete control.

All have become familiar with the Harvey process, as applied to armor plate. Great depth of high carbon is secured by that process in the surface of low carbon steel, by subjecting the same, while buried in carbonaceous material, to a high heat, beyond the melting point of cast iron. My furnace was designed and constructed with the view of adopting that process in making the bearing surfaces of these ball bearings, but on testing it I found that the high heat necessary by the process raised the grain of the steel so that it was not adapted for these purposes. The high heat also, as it proved, would destroy the efficiency of my furnace, and I decided to use tool steel for the bearing surfaces and the workmen were instructed to use the furnace for annealing and case-hardening purposes. Later developments, using the ordinary process of case hardening with the article packed in carbonaceous material in a cast iron box, demonstrated that the furnace would accomplish, at a low heat, what had before only been possible to do at a high heat.

By means of this furnace, for the past 18 months all the bearing surfaces for these ball bearings have been made from ten carbon Bessemer steel, and also all the reamers, taps, gauges, &c., which have been needed in their construction, as well as a large variety of articles for other purposes.

Having secured, through analysis, the exact result of each day's work, it has been demonstrated that formulæ may be established, and by set rules definite and inflexible results will be obtained. The surface of any article can be carburized to any given required depth, and to any high degree of carbon, at a low heat, and in a limited time, without impairing the cutting or wearing qualites of the steel. The furnace is operated at a very moderate expense for fuel, and has needed no repairs in 18 months of constant use. During that time no article has been cracked or broken through the processes.

By means of the new process for hardening rings and sleeves any number of tubular pieces can be hardened with absolute precision alike one with another. This is especially valuable in the manufacture of the ball bearings, but will in time come into general use for all purposes to which it is adapted.

The tempering oven is quite new, and will give a uniform heat for drawing the temper, which, so far as I am aware, is not at present attainable.

These ball bearings have been subjected to an exhaustive test to determine the saving in power and their wearing qualities. This test demonstrated that the friction is less than one-thirtieth of that developed by the best class of ordinary bearings as now in use. The rotating shaft of the testing machine—a machine designed and made especially for the purpose—was $2\frac{1}{4}$ inches in diameter, and the balls as used in the bearings were $\frac{3}{8}$ inch in diameter. The first series of tests demonstrated that the maximum speed attainable with the best ordinary bearings, under 200 pounds pressure, was 1000 revolutions per minute, owing to excessive heating of the journals and boxes. A ball bearing mounted on the same shaft at 1000 revolutions under a pressure of 2800 pounds did not heat at all.

In the second series of tests ball bearings were introduced in the machine where the ordinary bearing in the first test had been used. The velocity of the shaft was then increased to 2600 revolutions per minute, and it was demonstrated that increase of pressure on the bearings did not perceptibly in

* From a paper read before the Franklin Institute of Philadelphia.

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crease the resistance (or friction), and with an increase in the velocity the resistance was so slight as to be of no material importance.

A test of the resisting power of steel balls was made. Three ⅝-inch balls stood a direct pressure of 175,000 pounds, or 58,000 pounds per ball, without injury. The same size balls were rotated between parallel plane surfaces, and under these conditions the balls and the bearing surfaces (the latter Bessemer steel, case hardened) successfully withstood a pressure of 2500 pounds per ball.

The New Orleans *Picayune* says the amount of cotton crop of 1893 actually in sight in the South is practically the same as the amount in sight at this time last year. Popular estimates run from 7,250,000 to 7,500,000 bales.

The Morse Valve Reseating Machine.

The Leavitt Machine Company of Orange, Mass., make the valve reseating outfit shown in Fig. 1, which is used to reseat all flat and taper seated valves from 4 to 9 inches, while that shown in Fig. 2 takes the range of 9 to 12 inches. The

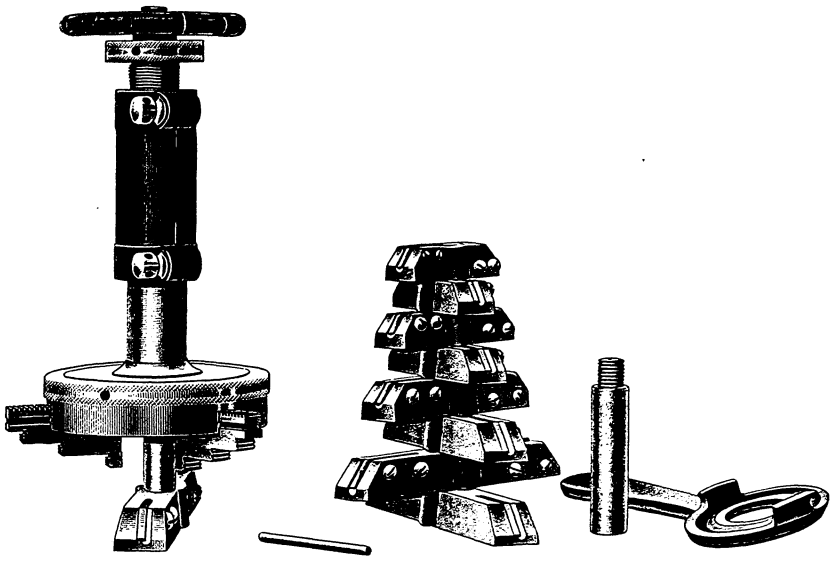


Fig. 1.



Fig. 2.

THE MORSE VALVE RESEATING MACHINE.

lower portion of the machine is provided with a chuck arranged to grip in the opening in the body of the valve and thus hold the device firmly in position. The lower end of the spindle carries the cutter, which is fed to the work by means of a screw having a knurled top, as shown in both engravings. The sleeve carrying the spindle can be clamped in any desired position in the chuck. The machine represented in Fig. 1 is operated by means of a hand wheel, the other being operated by a crank and beveled gears.

Canadian Notes.

Trade and industry have been normally active and nothing has happened to throw either out of its usual grooves. Though the rate of interest has been high—seldom below 7 per cent. since last spring—and though lenders have been very exacting as to the character and amount of security proffered, the circulation has been above the average. In August it was greater than it has been for some years. In September it was almost equal to the very large circulation in that month last year. Mercantile and productive operations have, therefore, not lacked necessary financial sustenance, and both have been larger in volume than they were last summer when less was heard about hard times. Confidence was never absent at any time. Bankers and manufacturers believed that crops would be full, and that everybody's purchasing power would be improved this fall. They therefore co-operated to launch a considerable volume of business upon current credit. The amount and promptness of returns that have matured show that they were right. Harvest machinery, agricultural implements, wire, nails, stoves, furnaces, manufacturing plants, bridge works and sundry other products of iron have figured prominently in the season's exchanges. There have been no failures of any moment in this group of manufactures.

Some hope is entertained that one result of the revision of the United States tariff will be the admission of iron ore free of duty. This hope is cherished both by owners of mining lands of easy access to American consuming importers and by domestic consumers of pig iron. The former of course want a market for their ore, of which there is believed to be an abundance superior in quality and economically available for smelting in the Eastern States and along the border. The iron ore wealth of central Ontario, of Nova Scotia, of Algoma and probably of British Columbia might be considerably developed by a free market in the United States. The establishment of smelting works at various points in this country would be but a partial stimulus to mining enterprise, as, unless we had a large export demand to produce pig iron for, we should be unable to use the product of any great depositories of ore. The consumers of pig iron in this country would be satisfied with the free admission of ore to the United States, as that would be certain to bring down very considerably the price of pig iron, nearly all of their importations of which come from the United States. The abolition of the American duty on iron ore would be felt beneficially in this country in the lower prices at which nearly every article of iron composition could be obtained. Of course our smelters would not hail with approval the free admission of ore to the United States, as such a step would have no influence to cheapen their cost of production, while it would probably raise the price of their material and would certainly lower the price of their product. Since the talk of free iron ore in the United States less has been heard of the numerous proposals to start smelting works at various points.

As the time of year approaches when Parliament assembles there is perceptible a revival of interest in some of the questions left unsettled last session. The Premier and several of his colleagues in government have been touring the country again and holding political

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meetings, at all of which promises of a revision of the tariff are made. The manufacturers who use pig iron, bar iron, sheet and hoop iron are ready again to push forward their claims for a reduction of the duty. Last winter a very thorough investigation of the question of protection in its effects upon manufacturers whose material was heavily protected was made by a committee of the Toronto Board of Trade. Their case, however, did not come up for consideration before the Budget, with its meager changes, was brought down. They are still urgent for free or but moderately protected material. The farmers of the Northwest are more stubbornly than ever possessed of the idea that their farm implements and machinery should not be subject to so heavy a tax for the benefit of home manufacturers. They still hold out, also, for free binding twine, fence wire and coal oil. The low prices they have had to take for the last two crops of their wheat disposes them to be very steadfast in their support of an attack upon protection. It is improbable, however, that any amendments made in the tariff will materially modify its protective character.

The various associations of iron manufacturers held their quarterly meetings in Montreal last week. The manufacturers of bar iron, cut nails, wire, wire nails, horseshoes, horse nails, bolts, &c., made no changes of moment in prices or terms. But the seam dividing the Eastern from the Central and Western members of the associations has finally opened out and parted the two sections. The manufacturers of St. John, N. B., and Halifax, N. S., have for some time been accused of selling at prices different from those adopted by the association. The former were not at the Montreal meetings, and it has been resolved to consider them no longer in the association, and to meet them at their own prices in their own territory. Heretofore, the arrangements between the two sections has been of the nature of a partition treaty, the East being given up to the maritime province people, and the West to the manufacturers of Montreal, Toronto and Hamilton. The prices quoted in the East precluded Western manufacturers from obtaining their schedule rates there after paying freight. The adjustment of Easterners' prices similarly prevented them from shipping to the West. The Association of Manufacturers of Bar Iron, Nails, &c., is holding well together so far as Montreal and the West are concerned. There were several tentative efforts made, however, before they got a well knit organization. Three years ago a ruinous competition in nails and bar iron brought them together again into an agreement that was both literally and metaphorically a wrought iron agreement.

The Ferrona Iron Works, in Ferrona, N. S, have been in operation about a year. Considerable quantities of their pig iron have been distributed in the West, and the industry appears to be a thriving one.

The machinery for the new iron and steel works at Hamilton has been contracted for. The syndicate has applied for incorporation under the style of the Hamilton Iron & Steel Company. Capital, $1,000,000.

The Central Bridge & Engineering Works, Peterborough, Ont., have a contract for a number of large flexible joints for the water pipes in the Buffalo Water Works. The inside diameter of these joints is 5½ feet, said to be the second largest in the world.

Arendt Angstrom, late naval architect and constructing engineer for the Cleveland Shipbuilding Company, has accepted the position of general manager in the Doty Engine Works, Toronto.

The William Clendinneng Company, Montreal, have been incorporated to take over the business of Wm. Clendinneng & Sons, manufacturers of stoves, ranges, iron pipes, castings, &c.

The array of products of iron and steel manufacture at the Industrial Exhibition at Toronto this year was very large. There was little that was very distinctively new, however.

A cause of some dullness in the seasonable trade in heavy hardware is the comparative backwardness of the lumber industry this year. Last fall and winter operations were very extensive in the lumber regions. The sales to American buyers were larger than they had been for many years. This was due to the lowering of the United States tariff on lumber by the McKinley act. But while our shipments of lumber were large, payments were not so prompt as they used to be. The stringency across the line was severely felt by all connected with our lumber interests on this side. But more than delayed payments and the troubles incident to delay followed. American buyers seem not to have recovered their old financial energy for the autumn business, and lumber prospects here are dull. The hardware trade misses the demand for camp equipments, for saws, axes, cant hooks, crowbars, chains, bolts, &c. Manufacturers of sleighs also report a falling off this fall.

The fine, open fall has made trade brisker than usual in hunters' goods. General lines of firearms of United States manufacture are prominent in stocks.

A factory for the making of a new style of lawn mowers is to be started in Brantford by the former president of the Harris Company, lately amalgamated in the Massie-Harris Company.

The contract for supplying steel rails on Government railways was divided up this year. J. R. Hutchins of Montreal has an order to supply 2500 tons; Charles Cassils of the same city is to furnish a like quantity, both for the Intercolonial Railway. W. H. Daunt is awarded the contract to supply 1000 tons for the P. E. I. Railway and 300 tons for the Windsor branch.

The contract for building the five pairs of lock gates at the Sault Canal has been awarded to an Ontario firm. The engineering estimate of the cost is $80,000.

The facilities for improvement afforded by the evening educational classes of the Young Men's Institute, 222 Bowery, New York, are being increasingly appreciated by young mechanics of the city. The classes this season have a larger enrollment than in any previous year in the history of the institution. Nearly 300 young men, who are working at various trades in the day time, employ their evenings in acquiring mental and technical knowledge, of whom 40 are taking the course in steam engineering, 35 that in electricity and 40 in bookkeeping.

A revival of Mississippi River trade is predicted.

Trade Publications.

PARSONS' MANGANESE BRONZE has been used by the home company of London in over 1200 blades and propellers, and no breakage has occurred in seven years. Its extended use by the prominent steamship lines has proved it to possess all the most essential qualities needed in a propeller blade. One of the peculiarities of this bronze was shown when the "City of Paris" was in dock. One of the blades of her screw fell and the outer portion was doubled up into a U-shape without showing the least sign of a crack. When the steamship "Eider" was on the rocks her engines were driven and yet the damage to the propeller blades was remarkably slight. Tests made by the William Cramp & Sons Ship and Engine Building Company of Philadelphia, who are the sole manufacturers for the United States of this bronze, gave a tensile strength of 66,108 pounds and an elongation of 29 per cent. This test piece was cast on the face of one of the blades for the "Noordland," and may therefore be considered as accurately indicating the quality of the metal in the entire blade. Owing to the fact that no marine growth takes place on these propellers and that there is no corrosion, the speed of the vessel can be kept more closely to its standard. Each of the three blades of one of the screws of the "Campania" weighs about 8 tons and cost as fitted over $17,500. It has been found that the advantages more than offset this high first cost. This bronze is also used for tubing, pump rods and linings, valves and parts requiring strength and non-corrosive qualities. Parsons' white brass has been used in the bearings on the Government vessels built by the Cramps, and also in the merchant vessels built or repaired by them. The agent for these metals is G. Douglas Petrie of 39 Cortlandt street, New York.

WE HAVE RECEIVED from the Lodge & Shipley Machine Tool Company of Cincinnati, Ohio, an illustrated circular of their new turret chucking lathe. This machine was designed to occupy the same position with regard to cast-iron work that the screw machine does in its line. With this lathe blank gears, pulleys, fly wheels, drill press tables, and all parts of Corliss and slide valve engines requiring to be turned, bored and faced (the operations on this machine being simultaneous or separate at choice) may be gotten out rapidly and accurately.

THE HENDEY MACHINE COMPANY of Torrington, Conn., issue a catalogue describing the Norton improved screw cutting engine lathe made by them. In this lathe the ordinary train of change gears is mounted in the form of a cone directly on the screw of the lathe, to which they are secured by one spline. Motion is transmitted to either of these gears from a stud gear splined to a shaft parallel with the shaft of the cone and engaging with an intermediate gear which is mounted in a fork in such a way that it can be brought to engage either gear of the cone. In this way the cone can be arranged to cut the regular list of threads from 6 to 20. In a circular they also describe their 15, 24 and 25 inch pillar shapers.

THE BICYCLE POWER PLATING DYNAMO is described in a catalogue by the Hanson & Van Winkle Company of Newark, N. J. This consists of a cast iron column, near to top of which is placed an adjustable bicycle saddle and near the base of which is a shaft carrying two bicycle cranks of the usual form on a band wheel. The dynamo is mounted on top of the column. Electroplating of any kind within the capacity of the machine can be easily done.

A GENERAL CATALOGUE of pumping engines, steam pumps and hydraulic machinery built by Henry R. Worthington of 86 Liberty street, New York, has been received. This describes all the more important types of pumps made by this extensive establishment.

The loss to shipping off the Atlantic Coast caused by the great storms of the last two months is estimated to be nearly $3,000,000.

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THE WEEK.

Tho New York and New Jersey Bridge bill was passed by the House last week, after amendment so as to require the expenditure of $1,000,000 per year after the first year, and that the work shall be completed within ten years. J. H. Swan of the Bridge Company, whose plan has been approved, is quoted as stating that almost all the railroads running into Jersey City have signed an agreement with his company to use one bridge and station, which will be built at Forty-second street, New York, between Broadway and Seventh avenue. The only great road that has not yet joined the agreement is the Pennsylvania, and its adhesion is promised when a guarantee of the actual building of the bridge and station is given.

Twenty vessels and 54 lives was the total loss on the great lakes during the furious storm which swept over them last week. The value of property lost is estimated at over $700,000.

The Pullman Palace Car Company have apparently suffered less from the prevailing business depression than the majority of manufacturing industries. The report of the company's business presented at the annual meeting of the corporation in Chicago last week showed that more men were employed and higher wages paid during the past fiscal year than ever before in the company's history. The financial statement showed total earnings for the year to have been $11,389,896, and operating expenses $3,825,940. The total number of persons in the employ of the company in their manufacturing and operating departments is 14,635 and wages paid during the year $7,751,644. The number of employees for the previous year was 12,809 and wages paid were $6,619,156.

A Yonkers, N. Y., carpet manufacturing concern is reported to be shipping some large consignments of carpets to England in response to orders from the other side

The British Admiralty have just placed an order for 1000 tons of Harveyized armor for the new battle ship "Renown."

The rapidity with which grain is now being handled in Buffalo is something quite unprecedented. During one day of 24 hours last week the receipts at that port aggregated 1,600,000 bushels.

The "Cevic," a cargo steamer recently launched from the yard of Harland & Wolff, Belfast, Ireland, and destined for the transatlantic trade, is by far the largest cargo vessel in the world. This steamer is 500 feet in length, 60 feet in breadth and 38 feet in depth. Her estimated gross tonnage is 8315 and her total capacity of holds 14,089 tons. The vessel is fitted with two sets of triple expansion engines.

A heavy frost which visited the South at the beginning of last week caused severe injury to crops and vegetation in Tennessee, Louisiana and Mississippi. Cotton will, it is calculated, suffer to the extent of 15 to 20 per cent. of the crop.

Ex Senator H. G. Davis of Baltimore, Md., is said to have started a promising new industry, namely, the shipping of West Virginia coke to the silver mining districts of Mexico.

A new coaling device for ships at sea was tested off Sandy Hook last week, when the U. S. flagship "San Francisco" was coaled by the "Kearsage" while the ships were 200 feet apart, and steaming at the rate of 4 knots an hour. The system, which is on the trolley principle, is the invention of Philip H. Low, an ex-United States navy officer, and its advantages in obviating the necessity of using shore coaling stations in certain cases—such as war times, &c.—are obvious.

An electric hearse is the latest innovation in trolley transportation in San Francisco. The vehicle is in use on a railway leading from the city to four suburban cemeteries.

The cattle slaughtering record of the world was beaten last week at Armour's Kansas City packing house, where 3218 cattle were killed in 11 hours, the average being five a minute.

No more striking evidence could be given of the prevailing dullness in business than the announcement that the Reading road is to withdraw no less than 28 passenger trains from its system, including eight from the New York division and 12 from the main line.

It is probable that New Haven, Conn., will spend $100,000 in repairing several of its bridges.

Work is progressing rapidly on the new buildings of the United States Armory, at Springfield, and already finished work has been done on the new Krag-Jorgensen arms.

The *Railway Age* mentions that recently two steamers carried away, within 24 hours, as much freight from Chicago as all the railway lines leading to the East in that time, notwithstanding that the latter have cut down their rates to the closest of margins.

New Publications.

SEVENTH BIENNIAL REPORT OF THE BUREAU OF LABOR STATISTICS OF ILLINOIS, FOR 1892. By John S. Lord, Secretary of the Commission.

As a statistician on the coal trade of Illinois Mr. Lord has been long and favorably known. He is now working in a wider field, and has embodied in the report just issued the results of a very elaborate investigation concerning the working women in the city of Chicago. The inquiries of the bureau have been directed to the earnings and environment of the working women and girls in that city. The investigation covered not alone the transcription of wages and work record of each person from the pay rolls of the establishment with which they were connected, but extended also to the personal earnings of the employees. Facts have been gathered not alone relating to their incomes, but also to their expenses, their place of abode, manner of living, and various details of personal description. In this way statistical details have been gathered on the work, wages and welfare of 5099 women, employed in 95 establishments and 43 industries, and pursuing 474 different occupations in the city of Chicago. Mr. Lord summarizes his data relating to wages as follows: "We find that 21 out of 4526 employees were working for less than $2 a week; also that 17 were receiving $20 or more per week. Between these extremes the greater numbers are massed in three classes earning from $4 to $7 a week, as follows: 675 received from $4 to $5; 882, from $5 to $6; 860, from $6 to $7; total, 2417. Below this central group are found 680 who earn less than $4 a week, and above it are found 1429 who earn from $7 to over $25 a week. This, then, is the general statement concerning 4526 women and girls employed in 90 establishments, in 41 industries, the same being all the employees of every rank and grade in each establishment—viz.: That 15.02 per cent. of the whole number earn less than $4 a week; 53.40 per cent. earn from $4 to $7 a week, and 31.58 per cent. earn from $7 upward."

Data are also presented on the amount of time lost, the expenses, including board and lodging, clothing, sickness, car fare, &c. It appears that board and room to those who pay specific amounts for them absorb 56.4 per cent. of the average earnings; that the item of clothing requires an average expenditure of 21.5 per cent. of the income, making a total for subsistence and clothing of 78 per cent. of the income. Mr. Lord has also gathered statistics of age, nativity, conjugal condition and residence, health and home surroundings, the whole showing an industry and a care which make the report particularly valuable.

An incidental though natural outcome of the inquiry was the collection of data relating to the sweating system in the clothing trade. The canvass of the bureau has disclosed the fact that there are 666 shops with which there are connected, working either in the shop or at home, 10,933 employees, which is very much less than the usual estimate, which ranged between 30,000 and 40,000 employees.

The third part of the volume deals with the statistics of coal mining in Illinois, compiled from the reports of the State inspectors. In this it is shown that during the year ending July 1, 1892, the total number of net tons of coal of all grades mined was 17,862,276. The statistics embrace details relating to labor, both in hand mining and in machine mining. Figures are given concerning the tonnage of coal mined by machine, the number of machines used in the different mines and the number of men employed in connection with them. Mr. Lord has also investigated the question of the consumption of powder in the mines, which shows that the tonnage of coal per keg used was 39.5 tons, while in machine mining it was 95.3 tons per keg. The usual accident statistics are appended. The general report is followed by the detail reports of the different mine inspectors' districts.

BOLIVIA. Bureau of American Republics; Bulletin No. 55, Washington, 1892.

The Bureau of American Republics has added another to the series of manuals on Central and South American countries. The last issued is that on Bolivia, the general plan being followed which has been adopted in all the publications of this series. The first part of the work deals with the geography, climate and resources of that country, while the second section reproduces the political constitution of the Republic and gives in full the import duties of Bolivia.

AERONAUTICS is a new monthly publication which is the outgrowth of the recent International Conference on Aerial Navigation. It is published by the *American Engineer and Railroad Journal*, 47 Cedar street, New York, whose editor is the well known engineer, M. N. Forney. Those who believe in the future possibilities of flight will find it a useful aid in their study.

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The Iron Age

New York, Thursday, October 26, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Effect of Cheap Steel Beams.

The low price of steel beams is now opening up a wider field for them. They are no longer a luxury, available only by those erecting large buildings and to whom cost is a secondary consideration. Builders of moderate sized structures are using them freely in the place of large wooden girders. Warehouses and stores, with no architectural pretensions whatever, are now absorbing considerable quantities of beams, whereas but a short time since they would not have been seriously considered by the builders. Some progressive architects are even specifying them for use in certain places in dwelling houses. Notwithstanding the general depression in the building trade at present the tendency to substitute steel beams for wood is a notable feature of the beam business, and manufacturers are hopeful that the movement will continue to grow. In this prospect of enlarged consumption in the future they see some compensation for the very low prices now ruling. Cheapness is a very effective missionary.

With the movement begun for the use of steel beams in ordinary structures, a great deal has been accomplished which will be of much value if it is persistently followed up. There are many architects and builders who know but little practically of the use of steel beams. They need to be informed of the manner in which such material can be used in partial steel construction. This is a line in which it might be well for the manufacturers of beams to do some educational work. In the construction of buildings, particularly in large cities, economy of space is often very desirable, and a steel beam will often be found decidedly preferable for that reason to a bulky wooden girder. Again, the matter of shrinkage is something that proves very annoying to builders, who find their best work frequently marred by the unexpected shrinkage of a large girder, guaranteed perfectly seasoned, but susceptible to atmospheric changes, as all wood is. There is hardly a house of moderate size in which some steel beams could not be used to advantage. In building expensive dwelling houses, however, architects and builders by the use of steel beams could make them either fire proof or of a "slow combustion" type. It would be of much interest in this connection if some competent person were to make a comparison of cost between such a house and one fitted with wooden joists. It is believed that the enhanced cost would be found so moderate that the man who could afford to build such a house would prefer to pay the increase and not only enjoy the sense of security from danger of fire but find an absolute saving in the lessened cost of insurance.

Beam manufacturers could very profitably to themselves follow up this educational work and instruct builders in the special advantages to be realized from the enlarged use of steel structural material. In entering this field it might be found necessary to make modifications in the shapes and sizes of beams now standard in order to meet new requirements. In the construction of dwelling houses there would, for instance, be no necessity for using the heavy beams now made. Perhaps 3 or 4 inch beams, properly stiffened by cross beams, would be found suited to a great deal of such work. Beams of this size, weighing much less than standard beams, would not be a very costly investment for owners desiring fire proof or "slow combustion" houses, although manufacturers would probably charge more for them than for the heavy sections, being more expensive to roll. There is certainly a most inviting field opening up in this direction for the beam trade and as the era of low prices for beams has apparently come to stay it is likely to prove in the future a better business in point of value than has thus far been enjoyed from the construction of large buildings.

The World's Fair Closes October 30.

The managers of the World's Columbian Exposition have acted wisely in deciding to close on the 30th inst. This is the day which has been set for the termination of the fair from the time when the preliminary arrangements for the enterprise crystallized into definite announcements. It is not surprising that the enormous increase in attendance which has characterized October should have inspired many individuals interested in the affairs of the exposition to plan for its prolongation beyond the official date of closing. They are so numerous and influential that at one time an apparently authorized statement was published that the fair would be continued as far into the winter as the weather would permit, and that next year another six months' fair would be held on the exposition grounds, even if it were confined entirely to domestic exhibits. The legal advisers of the management, however, promptly showed that there were many obstacles in the way in the nature of legislative enactments and innumerable contracts, all based on an early termination of the existence of the enterprise. Complications of an apparently insurmountable character were thus set forth, and enthusiastic advocates of prolongation became convinced that their plans were not feasible. This is well, as it would be a reflection on the splendid management of the fair hitherto if it were to be permitted to run until it simply "petered out" as it would assuredly do. A general feeling of regret is experienced that the magnificent architectural effects of the exposition buildings cannot be preserved. If it were possible to permit the buildings to stand as they are, there is no doubt that they would prove a great attraction to strangers visiting Chicago who have not had an opportunity to attend the fair. But there are many reasons why even this cannot be done. The buildings will be demolished and every vestige of them removed at as early a day as possible, and their beauty will then only be a memory.

Defense of the Atlantic Coast

Gen. O. O. Howard, commanding the military department of the East, in his annual report, just published, strongly urges the establishment of a more efficient system of coast defenses for the great ports on the Atlantic Coast. While admitting the defensive value of the navy and of the naval reserves, he reminds the Government that the work of this arm in time of war would be rather in the offensive department, so that for the defensive purposes of permanent works the sea coast batteries, including mortar shells and other projectiles and all the modern torpedo preparations, must be kept in mind. General Howard is of the opinion that the first attention is needed for the most important ports—*e. g.*, New York, Boston and New Orleans. But the defense will, he thinks, fall far short of what it should be until such cities as Philadelphia, Baltimore, Washington and those near Hampton Roads, as well as Charleston, Savannah and Mobile, are properly covered by defensive works, well marined and properly equipped with modern ordnance. General Howard's convictions on this head are evidently shared by other experienced military authorities, for the Inspector-General of the Army—Brig.-Gen. J. C. Breckinridge—in a recent report pronounced the condition of affairs in the matter of coast defense as "disgraceful," particularly on the Southern coast, which, he says, is "wholly unprotected and at the mercy of any enemy, the forts crumbling away, the cannon rusting and the gun carriages rotting." Twenty-seven forts have, during recent years, been entirely abandoned, and are gradually becoming dilapidated ruins. Ceneral Breckinridge strongly recommends their being put in order and regarrisoned, and he would have all the guns remounted, cleaned and generally repaired, if nothing better can be done at present. Congress, however, is proverbially slow to move, and the important matter of coast defenses appears to have taken a back seat of late years in Washington. Happily there is no

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immediate likelihood of a foreign war; but should such a remote contingency arise, the condition of our Atlantic and Gulf Coast defense—or want of defense—as described by such competent authorities as the general officers above quoted, must cause grave misgivings.

As Foreigners See Us.

Thousands of foreigners have visited the United States for the first time this year. The majority of them are men who are fairly prosperous at home. A few of them are professional exhibition visitors, and a small number are people of leisure traveling to escape boredom. With these few exceptions they are professional and business men who have come to study for themselves the resources and the methods of work of this country. The last few decades have opened the eyes of Europe to our development, and the appearance of American products in many branches of commerce and industry has foreshadowed threats of rivalry from the rapidly growing Western giant. Reports of the impressions thus gathered are becoming numerous in the European press and are not altogether flattering. Many of them are crude, and others are tainted by a spirit of fault finding. Some of our foreign visitors have failed to grasp the fact that conditions are not the same on both sides of the Atlantic, and that what may be good practice there would be an unprofitable method here. Still, honest criticism and kindly comment should be carefully considered by the victim.

One of the things which seem to have struck our visitors is the worship of bigness in America. The one thing which we are accused of never failing to urge with pride is the magnitude of what we show. They are struck by our love of inspiring awe rather than admiration. Our eagerness to dwell on numerical maxima astonishes and amuses them. To them there is little merit in the "biggest thing in the universe." Mere magnitude in their estimation fades into insignificance as compared with the merit of finished excellence and beauty. Unprejudiced Americans will admit that there is a good deal of truth in that criticism, but they will at the same time acknowledge to themselves that in that respect we are not now really quite as bad as we were.

Another matter which foreign visitors are apt to refer to is coupled with the utilization of our enormous resources. We have often observed that a feeling akin to envy pervades their study of our natural advantages. But the one point raised, particularly by the thrifty men from the Continent, is the reckless and often criminal wastefulness which characterizes so many of our operations. Our skinning of the soil, our savage inroads into our forests, the careless destruction for further use of much of our mineral treasures, our neglect in utilizing waste products and old materials, are astounding to them, and at times give rise to indignation and disgust. They point out that we are quick to adopt some makeshift and go on renewing it at frequent intervals rather than spend the money for one lasting structure. The same lavish extravagance pervades the whole community from the laborer to the captain of industry. It obtrudes itself upon the foreigner in private, municipal, national and industrial affairs, and is to him our greatest reproach and our most serious source of danger.

Let it be conceded that it may pay to waste, that posterity has no rights which the living are bound to respect, and yet, with all that eliminated, the criticism that Americans are wickedly wasteful remains only too true. It cannot be contemptuously waved aside as a proof of a mean spirit. We believe that, on the whole, it is one of the principal sources of comfort which has come to those Europeans who have studied our capacity as rivals in the early future. They frankly say that as long as we go on in the extravagant manner apparently habitual with Americans, high and low, they need not fear us as competitors. It is possible that the very sharp lesson which is now being taught us will rid us earlier of a national sin than our foreign friends anticipate.

PERSONAL.

Theodore Fry, M.P., an English ironmaster, who was a member of the party of the Iron and Steel Institute in 1890, has the distinction of having made the fastest trip of record between Queenstown and Chicago.

Professor W. Hartmann of Berlin who was the representative in Chicago of the German Society of Engineers, sailed for home last week.

H. W. Borntreager of the Carnegie interests at Pittsburgh sailed for Germany this week for the purpose of bringing his family, who have been abroad for some time, to this country.

A correspondent in commenting on the article which appeared in *The Iron Age* of last week regarding a shipment of American pig iron to England confirms the view taken of the circumstance and says that a similar hubbub was raised in 1884 when a shipment of Michigan charcoal iron was made to Liverpool to be used for special malleable castings, for which it was difficult to find a metal that was suitable. At that time our correspondent was in Scotland and during his visit attended a meeting of a literary society at which the subject was referred to by a member, who took exception to what was said by the lecturer of the evening. The lecturer had taken for his subject "Nothing New" and had endeavored to explain that the many wonderful happenings of the century had a parallel or origin in the history of civilization. The critic of the evening asked if it was not something new for pig iron to be shipped into England, as had recently been done by Americans. The lecturer admitted that it was a new departure so far as America was concerned, but the circumstance was not a precedent, as primitive pig iron was shipped to England from the shores of the Mediterranean many centuries before America was discovered.

CORRESPONDENCE.

Copper Coating the Hulls of Vessels by Electricity.

To the Editor: The interesting article on electro copper plating steel vessels in a recent issue of *The Iron Age* shows that it is admitted by those most competent to judge that as a protection to the hulls of steel vessels a sheathing of copper is superior to anything else, and the electrical method of the Ship Copper Plating Company you describe is, to my mind, the cheapest and most practical way of applying such a sheathing. The figures you give as to the rate and cost of depositing a copper sheathing by their method, while correct in the main, are not as clear as they might be, and if not carefully read give the impression that the plating of a ship 400 feet long would require a plant of 780 horse-power. The following figures will, perhaps, give a more clear idea of the time and horse-power required.

Taking the thickness of the copper coat to be deposited as $\frac{1}{20}$ inch and the correct density to be used as 12 ampères per square foot, the time required to deposit such a coat will be about 72 hours. For a square foot of copper $\frac{1}{20}$ inch thick will weigh a little over 36 ounces. And as one ampère will deposit nearly 1 ounce of copper in 24 hours 12 ampères will deposit 36 ounces in a little over 72 hours.

The electromotive force required will be 2½ volts, and if 120 10 x 4 feet tanks are in use the electric horse-power required will be a little over 193, as is shown by the following figures: The combined surface of the 120 tanks will be 4800 square feet, which multiplied by 12 ampères will give 57,600 ampères; this multiplied by the voltage gives 144,000 watts, or a little over 193 horse-power. Taking the efficiency of the electrical plant at only 80 per cent. it would at no time take more than 241 horse-power to run 120 tanks.

J. D DARLING.

FRANKFORD, PHILADELPHIA, October 17, 1893.

OBITUARY.

JOHN O HUGHES.

John O. Hughes, senior member of the firm of Hughes & Patterson, iron manufacturers at Kensington, Philadelphia, died suddenly in Chicago on the 18th inst. of heart disease. Mr. Hughes, together with his wife and Mr. and Mrs. John Fritz of Bethlehem, were visiting the exposition when death came to Mr. Hughes without a moment's warning. Deceased was born in Denbigh, Wales, in 1832, and when a young man emigrated to this country. He became identified with the iron trade, and entered the firm of Hughes, Morgan & Caskey, by whom, in 1870, the Delaware rolling mill at Kensington was erected. The firm afterward becames Hughes & Patterson, and in 1877 Walter Hatfield was admitted to an interest. The Philadelphia rolling mill, at Beach and Vienna streets, Philadelphia, was purchased by the firm in 1889 and added to the plant, the total annual capacity being 27,000 net tons of bar iron, iron specialties, skelp, bands, hoops and rods. Robert Patterson died last April, and on May 1 Robert J. Hughes, the eldest son of the senior member, was given an interest in the business. Mr. Hughes possessed a thorough knowledge of the iron busi-

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ness, and it was mainly by his efforts that the establishment was brought to its present size. He was a well-known club man, but never associated himself with politics.

S. P. HINKLEY.

S. P. Hinkley, manufacturers' agent, whose office was located at 101 Lake street, Chicago, died in St. Louis on October 18, while in that city on business. He was born in Somersetshire, England, in 1838, and came to America when he was 20 years of age. He had been a sufferer from heart trouble for several years. Mr. Hinkley represented the Samson Cutlery Company, the Crescent Saw Company, and Joseph McCoy & Co., at the time of his death. He was about 55 years old, had been a hardware salesman of many years' experience, enjoyed a wide acquaintance, and was highly esteemed for his many excellent qualities of head and heart. He leaves a widow and two sons.

Sheet Mill Wages.

When the iron and steel roofing business commenced its rapid development into a very important industry some 12 years ago competition became brisk, and in order to compete successfully many roofers decreased the weight per square foot of flat sheets used without changing the gauge marked thereon, so as to keep their cost down and even up on the reduced prices at which their finished goods were sold. According to the old standard No. 27 used to weigh 72 pounds per square, flat, but it was reduced to 68 pounds, 66 pounds, and finally to 64 pounds. When the lowest figures were reached the Iron and Steel Roofers' Association condoned the sin of their brethren by adopting a new standard, taking Haswell for authority. According to the new table of weights No. 27 was made to weigh $\frac{64}{100}$ pound per square foot, but according to the rolling mill table of weights as printed in the agreement entered into with the Amalgamated Association of Iron and Steel Workers sheets rolled to this weight should be classed as No. 28 gauge, and upon that basis the mills of the Wheeling district have always paid their rollers. When the Roofers' Association established their weights attempts were made to get $\frac{64}{100}$-pound sheets rolled at No. 27 price, but the workmen objected and have always received the full No. 28 gauge price, which was $10.40 per ton. Pittsburgh mills also made settlements on the same basis, but many mills outside these two districts succeeded in getting $\frac{64}{100}$-pound rolled for No. 27 price, $9.60 per ton, thus gaining an advantage of 80 cents per ton over some competitors, while the scale of wages signed was in each case identical. Since July 1 the legal standard of weights for various gauges of iron and steel sheets has become the basis of settlements and No. 27 now weighs $\frac{68}{100}$ pound, the price for rolling the same being $10 per ton. This change places the mills that formerly paid $9.60 for No. 27 gauge in a worse position than they were prior to July 1, as they now pay $10 for rolling $\frac{68}{100}$-pound whereas they used to get $\frac{64}{100}$-pound rolled for $9.60, a difference of 40 cents per ton. This is the principal concession known to have been made by workmen. In explaining the matter workmen will say that they were ignorant of the exact weight of the sheets they were rolling, but such a statement does not destroy the fact. In like manner many other concessions were made (with a wink) when mills were able to secure large orders for sheets rolled to special weights which came between two gauges of the recognized table. Although contrary to the rules of the A. A. of I. and S. W., one instance is known where No. 27½ gauge was paid, half the difference between No. 27 and No. 28 being added to the price of No. 27. This occurred at an isolated mill. It is right that concessions of this kind should be made between employers and employees, provided neither side belongs to an organization, but when organization does exist and both manufacturers and workmen are supposed to be placed upon an equal basis in their respective competition, the basis should be maintained or organizations should be disbanded and local agreements govern the matter of prices to be paid for labor.

Trade-Marks.

We are indebted to Francis Forbes, secretary of the United States Trade-Mark Association of New York, for copies of a series of valuable papers read at the Congress of Patents and Trade-Marks at Chicago. The subjects discussed are of such importance to manufacturers that we present the leading features of some of the papers.

The Present Condition of the Trade-Mark Law in the United States.

BY J. M. BATTLE OF ST. LOUIS.

The practice of designating certain manufactured products by trade marks and labels is one that has met with the approval of the public, having many advantages in its favor, while few, if any, objections are to be made against it.

It would seem that the statutes of the United States which created the trade mark would throw around it every safeguard, and make it as sacred as other rights so highly prized by the American people. The history of trade-mark legislation shows that Congress has had this object in view, but unfortunately has been thus far unsuccessful in the work of perfecting a law which the courts will uphold, and to-day the statutes of the United States provide no penalty for imitating or counterfeiting trade-marks or labels.

The holders of trade marks may proceed against infringers by civil action under both Federal and State laws, and many States inflict penalties for violation of trade-mark rights; but for many reasons, unnecessary to enumerate here, a Federal penal law is necessary. Many ordinarily well informed persons presume that we now have such a law, and indeed it is to be found in the Revised Edition of the U. S. Statutes, but it has been decided by Judge Brewer (40 Federal Rep., page 250) to be "a dead letter," and it is only necessary for us to know that it is such, without tracing out the technicalities involved.

In consequence of legal entanglements, the dishonest dealer resorting to imitation, counterfeiting and substitution has become bolder and bolder in his nefarious work. Almost every meritorious trade-mark article known to commerce has been made the basis for such depredation. One can scarcely find an advertisement for such goods which does not contain the warning "Beware of imitations." It has been said in an editorial in one of our leading papers that it has come to pass that the more the manufacturer advertises his trade-mark goods the more the imitator fattens and flourishes. As far as the manufacturer is concerned this contemptible practice is simply a robbery of his name and profits, a practice that ought not to be tolerated or indulged in by any man who respects himself or the rights of others.

The people are made defenseless victims. They have learned to depend upon certain trade-mark articles, the value of the genuine of which they know by experience, and the fraud practiced upon them by imitation not only deprives them of the right to the identical thing they are giving up their money for, but often endangers the life or health of the person imposed upon. Take for example many proprietary foods and medicinal preparations used in the treatment of disease and in surgical operations. The physician is familiar with and satisfied with the nature and quality of certain proprietary articles and frequently resorts to their use. It requires no great stretch of the imagination to contemplate the magnitude of the offense of supplying him and his patient with an inferior or worthless substitute—it is simply heinous. Infirmity or death is the result to the patient. The reputation of the physician is damaged. The guilty druggist, however, has made a few cents more than he would have done had he sold the genuine article, and he continues to pirate and thrive without molestation.

Congress has shown a disposition to curb this evil. At the last session a bill was introduced by Mr. Hall of Minnesota providing for the proper registration of trade-marks and labels, settling disputes concerning their rightful ownership and providing punishment for parties found guilty of imitating them or the goods to which they apply. This bill was considered by the Committee on Patents and favorably reported to the House of Representatives, where it failed to reach a hearing for want of time. It will be presented to Congress again at this session either by Mr. Hall or some member of the Committee on Patents, and every honest man in this land who can exert any influence upon a member of Congress should do all in his power toward obtaining for it a full hearing. There is no doubt about it passing, if fully considered.

The question may arise, why is it necessary to influence the members of Congress to take action upon a measure of such manifest importance and justice? At the last session of Congress there were pending over 10,000 different measures, and at this session there will be as many, if not more. It is not reasonable to presume that any human being can within the limited time carefully read this great number of bills, separate the good from the bad and concentrate his thoughts upon the few that should become laws. Use every opportunity in person and by letter to press it upon the minds of the Congressmen and keep it uppermost in their thoughts. If concerted action is taken by parties interested this bill will become a law. Then the manufacturer will no longer be robbed with impunity. Then the buyer will obtain the identical article he pays his money for.

Trade-Marks From the Manufacturer's Point of View.

BY EBERHARD FABER.

The manufacturer who expects to sell articles made by him because he believes them meritorious will adopt and affix some mark to them as a sign indi-

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cating to the purchaser the way of return to the article. He thereby establishes a good will of his business.

While the quality and character of the article are preserved the tendency to a return to purchase is sure; but if the quality or character is changed by a manufacturer, or if the purchaser is so often deceived by spurious articles that he cannot be sure of the original sign, then the manufacturer's trade is lost and can only be regained, if at all, at great cost.

In the notable litigation in the year 1877, between Colman & Co. and Crump, over the bull's head label for mustard (reported in the New York Court of Appeals Reps., Vol. 70, p. 573), it was alleged on the part of the plaintiff that their sales had dwindled from a very large to a very small amount and that while so dwindled some 6,000,000 spurious bull's head labels had been sold for application to packages of so-called mustard.

Again, a manufacturer of salaratus, long since out of business, stated that he went abroad, leaving his business in the hands of an agent who had full control. At the time of leaving the sales were very large, and the packages honest and full weight. On his return two years afterward he found that the pound packages had shrunk to ⅞ pound and all others in proportion, and that the trade had shrunk to one quarter of its former value. He attributed the loss of sales to the deception of the purchaser. He closed the business. Many instances of this kind are familiar to every manufacturer. The fierce competition of late years and the striving of many establishments to produce and sell goods at lower prices than others have led the more unscrupulous manufacturers to imitate goods of long standing reputation and bearing widely known marks.

All that the manufacturer of a uniform product meeting the wants of the people desires is to be let alone by imitators, retaining his sign or mark so distinct that the most unwary may be able to return and repurchase his product.

It is apparent that good morals teach that his wish should be observed. Anything which contravenes it is based on deception. Such deception can be restrained by the courts, but the proceedings have been and are expensive and uncertain, and many of the States have passed penal statutes for the repression of imitation, viz.: Arizona Territory, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nevada, New Jersey, New York, North Dakota, Ohio, Oklahoma Territory, Pennsylvania, Texas, Utah, Washington, Wisconsin.

But still the manufacturer is not secure in the condition in which he believes himself to be placed and to which he is justly entitled by the rule of morals. He has neither a mark which will go everywhere and be protected everywhere nor proper means of ascertaining whether he may not himself be a violator of the moral if not the statute law. The latter is the more serious of the two questions in the United States, where there is absolutely no means of determining who is the first to adopt and use a mark, and therefore entitled to it. An approximation may be reached by a long series of advertising, *e.g.*, such as has been given to such well known articles as Spencerian pens, Sozodont, Rising Sun stove polish, Maizena, Sapolio, Armour's extract of beef, Pearline, &c., but these have become known through the length and breadth of the land by a vast amount of advertising, and it is not to be expected that any one who had a prior claim would remain silent.

The actual condition of things which not only may but does exist is illustrated by the stove, which is a bulky article with a more or less local sale. A directory of stove marks issued a few years ago showed that all but one brand given were used by from two to five different manufacturers. When the British law of registration was adopted it was found necessary to allow any mark which was not then in use by more than three persons in different parts of the United Kingdom to be registered by each of the users up to three. If there were more than three users then the mark was considered a common mark and none were allowed to register. The British law has remedied this difficulty by requiring new marks to be published and registered, and there can now be no excuse for adopting marks similar to those already used by others. In this country, however, no national registration of all marks exists, and an attempt has been made by private means to ameliorate the condition of the manufacturer in this respect. I say ameliorate because no private enterprise can make the position more than tolerably safe. The means to which I refer is the United States Trade-Mark Association.

If the manufacturer is himself within the bounds of good morals and has adopted a trade-mark—perhaps struck out of a pleasant sound in a moment of inspiration and put into letters—he ought to be let alone in its possession, not only in his own country, but the world over. This would seem right to both the manufacturer and the consumer. In this age of the world, when the printing press is spreading the fame of an article everywhere, it is a matter of importance to the far away purchaser, who has only heard of the fame of the article or who has obtained a stray sample, that he be protected from imposition.

It is understood that a bureau for the international registration of trade-marks has been established at Berne, in connection with the Union for the Protection of Industrial Property between Belgium, Brazil, France, Guatemala, Great Britain, Italy, Netherlands, Portugal, Servia, Spain, Switzerland, Sweden and Norway, United States and Tunis. But registration can only be made at this bureau through the intervention of the nation. The United States has not yet made provision for such registration for its citizens.

I have called your attention to the prime needs of the manufacturer and to the means at his disposal to fulfill them. These means, it is evident, are not sufficient in this country, and it is proposed that united action should be taken by the manufacturers of the United States to establish a proper national trade-mark law superseding the present State laws on the subject.

Not until then can any manufacturer be safe in the good will which he has created for his products, or in the esteem of his fellow citizens which comes from respecting the rights of others. The Supreme Court of the United States has held (McLean *vs.* Fleming, 96 U. S., 245) that an injunction might be granted after a lapse of ten years of continuous use against the second user of a mark—*i. e.*, the one who was unfortunate enough to be second in point of time to adopt the mark—and this might happen although the second user had not intended to infringe anybody's rights. It is outrageous that such a pit should exist, into which the cautious may fall. In a country where registry laws in their proper form prevail such a case could not happen, because suit could not be brought except upon a registered mark. The registration allowed in this country not being required as a prerequisite to a suit, is not of such a complete character for marks in existence as to be of any aid in assuring the adopter of a new mark that he is not taking something which belongs to another.

It seems to be necessary for the public good that provision should be made by the nation for the proper adoption and continued use of marks indicating the particular manufacturer, and that further provision should be made for the full use by our citizens of international registration.

Trade-Marks.

BY ELIJAH A. MORSE, CANTON.

The value of State and national legislation for the projection of property rights in trade marks cannot be overestimated. Property in trade-marks has been recognized in civilized nations for centuries, and in more modern times by legal enactments to protect, secure and defend the owners of trade-marks. Although, unfortunately, a United States national law on this subject, making piracy a penal offense, was some years since declared unconstitutional by the Supreme Court of the United States, I regard the matter of so grave a moment that I think it of sufficient importance in this country to secure if possible a constitutional amendment, giving Congress authority to re-establish the old law upon this subject, owners at present being compelled to defend their rights under the common law and State law. A uniform trade mark law for the whole country—like a uniform bankrupt law—would be of great value.

Why should trade-marks be protected? 1, untold millions of money are invested in the manufacture of articles, and untold thousands of men are employed in industries protected by trade-marks, and upon the protection of which the continuance of these industries depend. 2, no one is more interested in defending the rights of owners of trade-marks than the consumer, who thus learns to distinguish the kind and quality of goods which he wishes to buy, and which he is well nigh certain to obtain under protected devices and trade-marks. Impair, or destroy or refuse to protect such marks and the property rights in them and such benefit to the consumer (in many cases priceless) is lost. 3, the protection of trade-marks prevents ruinous competition, which compels an inferior quality, short count and short weight to meet the demands of competition when the article is not so protected.

I look upon associations for the protection of trade-marks and legislation to that end as wise and far reaching statesmanship, beneficial, 1, to the manufacturer; 2, to his employees, by insuring them permanent employment; 3, to the merchant, wholesale and retail, by largely lightening the labor of personal examination of goods purchased and sold, the trade-marks in most cases being a sufficient guarantee of quality, weight and count; 4, by the great benefit to the consumer, by insuring him in his purchase of certain marks a uniform and known

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quantity, quality, weight and count of merchandise, in the case of drugs, medicines, prepared foods for the sick and surgical instruments, for instance, often a case of life and death.

I should hope that this Congress would memoralize the civilized governments of the world for continued and additional legislation for the defense and protection of property rights in trade-marks.

MANUFACTURING.

Iron and Steel.

The Indiana Iron Company, Muncie, Ind., manufacturers of bar iron and steel, recently made a proposition to their employees to pay them $4 per ton for puddling and 25 per cent. less on last year's scale for finishing. This proposition was not accepted by the men, and the probabilities are that when this plant resumes operations it will be started up as a non-union mill and on a scale of wages mentioned above.

For the past two months the Belmont nail department of the Wheeling Steel & Iron Company has been undergoing repairs. These have been completed and in all probability this department will resume operations in the near future. The Belmont blast furnace of this concern has also been undergoing repairs for some time, which have been completed and the furnace is again ready for operation.

We are advised that the report that Horace and Arthur Brock of Lebanon, Pa., had leased the Colebrook furnaces for a term of 20 years, and that the firm of Coleman & Brock would be dissolved, is entirely without foundation. It will be remembered that the Colebrook furnaces are at Lebanon and are operated by Robert H. Coleman.

The Eureka Cast Steel Company of Chester, Pa., are, besides repairing the damage caused by the recent fire at their works, increasing their open hearth plant to three times its former capacity. They expect to commence running about the first week in November.

The puddling department of the Passaic Rolling Mill Company, at Paterson, N. J., has closed down.

The Pittsburgh Iron & Steel Engineering Company of Pittsburgh are erecting a number of iron buildings for Wm. Clark's Son & Co. of the Solar Iron Works in that city. These buildings are three in number, being 100 x 100, 60 x 218 and 56 x 260 feet in size, and will replace former frame structures recently damaged by fire. The first mentioned firm have also closed a contract with Geo. A. Macbeth & Co., glass manufacturers, of Pittsburgh, for the erection of seven iron buildings covering their entire equipment.

The Ohio Iron Company, Zanesville, Ohio, manufacturers of bar iron, are operating two mills. These works are being run on a non union basis. At one time many of the workmen were colored, but the company now find no difficulty in securing enough non-union white men to fill the crews for such part of their plant as they desire to operate. A full force of men could be easily secured if required.

It is stated that the steel rail mill located at Alexandria, Ind., last spring by the DePauws, and which was partially completed when the DePauw failure occurred, will be finished by the Union Trust Company, who were made assignees of the DePauws.

The Cambridge Iron & Steel Company, Cambridge, Ohio, are operating three of their four sheet mills and are adding another pot to their galvanizing shop. This plant is equipped with the Bayliss patent pots manufactured by Davis & Co., Wolverhampton, England. It is claimed that this system effects a great saving of labor, as the sheets are carried automatically from the pickling vats through the metal pots to the shipping department. Another claim is perfect distribution of metal over the surface of the sheets, all parts being coated evenly. This department is under charge of Thos. E. Cook, formerly of Saginaw, Mich.

It is stated that operations have been resumed in full at the North Branch Steel Works and the Mahoning Rolling Mill in Danville, Pa.

The American Sheet Iron Works of Phillipsburg, N. J., will, it is said, resume operations this week. About 100 hands are employed at these works.

One of the three stacks of the Andover Iron Company, at Phillipsburg, N. J., has been placed in blast.

The Bethlehem Iron Company of Bethlehem, Pa., have shipped to the Watervliet Arsenal, at West Troy, N. Y., for use in the 10 and 12 inch guns, 111 tons of material, consisting of tubes, jackets, hoops, &c.

The Woodward Iron Company have relined and blown in one of their furnaces at Woodward, Ala., and the second furnace will blow in as soon as the work of relining is completed.

The Monongahela Iron & Steel Company of Pittsburgh, manufacturers of muck iron, whose plant is located at Hays Station, on the Pittsburgh & Lake Erie Railroad, signed the Amalgamated Association scale last week. The plant of the firm contains 20 single puddling furnaces and one train of muck rolls, with an annual capacity of 15,000 net tons. It is stated that this plant will resume operations within a short time.

The Thomas Iron Company of Catasauqua, Pa., have resumed work on the erection of their No. 1 blast furnace at Hokendauqua, Pa.

Last week the puddlers in the employ of Brown & Co., Incorporated, of the Wayne Iron & Steel Works, at Pittsburgh, were requested by the manager to sign a paper agreeing not to join any labor organization of any kind while in the employ of that firm. The puddlers refused to sign the paper, and the puddling department, in consequence, has been temporarily closed down.

Recently Philips, Nimick & Co., operating the Sligo Rolling Mills, at Pittsburgh, notified their puddlers that it would be necessary for them to accept a reduction of 10 per cent. in prices paid for boiling, in order that the firm could compete with non-union mills in the Pittsburgh district and other places, where boiling is being done at considerably less than $5 per ton. So far the men have refused to grant the request of the firm for a reduction, and at this time the puddling plant is closed down. It is not improbable that when operations are resumed it will be with non-union men.

Application for a charter for an intended corporation to be known as the Diamond Steel Company of Reading, Pa., has been made. The new concern propose to engage in the manufacture of iron, steel, or both. The plant of Rothenberger, Steel & Sassaman, in North Reading, will be transferred to this new corporation, and the mill will probably resume operations at an early date, as it is stated that a number of orders have already been received.

During this week the South Fifteenth street mills of the Oliver Iron & Steel Company, at Pittsburgh, will probable be put in operation in both the puddling and finishing departments. Only non-union men will be employed, as this firm some time ago refused to treat with the Amalgamated Association or recognize it in any capacity. It is also likely that the lower mills of this firm, situated in Allegheny, Pa., will be put in partial operation within a short time.

The rolling mill of the Oxford Iron & Nail Company, Oxford, N. J., has started up.

The Bessemer department and the rail mill of the Bethlehem Iron Company, at Bethlehvem, Pa., have resumed operations after an idleness of two months.

Operations at the large plant of the Ætna-Standard Iron & Steel Company, Bridgeport, Ohio, are now being conducted as follow: In the Ætna department all of the bar mills and two sheet mills are in operation. In the Standard department everything is on in full, including the galvanizing and corrugating departments. This leaves but four sheet mills in the Ætna department as the only idle parts of the plant. This firm announce that they are prepared to fill orders for their different lines of manufacture promptly, and expect to keep those portions of the plant now running in full operation.

The blast furnace of the Jefferson Iron Works, at Steubenville, Ohio, has recently been relined and otherwise extensively remodeled and improved. Included in the improvements are two batteries of water tube boilers, supplied by the Babcock & Wilcox Boiler Company, with a total combined horse-power of 500. Waste gas from the furnace will furnish the fuel for these boilers, and in the utilization of this gas some improved methods of handling will be used. It is said that this blast furnace will be put in operation in a short time.

A recent visit to the new plant of the New Castle Steel & Tin Plate Company, at New Castle, Pa., developed the fact that this concern have one of the most complete plants in every respect in the country for the manufacture of tin and terne plate. The buildings are all of iron and as nearly fire proof as could be made. The welfare of the employees was carefully looked after in the construction of the buildings, and they are so arranged that a very comfortable temperature can be maintained during the summer and winter months. The entire equipment is of the most modern design throughout, and will permit of the handling of both raw and finished material to the best possible advantage. The location of the plant is an admirable one, the concern having switch connections with three different lines of railroads. The plant of the Shenango Valley Steel Company lies just alongside, and this will enable the firm to purchase their billets at the very lowest market prices and at the same time insure a material saving in freight charges. As yet only black sheets for tinning purposes have been turned out, but in a short time the tinning department will be put in operation. It is the intention of the firm to make a full line of the different grades of tin and terne plate, and they will also be sellers of black sheets in the open market.

The plant of the Catasauqua Mfg. Company, at Catasauqua, Pa., has started up.

The business men of Belleville, Ill., have decided to raise $15,000 to liquidate part of the indebtedness of the Belleville Steel Company, the creditors having agreed to permit a resumption of the steel works when that amount is made up.

Machinery.

The disastrous fire which recently occurred in West Forty-first street, New York, extended to the building Nos. 512, 514 and 516, occupied by P. Pryibil as warerooms and storerooms for finished machines and patterns and shafting department. The building Nos. 520–524, in which are located the principal machine tools, as well as the drafting room, pattern shop, office, &c., was uninjured. The works comprised two five-story brick buildings, each 75 x 75 feet, with ample space between and behind them and connected by a tunnel and bridges. For this reason the structure known as the west building escaped damage. Mr. Pryibil has issued a circular in which he states that in 38 years of business he has never experienced a fire before. He anticipates little or no trouble in filling orders.

Morse, Williams & Co., Philadelphia, manufacturers of elevators, have been running their plant on full time and are contemplating an enlargement in the near future. The company state that prices have been very unsatisfactory and collections slow, but an improvement is noticeable in the latter, and they believe that it is only necessary to restore confidence, through the prompt action of Congress, to bring about a speedy restoration of business.

The Chapman Valve Mfg. Company of Boston, with works located at Indian Orchard, Mass., report a very busy season; not only have the works run to their fullest capacity with their full quota of employees, but the increasing demand has made it necessary to run many nights to keep abreast with the orders. The reason for this business activity during the general depression is owing to the fact that the demand has been for specialties that this company make. Since the increasing importance of using steam under high pressure, Jason Giles, the company's general manager, conceived the idea of making a gate valve with a removable bronze seat, which should be especially adapted for high steam pressure. Such a valve was made and patented by him March 18, 1890, and afterward assigned to the Chapman Valve Mfg. Company About all of the largest electric light and power plants in this country are equipped with Chapman valves. Another specialty, the increasing demand for which has contributed to the company's activity during the present season is the indicator valve, which was also patented by Mr. Giles The demand has been very large and from all sections of the country, and although the company have increased their capacity very largely this season in erecting a brick building 234 feet long by 50 feet wide, yet at this time every

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department is crowded to its utmost and still they are unable to keep up with the constantly increasing demand, and already have booked orders which will keep the present force of upward of 300 employees busy during the entire winter season and until spring trade opens.

The Stow Mfg. Company of Binghamton N. Y., manufacturers of the Stow flexible shaft, report that their trade up to October 1 shows an increase over that of the corresponding months of 1892. During the past two months they have greatly improved their plant, adding largely to their boiler capacity, &c. They report a decided improvement in October sales over those of the preceding month.

Palmer & Co., dealers in machinists' tools, mills, factory and railroad supplies, of Philadelphia, are now at 26 North Seventh street, in that city. J. C. Palmer, the head of the concern, was a partner in the firm of Palmer, Cunningham & Co. of Philadelphia, lately dissolved by limitation. They are making a specialty of cold rolled steel, sharpened and hardened, and finished steel balls for bearings.

Maris & Beckley of Philadelphia are completing two 6-ton traveling cranes for the Altoona Mfg. Company, Altoona, Pa. These cranes are built with two speed hoists. They have also approaching completion a 5-ton power crane for use over a pipe facing lathe, for the McNeal Pipe & Foundry Company of Burlington, N. J. In this crane all the movements are controlled by one man from the floor, through levers fastened to the wall. Among recent shipments made by the firm was a crane to the Continental Iron Works, Brooklyn. They report inquiries for quite a number of their cranes, many of them from abroad, among which they mention one from Aberdeen, Scotland, for three cranes.

The Garvin Machine Company of New York have opened a salesroom in Philadelphia at 51 North Seventh street.

A number of the boiler makers at Wickes Brothers' Foundry & Machine Works, Saginaw, Mich., went on strike on account of a reduction in pay for overtime on contract work.

The foundry known as the Mims' Iron Works Company, Limited, at New Orleans, La., has been destroyed by fire. The principal loss is on patterns and stock, since the structures burned were very old. The works did a large business in the manufacture of steamboat, sugar house and rice mill machinery.

On the petition of the assignee of Pedrick & Ayer of Philadelphia, manufacturing machinists, who assigned September 5, Judge Reed has made an order restraining the Sheriff's sale of the effects of the firm, and authorizing the assignee to make up all the stock on hand and transfer the proceeds to the execution creditors. This order was made owing to the fact that when the assignment was made there was a large quantity of working stock on hand, and the firm had a number of unfilled orders, and that at a public sale which was to have taken place under the execution the creditors would sustain a great loss. An appraisement of the assigned estate was filed, showing assets aggregating $93,599.94.

The Hendey Machine Company, manufacturers of machine tools, at Torrington, Conn., have been running their works for the past two months five days per week and eight hours per day, and have about three-quarters of their full force at work. They have sold a few machines in this country during the past two months, and have sent a number abroad, but their business has been unusually light compared with previous records. The company look for very little improvement in trade during the balance of the year, but believe that business will pick up rapidly after the inauguration of the new year.

The buildings for the new plant of the Dean Bros. Steam Pump Works, Indianapolis, Ind., will be completed about December 1. They will be more than double the size and capacity of the present works.

The Cincinnati Milling Machine Company of Cincinnati, Ohio, makers of machine tools, started their works about three weeks ago with two-thirds of the usual force, and are now running five days a week. With the orders in sight the company feel encouraged to believe that they will be able to continue in operation on this basis at least to January 1.

The Detroit Dynamo Company of Detroit, Mich., have just moved into their new factory, 121 to 125 Champlain street, where they have about double the former amount of floor space. They now have equipped a complete machine shop, where they not only turn out their own machines complete, but are prepared to do a full line of repair work on all kinds of electrical machinery. The company have an order for equipping a new foundry in Detroit complete with motor power instead of steam and rope transmission. The company are acquiring a reputation for their electric lighting dynamos for isolated plants, and hope during the next year to almost double their business in this line.

L. Schneider has begun work at Winona, Minn., on a new boiler factory, 100 x 40 feet in size

D. J. Bolenger's foundry, at Waynesburg, Ohio, has been destroyed by fire. Loss, $5000; insurance, $500.

Steps have been taken to establish at Columbia, S. C., foundry, machine and repair shops and depot for agricultural machinery of all kinds, the purpose of the scheme being to furnish to farmers of the State machinery at small cost. The capital of the company is to be $10,000, business to begin as soon as $4000 has been paid in.

Ground has been broken at Toledo, Ohio, for the construction of the new foundry and machine works of M. M. Donovan & Co. The main building will be three stories high and the foundry one story.

W. B. Pollock & Co. of Youngstown, Ohio, have started their boiler works.

The Lambert Point Iron Works, at Norfolk, Va., have been destroyed by fire. The plant was owned by Clark & Cunningham, and valued at about $10,000.

A boiler and iron works is to be established at Meridian, Miss., by W. R. K. Standford.

Byram & Co., Detroit, Mich., have recently furnished a Colliau cupola to Wm. Clendinneng & Son, Montreal, P. Q., the Eastwood Wire Mfg. Company, Belleville, N. J.; two for the Ingersoll-Sargeant Drill Company, New York City, for their new shops at Easton, Pa.; the second one for Messrs. F. E Meyer & Bros., Ashland, Ohio, and the Clinton Plow Company, Clinton, Mich.

The works of F. E. Myers & Brother, Ashland, Ohio, manufacturers of pumps of various kinds, are now in operation, with a larger capacity for production of pumps than ever before. Some additions have recently been made to their equipment, among which is included a new 15-ton Colliau cupola in their foundry, and the refitting of the cleaning room with considerable modern machinery.

The Harrison Machine Works, at Belleville, Ill., which shut down two weeks ago, have resumed in all departments.

Davies & Thomas, founders and machinists, of Catasauqua, Pa., have received a contract for the foundry work for a new zinc works to be erected at Passaic, N. J.

In the courts at Pittsburgh last week, a petition was filed asking for the removal of the receiver for the Nations Mower & Reaper Company, whose plant is located at Latrobe, Pa. The petition was filed by Martin Cutter, who asserts that he was the owner of certain patents which he assigned to the company for $15,000 worth of stock and $120,000 in cash. There is still $79,000 owing him, which the company cannot pay at present. The debts of the company are about $8000, and it is claimed that if the stock was all paid up the proceeds would pay the debts. Mr. Cutter asks that the property be placed in his hands as tenant.

The Pittsburgh Porcelain Enameling Mfg. Company of Pittsburgh have been granted a charter, with a capital of $10,000. The directors are David Boyd, Wm. Boyd and Ross W. Patton, all of Pittsburgh.

The brass manufacturers of Canada, at a recent meeting held at Toronto, decided to request the Canadian Government to withdraw the duty of 10 per cent. on raw material.

All the shopmen on the Union Pacific system, some 4000 in number, have been put on full time.

Hardware.

Landers, Frary & Clark, New Britain, Conn., are now running their cutlery works four days a week instead of three, but business in the other departments of the plant is duller, so that there is a shut down of three days per week.

The Hinkle & Gaither Mfg. Company, Laurel, Md., manufacturers of agricultural implements, have nearly completed repairs to their buildings, and have all their machinery ready for operation. They will employ at the start about 50 men.

The Penn Hardware Company, Reading, Pa., have resumed operations.

The Crystal Mica Company's plant, at Warren, N. H., which has been idle through the summer, has started up and is running on full time.

The G. S. Foos Company, Springfield, Ohio, have disposed of their business to John Spencer and George O. Leedle, late treasurer of the company, who will incorporate a new organization to assume control November 1, when the manufacture of all kinds of wringers, lawn mowers, &c., will be continued. Ample capital and increased modern facilities will be provided. Mr. Spencer is referred to as a thoroughly practical and experienced mechanic.

The Rock Island Plow Works, Rock Island, Ill., resumed operations on the 16th inst. after a two-months shut down. About 250 men, less than half the usual force, are employed. The company have made a reduction of 10 per cent. in wages, and have shortened the working day for the present, so that the men work eight instead of ten hours.

The new warehouse of the Hatch Cutlery Works, South Milwaukee, Wis., was damaged by fire a short time since to the extent of $3000, a loss which is fully covered by insurance. The warehouse was used for storing grindstones and unfinished shears.

Foster Brothers' Knife Works, at Oswego Falls, N. Y., were slightly damaged by fire on the 17th inst. The fire is supposed to have originated from smoldering sparks in the emery room. The prompt action of the fire department prevented what might have been a serious conflagration. The works are again in running order.

The Seabury Gun Company have been incorporated, with a capital of $300,000. The company will manufacture arms of all descriptions in New York City. The incorporators are E. H. Litchfield, J. B. Grosvenor, H. Wallis and others.

The Scranton Axle Works, Scranton, Pa., have resumed operations after a brief suspension, which was rendered necessary in order to make needed repairs. Important improvements in the works are contemplated which will increase their output.

The Belmont Nail Works, Wheeling, W. Va., a part of the Wheeling Iron & Steel Company, started up on the 16th inst., after an idleness of five months and partial idleness of a year. They are giving employment to over 500 men.

The Gleeson Wire Cloth Mfg. Company have filed a certificate of incorporation in the Hudson County Clerk's office in Jersey City, N. J. The company propose to establish a factory at Harrison, N. J., for manufacturing wires of various patterns. The company will begin business with a capital of $15,000. The incorporators are John Martin Moore of Kearney, George F. Wilson, Martin Desmond and Thomas F. Bulger of Harrison, N. J., and Francis A. Harris of Waterbury, Conn.

During the summer months extensive improvements and additions were made to the wire nail factory of the New Castle Wire Nail Company, at New Castle, Pa., whereby the capacity has been considerably increased. The plant of this concern is now in full operation and is turning out an average of 3200 kegs of wire nails every day. Since the initial establishment of this plant at New Castle it has been found necessary to increase the capacity from time to time in order that the firm could turn out their product as fast as wanted by the trade, and at this time their nails are sold in every part of the United States where wire nails are used.

The Standard Wire Company, New Castle, Pa., manufacturers of wire mats, report an excellent demand for their goods, and are operating their works to full capacity. Although this concern have been established but a short time, they have already built up quite a large trade, and propose in a short time to take up the manufacture of tree guards and other wire goods. The firm recently made a shipment of two of their flexible wire mats which measured 47½ feet in length and 6 feet in width. They have also received in the last few days a third order for a mat of this size, and are making shipments of the smaller sizes right along.

The Standard Horse Shoe Company, South Wareham, Mass., for whom Leeds, Robin-

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son & Co., 4 Liberty street, Boston, are general agents, report that all their machines are being run full time. Improvements are going on at their plant, and additional new machines will be installed as soon as received from the makers. Their shoes are made from old horseshoes, insuring quality, and John Wike is patentee of the machines used and superintendent of the works.

E. T. Barnum, wire works, of Detroit, Mich., has just received an award upon steel prison jail cells or lockups and grocers' cheese safes, as well as upon his general exhibit at the World's Fair.

Miscellaneous.

The Providence Steam Engine Company are building two additional engines, each of 1100 horse-power, for the Union Company (electric railway) of Providence. These will be coupled direct to the dynamos. This company have made provision for engines and boilers of 7000 horse-power.

The plant of the Indianapolis, Ind., Steel Roofing Company has been damaged $3000 by fire.

A. Leschen & Sons Rope Company of St. Louis, Mo., express themselves as being well satisfied with the volume of trade. Their trade for their Hercules wire rope is constantly on the increase, and judging from the inquiries received the company look for a good trade next year.

The C. & C. Electric Company's branch office in Philadelphia is now at 633 Arch street, in that city.

It is now thought that the Litchfield Car Works of Litchfield, Ill., which have been casting about for some time for a suitable location for a new plant, will settle at Memphis, Tenn.

Negotiations are in progress for the establishment of a brass foundry at St. Paul, Minn., by Jacob Kritch of Port Townsend, Wash.

The Cambridge Roofing Company, Cambridge, Ohio, have added numerous sheet metal specialties to their line of manufactures, which are principally iron and steel roofing, plain and corrugated. This company are now prepared to furnish eave trough, conductor pipe and all other material required to complete a metal roof.

A. B. Laurence of New York has furnished to the United States Government 4000 feet of Shultz Sable rawhide belting for the Watervliet Arsenal, West Troy, N. Y. The quantity required will aggregate about 4000 feet, with gross value of $8000. A 24-inch belt has been in use there for some five or six years, and has recently been removed to the Springfield, Mass., Arsenal. On the Sun Insurance Company's dynamo there is one of the recently patented Shultz grooved dynamo belts, which is quite novel in method of reducing the much talked of air cushion. This is made with grooves running lengthwise of the belt.

A license to incorporate under the laws of Illinois has been issued to the R. Herschel Mfg Company, at Peoria; capital stock, $30,000; to manufacture and sell mower knives, reapers, sickles, molding bits, coil springs, agricultural implements and supplies. Incorporators, Paul B. Herschel, H. R. Herschel, Martin Sohn and John Mertes.

It is expected that within a short time announcement will be made of the appointment of P. R. Dillon as general superintendent of the various plants of the Carnegie Steel Company, Limited, at Pittsburgh. These include the Edgar Thomson Steel Works, Homestead Steel Works, Duquesne Steel Works, Upper and Lower Union Mills and Beaver Falls Mills. It is probable that this appointment will result in other changes among minor officials being made.

The city of Indianapolis is said to be absolutely bankrupt. The new Controller in taking charge discovered that the cash resources of the city amounted to but $2000 in hand, while an indebtedness of nearly $900,000 falls due within six months. Steps are being taken to raise funds for necessary municipal expenses, particularly those of the approaching elections.

TRADE REPORT

The certainty that the purchasing clause of the Sherman bill will be repealed unconditionally has revived hope, and is received with satisfaction Some authorities in the Iron trade expect an increased volume of orders and a more cheerful tone. Others believe that repeal now has simply saved us from additional disasters. It is probable that a good effect may be produced in another direction. There is evidence that during the protracted period of doubt over the fate of the silver question sales of Steel were made at very low prices for delivery very far into next year. Now that this danger is over a more conservative course may be followed.

Another question will come to the front which is expected to influence adversely developments in the Iron trade. There are many clear headed men engaged in the business who are convinced that nothing so radical in the way of tariff revision will be formulated by Congress that it will hurt the industry. A large majority of earnest and sincere persons, however, do believe that any change in the present rates of duty will do quick and lasting harm. Until it is known what those changes are to be their effect cannot be measured.

This broad statement may be made, so far as this winter's business is concerned, that no cut in rates likely to be passed will enable a buyer to purchase at lower prices than those now prevailing through the influence of fierce domestic competition at a time of unparalleled depression. As for the reflex action upon the Iron trade of disastrous effects upon other national industries, the case may be entirely different. It is remote, however, and should not affect perceptibly business which is pending or must come out for early settlement.

A little more work has come out lately in many directions, but it is far from being enough to put even a semblance of backbone into sellers Some of the Rail mills have induced their customers to let them roll material for next year's delivery. Upon what terms this is being done has not transpired. It is evidently being done to keep the works organization together.

Until the money now accumulating so rapidly in our financial centers is again employed in commerce and industry no marked improvement can take place in those branches of the Iron trade which depend upon the railroads, upon engineering and municipal undertakings, upon buildings and upon the machinery branch for their customers. In many departments the busy season is practically over, and approaching spring can only bring relief. For a large section of the Iron trade the winter months seem bound to be dull. There seems little danger that another false start will be made.

While it is a matter of congratulation and rejoicing that we have escaped the perils which would have followed any compromise on the silver question, it must be remembered that confidence is a tender plant of slow growth. Unduly sanguine expectations of quick recovery now will only delay the day when the buyer will cease to be the autocrat. He is having his turn now, and is making the most of it, in some cases repudiating contracts in an unparalleled fashion.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, October 25, 1893.

Pig Iron.—The business of the past week has been of an irregular character. Some houses have been so fortunate as to capture a few good orders. One of these was for 1000 tons of local Coke and another for 500 tons. Ordinarily such transactions would not be considered of importance, but in the present condition of trade they are eminently worthy of mention. Business generally has been confined to carload orders, and even these have by no means been numerous. Inquiries are in the market for a couple of lots of 500 tons of Soft Southern Iron, and one inquiry is reported for 1000 tons of Lake Superior Charcoal. These inquiries are exciting more than usual attention from the trade, and competition for them promises to be lively. The sale of 2000 tons of Southern Gray Forge at $10 at Cleveland has stirred up this market quite considerably, as it showed what possibilities are in store here. Quotations are now as follows for cash:

Lake Superior Charcoal.....	$16.00 @	$16.50
Local Coke Foundry, No. 1...	13.50 @	14.00
Local Coke Foundry, No. 2...	12.75 @	13.00
Local Coke Foundry, No. 3...	12.25 @	12.75
Local Scotch.....	14.00 @	14.50
Ohio Strong Softeners No. 1..	15.50 @	16.00
Southern Silvery, No. 1.	@	14.50
Southern Silvery, No. 2	@	14.00
Southern Coke, No. 2.....	12.10 @	12.60
Southern Coke, No. 3	11.60 @	11.85
Southern, No. 1, Soft.....	12.35 @	12.60
Southern, No. 2, Soft.....	11.85 @	12.10
Southern Gray Forge	11.10 @	11.35
Tennessee Charcoal, No. 1...	16.00 @	16.50
Alabama Car Wheel.....	18.50 @	18.75
Hocking Valley, No. 1 ...	15 25 @	16.00
Jackson County Silvery.....	16.00 @	17.00

Bars.—Inquiries have been fair, and quite a number of sales are noted. Among these was one of 200 tons to a wagon manufacturer. The volume of business is less than that of two or three weeks since, but is still large enough to keep the local mills employed. Competition on business has reduced prices, and Common Bar Iron has been sold at 1.35¢, Chicago, although carloads bring more than this and may be quoted at 1.42½¢ @ 1.45¢, half extras, Chicago. Soft Steel Bars have participated in the weakness, and may now be had at 1.50¢ or lower. Jobbers note an improved demand from stock. Their business has of late come largely from Agricultural Implement manufacturers, some of whom are buying in this way as their wants require rather than place contracts with mills. Store prices on Iron are now 1.60¢ @ 1.70¢, and Soft Steel 1.65¢ @ 1.70¢.

Structural Material.—One fair contract for Beams has been placed for a new factory building. Small lots have been fairly active, but business in this line is now falling off with the approaching close of the building season. Bridge work is dull. Quotations are maintained at the following prices on mill shipments, Chicago delivery: Beams, 1.75¢ @ 1.90¢; Tees, 1.95¢ @ 2.05¢; Angles and Universal Plates, 1.75¢ @ 1.80¢.

Plates.—Almost nothing is doing in this line; an inquiry for 100 tons is extremely rare. The demand even for small lots from stock has fallen off. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.75¢ @ 1.80¢; Shell Steel, 2¢ @ 2.10¢; Flange Steel, 2.15¢ @ 2.30¢; Fire Box, 2.75¢ @ 5¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2.25¢ @ 2.40¢; Tank Steel, 2.10¢ @ 2.20¢; Shell Steel, 2.20¢ @ 2.40¢;

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Flange Steel, 2.50¢ @ 2.65¢; Boiler Tubes, 70 %.

Sheets.—Trade in Black Sheets has been spasmodic. The mill business doing latterly has been almost entirely with jobbers, who have been buying as they needed stock, instead of as in former years placing time contracts. Mill shipments, Chicago delivery, are quoted at 2.75¢ for No. 27 Common. The demand for small lots from stock has been very good of late, but appears to be running more to Smooth Iron and Sheet Steel than Common Iron. The price on carloads of Common from stock is 2.90¢ @ 3¢. Galvanized Iron continues to be in good demand and prices are maintained at 75 % off for mill shipment with freight added. Copper Sheets are weaker and small lots are selling at 35 % off.

Merchant Steel.—Business in this line continues about as previously reported. New business is not coming forward to any considerable extent. The Joliet works of the Illinois Steel Company will be put in operation shortly after the beginning of next month on Billets, quite a number of orders having been entered at $20. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel at 1.90¢ @ 2¢; Ordinary Bessemer Machinery, 1.60¢ @ 1 65¢; Ordinary Bessemer Tire, 1.55¢ @ 1.60¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Rails and Track Supplies.—It is reported that a contract for 2000 tons Steel Rails for a Western railroad was placed with Pittsburgh manufacturers, as the local mills would not start up to roll so small a quantity. Outside of this very little business has been offering either in standard or light sections. Standard sizes are unchanged at $30 @ $32; and Light Rails, $31.50 @ $32. Iron and Steel Splice Bars, 1.50¢ @ 1.55¢; Track Bolts with Hexagon Nuts, 2.50¢ @ 2.55¢; Spikes, 1.85¢ @ 1.90¢.

Old Rails and Car Wheels.—Transactions in Old Iron Rails are reported at $14. Quite a number of railroads are still holding their stock of Old Rails, firmly refusing to take prevailing prices, but it is expected they will change their views by December, if not before that time. There will then be a desire as usual to secure as much cash as possible in anticipation of interest payments and the necessity of making up favorable annual reports. Sales of Old Steel Rails, selected lengths for rerolling, have been made at $10. Short pieces are quoted at $7.50 @ $8 The most vigorous inquiry fails to disclose any transactions in Old Car Wheels or negotiations on which to base a quotation.

Scrap.—A moderate volume of business is reported in almost every kind of Scrap Iron or Steel, for which there seems to be absolutely no demand whatever. Buyers of Scrap, however, are very conservative, and especially the foundries, who are taking only what they need from day to day, and will not anticipate their requirements to any extent. Dealers' selling prices, net ten, are as follows: No. 1 Forge, $10.50; No. 1 Mill, $8; Sheet Iron, $5; Pipes and Flues, $8; Axles, $10; Horseshoes, $11; Fish Plates, $13; Spikes and Bolts, $10; Cast Borings, $5; Wrought Turnings, $6.50; Axle Turnings, $8; Heavy Cast, $9.50; Stove Plate, $7.75; Malleable Cast, $8; Mixed Steel, $7, gross ton; Leaf Steel, $14 50.

Metals.—No trade is reported in Copper. In the absence of transactions carload lots of Lake continue to be quoted at 10⅜¢, and casting brands at 9¾¢. Very little is doing in Spelter, which is down to 3 40¢. Consumers of Lead are holding off and business in that line has been extremely quiet, with quotations at 3 25¢ @ 3 30¢, according to quantity.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., October 24, 1893.

There is but little of interest to report from this center of the Iron trade, and taking the market as a whole no change of any moment can be noted. The trade recognize the fact that wear and tear is going on all the time, and that renewals will have to be made sooner or later, but as yet there is no indication of anything but a makeshift market. Anything that is not absolutely necessary is not bought, no matter how low the price may be, so that business continues on a smaller scale than for years past. After so many weeks of depression it would be pleasant to note a change for the better, but a strict adherence to facts will not permit anything of that kind. There is the same demand as there has been for several weeks past, no more, no less, and the same may be said in regard to prices. After so long a run of poor business and low prices the natural expectation is that there ought to be an improvement, particularly as the financial situation is becoming stronger, but while the future may be all right the present is to all intents and purposes just about as it has been for several weeks past.

Pig Iron.—The market is dull, listless and apathetic. Consumers appear to be absolutely indifferent in regard to the future course of the market. All they care to do is to provide for current requirements, leaving the future to take care of itself. There is a general assent to the statement that prices are not likely to be lower, but, on the other hand, there is no willingness to increase purchases, because there are no indications of an upward movement; hence they say: "What is the use of buying beyond what we require for immediate use?" Sellers find it impossible to make much headway on such a market, and are therefore taking such business as they can get at current quotations, or as near to it as may be. This in the aggregate is very trifling compared with any similar period during the past three or four years, notwithstanding the fact that prices are at the lowest ever known. To say that things will be better in a little while would be simply a guess, as there is nothing upon which to predicate any change whatever. Things can hardly be worse than they are, and we join with everybody else in the hope that they will soon be better, and that is about all that we feel warranted in saying. Sales are mostly at about the following quotations for Philadelphia or nearby deliveries, with occasional sales of round lots at 25¢ @ 50¢ less money: $12 @ $12.50, delivered, for standard brands of Gray Forge; $13 @ $13.50 for No. 2 Foundry, and $14 @ $14.50 for No. 1. Southern Irons can be had at less money, several lots having changed hands at $11.50 @ $11.75, with a fair chance that orders could be placed at the same figures for good sized lots and prompt settlements.

Steel Billets.—There is not much demand, but quotations are firmer, say $20 @ $20.25, delivered. A few small lots have been taken on this basis, but for 1000-ton lots and larger $20 could probably be shaded to the right kind of a buyer. Mills are so poorly employed that they have comparatively little use for material, so that anything over 500-ton lots is rather exceptional these days. Last sale reported was 500 tons, a day or two ago, at $20, to mill near by.

Finished Material.—The general report is that the demand is slow and disappointing, although in some cases mills are kept fully employed in meeting the current demand for small lots. This is exceptional, however, and the majority report a light demand at weak and unsatisfactory prices. There is no large work of any amount coming out, so that mills have to either run on old contracts (chiefly for shipyards) or such new business as can be had from day to day. Architectural work figures more prominently than almost anything else, but deliveries are so far ahead that it may be weeks before specifications will be sent in, so that, as we said before, there is little or nothing to depend on for immediate work except the daily run of small orders. This applies to all departments, Plates, Shapes, Sheets, Bars, everything, in fact, with no immediate prospect of anything better. Prices are very weak, and on anything attractive as to quantity, specification or delivery further concessions have been made, so that we may again say that new figures have been made, and lower than ever before. Ship Plate has been delivered from Pittsburgh to one of the Philadelphia shipyards at less than 1.55¢, and local mills have quoted about the same figure for Tank Steel. There is no price to anything, in fact, and to find how low the market really is it only needs the presentation of a nice specification of a good-sized lot and a firm offer. Small lots are quoted and usually sold at about the following figures:

Grooved Skelp, delivered	1.47½¢	@	1.50¢
Best Refined Bars	1.55¢	@	1.60¢
At interior points	1.50¢	@	1.55¢
Tank Steel	1.60¢	@	1.65¢
Heavy Plates	1.65¢	@	1.70¢
Shell	1.75¢	@	1.85¢
Flange	2.00¢	@	2.20¢

Old Material.—The market shows no improvement, and while prices are nominally unchanged, business is possible only when concessions are made. Some holders are not doing anything at all, on the ground that business at current prices is not worth handling. Nominal prices are about as follows:

No. 1 Wrought Scrap, delivered	$12.00	@	$13.00
Machinery Cast, delivered	10.00	@	11.00
Heavy Steel Scrap, delivered	13.00	@	14.00
Old Iron Rails, delivered	15.00	@	16.00
Old Street Rails, delivered	17.00	@	18.00
Wrought Turnings, delivered	10.00	@	11.00
Cast Borings, delivered	6.00	@	7.00
No. 2 Light Scrap	6.00	@	7.00

Edward Corning & Co. have removed their Philadelphia office from 237 South Third street to the Philadelphia Bank

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Building, 421 Chestnut street. They announce that they are now ready to bid for all building work, either wrought, cast or ornamental. They will retain the agencies of the Allentown Rolling Mill Company and the Lebanon Iron Company, as heretofore.

St. Louis.

(*By Telegraph.*)

Office of *The Iron Age*, Bank of Commerce Building, St. Louis, October 25, 1893.

Pig Iron.—Sales continue to be limited and prices are weaker. Some extremely low prices have been made which in ordinary times would have secured large orders, but it is doubtful if a cut of $1 ℔ ton from current prices would have any effect on the size of an order. Consumers are buying only as they need the Iron, and some of them need very little. We quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry	$13.25 @ $13.50
Southern Coke, No. 2 Foundry	11.50 @ 11.75
Southern Coke, No. 3 Foundry	10.75 @ 10.95
Southern Gray Forge	10.25 @ 11.50
Southern Car Wheel	17.25 @ 18.25
Lake Superior Car Wheel	16.50 @ 17.00
Ohio Softeners	16.00 @ 16.50

Bar Iron.—There is no improvement in this department. Mills are only running part time, and it is more than likely will continue to do so during the balance of the year. Store trade is dull and prices are quoted a trifle lower than last reported. Lots from mill command 1.42½¢ @ 1.47½¢, f.o.b. cars East St. Louis. Jobbers ask 1.60¢ @ 1.65¢ for small lots from store.

Barb Wire.—There is no improvement to be noted in the demand for Barb Wire. Mills are making close prices and offering inducements in the way of 60 days, at prices that heretofore have been cash, but trade fails to respond. Jobbers are doing only a small business, and report a gradual weakening tendency in prices. We quote Painted from mill at $1.90 @ $1.95 in carload lots to jobbers. Galvanized at $2.30 @ $2 35. Jobbers ask $2 05 @ $2.10 for Painted, with the usual advance for Galvanized.

Wire Nails.—There continues to be a fair demand for Wire Nails, but prices are anything but encouraging. Some very low prices are reported, but are impossible to verify. Mills ask $1.45 @ $1.50 in carload lots to jobbers. Store price is $1.55 @ $1.60, according to quantity.

Rails and Track Supplies.—Business does not improve, and the demand continues to be of a hand to mouth character. Splice Bars, are quoted at 1.65¢ @ 1.70¢; Spikes, 2¢ @ 2.05¢; Bolts, Square Nuts, 2.50¢; with Hexagon Nuts, 2.60¢. Steel Rails continue to be quoted at $30 @ $31. Old Iron Rails are nominally quoted at $15, but no sales are reported.

Pig Lead.—After selling down to 3¢, this metal has recovered somewhat and is now quoted at 3.10¢, although it is by no means steady at this figure. There is practically no consumptive demand.

Spelter.—This metal remains practically unchanged at 3.25¢ @ 3.30¢. Sales are limited to carload quantities.

Cincinnati.

(*By Telegraph.*)

Office of *The Iron Age*, Fifth and Main Sts., Cincinnati, October 25, 1893.

There is no improvement in the market for Pig Iron, and as long as the obstructionists in the Senate are permitted to have their way there will be none. There has been little more than a current jobbing demand in this district, running from single carloads up to 200 tons for immediate shipment, but no buying for forward delivery, although the indications are that Pig Iron could be obtained at the rates now current for any delivery during the next four months. The occasional offering of some calamity Iron at prices less than the cost of production, although not in first hands, tends to keep up the demoralization of the market and to prevent any recuperation. There was one such lot of Gray Forge sold during the week and while the price was not made public it was intimated that it was as low as it sold during the most extreme depression. While the offerings of Southern Iron are not large or urgent, it is not difficult to obtain a sufficient quantity to meet the requirements of the market, for the demand from the East is smaller than it has been. The only industry that is melting any considerable quantity of Pig Iron is the Iron Pipe works, and it is not expected that this will keep up long. There is scarcely any demand for Charcoal Iron. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$12.75 @ $13.00
Southern Coke No. 2	10.75 @ 11.00
Southern Coke No. 3	10.25 @ 10.50
Ohio Soft Stone Coal, No. 1	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2	14.50 @ 14.75
Lake Superior Coke No. 1	15.00 @ 15.25
Lake Superior Coke No. 2	14.00 @ 14.25
Hanging Rock Charcoal, No. 1	18.50 @ 19.00
Hanging Rock Charcoal, No. 2	17.50 @ 18.00
Tennessee Charcoal, No. 1	14.00 @ 14.25
Tennessee Charcoal, No. 2	13.00 @ 13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @ 18.00
Lake Superior Car Wheel and Malleable	17.00 @ 17.25

Forge.

Gray Forge	9 75 @ 10.00
Mottled Coke	9.50 @ 9.75

Pittsburgh.

(*By Mail.*)

Office of *The Iron Age*, Hamilton Building, Pittsburgh, October 24, 1893.

The situation to-day as compared with that of one week ago does not show any marked change one way or the other. The same struggle to get enough business to keep running still goes on, with the inevitable result of keeping prices as low as ever, and with buyers still able to secure concessions when they are prepared to place a moderate sized order with attractive terms.

Never before in the history of the Iron and Steel trades have producers been so completely at the mercy of buyers as they are now and have been for some time past. Contracts for Steel made when prices were from $2 to $3 ℔ ton higher than at present have been canceled and new contracts made, while the original seller looked on, unable to help himself. This also applies largely to almost every line of Iron and Steel manufactures. Had conditions been reversed the seller would have been called upon to observe his contract to the letter, and it would seem that something should be done in the direction of more nearly equalizing this feature of the market by which the manufacturer would be better protected. For the week under review prices have shown no material change, but a general air of weakness pervades the entire market. Nearly all the mills in the Pittsburgh district are operating to greater or less degree, some of them to nearly full capacity, others to half capacity or less.

Pig Iron.—There has been no change in the condition of the market since our last report. Some Iron is being sold right along, but in small lots ranging from 100 to 500 tons. The probabilities of some business being done in Rails, if realized, will, of course, aid in reducing stocks to some extent. There is also more Steel being made now than there was last month, and it is safe to say that in the Pittsburgh district the consumption of Pig Iron has slightly increased over last month. If the present degree of activity among the mills is maintained, and there is no increase in production of Iron, it is not improbable that consumption may catch up with production within a short time, and when this has been attained there will undoubtedly be a better outlook for the Pig Iron trade. If buyers can be brought to realize that prices have reached bottom, we can then look for a better demand, which must come before there can be any betterment in prices. We repeat quotations of last week, as follows:

Neutral Gray Forge	$10.50 @ $10.75,	cash
All-Ore Mill	10.75 @ 11.00	"
Bessemer Pig	11.25 @ 11.50	"
No. 1 Foundry	12.50 @ 13.00	"
No. 2 Foundry	11.50 @ 12.00	"

Billets.—There is nothing of special interest to report. The plants of the four Billet makers in this district are all in operation, and to nearly full capacity. There is a better inquiry for Steel now than a month ago, and the tonnage is considerably heavier. It is evident that Pittsburgh makers of Billets are on a more equitable basis as regards cost of production than ever before, and it is not believed that any one concern has any material advantage over his competitors in this respect. The market is represented by the quotation of $17.75 at maker's mill. For a good sized order, with favorable terms of settlement, it is possible this price would be shaded to a slight extent. In all probability the new Bessemer plant of the National Tube Works Company, at McKeesport, will be started up about November 15 next. The plant has two 8-ton vessels, and is admirably equipped in every way. The product will be largely used by the above concern in the manufacture of Pipes and Tubes. Some good records for production are being made at the plant of the Shenango Valley Steel Company, at New Castle, the output being considerably larger than ever before.

Ferromanganese. — We continue nominal quotation of $55 at mill for domestic. It is not improbable that this price would be shaded if there were any business offering.

Muck Bars —There is nothing doing, and we repeat nominal quotation of $20.50 at maker's mill.

Wire Rods.—We note a sale of 500 tons for prompt delivery at a price equal to $26, cash, at maker's mill. For balance of the year delivery this price would be shaded perhaps 50¢ ℔ ton. There is a good demand for Rods, and some mills have very few to

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offer for close delivery. The deal involving some 4000 tons referred to in our report of last week has not as yet been closed.

Steel Rails.—The local mill continues in operation and has secured an order for 500 tons of 85-pound Rails to be used on the Pittsburgh Division of the Baltimore & Ohio Railroad.

Plates.—Business is quiet, and the prospects for an increased tonnage are not encouraging. Prices continue low, and for good orders our quotations would no doubt be shaded. We quote as follows: Tank, 1.45¢ @ 1.50¢; Shell, 1.65¢ @ 1 70¢; Flange, 1.80¢; Fire Box, 2.50¢ @ 4.50¢, according to quality.

Structural Material.—The demand continues fairly good, everything considered, and as long as the weather will permit building operations to be carried on there will doubtless continue to be a moderate volume of business. The McIntosh-Verner Building, to be erected on Penn Avenue in this city, will require about 200 tons of material. It will be 120 feet front, 160 feet deep and eight stories high. We quote as follows: Beams up to 15 inches, 1.50¢ @ 1.60¢, according to order. Angles and Universal Plates, 1.60¢ @ 1 65¢; Tees, 1.75¢.

Bars.—Some of the mills have a fairly large amount of work on hand, while others have next to nothing. As yet there are no signs of the idle mills in the Mahoning Valley starting up. We quote Steel Bars at 1.35¢ at mill, with Bar Iron extras. Bars in the Valley are held at 1.35¢ @ 1.40¢, half extras, with reports that stocks at mills are badly broken, certain sizes being about cleaned up.

Merchant Steel.—Business is fairly active, and we are advised of a few season contracts being placed during the past week. Prices are being maintained on the following basis: Open Hearth Spring Steel, 1.90¢ @ 2¢; Bessemer Machinery, 1.65¢ @ 1.75¢; Toe Calk, 1.90¢ @ 2¢; Tool Steel from 5½¢ upward, according to quality.

Barb Wire.—The demand is only moderate, orders being confined nearly altogether to small lots. For ordinary carload lots we quote at $2 25 @ $2.30 for Four-Point Galvanized. Jobbers charge the smaller trade $2.35 @ $2.45 for less than carload lots. Painted is held at $1.85 @ $1.90, in carload lots.

Wire Nails.—We can report a very active demand for Wire Nails, several large orders for season requirements having been placed within the past week. Mills are fully employed, some of them having their product sold up into next month. Notwithstanding the active demand, prices show no signs of advancement. We quote at $1.25 @ $1.30 in carload lots, according to delivery. From the smaller trade $1.35 @ $1.40 is obtained. It is reliably reported that a movement is on foot among the Wire Nail trade looking to the taking of some action by which the severe competition coming from a certain maker will be removed or controlled.

Connellsville Coke.—For the week ending Saturday, October 14, there were 5375 ovens in the Connellsville region in blast, and 12,115 idle, with a total estimated production for the week of 48,460 tons. No new contracts or orders for Furnace Coke have been placed for some time. While some Furnace Coke has been sold as low as $1.10 ℔ ton, certain operators state that as yet they have not been compelled to meet that price. It is probable, however, that an order placed in the market at this time would be accepted at that figure. Prices on Foundry Coke are maintained on the basis of $1.50 to dealers and $1.65 to consumers.

The offices of H. E. Collins & Co., Iron and Steel factors, Pittsburgh, Pa., formerly located on the seventh floor of the Bank of Commerce Building, in that city, have been removed to the third floor in the same building.

N. P. Hyndman of Pittsburgh has recently connected himself with Brown & Cochran, the well-known Connellsville Coke manufacturers, and will represent their Coke sales department in Pittsburgh in their new offices recently opened in the Conestoga Building, corner Wood and Water streets, in this city. The Connellsville Coke manufactured by Brown & Cochran has an excellent reputation among the trade, the concern being one of the oldest Coke producing firms in the Connellsville region. Mr. Hyndman will continue to represent the Hazard Mfg. Company of Wilkesbarre, Pa., manufacturers of wire rope, which agency he has held in Pittsburgh for the past 11 years. Mr. Hyndman recently closed a contract with the Pittsburgh & Castle Shannon Railroad Company for a 2-inch steel rope, weighing about 5½ tons, which will be placed on No. 1 plane of that concern.

Metal Market.

Copper.—Nothing has transpired in the way of new export or home trade movement that reflects any decided change in the condition of the market. Certain it is that fresh purchases have been on a moderate scale and that buyers are extremely indifferent, since deliveries on old contracts satisfy current wants to no small extent, while the offering affords something more than purely circumstantial evidence that the supply keeps fully abreast with the demand. A good showing is made in export statistics and the foreign markets have stiffened somewhat in the face of that fact, but Copper can be purchased as cheaply at present as at any previous time this month. Thus 9¼¢ has become a common selling price for Lake Superior Ingot, while business is said to have been effected *sub rosa* at 9.70¢, regular terms, and at even less net cash terms, prompt shipment; about 250,000 lb were sold. With other varieties the experience has been somewhat similar, Electrolytic selling at 9¼¢ @ 9⅜¢ and common casting stock at 9⅛¢ @ 9¼¢, according to brand.

Pig Tin.—As far as recorded, the speculative dealings have been on a moderate scale and sentiment in the speculative direction seems to be exceedingly tame. Thus far this month less than 100 tons of Tin have been imported. According to most calculations nearly or quite 1000 tons have been turned out from first hands. The statistical position would thus appear to have undergone a further change for the better. It is the plain fact, however, that prices have averaged a shade lower, and that the movement of prices is rather inconsistent with the apparent relation of supply and demand, making altogether a peculiar market. Prices for deliveries this month and next have receded to 20.75¢ and December delivery commands little, if anything, more than 0.10¢ premium, despite estimates of a reduction of at least 1500 tons in spot stocks during the next six weeks. The best bids at the close for current and next month delivery were 20.70¢. There were sellers at 20.75¢ for October and 20.80¢ for November delivery at the close, with jobbing quantities offered at corresponding rates.

Pig Lead.—Nearly if not quite 1500 tons of common domestic have been sold at 3.30¢, delivered here or at common point during the balance of the year. The greater portion was taken by consumers, and not a little went from a prominent firm that purchased 1000 tons or more some time ago when values seemed to have been at a low ebb. Reports have had circulation that mining operations were checked to a greater or less extent by water difficulties; but latest accounts go to show that Idaho and other producers having modern machinery more than hold their own, and that several are in a position to work profitably at present prices, or, say, 3¢ @ 3.05¢ in East St. Louis. This fact is brought out in offset to "bullish" points that have been given more or less circulation of late, and seems to be deserving of more than passing attention. On Wednesday a sale was recorded on the Metal Exchange of 100 tons at 3.35¢, prompt shipment, cash against bill of lading.

Spelter.—There are faint signs that the market for this metal has reached hard pan. The most conspicuous of these is the fact that there are numerous orders for certain Western brands at 3.50¢, delivered here, for export account. It is learned also that the product of several smelters for the balance of the year has been sold up, and that bids of 3.55¢ have been refused in more instances than one. Any price under 3.60¢ for other than inferior brands seems to be exceptional at the moment, and there is not a great deal offered at that.

Antimony.—Demand has been of strictly routine character, and prices just about hold their own. We quote at 10¢ for Hallett's, 10⅛¢ for L. X., and 10¼¢ for Cookson's, in round lots.

Tin Plates.—Coke Plates have met with very fair sale, but the prices that were established about a week ago have not been maintained, for either spot stock or future shipments. In other varieties the movement has been slow and prices for the general line of Bright Charcoals and Ternes are somewhat uncertain, although showing no radical change. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $5.30; J. B. grade, do., $5.40; Bessemer full weight, $5.35 @ $5.40; light weights, $4.92½ @ $4.95 for 100 lb, $4.85 for 95 lb, $4.70 @ $4.75 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60; Siemens Steel, IC basis, $5.65; IX basis, $6.75 @ $7. Charcoals—Melyn grade, IC, $6.35 @ $6.37½; Crosses, $8; Allaway grade, IC, $5.60; Crosses, $6.75; Grange grade, IC, $5.75; Crosses, $6 85. Charcoal Ternes—Worcester, 14 x 20, scarce; do., 20 x 28, $11.35; M. F., 14 x 20, $7.35; do., 20 x 28, $14.75; Dean grade, 14 x 20, $5.30 @ $5.37½; do., 20 x 28, $10.50 @ $10.60; D. R. D. grade, 14 x 20, $5.15; do., 20 x 28, $10.10; Alyn, 14 x 20, $5.32½ @ $5.35; do., 20 x 28, $10.40; Wasters—S. T. P. grade, 14 x 20, $4.75; do., 20 x 28, $9; Abercarne grade, 14 x 20, $4 60; do., 20 x 28, $8.87½.

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Financial.

The aspect of things financial shows far brighter at this time than could have been expected from the outlook a week ago. Then uncertainty and uneasiness ruled. The proceedings at Washington gave little promise of any speedy action by the Senate in the matter of repeal. Rumors of compromise were persistently published, and with considerable justification in fact. Last week a feeling of despondency was current which served to depress all business enterprise and speculation; and relief from the suspense seemed far off. Foreign exchange was high, and the money and stock markets dull and weak. The whole outlook was far from reassuring for any imminent improvement in the general monetary situation. Now, however, the scene has changed, and a decided feeling of hopefulness and reassurance has developed. The compromise scheme of Senator Gorman, which, it was announced, was likely to receive the support of a majority, has fallen through. The silver champions have surrendered at discretion, and all signs point to the likelihood of an early vote in the Senate, with an assured majority for immediate and unconditional repeal of the Silver Purchase law.

The sustained confidence of Wall street in the ultimate triumph of repeal—which now appears likely to be justified by the event—has done good service in staving off to a large extent the ill effects of the prolonged delay and inaction. Otherwise the suspense would probably have proved far more serious in its effects on the business community than it has been. As it is, with the silver repeal question in a fair way of satisfactory settlement, and confidence thereby restored, there is good hope for a gradual revival of business from this time forth. Foreign exchange, which has fluctuated with the varying prospects—favorable and otherwise—of currency legislation, is fast declining to the gold importing point, which will in all probability be shortly reached. Advices from Europe intimate that large sums of money are there awaiting American investment so soon as something decided is done to put our currency on a settled basis. Banks in this country are loaded with money for which they are seeking profitable investment, and everything points to activity and returning prosperity just so soon as solid ground is offered to encourage a general revival of business. Hopes are now entertained that this condition is already developing.

The accumulation of surplus funds by the New York banks goes on at a rapid rate. Saturday's statement of the Clearing House banks showed an increase in the reserves last week of $8,744,000, bringing the surplus over legal requirements to more than $42,500,000, the highest ratio reached since September, 1885. As at that period, however, the immense surplus merely reflected stagnancy in business and absence of demand for money for speculative purposes. The great gain of funds during the past week was made, moreover, in spite of large shipments of money from New York to the South for the purpose of moving the cotton crop. The figures subjoined show the principal items of Saturday's statement as compared with the corresponding dates of 1892 and 1891:

	October 24, '91.	October 22, '92.	October 21, '93.
Loans.....	$405,602,400	$452,333,900	$394,037,700
Specie.....	82,210,100	70,649,300	95,718,500
Legal tenders.	34,281,200	46,904,400	52,344,000
Deposits..	416,400,600	460,885,100	421,686,900
Circulation.....	5,576,000	5,611,400	14,690,500

The following shows the relation between the total reserve and the total deposits at the respective dates:

Specie.....	$82,210,100	$70,649,300	$95,718,500
Legal tenders.	34,281,200	46,904,400	52,344,000
Reserve....	$116,491,300	$117,553,700	$148,062,500
Reserve required against deposits.	104,100,150	115,221,275	105,421,725
Surplus..	$12,391,150	$2,332,425	$42,640,775
Percentage.....	27.9	25.5	35.1

In respect to the movement of currency and gold to and from the interior by the New York banks, the *Financial Chronicle* gives the following tables, which demonstrate clearly the extraordinary gain that is going on in receipts over shipments:

Week ending October 20, 1893.	Received by N. Y. banks.	Shipped by N. Y. banks.	Net interior movement. Gain.
Currency.....	$8,498,000	$4,088,000	$4,410,000
Gold	2,047,000	411,000	1,636,000
Total gold and legal tenders..	$10,545,000	$4,499,000	$6,046,000

Result with Sub-Treasury operations:

Week ending October 20, 1893.	Into banks.	Out of banks.	Net change in bank holdings. Gain.
Banks' interior movement, as above.....	$10,545,000	$4,499,000	$6,046,000
Sub-Treasury operations..	18,600,000	15,500,000	3,100,000
Total gold and legal tenders..	$29,1450,00	$19,999,000	$9,146,000

New York Clearing House loan certificates outstanding have been reduced to less than $2,000,000. As a set off to the plethora of money in the banks the Treasury statement issued on Saturday showed that the gold reserve has decreased to $81,700,000 the lowest point it has ever reached. The loss for the first three weeks of the month of October reached $12,000,000. It is believed, however, that the reserve will from henceforth gradually climb up again, as the currency now in process of redemption will become unlocked and available for use.

The customs receipts at New York for the first 20 days of this month aggregated $5,038,000, as against $6,942,000 for the corresponding period of last year. A proportionate decrease in customs receipts at other points throughout the country is shown by the reports received. The falling off of the revenues is clearly shown in the official statement that since the beginning of the present fiscal year the expenditures of the Treasury have exceeded the receipts $22,000,000, which will be increased when October interest is taken out of the cash to the extent of $27,000,000 or $28,000,000. These figures bear out Secretary Carlisle's estimates that at the end of next June the deficit will amount to $50,000,000 or $60,000,000.

On the Stock Exchange a remarkable revival of trade has sprung up during the present week. Up to Saturday the volume of transactions was narrow, with a slight tendency to better prices, especially in the "grangers" and some of the less active railway stocks. On Monday a sensational rise took place in stocks of the anthracite coal roads, on the news of the acquisition of 40,000 shares of Lackawanna by W. K. Vanderbilt, with accompanying rumors of a coming change of ownership in that road, and a contemplated consolidation of the anthracite interests. Lackawanna, which closed on Saturday at 160, rushed up as high as 171½, or 4 points higher than it reached during the McLeod boom of last year. Jersey Central jumped 10 points, and Delaware and Hudson 5 points. This was followed, however, on Tuesday, by a sensible reaction. Meanwhile the absolute significance of the Vanderbilt purchase is not fully known, but the feeling exists that its outcome will tend to improvement in the general status of the road, and to harmonize conflicting interests in the anthracite coal roads. Another feature of recent business in the Stock Exchange has been an advance, with considerable activity and strength, in Reading stock, consequent on the extension of the Speyer loan, referred to last week. Monday's market, in consequence of these and other favorable causes, was more active and buoyant than for many weeks, nearly all railroads and industrial securities sharing in the general rise. American Sugar certificates were especially active, both on that day and on Tuesday, rising rapidly until 104½ was reached, the highest point yet touched by this stock, but dropping suddenly again to 99½. Late on Tuesday the news of the surrender of the anti-repealers at Washington and good prospects of prompt action in the Senate gave added buoyancy to the stock market, which closed strong, with values enhanced along nearly the whole list of stocks. The following list shows the extreme fluctuations of the more active securities during the past week, with closing quotations on October 25:

	Highest.	Lowest.	Closing, Oct. 25.
Am. Sugar Ref.....	104¾	91¼	103¾
Atchison, T. & S. Fé....	21¼	18⅛	21⅛
Balt. & Ohio.....	73⅜	67⅛	73⅜
Chicago Gas.....	64⅛	58⅛	63⅝
Chic., B. & Q.....	86½	78¼	86⅛
Chic., Mil. & St. Paul...	64⅜	58⅛	64⅛
Chic., Rock Isl. & Pac..	70	61⅜	70
Del. & Hudson.....	130	121	129½
Del., Lack & Western...	171½	156	164⅛
Gen. Electric.....	49½	43¼	49¼
Lake Shore.....	129	121¼	129
Louisville & Nashville...	49½	44¾	49
Manhattan.....	134	126½	133
Missouri Pacific.....	25⅞	21⅛	25⅛
Minnesota Iron, asked...	....	....	60
National Lead, Common.	28⅜	25⅝	28¼
New Jersey Central.....	119½	110¼	117½
New York Central.....	104	103½	103⅝
N. Y., L. E. & Western.	17⅝	13¾	17⅝
Northern Pacific, Pfd. .	24¼	22	24¼
Philadelphia & Reading..	23¾	17⅛	23⅛
Richmond & West Pt., Terml.....	3¾	2⅝	3⅝
St. Paul & Omaha.....	37⅞	34½	37½
Union Pacific.....	20	17¼	19¼
Western Union.....	90⅜	81⅞	90¼

Money on call has ruled exceedingly low; rates having been quoted largely at 1 %. The usual rate has, however, been about 2 %, which was the closing price on Wednesday. The supply of call loans is abundant, but the demand hitherto has been but moderate. Time money is quoted at 4 % for 30 days, 4½ % for 60 @ 90 days, and 5 % @ 6 % for longer periods. Banks have not lately been in this market, such transactions as have been consummated being generally with trust companies or private lenders. Mercantile paper has shown some slight movement, and a fair out of town business is reported at about the following rates: 5¾ % @ 6 % for prime indorsed bills, 6½ % @ 7½ % for first class single names, 8 % @ 10 % for other names less well known.

Sterling exchange, has ruled weak and lower. The demand for remittances is slight, while the supply of bills is large. Last actual business was done at the following rates: Bankers' 60-day bills at $4.80¾ @ $4.82; demand at $4.83 @ $4.84; cables at $4.83¼ @

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$4.84½; 60-day commercial, $4.79 ¾ @ $4.80; demand at $4.83½ @ $4.83¾. Domestic exchange on New York is quoted as follows: New Orleans, commercial 150 @ 175 discount, bank par; Charleston, buying ⅛ discount, selling par; San Francisco, sight 15; telegraph 25 premium; Savannah, buying ¼ discount, selling ⅛ discount @ par; Chicago, 75 premium.

The market for Government bonds is strong and practically higher. Closing quotations were as follows:

	Bid.	Asked.
2s, 1891, registered	97	.....
4s, registered	111	111¾
4s, coupon	111	111¾

Silver has strengthened; the closing price for bars in London being quoted at 33 15/16d. ℔ ounce, and in New York at 74¢ ℔ ounce.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, October 25, 1893.

Pig Iron.—Buyers are taking Iron only for immediate requirements, and the market continues very dull. We quote Northern brands $14 @ $15 for No. 1; $13 @ $14.25 for No. 2; $12 25 @ $12 50 for Gray Forge, at tidewater. Southern Iron, same delivery, $13.25 @ $14.25 for No. 1; $12.25 @ $13.25 for No. 2; $11.50 @ $12.25 for No. 3; $11.75 @ $12.25 for No. 2 Soft, and $12.25 @ $12.50 for No. 1 Soft. Gray Forge is $11.25 @ $12.

Spiegeleisen and Ferromanganese.—There is only a very moderate demand for small lots of Ferromanganese. We quote: Foreign Spiegeleisen, nominally, for 10 % @ 12 %, $21.50 @ $22, and 20 % $25 50 @ $26, on cars, Jersey City, and Ferromanganese, $55 50 @ $56.

Billets and Rods. — Business in domestic Billets is very light. In Wire Rods a sale has been made of a moderate lot by a Western mill. We quote nominally: Domestic Billets, $20.50 @ $22.50, and foreign Billets, $28 @ $28.50, tidewater; domestic Wire Rods, $28.75 @ $29, and foreign Rods, $39.50 @ $40, tidewater.

Steel Rails.—Eastern mills report no new business. Rumors of a sharp cut are persistently circulated, but are without tangible foundation.

Track Material.—Small lots are selling at the following prices: Spikes, 1.80¢ @ 1.90¢; Fish Plates, 1.40¢ @ 1.60¢; Track Bolts, Square Nuts, 2.25¢ @ 2.40¢, and Hexagon Nuts, 2.40¢ @ 2.50¢, delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—A moderate sized order is about to be placed for a new city hall at Paterson. A prominent dry goods house in this city is also expected in the market soon for an extension. In engineering work a 1500-ton order is on the market for Buffalo. Plates are very dull, and some low quotations are being made. We quote nominally: Beams up to 15-inch, 1.75¢ @ 2¢; 20-inch, 2¢ @ 2.25¢, for round lots; Angles, 1.75¢ @ 1.90¢; Universal Mill Plates, 1.65¢ @ 1.90¢; Tees, 2¢ @ 2.15¢; Channels, 1.80¢ @ 2¢, on dock. Steel Plates are 1.60¢ @ 1.70¢ for Tank; 1.75¢ @ 1.90¢ for Shell; 2¢ @ 2.15¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.50¢ @ 1.9¢, on dock, and Common, 1.40¢ @ 1.50¢; Soft Steel Bars are 1.50¢ @ 1.70¢; Scrap Axles are quotable at 1.70¢ @ 2¢, delivered; Steel Axles, 1.70¢ @ 1.90¢, and Links and Pins, 1.70¢ @ 1.80¢; Steel Hoops, 1.75¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ ℔ 45 lb bundle, at mill.

Old Material.—Steel Works Scrap is selling at very low figures, $10.50 @ $12. delivered, being done. Old Iron Rails are nominally at $13 @ $14; Old Steel Rails, $8 @ $9, and Wrought Scrap $9 @ $11.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, October 25, 1893.

Business in Pig Tin has been confined chiefly to regular dealers. Reduction in Straits shipments fails to attract outside interest and consumers buy sparingly. The leading holders offer with some reserve, however, and prices vary in a moderate degree only, despite the dullness of trade. The average has been slightly higher than that of last week, with late transactions at £78. 10/ for prompt delivery and £79 for three months' futures.

Copper has ruled a fraction higher in the face of slow business and other adverse influences. The chief obstacle in the way of improvement is periodical selling orders from the American market. Orders from consumers have been readily filled at market value. Prices at the close were £42. 5/ for Merchant Bars, prompt delivery, £42. 12/6 for three months' futures, and £45. 10/ for Best Selected English.

Tin Plate orders have been moderate and the market is weaker, with some pressure to sell. Ordinary 14 x 20 Bessemer Cokes went at 10/9, f.o.b. Swansea, early in the week, but some orders were subsequently placed at 10/6. Demand for Oil sizes has moderated. Stocks at Swansea are estimated at 226,000 boxes. Liverpool quotations are as follows:

IC Charcoal, Alloway grade	12/9 @ 13/3
IC Bessemer Steel, Coke finish.	11/6 @ 11/9
IC Siemens " " "	11/9 @ 12/
IC Coke, B. V. grade, 14 x 20	11/6 @ 11/9
Charcoal Terne, Dean grade	11/3 @ 11/6

Pig Lead has been very quiet, and prices have remained at £9. 12/6 for Soft Spanish.

Spelter has remained steady in price at £16. 15/ for ordinary Silesian, but found rather slow sale.

All branches of the Iron and Steel trade remain flat, with prices soft but showing no radical change. Last dealings in warrants were at 42/3 for Scotch, 34/6 @ 34/7½ for Cleveland, and 44/6 for Hematite.

From Pittsburgh comes the information that the vote of the lodges of the Amalgamated Association on the question of granting a reduction of 10 per cent. to the sheet manufacturers will not be concluded before the latter part of this week. In the meantime the members of the Association of Iron and Steel Sheet Manufacturers, believing that the vote will be against accepting the reduction, have arranged to hold a meeting in the *Times* Building, Pittsburgh, on Thursday, the 26th inst. At this meeting it is expected that important action on the request for a reduction will be taken. In case the workmen refuse to adjust the wage scale governing sheet mills adopted in Pittsburgh last summer to conform to the recent reduction in the base of the bar and guide mill scales from 2 cents to 1½ cents, it is not improbable that the sheet manufacturers, who have heretofore recognized the Amalgamated Association, will refuse to longer treat with that organization and will operate their mills with non-union workmen. Should this action become necessary it will be a very serious blow to the Amalgamated Association, as what little strength that organization retains lies nearly altogether with the sheet manufacturers. The final outcome of this matter is being awaited with considerable interest by the trades.

Industrial Matters in Ohio.

The actual condition of affairs is dull, and there are many thousand workmen throughout the State either idle or only working part time. Blast furnaces are out of blast, bar mills and guide mills are nearly all idle, boiler shops, machine shops, foundries and miscellaneous factories would not in the aggregate average half time. The holiday and stock taking season is approaching, and the vision of hard times will soon become a reality. There is only one branch of the iron and steel trade in which any activity is noticed. Sheet mills are able to continue operations, but in all other branches operations are nearly at a standstill, the cause being unremunerative prices and an incompatible wages scale. In spite of these facts, however, the sheet mill skilled workers have cast their votes through their various lodges, and have refused to agree to a reduction of 10 per cent. in their wages simply because the scale was signed for a year and they want their "pound of flesh." What the immediate result will be is difficult to predict, as the mills which are in operation are all working on orders for prompt shipment, and do not care to disappoint their best customers, but as soon as present wants are supplied the battle may begin in earnest. Orders now entered have been accepted only after the closest scrutiny in regard to the credit of the buyer, and there is no attempt to force goods. The bulk of business being done is in galvanized sheets, and mills that are able to make up mixed cars of black and galvanized are getting preference from the best buyers. The slight activity is not to be compared with the rush for material felt at this season for many years past, and when it is over the workmen will probably realize that they have made a mistake. It is safe to say that no stocks will be accumulated this winter at the mills, although such has been the course in former years. The ultimate result may be local agreements on a non-union basis, as indicated in *The Iron Age* two weeks ago, and nothing but a conciliatory spirit on the part of the workmen can prevent it. The manufacturers are independent in their attitude toward buyers for the reason that they are not over anxious to run their plants, and they are ready to act in the same manner toward the men when occasion requires.

The iron and steel roofing trade is particularly dull this fall, and the average time made by the 23 concerns doing business in the State is not more than three days per week. Traveling men are nearly all at home for the rest of the season.

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HARDWARE.

Condition of Trade.

ORDERS continue comparatively small and cover in most cases assortments simply for the replenishing of stock, seasonable goods having also a prominent place. Anticipating a quiet trade for the next two or three months, the large wholesale houses are buying very sparingly, preferring to let their stocks become considerably depleted rather than be obliged to carry over a considerable quantity of goods. They are also giving continued attention to the matter of credits, and are exceedingly careful in this regard, and disposed to restrict the time which accounts are permitted to run, limiting the transactions largely to a cash basis. In order to dispose of the stock on hand there is also a tendency on the jobbers' part toward cut prices on a good many lines, and more or less irregularity is thus caused. Prices, however, are pretty well maintained, and while there are cases in which manufacturers would undoubtedly accept lower prices on attractive orders, there has been on the whole a remarkable steadiness in values. Collections are unquestionably better, but a good deal of complaint is still made on this score. There is no reason to doubt that business during the past month or two has been seriously injured by the delay in the repeal of the Sherman bill, but it is expected that early action in this direction will have a beneficial effect on the general condition of trade.

Chicago.

(*By Telegraph.*)

The Shelf Hardware trade is in about the same condition as reported last week. The volume of business shows a decided falling off from its condition during the first half of October. Merchants throughout the Northwest have evidently filled up on season goods, and orders now coming in are only for small lots of Hardware, merely to cover present requirements. Stocks are reported by salesmen to be extremely light in every direction, but merchants are still disinclined to buy anything more than they must get for their immediate trade. The outlook is quite discouraging for the jobbing trade here for the balance of the year. Economies are being instituted so as to reduce expenses as much as possible to correspond with the shrinkage in business. The prices on Hardware generally are remarkably steady considering the circumstances. Tin and Tinware are especially noticeable in this respect, which is perhaps due to everybody carrying very light stocks. Heavy Hardware is in a somewhat better condition than Shelf Hardware, owing to the continued good trade in the iron and steel departments. The other departments, however, are quiet, as wagon and carriage makers are still buying very lightly.

St. Louis.

(*By Telegraph.*)

There is no particular change in the Hardware trade since our last report, except, perhaps, that prices are not as firmly held. Here and there low prices for special lots are made, which rapidly become regular selling prices, and a lower range all around is the natural result. Wire Nails just now seem to be the special victim, and we hear of some exceptionally low prices, which if even thought of three months ago would have appeared more than ridiculous. Jobbers and retail dealers alike are not carrying anything like their usual stock or assortment, and refuse to change this policy until something definite is done in Washington. A waiting policy is being adopted, and under the circumstances seems the only correct one to adopt.

Notes on Prices.

Wire Nails.—The volume of business is rather light, and comparatively few of the mills are running on full time. There have been some inquiries in regard to quotations on especially large lots, and it is understood that low figures have thus been developed. The market on the whole is represented by $1.30 for carload lots at mill, this figure being readily obtainable, though some manufacturers quote a slightly higher price.

Chicago, by Telegraph.—The trade in Wire Nails tapered off during the past week, the early part having been fairly active, but it has as yet not relapsed into complete stagnation, as there are some inquiries from large buyers for considerable quantities which are expected to lead to further business. Prices have receded on factory lots and some sales were made as low as $1.32½, Chicago, although $1.35 to $1.40 are now considered fair quotations. Jobbers have recently had an improved business in Wire Nails and have taken a great many orders, but usually for small quantities. Their regular price from stock is $1.50, but this is shaded by some houses.

Cut Nails.—There has been little change in the Cut Nail market since our last review. The quotation of $1 base is regularly and quite firmly adhered to. There is evidence of a disposition on the part of the mills to obtain a slight advance, but it is not attended with much success. The volume of business is not sufficient to justify the running of the mills to their full capacity, and at the present time considerably less than the usual quantity of Nails are being made in the Wheeling district, and the Eastern mills seem to be doing a somewhat larger proportion of the business than usual. The New York price for small lots from store is $1.20 to $1.30.

Chicago, by Telegraph.— The trade in Cut Steel Nails has been for some time moving in spurts, being fairly active for a few days and followed by a period of dullness. The net result, however, is such as to keep the local factories steadily at work. A change has recently been noted in the character of this trade which seems to have some significance. A great deal more business is now being done in Finishing, Casing and Clinch Nails, which was a branch of the trade that for a considerable period seemed to have been completely monopolized by Wire Nails. The Cut Nail manufacturers are hoping that this may prove that a reaction has taken place, but would like to see some further demonstrations before allowing themselves to derive very much encouragement. Prices are maintained at $1.20 to $1.25, Chicago, for factory lots. Small lots from stock are held at $1.30.

Barb Wire.—The Barb Wire market is stagnant and in an unsettled condition. Prices are decidedly in buyers' favor, and with the small volume of business doing are uneven and irregular. We quote Galvanized Four-Point at mill on a basis of $2.25 to $2.30. Painted being held at 40 cents less, but concessions from these figures are obtainable.

Chicago, by Telegraph. —Manufacturers report only a moderate trade. This is derived in a large measure from direct connection with the retail merchants. It is difficult to obtain quotations as trade is now going, as prices made depend entirely on circumstances.

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Manufacturers of ordinary Galvanized Barb Wire are selling at $2.40, but this is shaded. Jobbers continue to quote small lots from stock at $2.55, but say that their trade in this line is practically dead.

Clippers.—We are advised by the Coates Clipper Mfg. Company, Worcester, Mass., that only 20 per cent. discount is allowed on their power machines and parts for the same, instead of 25 per cent. discount, as stated in our issue of October 19, 1893, under Notes on Prices. With the exception of power machines and parts their line of Clippers is subject to a discount of 25 per cent.

Combined Door Lock and Ventilator.—This article was described in our last issue as put on the market by the Brooklyn Specialty Company, 166 Pierrepont street, Brooklyn, N. Y. It is sold to the trade, japanned, at $3 per dozen, net, and nickel plated at $5 per dozen, net.

Magnetic Curry Comb.—The Ives Mfg. Company, North Granville, N. Y., who are manufacturing this article, which was illustrated in *The Iron Age* October 12, are selling the Comb to the retail trade at $2 per dozen, net.

Cream City Flour Bin and Sifter.—This article is put on the market by the Geuder & Paeschke Mfg. Company, Milwaukee, Wis., and was described in a recent issue. It is sold from the following list, which is subject to a discount of 50 per cent. to the trade:

25	50	100 pounds.
$34.00	$42.00	$54.00 per doz.

Automatic Steam Coffee Cooker.—This Cooker was described in our last issue and is put on the market by Wilmot Castle & Co., Rochester, N. Y. It is sold to the trade from the following list, which is subject to a discount of 40 per cent.:

2-qt. heavy tin,	$1.50	...nickeled pots,	$2.00
3 " " "	1.75	... " " "	2 50
5 " " "	2 50	... " " "	3.50

Cereal Kettles for use in connection with the above steamers are sold at 20, 25 and 30 cents respectively.

The Arnold Automatic Steam Cooker, put on the market by the same concern, is sold to the trade from the following list, which is subject also to a discount of 40 per cent.:

No. 0, Two quarts,	1	compartment,	$1.50
No. 1, One gallon,	1	"	2.25
No. 2, Two gallons,	2	compartments,	2.75
No. 3, Three gallons,	2	"	3.50
No. 3, Three gallons,	3	"	3.75
No. 4, Four gallons,	3	"	4.50
No. 5, Five gallons,	3	"	5.00
No. 5, Five " oval,	3	"	6.00

Glass.—Since our last report the Glass market has been declared an open one by the National Window Glass Company; that is, the agreement among American manufacturers to sell Glass at only fixed prices has been abandoned. The Glass factories will start up when and as they please, so it will be a free fight and no favor. The National Window Glass Company did not give up their charter, but for the present will not influence the manufacturers nor the trade. The wage question has not yet been definitely settled, but indications are that an agreement will be reached in a short time. It is estimated that 75 per cent. of the factories will be started up in the near future, but it remains to be seen how large a proportion of those starting can continue running, with light demand, accumulating stocks and low prices. Former quotations are still being adhered to, as no new Glass can be got on the market under three or four weeks, by which time the fall demand will practically be over. In Plate Glass there is little doing. Imported Glass is being sold in a small way, as the market continues lifeless.

Export Notes.

PAUL F. GERHARD & CO., 19 Whitehall street, freight agents of the Lamport & Holt line of steamers to Rio de Janeiro, recently inaugurated, have issued a special notice, announcing to shippers that owing to the increased expense in landing cargo in Brazil, by reason of the present disturbed state of the country, they have been obliged to advance all rates of freight 20 per cent. to Rio de Janeiro.

Roland R. Dennis, in charge of Whitman & Barnes Mfg. Company's London branch, has returned to England after a three weeks' visit here. He came over to attend a managers' meeting, which was held at Akron, Ohio, September 18, at which all the branch houses were represented.

The Central & South American Telegraph Company, 37 Wall street, New York, have issued a handsome mounted wall map, 39 x 37 inches in size, for the accommodation of their patrons, which shows at a glance not only the location of their own cables, but those of other companies connecting North and South America, as well as the numerous submarine lines to Europe. Commencing at Galveston, the various points reached by them in Mexico, Central America and the West Coast ports of South America, together with their transcontinental line from Valparaiso to Buenos Ayres, are given, in connection with the land lines of both continents. These features are represented on a hemisphere 30 inches in diameter, resting on a blue background.

Drawer Labels.

THE TABLET & TICKET COMPANY, 99 Franklin street, New York, and 87-89 Franklin street, Chicago, who make a specialty of Wilson's Gummed Letters and Figures, are offering a line of Drawer Labels, one style of which is represented in the accompanying cut. Other labels are shown, with variously designed back grounds and different sizes of letters, and reading as follows: "Yale, Small Brass;" "Brass Screws, One Inch;" "No. 6 Door Hinges," and "Spring Locks." Desk and cabinet cards for document boxes are also shown, made in the same manner. These are all made with their Wilson white paper letters on black gummed paper, which can be easily moistened and attached to a drawer or box. Labels are made with any wording desired, at 50 cents per dozen labels. A recently issued catalogue of merchants' specialties, shows these labels; also a large variety of tickets, tags, labels, &c.



Drawer Label.

World's Fair Exhibits.

ATLAS TACK CORPORATION.

The arrangement of Tacks, Nails, Eyelets, Rivets, Staples, &c., by the Atlas Tack Corporation, Boston, makes an attractive and effective display. A large canvas is mounted on a richly carved frame which stands on a raised inclosed platform. On the canvas is painted one of the mills of the A. Field & Sons branch of the corporation, with a title scroll and list of specialties; also the addresses of the various corporation branches. On the reverse side of the canvas panel is an eagle surrounded by the stars and accompanied by the shield and flag; while beneath is the title of A. Field & Sons, with the description of the specialties produced at their works, all done in letters formed by copper and iron Tacks, carpet, brush and gimp Tacks, patent coated Tacks, &c., the color effects being created by the use of the various colored Tacks. The panel represents, it is stated, the six months' continuous work of one person. Surrounding the panel are uniform showcases containing a series of trays divided into compartments in which are displayed the many colored Tacks, &c It is remarked that the exhibit includes over 2000 sizes of carpet, upholstery, leather and silk covered Tacks, brass Nails and Buttons, Staples, double pointed Tacks, Eyelets and Rivets, Brads, Nails, Escutcheon Pins, Tufting Buttons, Tufting Nails, &c., the Tacks measuring from $\frac{1}{16}$ inch up through and including all the standard sizes.

NATIONAL CASH REGISTER COMPANY.

The National Cash Register Company, Dayton, Ohio, have three exhibits at the fair—one upstairs in the Department of Liberal Arts, another in the Electrical Building and a third in Machinery Hall. The exhibit in the Electrical Building is in a pavilion, at the left of which is a Total Adding Register, having on the top a number of metal signs, two of them being exhibited at a time, and automatically changing about every half minute. Two of the keys of the register are operated to show the public how the registers work. The interior mechanism of the machine is exposed, showing the method of adding. On the other side is a gold plated check printing register, which is also worked automatically. At short intervals the register prints, cuts off and throws a check out, on which is printing, showing the amount of the purchase, the date, the number of the check, &c. The register has an illumi-

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nated sign on top which flashes out at frequent intervals. In the center of the pavilion is a glass picture, illuminated with a light at the back, showing a view of the envelope addressing department at the factory, with operators at work. On the opposite side of the pavilion is another illuminated picture in colors of their factory at Dayton, showing a scene at night with all the windows lit up. Employees of the company are in attendance to explain the merits of the registers. At the Machinery Hall exhibit registers are displayed on counters in a booth finished in cream and gold. Attendants are here kept busy explaining the workings of the machines, and at all the exhibits the public is invited to touch and operate the registers. In addition to the exhibits there are over 650 National Cash Registers used by the World's Fair, the collection department having adopted them to control and account for the cash received. These are found on the Midway Plaisance, in the German village, Esquimaux village and elsewhere. We are advised that foreigners soon learned to operate the registers.

Changing a Credit into a Cash Business.

BY E. D. WARNER.

THAT A BUSINESS upon strictly a cash basis is preferable to one part cash and part credit, or to one all credit, is conceded by all progressive merchants. But while the theory and desirability are granted, the practicability is doubted—in fact, even derided. To a merchant starting a new business, to open and continue an all-cash trade, is comparatively a simple matter; the rub comes upon changing a credit into a cash business.

CAN IT BE DONE

without injury to my business? Most emphatically yes, if one has push, patience and perseverance, but if one be weak and vacillating, then a negative answer must be given. While the beginning may be marked by a decrease in the amount of sales, yet the net profits will usually be found to be as great, if not greater, than before; for in a part cash and part credit business three-fourths of the profits will result from the cash part. A large share of the items of expense, if examined carefully, will be found to consist of matters relating largely to the credit side of the ledger, such as bad debts, bookkeeper, cost of collection, extra help required, interest on capital invested and a number of other charges traceable to the same cause. In a cash business these are eliminated, while as added sources of profit we have cash discounts, increased custom because of lower prices, quick returns upon compound interest of money invested and the freedom from that peace destroyer, worry. Besides, one has his business well in hand, is ever pushing it, and with a gilt-edge credit—the best of capital.

LESSENED SALES.

Without doubt the first year or two will see lessened sales, but remember it is but the shrinkage from inflation to real value and that the growth afterward will be more healthy and satisfactory than it ever otherwise could be.

The end is desirable, but how is it to be obtained?

In the first place, decide to change to a cash basis and do it. Do as Cortez did when entering Mexico with but a handful of men against a rich and powerful nation — burn your boats behind you and press on with a firm determination to succeed, and you will. Set a day for the change, and prepare your customers for it by explaining to them as far as possible, either personally or by letter when well acquainted, by circular, as we did, or through the press, the advantages to be derived therefrom by yourself, but especially by them.

When we decided to make the change to a cash basis we issued a circular, which was distributed among our customers, as follows:

We take pleasure in announcing to our friends and the public generally that after this date we propose to conduct our business, both buying and selling, on the cash plan.

A long experience in the Hardware business has convinced us that the system of selling goods on credit, to be paid for when convenient, is a most vicious one. The increased expenses of doing a credit business, on account of salaries of bookkeeper and collector, the amount of inevitable losses every year because of bad debts, which will occur notwithstanding the most careful discrimination, and the loss of interest from having a large amount of capital "tied up" in book accounts, all render necessary a larger margin of profit, which has to be considered as business expenses and paid for by the cash buyers.

Besides this, the bad feeling constantly occurring because credit is given to one customer and refused another, and the disagreeable necessity of being obliged to "dun" customers for past due accounts, confirm us in our determination in the future to sell for cash.

In these times of close competition cash buyers expect, and are entitled to, the very lowest prices, and should not be required to pay the losses incident to a credit business.

In the future it shall be our aim, by giving the most careful personal attention to every detail of our business, to satisfy the demands of close cash buyers, and to carry a still better assortment of carefully selected lines of the following goods. Endeavoring in all things to further the interest of our patrons by giving them all the advantages of a cash system, we shall hope to merit a continuance of the patronage which we have received in the past.

On the other side of the circular we called attention to the fact that we carry in stock a large and complete assortment of the following goods, purchased direct from the manufacturers for cash. The various lines of goods were mentioned under the following headings:

BUILDERS' HARDWARE.
CUTLERY.
MECHANICS' TOOLS.
BUTCHERS' SUPPLIES.
BLACKSMITHS' GOODS.
FARMING IMPLEMENTS.
HOUSE-FURNISHING GOODS.
MANUFACTURERS' SUPPLIES.

Show by your prices how much cheaper you can sell now than before, as you surely can. It is unnecessary to make a pro rata reduction through your stock, but make leaders many and often, display tastefully, advertise extensively and trade will be attracted. This now can be done with no fear of loss. Upon those articles where competition is severe figure very low, for here comparisons will be made; but from those unattacked a good profit can be reaped. In the first case, however, good returns will be obtained because the stock is quickly turned into money and reinvested, the interest or profit being now compound instead of simple.

FOR CASH.

One, except in special cases, can always sell for cash closer than for credit, and in this way is able to make greater inducements to the public to trade with him than can his credit competitor. Without doubt a few customers will become offended when refused trust, but for every one thus lost two will be gained, and as the firms see that their money will go further for cash than when time is given they will soon return. A man if he thinks he has saved money upon an article of good quality will be pleased. Such a customer is the best advertisement one can have. Sell close at a fixed price, back it up by strict honesty and courtesy, and there will be no doubt of your success.

IN CHANGING

to a cash basis, to get the best results most quickly, circumstances will alter cases. With a wide fund to draw from the change can be made at once, but when restricted it is often better to allow, for convenience, a little time to those you know will pay your bill as soon as presented. They will, however, soon become educated to paying cash. But let the time given be brief as possible.

Our experience of a year in a cash business has confirmed our theory. While the amount of sales has of necessity diminished, we are constantly, by reason of reduced expenses, lower prices, &c., extending our business to fields into which we could not otherwise have gone. Moreover, while selling on much closer margins than before the change was possible, the ratio of profits to sales is greater. But best of all, when we leave at night "we go not like the galley slave, scourged to his dungeon," by worry over approaching bills, but "sustained and soothed by an unfaltering trust—we lie down to pleasant dreams."

THE SUDDEN DEATH of Charles W. Cotchett, who represented the Peck, Stow & Wilcox Company to the trade of this city and vicinity, occurred October 18, and is appropriately announced by the company. They speak of him as a young man of sterling intergrity, faithful to their interests, beloved by his associates and popular with their customers. The funeral services, October 20, from his late residence, were attended by the New York managers and employees in a body, the store having been closed for that purpose.

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William T. Nicholson.

THE TRADE have learned with regret of the death of William T. Nicholson, founder and president of the Nicholson File Company, Providence, R. I., announcement in regard to which appeared in our last issue. Mr. Nicholson's portrait is given herewith, and below is a sketch of his eventful career:

William T. Nicholson was born in Pawtucket, R. I., March 22, 1834, and died on the morning of the 17th inst., having been stricken with apoplexy after rising from the breakfast table the previous day. He was thus in his sixtieth year at the time of his death. His funeral was held from his residence, on Friday, at 12 o'clock noon, and was attended by a large assemblage of sympathizing friends in business and social circles. His boyhood and school days were spent at Whitinsville, Mass., and it was there at the age of 14 that he entered the machine shop of Paul Whitin & Sons, where he remained three years and learned the machinists' trade, which was the basis of his life work. Soon after that time he came to Providence as furnishing a better field for a wider and more varied experience. After a short time spent with Halsey Hatley, one of the pioneers in the manufacture of machinery for making Screws, and subsequently with the firm of Arnold & Barber, he found employment with Joseph R. Brown, with whom and the firm of Brown & Sharpe he remained for six years, having been the foreman of their shops during the last two years of his service with them. By diligent use of his evenings, which he had devoted to the study of mechanics and mechanical drawing, he had acquired such proficency that he was competent to make all the drawings used in the works where he was employed. In 1858 he entered into partnership with Isaac Brownell in the manufacture of jewelers' tables and light machinery, but bought out the interest of his partner in 1859, and in 1860 moved into larger quarters, materially increasing the productive capacity of his plant.

The outbreak of the Civil War, though at first followed by dull times, soon brought into active play the plant and the resources of Mr. Nicholson to supply the machinery needed to produce the small arms required by the United States Government. Soon after he engaged in the manufacture of parts of the Springfield rifle, having devised special machinery and formed a partnership with the late Henry A. Monroe for that purpose, in addition to carrying on his machine shop. In the spring of 1864 he sold this branch of the business to his partner, Mr. Monroe. This left him free to give more attention to his machine shop, and especially to the development of an invention which he had for some time previous desired to perfect—a machine for cutting files. The successful completion of this machine soon followed, and the organization of the Nicholson File Company in 1864 was the result. Had Mr. Nicholson realized the long and tedious road which lay before him ere success would crown his efforts it is doubtful if he would have had the courage to attempt the task of building up an industry in File making by machinery. There were many times between the inception of the project and its final assured success



WILLIAM T. NICHOLSON.

when even his confidence and his devotion to his pet hobby came very near deserting him, and only his tenacity of purpose saved him from defeat and failure. For it should be borne in mind that his success with the machine for cutting Files made it necessary that machinery should be devised for the other operations of forging, annealing, grinding and hardening if a successful business were to be carried on. This was ultimately accomplished, and the making of machine cut Files was an unequivocal success.

But now Mr. Nicholson was brought face to face with another difficult task—that is, the selling of his goods. For years the English hand cut File had monopolized the American market, and to dislodge it from its position was the work now before him. The conflict was long and fierce, but triumph was finally his, and the noble monument to that success is found in the plant which has been erected as the result of his efforts, and which is without a rival in completeness and capacity.

There is one thing that stands out in Mr. Nicholson's connection with his company, and it stands out so clearly and distinctly as to be almost unique, and that is, that in devotion of time, of energy, of talent and of care he gave as fully and freely as it would have been possible for him to have done had the property and interest been wholly his instead of a corporation's. In these days when trusts seem to be borne so lightly, such an example of devotion to the interests of others is worthy of being held up to public attention and emulation.

The Nicholson File Company were thus the pioneers in successfully producing machine cut Files. Previous to the incorporation of the company in 1864 goods of this character were made in Boston by the Whipple File Company, a concern having a large capital, which was eventually sunk in an endeavor to produce Files by machinery. Before them were the concerns of Ibbotson & Horner and James Horner & Co., who were located at Sing Sing, N. Y. The Nicholson File Company were also the first to pack their goods in telescope boxes, superseding the unsightly and inconvenient paper packages, which is mentioned as an indication of the pains taking care and attention given to all the details of the business in connection with the splendid enterprise which always characterized it under Mr. Nicholson's management.

Mr. Nicholson has served the city of Providence as an alderman from his ward; has been a trustee of the Providence Public Library from its organization and was for several years its treasurer; was a director of the Rhode Island National Bank and the Narragansett Electric Light Company; a member of the Providence Board of Trade and of the American Society of Mechanical Engineers. In 1857 he married Elizabeth Dexter Gardner, daughter of Samuel and Alice (Mowry) Gardner, who survives him. They have had five children, Stephen, who for several years was superintendent of the File Works and who is at present connected with the company; Samuel Mowry, who in 1881 was elected secretary, and for the past two years has held the positions of vice-president and secretary; Col. William Thomas, Jr., deceased, who in his short career as a banker had earned the esteem of all who knew him; Eva, wife of Stephen Waterman, and Elizabeth, now completing her education.

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The lapse of time with success achieved brought no change in the labors of Mr. Nicholson, and the closing week of his life found him actively and earnestly working for the success of the corporation which he has so conspicuously served. His death has served to develop and bring into prominence many emphatic expressions of esteem from persons in the trade who by many years of contact with Mr. Nicholson are recognized as qualified to judge. These expressions evidence the high regard in which he was held personally and as a business man. Reserved in making pledges, he was sure to redeem any guarantee thus given. Buyers with whom he had relations felt free to anticipate their wants, knowing by experience that any inequalities which might arise in a season's trade would be cheerfully adjusted on a satisfactory basis without dispute or controversy. Genial and affable, he was always cordially welcomed by those who had the pleasure of knowing him, who eagerly sought for his views on the prominent questions of the time, in regard to which he was especially well posted. He was permitted to attain to a success which is within the reach of comparatively few, and his career marks an epoch in the manufacturing methods of the line with which his activity was identified. It is pleasant to record how well deserved was the ample measure of success that he achieved, based as it was upon industry, preserverance, enterprise, ability and character. He will long be remembered by the trade as capable, thorough, painstaking and absolutely trustworthy, a man of sterling integrity, exceptional sagacity and unquestioned worth.

Trade Items.

THE TRADE will observe the advertisement of C. J. Healy, 106 Chambers street, New York, referring to Keyes' patent Pliers and Nippers, on which it is intimated that a Hardwareman can make 100 per cent. profit. The fact that they are handled quite generally by jobbers of Hardware is also alluded to.

F. E. KOHLER & Co., Canton, Ohio, have taken the agency for the Champion Lawn Rake (all iron), which is manufactured by the Champion Lawn Rake Company of Canton, and are prepared to fill orders for these goods.

THOMAS C. HOAGLAND, who has for a number of years been connected with the H. B. Newhall Company, has opened an office at 85 Chambers street and 67 Reade street, New York, as direct representative of the following manufacturers: T. Rowland's Sons, Shovels, Spades and Scoops; Milton Mfg. Company, Wrought Iron Plate Washers, Hot Pressed Nuts, Machine Bolts, &c.; Carlisle Chain Works, Trace, Stake and other Bright Chain, and Coil and Cable Chains; Bedford Handle & Hard Wood Company, Axe, Pick, Sledge and other Handles; F. Gardner & Sons, Carriage and Wagon Axles. Mr. Hoagland has also made arrangements with Wiebusch & Hilger to represent them on special lines in the New England States. For his success in this new departure Mr. Hoagland will have the best wishes of his many friends.

A FIRE BROKE OUT about 11 o'clock in the forenoon of October 24 on the premises 58 Warren street, New York. The street floor was occupied by the Excelsior Hardware Company, while the basement and sub-basement contained the stock of E. J. Brady, plumber. The fire started in the rear of the floor below the street; cause at present unknown. A rough estimate places the damage at $4000 to $5000, a large part of which is water damage. Both businesses were practically one interest. Insurance up to 80 per cent. was carried on the stocks, which, it is hoped, will cover the loss.

WE ARE ADVISED by S. H. Smith of Oxford, N. C., that he is carrying on the business formerly conducted by Owen, Barbour & Smith in that place, having succeeded them some months ago.

Practical Hints for Hardwaremen.

BY A. F. G.

THE AMOUNT of money to be used for family or

PERSONAL EXPENSES

should be decided upon at the beginning of each year, the amount based upon the net profits yielded by the business the year previous. The merchant should then treat himself as a clerk, paying himself a monthly or weekly salary, in accordance with the amount decided upon. It is poor policy and unbusiness-like—in fact, it is not treating the business fairly—for the merchant to give himself the run of the money drawer, and to take from it without charging himself with the amount taken. Nor is it wise to put into one's pocket cash received without accounting for it. Goods taken from the store by the proprietor should be paid for at cost from his salary if the salary plan is followed; if not, they should be charged to his account. The keeping of open accounts on the ledger, no credits being shown, with the doctor,

GROCER, BLACKSMITH, ETC.,

with whom the merchant has dealings, is to be condemned. The apparent money owed by these parties, as shown by the account, only deceives the merchant. If it is desirable for any reason to keep running accounts with such parties, the merchant should insist upon receiving their bills each month and credit them with the amounts.

IN MARKING GOODS

to yield an average per cent. profit, some goods will have to bear a greater and some a less profit than the average; while those marked at less than the average will be the ones most largely sold. It is not always safe to mark goods at the same price as a competitor is selling them for, without being satisfied what percentage of profit such prices would yield. He may be selling them at a higher price than a legitimate profit warrants, or his price may be lower than their cost to you would justify. In the latter case he may have better facilities for buying them, or he may be selling them at a loss. The matter should be carefully examined into, to ascertain whether the goods can be bought to sell at his price, or whether he is really losing money on them. If a legitimate profit cannot be made on any class of goods, after exhausting all resources in purchasing, it is better to drop them until a profit can be made.

The advantage of doing an

ALL-CASH BUSINESS

over that of doing part cash and part credit is great. A merchant often thinks he is obliged to do business on the latter basis, when, in the course of a year, he could by easy stages, convert his customers to an all-cash system. Some who have studied the matter carefully consider that when goods are sold at the same prices to cash and credit customers, the credit part of the business yields no profit, taking into account the loss of interest on the amount credited and the amount lost by bad debts.

The experience of a firm who have recently started a strictly cash Hardware business is that they could sell a much larger quantity of goods on a credit basis, but that they sell a great many goods to people simply because they do not owe the new firm.

If, however, a credit business is done, a specified date should be agreed upon when the goods are to be paid for—a bill rendered promptly, with the expectation of its being promptly paid. Some merchants make it a rule that all goods sold on credit, on which no specified time is given, must be paid for by the end of the current month.

CASH AND CREDIT.

The amount of credit to be given in proportion to the cash business done should be decided upon at the beginning of the year, and the proportion strictly adhered to. Prudence would suggest one-quarter credit to three-quarters cash sales. By keeping a daily account of cash and credit sales, the average can be maintained.

The advantages of having the

OFFICE NEAR THE FRONT

entrance of the store cannot be overestimated. Here customers can be welcomed as they enter; clerks called to wait upon them, or waited upon by the proprietor if all the clerks are busy. Books and correspondence can here be attended to in comfort when not otherwise engaged, knowing prompt attention can be given to other matters when required. If books, correspondence and the store cannot all be properly attended to,

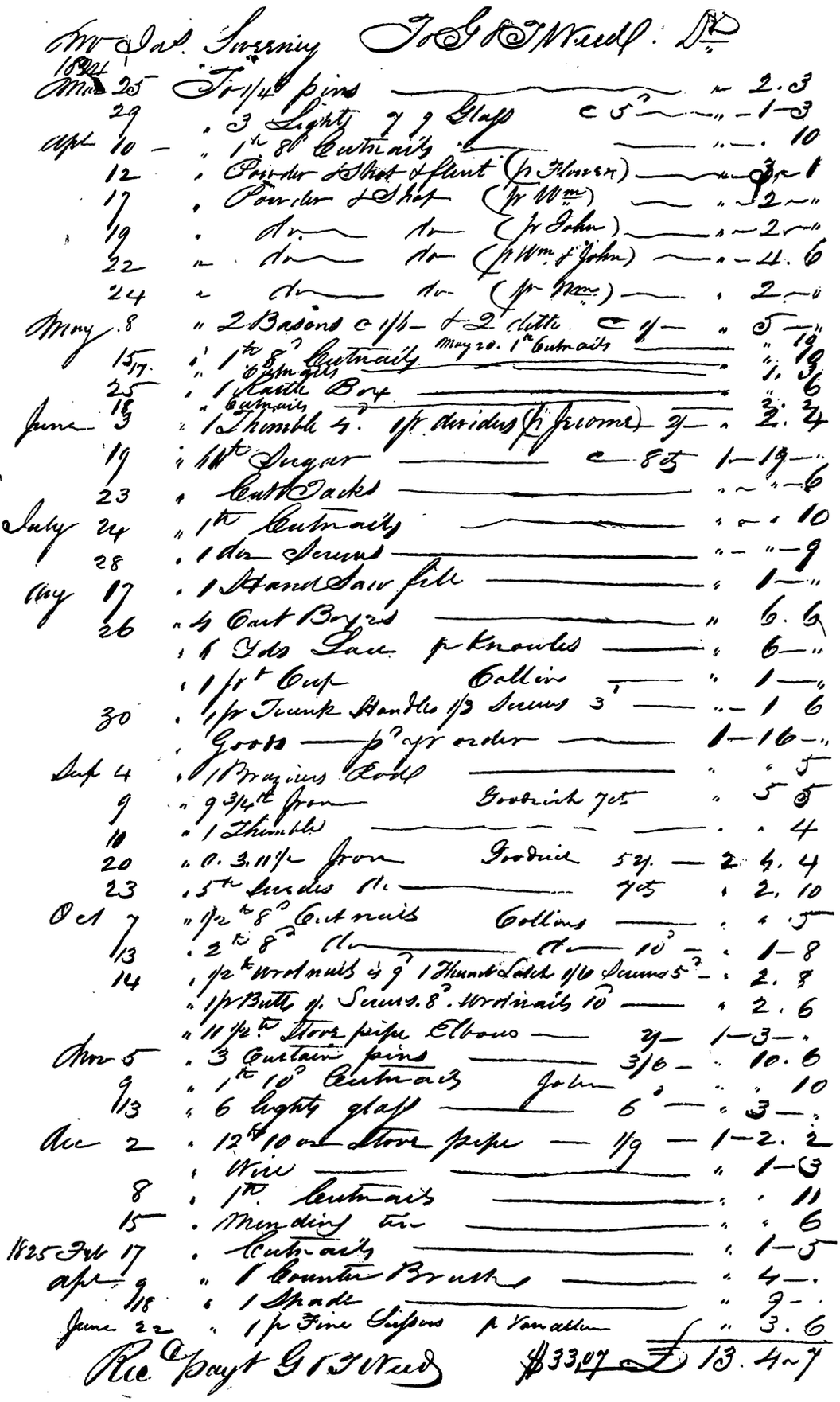
AN ASSISTANT

in the office is a good money investment, and may save the merchant from utter failure in business.

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An Old Bill of Hardware.

THE ACCOMPANYING ILLUSTRATION is a reproduction of an old Hardware invoice, which was brought out as one of the mementoes connected with the recent celebration of the seventy-fifth anniversary of Weed & Co., Buffalo, N. Y. It dates, it will be observed, from 1825. The goods were sold by G. & T. Weed to James Sweeney, father of a present resident of Buffalo, by whom the bill was given to Weed & Co., who have had it appropriately framed, and have given it a conspicuous place in their office. The bill is of interest to Hardwaremen as illustrating the line of goods handled at that comparatively early date and the prices which were then prevailing, which may, perhaps, excite a feeling akin to envy in the minds of merchants whose margins of profit on similar goods are at the present time unsatisfactorily narrow.



Bill of Hardware 1825.

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Price-Lists, Circulars, &c.

CLEVELAND AXLE MFG. CO., Canton, Ohio: Arrow Brand of Wagon and Carriage Axles. An illustrated catalogue shows a view of their new factory, also of Concord Express Axles, sand grooved; Square Shank Axles, one piece coach bed, fantail bed, coach bed; extra finish Steel Axles, half patent and taper; Long Swell Double Collar Axles, Half Collinge Axle, Self Lubricating Axles, &c. The company state that with their improved facilities they can safely promise prompt shipment of all orders received. A separate book is devoted to testimonials of their No. 6½ Concord Express Axles.

HOLLANDS MFG. COMPANY, Erie, Pa.: Chucks, Vises, Pipe Wrenches, Stocks, Dies, &c. The company issue an attractive folder, telling in verse of the Brownies in Erie. An illustration is given of their Offset Jaw Vise, surrounded by these inquisitive folk.

E. T. BARNUM, Detroit, Mich.: Wire and Iron good. Catalogue No. 570, 120 pages, is accompanied by a discount sheet and illustrates with prices and descriptions a very comprehensive line of goods. It is remarked in an introduction that the book has been compiled with the view of showing a general line of the Wire and Iron goods manufactured, and while very complete, it embraces a class of goods covering so large a field that it is possible to illustrate but a comparatively few designs of the different lines.

C. M. MCCLUNG & Co., Knoxville, Tenn.: Hardware, Stoves and Tinware. Their Stove catalogue No. 4 illustrates, with prices, Ranges, Cook Stoves, Heating Stoves, Laundry, Parlor Lamp Stove, Grates, Hollow Ware, Stove Trimmings, Fire Sets, Stove Boards, Coal Vases, Iron Roofing, Freezers, Coolers, Wooden Ware, Galvanized Iron Ware, Tinware, Japanned Ware, Agate Ware, Cane Mills, Evaporators, &c.

CLAYTON BROS., Bristol, Conn., and 122 Chambers street, New York: Steel Laid and Cast Iron Shears, Hardware specialties, Leather Axle Washers, &c. Their catalogue illustrates, with list prices, straight and bent Trimmers, Bankers' or Paper Shears, Barber Shears, Buttonhole, Ladies' and Pocket Scissors, all in a variety of finishes; also Kitchen Knives, Screw Drivers and Solid Sole Leather Axle Washers. A full stock of these goods is carried at the New York office, where all communications should be addressed.

S. L. ALLEN & Co., 1107 Market street, Philadelphia: Flexible Flyers, Flyer Sleighs and Flyer Coasters. Catalogues illustrate and describe these goods, and give reasons why they are superior to others. The Flexible Flyers have light runners of T shaped spring steel, making them strong vertically, but flexible sideways. This enables them to be guided by putting the feet on a steering bar, avoiding dragging the feet in steering and economizing in shoe leather.

THE NORWICH LOCK MFG. COMPANY, Roanoke, Va.: Mortise Locks. An illustrative, descriptive catalogue shows Mortise Locks complete in sets, selected from a large variety of the goods manufactured by the company. The catalogue is of the miniature type, and a large proportion of the Locks are represented by one-third size cuts. The Locks shown include Egyptian bronzed iron and bronze sets for inside doors, iron and bronze sliding door sets, front door sets with brass fronts and in bronze, iron and bronze store door sets. List prices are given on a separate sheet accompanying the catalogue.

THE SEDGWICK BROS COMPANY, Richmond, Ind.: Wire Netting, Fences and Gates, Sedgwick's Wire Stretcher, Summer Houses, Lawn Furniture, &c. Their catalogue contains illustrations, descriptions and prices of Stretcher, Farm Fencing, Lawn Fencing, Pickets, Gates, Netting, Self Opening Gate, Fencing for cemetery lots, &c.

LEGGETT & BROTHER, New York: Questions Answered, and Hints on Home Decoration, an illustrated pamphlet devoted to descriptions of and an explanation of the manner of using the firm's Varnish Stains, Enamels, Floor Paints, Gold Paint, Bath Enamel, Glass Paints, Varnishes, Liquid White Glue, Liquid Polish and Furniture Polish. The pamphlet contains no prices, and is designed to go into the hands of consumers.

It Is Reported—

That the Hardware store of Gideon Winans, Meshoppen, Wyoming County, Pa., was burned out on the 10th inst.

That the Hardware establishment of Hormell & Henry, Waynetown, Ind., was destroyed by fire on the 11th inst.

That early on the morning of the 12th inst. burglars broke into the Hardware store of Miller & Wise, Alliance, Ohio, and stole $200 worth of Revolvers, Razors and Knives.

That William Wagner's Hardware store, at Monaca, Pa., was damaged by fire on the 9th inst. The loss was $3000; insurance, $2500.

That recently burglars broke into the Hardware store of C. E. Dunham, Bound Brook, N. J., and got away with about $450 worth of Guns and Revolvers.

That Mr. Gridley of the Hardware firm of Pond, Gridley & Co., Springfield, Vt., has disposed of his interest in the business.

That the Hardware business of W. W. Harrington, North Branch, Mich., is now carried on under the style of Harrington & Weston.

That J. M. Graham & Co., are a new Hardware and Stove firm at Walurba, Pa.

That new Hardware stores have recently been opened at Perry, Oklahoma, by Spencer Hardware Company, Coulter & Brown, Wm. Flagg and H. C. Wallerstedt & Co.

That Howland & Rothfus are successors of Rothfus & Co. in the Hardware business at Blissfield, Mich.

That W. B. Adams has sold his Hardware business at Cannonsville, N. Y., to Charles Jester.

That J. S. White is now carrying on alone the Hardware business formerly conducted by White & Bromley, Sedalia, Mo.

That the Hardware establishment of Carpenter & Co., Wilkesbarre, Pa., was badly damaged by fire on the 14th inst., the loss being estimated at $30,000.

That Victor Borgaroff has purchased the Hardware stock of Mrs. Dostal, Waverly, Minn., and will continue the business.

That E. A. Cole's hardware store at Carlton Place, Ont., was robbed on the 17th inst.

That Stephen Allen has started in the Hardware business at Brookville, Ohio.

That the Hardware store of J. C. Rittenhouse, Lee's Summit, Mo., was visited on the evening of the 19th ult. by a well-dressed young man, who asked to be shown the best Gun in the store. The clerk, who was alone in the store, took a $60 double-barreled Parker Gun from the case, and after some hesitation the stranger agreed to buy it, but said he also wanted a box of loaded Shells for the Gun. A box of Shells was handed to him and the visitor loaded the Gun, and leveling it at the clerk's head, said: "Now young man, go to the rear of the store and keep quiet." Thus admonished the clerk obeyed, and the stranger walked out with the Gun and box of Shells and disappeared.

That Leo J. Baumgartner has succeeded Wilson & Baumgartner in the Hardware and Harness business at Armour, S. D.

That the Hardware store at Shelbyville, Ind., conducted by Fisher & Amenroth, was visited by thieves on the 9th inst., and $300 in cash and several Revolvers were stolen.

That burglars entered the Hardware store of Dull & Moorhead, McClure, Ohio, on the 10th inst., and blew off the safe door, totally wrecking the safe. The thieves only secured $30 in cash as a reward for their trouble.

That A. O. Oberholter's Hardware store, at Centerburg, Ohio, was destroyed in a large fire on the 30th ult.

That a fire which occurred at Fayette, Ohio, on October 7, destroyed the Hardware stores of E. S. Perry and W. Acker.

That the Dickinson Hardware Company, Little Rock, Ark., are intending to erect a three-story stone and brick structure which they will occupy on completion. The building will cost from $12,000 to $15,000. It will be 50 feet wide and 150 feet long. Pressed brick and granite are the materials which will be used in its construction.

That I. S. Rist has closed out his Hardware business at Marshalltown, Iowa. Mr. Rist is in ill health and will try farm life for a while.

That the Brooks Hardware Company have been incorporated at Denver, Col., with a capital of $20,000.

That burglars recently broke into the Hardware store of F. J. Simen at Humbird, Wis., and secured $40 worth of goods and some valuable papers.

That O. Beckington, Hardware merchant, Belvidere, Ill., has sold out his business to a new firm consisting of O. Rogers of Elgin and L. C. Cockran of Belvidere.

That W. L. Trimble and Messick & Dryden have purchased the Hardware stock of John W. Lincoln, Liberty, Mo., and will divide it between themselves.

That John L. Thomas has purchased the Smith Hardware stock at Red Oak, Iowa. His son, David Thomas, will have charge of the business.

That O. E. Wheaton of Kenton, Ohio, is thinking of entering the Hardware business at West Mansfield.

That Carl Plumb, Henderson, Iowa, has sold out his Hardware store to West & Martindale of Oakland.

That the store of the Holley Hardware Company, Rathdurm, Iowa, was destroyed by fire on the 27th ult.

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That Frank Conrad, Hardware dealer, Thomson, Ill., has sold out to Thomas Stagg.

That the Hardware store of Howe & Parish, Klamath Falls, Ore., was recently visited by fire, which damaged the establishment to the extent of $1000.

That Thomas Dunn & Co., dealers in Hardware, New Westminster, B. C., have sold out to A. Godfrey.

That E. S. Perry's Hardware store, at Fayette, Ohio, was destroyed by fire on the 7th inst.

That William G. Hayden, in the Hardware and Tin business, New Bedford, Mass., has sold out to a new firm under the style of James R. Denham & Co.

That S. Z. Hudson has purchased the T. R. Young Hardware stock, at Reedsburg, Wis.

That Mace Bros. have purchased J. A. Shaffer's stock of Hardware at Center Point, Ind.

That C. F. Morrisson, Hardware merchant, Wilkesboro, N. C., is building a new brick Hardware store.

That Charles Hicks and William Hicks contemplate entering the Hardware business at East Bloomfield, N. Y.

That burglars entered the Hardware store of A. Neil, Sauk Rapids, Minn., on the 3d inst., and got away with $60 worth of Revolvers, Razors, &c.

That the Hardware firm of H. W. Mills & Co., Paterson, N. J., has been dissolved, O. W. Mills retiring on account of ill health. The business will be continued by H. W. Mills.

That the Hardware stores of the Prusia Hardware Company and J. W. Ryan, Fort Dodge, Iowa, were burglarized on the 3d inst. At the former place the cash register was rifled and six expensive Revolvers were stolen. At the latter store about $20 in cash and a small quantity of goods were secured.

That C. F. Thompson, Hardware merchant, Brattleboro, Vt., has sold out.

That the stock of Hook & Slosson, Hardware dealers, Sabetha, Kan., was damaged by fire on the 26th ult.

That M. T. Howard's Hardware store, at Rice Lake, Wis., was robbed on the 29th ult. of $400 worth of goods and $40 in cash. The thieves broke the glass in a door in the rear of the store and pushed back the bolt.

That Charles Hawks and Ives Smith have bought the Stove and Tin business of C. W. Smith, Lee, Mass.

That Adams & Ridley, dealers in Hardware, Stoves and Agricultural Implements, Brunswick, Maine, have disposed of their business to Ridley & Jones.

That O. C. Story is now carrying on the Stove and Tin business formerly conducted by Joseph F. Smith at Essex, Mass.

That D. W. C. Nichols & Co., Hardware merchants, Bloomfield, Neb., have sold out to M. S. Goff.

That a copartnership has been formed by Joseph P. Reed and J. Mortimer Darby of North Adams, Mass., who will engage in the Hardware business at that point. The business will be started in a new building which is being constructed with special reference to the needs of the modern Hardware store. The store will be ready for occupancy in a few days, and the firm expect to open their doors to the public about November 1.

That Charles Prather has commenced the Stove and Tin business at Manchester, Ohio.

That burglars entered the Hardware store of C. J. Monson, Abercrombie, N. D., on the 1st inst. and stole three breech loading shot guns.

That Goldcamp Bros. & Co. have purchased the Hardware stock and business of the late H. D. Newcomb, Ironton, Ohio. The price was $11,000. The members of the new firm are John and F. F. Goldcamp and H. C. Rudman.

That James A. Moren has sold his half interest in the Hardware firm of Draper & Moren, Converse, Ind., to A. J. Webb. The style of the firm will hereafter be Draper & Webb.

That the Beyers Hardware Company's store at Colorado, Texas, was destroyed by fire on the 26th ult.

That A. C. Baker of the Hardware firm of Baker & Bissell, Sioux Falls, Iowa, who assigned some time since with heavy liabilities, has settled with the creditors and again resumed business.

That Elwood Brown has sold his interest in the Hardware firm of Wentworth & Brown, Benton Harbor, Mich., to J. J. Baker. The firm style has become Wentworth & Baker.

That H. Moffett & Co., Hardware dealers, Tulare, Cal., have disposed of their business to O. R. Cross & Co.

That on the 29th ult. the Hardware store of C. B. Dobie, Sigourney, Iowa, was entered by burglars who carried off about $200 worth of Pocket Knives and Guns.

That Turner & Archibald, Ridge Farm, Ill., have sold their Hardware store to Jenkins Bros. of Danville.

That T. W. Jameson of Farmer City, Ill., has bought the Hardware and Stove stock of the Leavitt & Ogleve Company, Clinton, Ill.

That the Harper-Reynolds Hardware Company, Los Angeles, Cal., have been systematically robbed during the past two or three months by one of their employees, who during that time has stolen Revolvers and Shot Guns valued at $500 or $600. The clerk has been arrested and has confessed his guilt.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

The general movement has been very fair and in some instances rather ahead of the average for this season of the year. Bulk goods used by glass manufacturers have been in noticeably good demand, as have the lines of Colors that are used largely by wall paper and curtain manufacturers. Grinders have purchased with a fair degree of freedom. In house painters' goods the trade passing is hardly equal in volume to the average of the first half of the month.

White Lead.—Fairly good orders for Dry Lead have been placed by grinders, and the distribution of Lead in Oil was referred to as having been quite satisfactory. Prices remain almost precisely as they were last week, the only irregularity being in quick process and some outside Western brands.

Red Lead.—There has been more inquiry for foreign brands for future delivery and improvement also in actual sales. Prices are somewhat firmer in consequence of this, but not positively higher. Former quotations for American brands remain in force.

Litharge.—Glass manufacturers have placed some fairly large orders for stock for delivery during the next 60 days, the most of which were taken at about former prices. The finer qualities have met with merely routine sales, and quotations remain unchanged.

Zincs.—The demand has been good from grinders, who have been drawing freely upon their contracts. Beyond this nothing is being done as regards new transactions. For the present we quote 4¢ @ 4¼¢ as to quality and quantity. Foreign makes are more or less unsettled as regards some special brands. Consequently it is almost impossible to give correct quotations, though it is claimed that the list price is adhered to.

Colors.—There has been an active business in the lines of Colors particularly adapted to the needs of paper manufacturers, but, this aside, the movement has been confined chiefly to ordinary jobbing distribution. Prices show only slight variation.

Oils and Turpentine.

The market has remained bare of distinctly new or interesting features. Nothing has transpired in any direction that would arouse speculative interest on the part of home buyers and exporters have operated very indifferently. Few changes in prices and only slight ones have taken place, but the rather dull condition of trade serves to impart rather weak undertone in some departments.

Linseed Oil.—Purchases have been almost invariably on a rather small scale and at practically the line of prices that has prevailed for some little time past. It is stated that current prices have been offered for round lots of both Western and city brands for future delivery and refused. Ordinary spot parcels are readily obtained at 40¢ for city and 38¢ for Western brands.

Cotton Seed Oils.—There has been a very fair but irregular business, and prices are still somewhat variable, although not moving very far in any direction. The situation is practically the same as it was a week ago. There is little support outside of what is given by purchases of large Western consumers direct at the producing points.

Lard Oil.—Pressers are very firm, asking as high as 77¢ @ 78¢ in some instances, and turning down all bids of less than 75¢ for prime Oil. Business has been slow, however, and the demand at present is moderate.

Fish Oils.—No important movement in any variety of crude products has taken place, and there is little business under way at the present time. The pressed and bleached Oils are selling fairly at old prices.

Miscellaneous.—Olive and Cocoanut Oils have remained quiet and unchanged. Red Oils have met with better sale at previous rates.

Spirits Turpentine.—The movement in prices has been very narrow, not exceeding ½¢ ℔ gallon, and business has been of commonplace type. Late dealings were at 29¢ for regular and 29½¢ for machine barrels.

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Streeter's Mincing Knives.

N. R. Streeter & Co., Groton, N. Y., are putting a line of mincing knives on the market, as herewith shown. The handles are cast iron with detachable nickel plated blades. The blades are of



Fig. 1.—Streeter's No. 10 Mincing Knife.

fine steel so that they can be sharpened, and are made in skeleton shape to prevent clogging. Fig. 1 represents the one-bladed knife, the blade being held

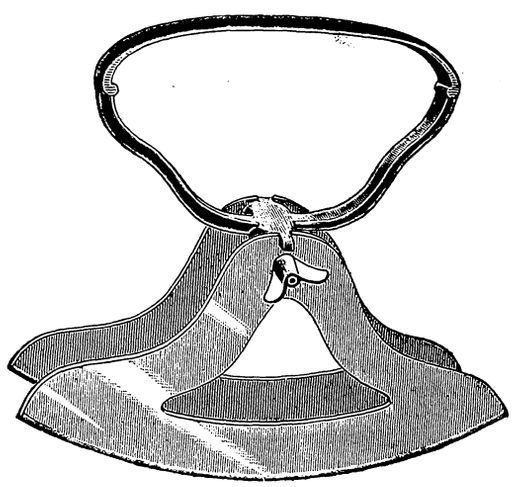


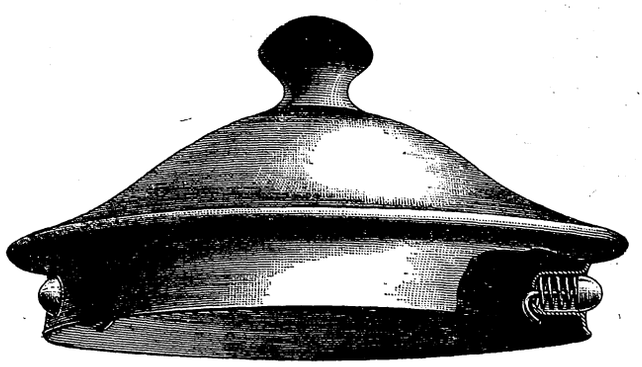
Fig. 2 —Duplex Mincing Knife.

securely by a screw passing through the plates on both sides. In the Duplex knife, Fig. 2, the blades are held in position by a square shouldered bolt with a thumb screw. The blades of the Sensible knife, Fig. 3, are held by a heavy bent wire hook with a nut on the top. The knives, Figs. 2 and 3, have lugs or grooves to prevent the blades from turning and to assist in holding them rigidly in position. Thus the blades can be easily removed for sharpening or cleaning. The durability and attractiveness of the goods are features emphasized by the manufacturers; also the low price at which the knives can be sold, the Sensible, Fig. 3 for instance, being designed to retail for 25 cents each.

THE NUMBER of the Sun Mfg. Company's Receptacle Mill, an illustrated description of which appeared in our issue of October 5, 1893, should have been No. 1080, instead of 1085, as given. Their Mill No. 1085 is of entirely different construction, having a sunken metal hopper and closed swing cover top.

Cover with Springs.

Boas Brothers, 231–325 Greenwich street, New York, are using their patented springs on tea and coffee pot



Cover with Springs.

mant enameled ware, as illustrated herewith. The springs and knobs are made of brass to prevent rusting, the spring holding the knob against the inside of the rim of the pot with enough force to prevent the cover from falling off when pouring from the pot. There is no offset on the inside of the pot's rim, so the cover may be lifted off almost as easily as if the springs were not there.

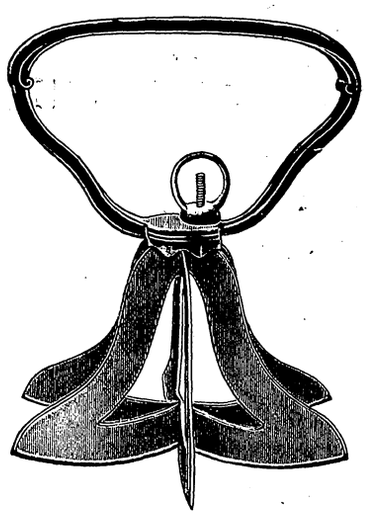


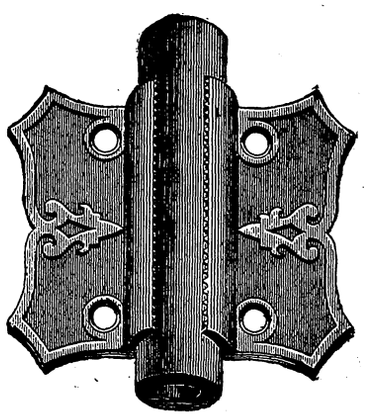
Fig. 3.—Sensible Mincing Knife.

Champion Egg Opener.

The Champion egg opener is offered by the Magic Introduction Company, 321 Broadway, New York. The handles are loop shape, similar to scissors handles. The curved pieces which surround the egg are provided with sharp teeth, so as to cut off the top of the egg shell. The opener is designed for table use, to obviate the unpleasant results that accompany opening soft boiled eggs with a knife or spoon ; also for use in the kitchen, by which the contents of the egg are exposed while yet in the shell, thus avoiding the spoiling of a bowl full of good eggs by dropping a bad one into them. The openers are made in nickel and silver plate, embossed, the silver plated ones being put up in satin lined cases.

Evory's Plumbers' Tacks.

The illustration herewith shows a plumbers' tack, now being introduced to the trade by the Evory Mfg. Company, 21 and 23 Ann street, New York. It is made of cast iron, and furnished either plain, tinned or nickel plated. The claim is made that the device does not need to be soldered to the pipe, thereby saving



Evory's Plumbers' Tack.

time and material. The jaws are ridged and so made that the tighter the screws that fasten up to the wood work are

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turned the tighter they grip the pipe, tests having shown, it is claimed, that they will sustain a strain far in excess of any that is likely to be put on a lead pipe. Several new modifications have recently been added to the variety,

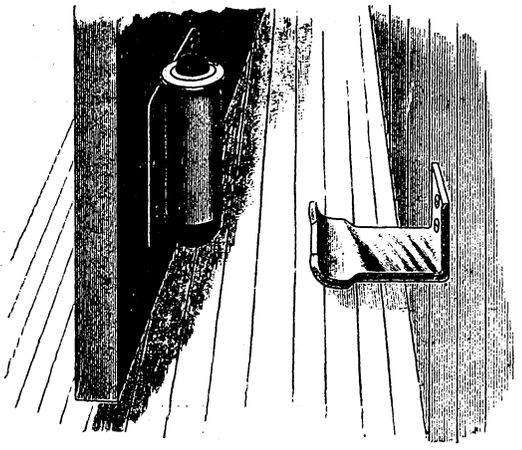


Fig. 1.—No. 155 Door Stop and Holder.

adapting them to all the requirements for ceilings, side walls, corners, cornices, &c. One form is made to hold two pipes for the flush and supply of water closet tanks and for holding bibbs or T-branches. Their quick adjustment and wide usefulness have made them popular with plumbers who have used them.

Solid Steel Putty Knife.

The accompanying cut represents a solid steel putty knife, put on the market by Charles J. Healy, 106 Chambers street, New York. The knife is forged from a solid piece of steel, resulting in a handle and blade in one piece. The handle is embossed, and the whole knife nickel plated. A feature of the knife is the low price at which it is supplied to the trade, selling as it does at $1 per dozen.



Solid Steel Putty Knife.

THE STOCK of Hardware, Nails, Iron and Steel, &c., of C. F. Thompson & Co., Brattleboro, Vt., has been disposed of to Mellen & Proctor and Robbins & Cowles, who conduct the only other Hardware stores in the town. Mr. Thompson retires from business after an experience of over 47 years as clerk, partner and principal in the same store.

Forg's Adjustable Door Stop and Holder.

The door stop and holder shown in the accompanying cuts is put on the market by P. Forg, Somerville, Mass. The door stop consists of a bolt and spring inclosed in a casing, which is fastened on the door. The bolt can be readily extended and adjusted with an ordinary screw driver. The holders are made of brass, the one shown in Fig. 1 being intended for use on the mop board or wall, and can be used at either the top or bottom of the door. The holder in Fig. 2 is for use on the floor, where the opening of a door too wide would cause the door to strike against a desk or other article of furniture. The stops and holders are made in two sizes, 2½ and 3 inches.

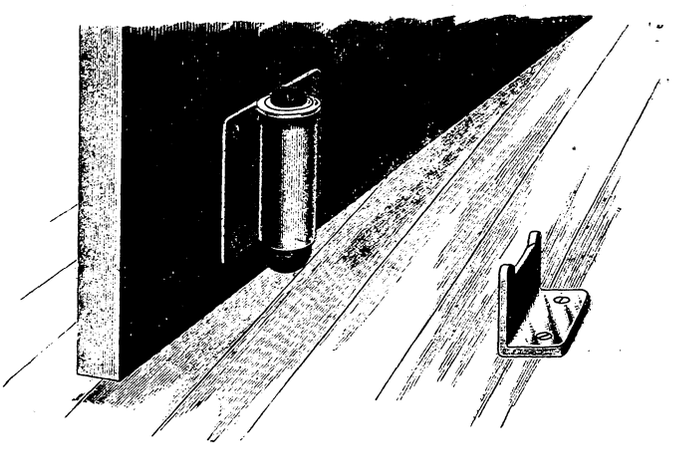
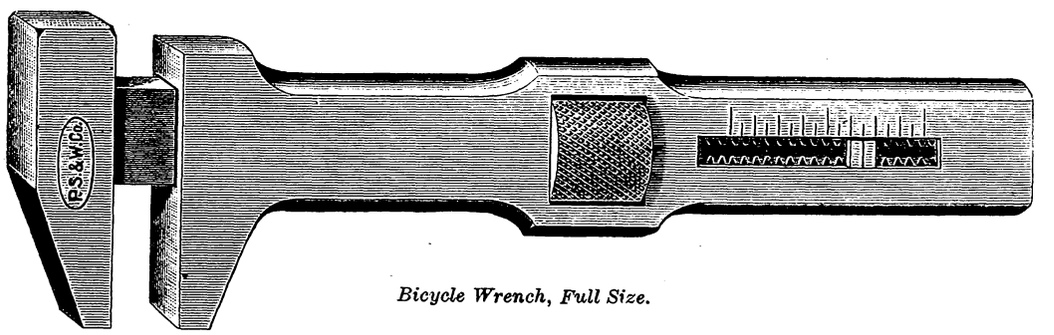


Fig. 2.—No. 156 Door Stop and Holder.



Bicycle Wrench, Full Size.

Bicycle Wrench.

Peck, Stow & Wilcox Company, Southington, Conn., and 27 Chambers street, New York, are introducing a bicycle wrench, as shown in the accompanying full size cut. The wrench is all of forged steel, polished and nickel plated. It is provided with a scale so that it can be readily adjusted to any sized nut or screw or bolt. The parts are designed strong enough to withstand all necessary strain without making it too heavy for bicycle use.

The Royal Heater.

The Plume & Atwood Mfg. Company, 18 Murray street, New York, are offering the trade a heater to be used in connection with center draft lamps or argand gas burners, as shown in Fig. 1. The heater is made of full nickel plated metal and is easily attached to a lamp, as in Fig. 2, and as easily removed. The heater is so constructed on top that small vessels containing water for shaving or other purposes, or milk or food for infants or the sick, may be quickly heated. It is remarked that the heater is constructed on the principle that it creates an increased or forced draft, not only through the chimney, whereby the combustion is made more perfect, but also under the

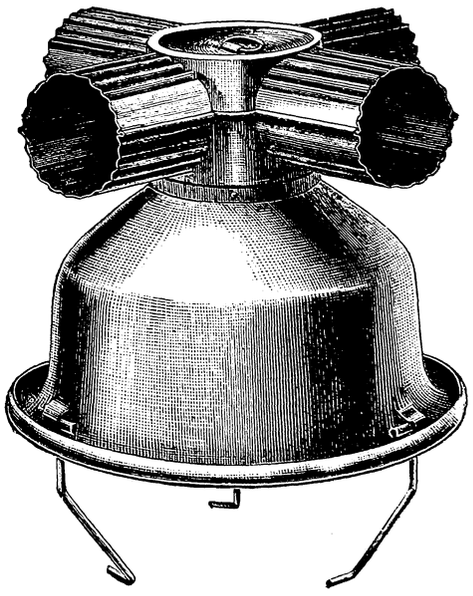


Fig. 1.—The Royal Heater.

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shade, so that the cold air is constantly drawn under the shade, and being heated by the surface of the hot chimney, ascends to the heater, where it is still further heated by direct influence of the flame before it is discharged into the room. The manufacturers point out that this is a convenient, attractive, efficient and inexpensive mode of heating; that the device will heat small

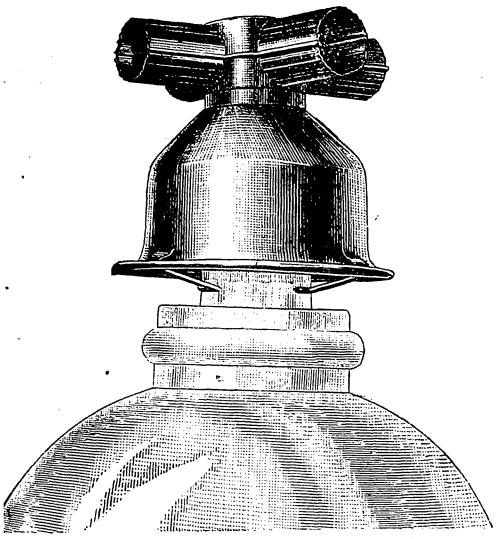


Fig. 2.—Position of Heater on Chimney.

rooms, bedrooms and bathrooms without the use of other heat; that it is a valuable auxiliary in any size room in damp and extremely cold weather and that as a result of better combustion the heater saves 20 per cent. of the oil. The makers state that the best results are obtained by using the heater with their Royal and Banner lamps, though it is adapted to any center draft lamp or argand gas burner.

Crescent Lock Joint Stove Pipe.

The accompanying cuts represent Crescent lock joint stove pipe, introduced by Logan, Gregg & Co., Pitts-

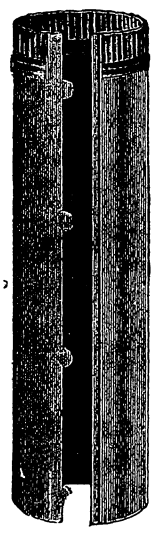


Fig. 1.—Showing Lugs and Groove.

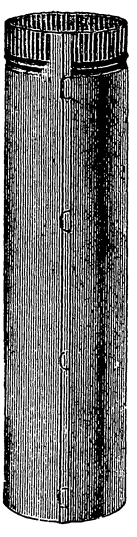


Fig. 2.—Lugs Turned Back.

Crescent Lock Joint Stove Pipe.

burgh, Pa. One edge of the iron is grooved and pierced, as shown in Fig. 1, to receive the lugs formed on the other side. When joined the lugs are turned back, as in Fig. 2, holding firmly, it is stated, and making a perfectly smoke tight joint. The pipe is made in 4, 5, 6 and 7 inch sizes, packed as in Fig. 3, in crates of 25 joints, for shipment. The manufacturers state

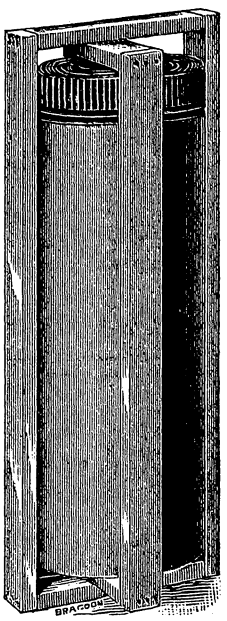


Fig. 3.—Manner of Crating Pipe.

that they are having a large demand for the pipe wherever it has been introduced.

G. W. WHITING, who has for a number of years been representing Sickels, Sweet & Lyon to the nearby trade, is still using as a pocket price book one of the catalogues of Walsh, Coulter & Flagler, with whom he was formerly connected. This catalogue bears date 1876, is without illustrations and contains lists of the leading goods in a compact and convenient form. It has, however, been in use for about 17 years and there is scarcely a list which has not been repeatedly changed, so that it is interesting to observe the succession of interlineations, erasures and corrections which have been made on its pages. It is also curious to note the changes which have occurred in the line of goods to which it is devoted. Mr. Whiting is now about to retire the book from active service and to put in its place one of *The Iron Age* Hardware Price Books, Style B, on the pages of which with much systematic care he has already entered list prices and discounts on the large and varied line of goods which he is offering to the trade. The Standard Hardware Lists are also made use of. In some cases where it is desirable to have illustrations of the goods, Mr. Whiting has made miniature sketches, preferring to do this rather than to insert the manufacturers' cuts, which in most instances are too large.

THE ANNUAL CONFERENCE of the National Paint, Oil and Varnish Association will be held in the Monongahela House, Pittsburgh, commencing on Tuesday, November 21, and will probably continue in session three or four days. The Pittsburgh Paint and Drug Club are making extensive preparations to receive their guests, and a number of excursions to different points of interest in and about Pittsburgh have already been arranged. It is also probable that a banquet will be given the delegates during their stay in Pittsburgh.

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Current Hardware Prices.

OCTOBER 25, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓@33⅓&10%
Excelsior....₩ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Eagle Anvils, ₩ ℔ 9¢.....15@15&5%
Peter Wright's.....11@11½%
Armitage's Mouse Hole.....10½@11¢
Am. Wrought, Horseshoe brand.11@11½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise $3.00.....40&10%
Star.....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—

Common Augers and Bits.....70@70&10%
Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....50%
Russell Jennings' Augers and Bits.25&10%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
Snell's Bits.....60&5%
C. E. Jennings' & Co., No. 10, extension lip.....40%
C. E. Jenning' & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32½ quarters, No. 5, $5; No. 30, $3.50.25%
Lewis' Patent Single twist.....45%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
L'Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....15%
Cincinnati Bell-Hangers' Bits.....30&10

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....60&10&5%
Cleveland.....60&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $18.....35@40%
Stearn's No. 2, $48.....20%

Gimlet Bits—

Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25....40&10%
Bee.....25@25&5%
Double Cut:
Shepardson's.....45@45&10%
Ct. Valley Mfg. Co.....30&10%
Hartwell's.....₩ gro.,$10.00..40&10%
Douglass'.....40&10%
Ives.....60@60&10%

Hollow Augers—

Ives', French, Swift & Co. (Beecher), Douglass'.....33⅓@33⅓ &10%
Bonney's Adjustable, ₩ doz $48.....50%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....25@25&10%
Snell's.....25@25&10%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@ 1.40
Awls, Handled Brad.....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00	$7.50
First qual., other brands	6.50 to 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1...3¼¢@4¼¢, No. 2, 5¢@6%
Nos. 7 to 14.....60&10%
Nos. 15 to 28.....47½%
Nos. 19 to 22.....70%
} 3% cash
Concord Axles, loose collar.....4½¢@6¢
Concord Axles, solid collar.....5½¢@7¢
National Tubular Self Oiling.....33⅓%@33⅓&5

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz.	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 8¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-in., $1.80; 12-inch, $2.00; 13½-inch, $2.50; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Dover.....₩ doz $1.00@$1.20
Duplex (Standard Co.).....₩ doz $1.00
Dover (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)..... ₩ doz. $3.50
Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ $4.50
Improved Acme (H. & R. Mfg. Co.)..... ₩ gro. $9.00
Silver & Co.....₩ doz $5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%

Door—

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. & E. Mfg. Co.'s..50&10&2%
Pull, Brook's.....50&10&2%

Electric—

Wollensak's.....20%
Bigelow & Dowse.....20%

Hand—

Light Brass.....70&10@70&10&5%
Extra Heavy.....70%
White.....70%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Miscellaneous—

Call.....45@50%
Farm Bells.....₩ ℔ 3¢&3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Molders'.....40&10@50%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....75@75&10%
Standard.....70&5@70&10%
Extra.....60&10@60&10&10%
N.Y.B.&P. Co., Carbon.....60@60&5%
N.Y.B.&P.Co., Diamond..... 50@50&5%
N.Y.B.&P.Co., Para.....40@40&5%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron.60@60&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%
See also *Machines, Hoisting.*

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....80@80&5%
Genuine Eagle, Norway, list Oct. '84.... 80&5@80&10%
Eagle, Norway, list Oct. '84.....80&10@80&15
Phila. pattern, list Oct. 7, '84..... 80%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....80&10%
Bolt Ends, list Jan. 1, 1890.....80&10%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wrought Square.....70&10@75%
Wr't Shutter, all iron, Stanley's. 60&10@60&10&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%
Wr't B. K.Flush, Common.....55&10%

Stove and Plow—

Stove.....60&10@60&10&10%
Plow.....60&10&50@60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16 '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Ives' Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20%
Clark's.....33⅓@35%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Boxes, Miter.

Spilker's Excelsior, 3 in. $7.50, 4 in. $8 50, 5 in. $13.00, 6 in. $15.00.....20%

Braces—

American Bit Brace and Tool Co..
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber s.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew s,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Davis Patent.....50&10%

Brackets—

Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting.	Inch	9	10	9x11
	Per doz.	$4.50	5.50	6.50

New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....₩ doz. $12, 50%
Queen City.....33⅓%

Buckets, Well—

Galvanized—

Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers.*

Butts—

Brass—

Wrought Brass.....80@80&10%
Cast Brass, Tiebout's.....50%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts.....
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned..
Loose Pin, Acorns, Japanned, Plated Tips.....
} 75@75 &10%

Wrought Steel—

Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Indide Blind, Light.....
Loose Pin.....
Bronzed Wrought Butts.....
} List Jan. 2, 1893, 40@40&10%
50@50&10

Cages, Bird—

Hendryx, Brass or Enameled.....50&10%
Hendryx, Wood.....40&10%

Calipers—See *Compasses.*

Calks, Toe—

Gautier, One Prong, Blunt.....5½@6¢
Burke's One Prong, Blunt.....6½@6¢
Burke's, Two Prong, Blunt.....7½@8¢
Burke's, One Prong, Sharp.....6½@7¢

Can Openers—See *Openers. Can.*

Cans, Milk—

S. S. & Co.: 5-gal., $3.00; 8-gal., $4 40; 10-gal., $4.75 each.....40&10

Cans, Oil—

Galvanized Blue Band, 5 gal., Tip-Top, ₩ doz, $12.00
Galvanized Blue Band, 5 gal, Faucet, ₩ doz., $8.00
Galvanized Blue Band, 1 gal., ₩ doz. $2.25
Glass Oil, Friend.....₩ doz. $2.75

Caps—

Percussion—

Hicks & Goldmark's and Union Metalic Cartridge Co.....₩ 1000
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.... 47@50¢
Musket. Waterproof, 1-10's.....50@53¢
G. D.....27@30¢
S. B. Genuine Imported.....45¢
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire. $1.60

Primers—

Berdan Primers, $1.00.....2%
B. L. Caps (Sturtevant Shells) $1 00...2%
All other Primers, $1.20.....2%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....25%

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

Rim Fire Cartridges.....50@5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed, Plate.....} Brass.....55@55&10%
Shallow Socket...} Others....60@60&10%
Deep Socket.....40&10%
Martin's Patent (Phœnix).45&10@50&10%
Tucker's Patent, low list.....45%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Yale Casters, low list.....45%
Yale, Gem.....70%
Giant Truck Casters.....35%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50@50&10%
Gwinner's Common Sense.....45%
Gwinner's Hercules.....45%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised May, 1893.....60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.50	3 40	3.25

Less than cask lots, add ¼¢@½¢ ₩ ℔
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12, 1892. 60@60&10%
Covert Halter.....60&2%
Cover Traces.....35&2%
Cover Heel Chain.....50&2%
Galvanized Pump Chain.
5 ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.75
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔.....₩ 100 ℔ $7.00
Onelda Halter Chain.....60@60&5%
Jack Chain, Iron and Brass, list July 10, 1893.....60&10%
Barnes' Reinforced Sash.....60&10¢
Barnes' Victor Sash.....65¢

Chalk—

See also Crayons.
White, case lots, ₩ gr 50¢; small lots, 52¢
Red, case lots...₩ gr 67¢; small lots, 72¢
Blue, case lots...₩ gr 75¢; mall ots 80¢

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Chalk Lines—See *Lines.*

Checks, Door—
Unity 50%

Chisels—
Socket Framing and Firmer
P. S. & W
New Haven
Witherby
Mix
Ohio Tool Co. } 75&10@75&10&10%
Douglass ..... 75@75&5%
Buck Bros 30%
Merrill ..... 60&10@60&10&5%
L. & I. J. White ..... 30@30&5%

Tanged and Miscellaneous.
Tanged Firmers ..... 50@50&10%
Butchers' ..... $4.75@$5.00 to $
Spear & Jacksons' ..... $5 to $
Buck Bros 30%
Cold Chisels, fair quality, ℔ ... 14@16¢

Chucks—
Beach Pat. ..... each, $8.00 ..... 20%
Morse's Adjustable, each, $7.00,20@20&5%
Danbury ..... each, $6.00,30@30&5%
Syracuse, Balz Pat. 25%
Graham Patent 33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.
Victor $8.50, 25%
Combination 40%
Vniversal 40%
Independent 40%

Churns—
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.

Clamps—
R. I. Tool Co.'s Wrought Iron 25%
Adjustable, Cincinnati ..... 15&10%
Adjustable, Hammers ..... 15@15&5%
Adjustable, Stearn's ..... 30@30&10%
Stearn's Adjustable Cabinet and Corner ..... 30@30&10%
Cabinet, Sargent's ..... 70&10%
Carriage Makers', Sargent's ... 75@75&5%
Carriage Makers', P., S. & W Co ... 40&10%
Eberhard Mfg. Co ..... 40&5@40&10%
Warner's ..... 40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenter's, Cincinnati ..... 25&10%
Barnes' Machinists' Clamps 33⅓%

Cleavers, Butchers'—
Bradley's ..... 25@30%
L. & I. J. White ..... 20&5%
Beatty's ..... 40@40&5%
New Haven Edge Tool Co.'s 40%
P., S. & W ..... 33⅓&5@33⅓&10%
Foster Bros 30%
Schulte, Lohoff & Co ..... 40@40&5%

Clips—
Norway, Axle, ¼ & 5-16 ..... 55&5&5%
2d grade Norway Axle, ¼ & 5-16 ... 65&5%
Superior Axle Clips ..... 66⅔&5@70%
Norway Spring Bar Clips, 5-16 ... 60&5&5%
Wrought Iron Felloe Clips ..... ℔ ... 5½¢
Steel Felloe Clips ..... ℔ ... 5¢
Baker Axle Clips 25%

Cloth and Netting, Wire
—See *Wire, &c.*

Cockeyes 50%

Cocks Brass—
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.) ..... 60&2@60&10

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Chapman Mfg. Company, new list ... 40%
Medford Fancy Goods Co ... 40&10@50%
Embossed, Gilt, Pope & Steven's list. 30&10%
Leather, Pope & Steven's list 40%
Brass, Pope & Steven's list 40%

Combs, Curry—
Fitch's ..... 50&10@50&10&10%
Rubber, per doz., $10.00 ..... 25%
American Curry Comb Co ... 33⅓&@40%
Kohler's Magic Oscillating ... ℔ doz., $2.00
Kohler's Humane ..... ℔ doz., $1.75

Compasses, Dividers, &c.
Compasses, Calipers, Dividers. 70@70&10%
Bemis & Call Co.'s
Dividers 65%
Compasses ..... 50&5%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Calipers, Double 65%
Calipers, Call's Patent Inside 55%
Excelsior 50%
Stevens & Co.'s ..... 25&10%
Starrett's
Spring Calipers and Dividers ... 25&10%
Lock Calipers and Dividers 25%
Combination Dividers 25%

Coolers, Water—
S. S. & Co.: 2-gal., $2.00; 3-gal., $2.50; 4-gal., $2.75; 6-gal., $3.40 each ... 33⅓%

Coopers' Tools—
See *Tools, Coopers'.*

Cord—

Sash—
Common ..... ℔ ℔, 8½@9¢
Patent, good quality ..... ℔ ℔, 10@11¢
White Cotton Braided, fair ... ℔ ℔, 23@24¢
Common Russia Sash ..... ℔ ℔, 12½@13¢
Patent Russia Sash ..... ℔ ℔, 13½@ 14¢
Cable Laid Italian Sash ..... ℔ ℔, 19@20¢
India Cable Laid Sash ..... ℔ ℔, 11½@12¢
Silver Lake—
A quality, White, 50¢ 25%
A quality, Drab, 55¢ 25%
B quality, White, 30¢ 10%
B quality, Drab, 35¢ 10%
Sylvan Spring, Extra Braided, White. 34¢
Sylvan Spring, Extra Braided, Drab. .39¢
Semper Idem, Braided, White ... 27@28¢
Egyptian, India Hemp, Braided ..... 26¢
Massachusetts, White ..... 29¢
Samson—
Braided, White Cotton ..... ℔ ℔, 37¢
Braided, Drab Cotton ..... ℔ ℔, 42¢
Braided, Italian Hemp ..... ℔ ℔, 40¢
Braided, Linen ..... ℔ ℔, 56¢
Tate's Solid Braided—
Hercules, White ..... ℔ ℔, 25¢
Hercules, Drab ..... ℔ ℔, 30¢
Economy, Drab ..... ℔ ℔, 27¢
Economy, White ..... ℔ ℔ 22¢
Ossawan Mills—
Braided, Giant, White, ℔ ℔ 30¢ ... 20%
Braided, Giant, Drab and Fancy, ℔ ℔ 35¢ ..... 10¢
Braided, Crown White, ℔ ℔, 50¢ ... 50%
Braided, Crown Drab and Fancy, ℔ ℔ 5¢ 30%

Wire Picture—
Braided or Twisted ..... 80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers Nut—
Table (H. & B. Mfg. Co) 40%
Blake's Pattern, ℔ doz., $2.00 ..... 10%
Turner & Seymour Mfg. Co 50%
Acme.
Japanned, ℔ gro., $30 ..... 50%
Nickel Plated, ℔ gro. $30 ..... 10%

Cradles—
Grain ..... 50&2@50&5&2%

Crayons—
White Crayons, ℔ gross ..... 7@8¢
D. M. Stewart Mfg. Co.:
Metal Workers', ℔ gross, $1.75 ..... 25%
Rolling Mill, ℔ gross, 2.50 ..... 25%
Railroad, ℔ gross, 2.00 ..... 25%
Soapstone Pencils, ℔ gross, 1.00 ..... 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—See *Combs, Curry.*

Curtain Pins—See *Pins, Curtain.*

Cutters—

Meat—
Dixon's, ℔ doz. ..... 40@40&5%
Nos. 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Woodruff's, ℔ doz. ..... 40@40&5%
Nos. 100 150
$15.00 $18.00
Hale's, ℔ doz. 70%
Nos. 11 12 13
$27.00 $33.00 $45.00
American 30%
Nos. 1 2 3 4 B 5
Each $5 $7 $10 $25 $50 $60
Enterprise 25%
Nos. 10 12 22 32 42
Each $3 $2.50 $4 $6 $15
Little Giant, ℔ doz. ..... 40&10@50%
Nos. 305 310 312 320 322
$35.00 $48.00 $44.00 $72.00 $68.00
Triumph No. 505, ℔ doz., $21.00.. 25@30%
Miles' Challenge, ℔ doz. ..... 45@45&10%
Nos. 1 2 3
$22.00 $30.00 $40.00
Home No. 1, ℔ doz., $26.00 ..... 55&10%
Draw Cut, each:
Nos. 5 2 6 8
$50 $75 $80 $225 ..... 20@25%
Beef Shavers (Enterprise) 20%
Chadborn's Smoked Beef Cutter, ℔ doz., $66.00

Slaw and Kraut—
Tucker & Dorsey Mfg. Co.:
Slaw Cutters, 1 Knife, ℔ gross ... $21.00
Slaw Cutters, 2 Knife, ℔ gross ... 30.00
Kraut Cutters 40%

Tobacco—
Champion ..... 20&10@30%
All Iron ..... ℔ doz., $4.25
Nashua Lock Co.'s ... ℔ doz., $18.00, 50@55%
Wilson's 55%
Sargent's ..... ℔ doz., $24.00, 55&10
Acme ..... ℔ doz., $20.00, 40%

Washer—
Smith's Pat. ... ℔ doz., $12.00, 20&10&10%
Johnson's ..... ℔ doz., $11.00, 33⅓%
Penny's .. ℔ doz.,, Pol. $14; Jap'd, $16, 55%
Appleton's ..... ℔ doz., $16.00, 60&10%
Bonney's ..... 30&10%
Cincinnati ..... 25&10%

Diggers, Post Hole, &c.—
Samson, ℔ doz., $34.00 ..... 25@25&10%
Fletcher Post Hole Augers, ℔ doz., $36.00, 20@20&10%
Eureka Diggers ..... ℔ doz. $12.00@$13.00
Vaughan's Post Hole Auger, ℔ doz., $8.50@$9.50
Kohler's Little Giant ..... ℔ doz., $18.00
Kohler's Hercules ..... ℔ doz., $14.00
Kohler's Invincible ..... ℔ doz., $12.00
Kohler's New Champion ... ℔ doz., $8.00
Scheidler ..... ℔ doz., $18.00
Cronk's Post Bars, ℔ doz., $60.00, 50&5&50&10%
Gibb's Post Hole Digger ..... ℔ doz., $15.00
Gibbs' National ..... ℔ doz., $12.00
Gibbs' Columbia ..... ℔ doz., $13.00
Gibbs' Imperial ..... ℔ doz., $7.50
Shimer's Hollow Handle .. ℔ doz., $24.00, 50%
Gem, Improved ℔ doz.,. $9.00@$10.00 net

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers.
Money, ℔ doz. ..... $18@$20
Waddel's Improved, ℔ doz. $15.00

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Blacksmiths' ..... each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Breast, P. S. & W ..... 40&10%
Breast, Wilson's ..... 30&5%
Breast, Millers Falls ..... each $3.00, 25%
Breast, Bartholomew's .... each $2.50 25&10@40%
Ratchet, Merrill's ..... 20@20&5%
Ratchet, Ingersoll's 25%
Ratchet, Parker's ..... 20@20&5%
Ratchet, Whitney's ..... 20&10%
Ratchet, Weston's ..... 20@25%
Ratchet, Moore's Triple Action ... 25@30%
Ratchet, Curtis & Curtis 30%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00 ..... 20&10%
Automatic Boring Tools ..... $1.75@$1.85
Chicopee Automatic Drill ..... 20&10%
Goodell Automatic Drills ..... 40&5%

Twist Drills—
Cleveland ..... 50&10&10%
Diamond, W. & B ..... 50&10&10%
Graham's Pat. Groove Shank. 50&10&10%
Morse ..... 50&10&10%
New Process ..... 50&10&10%
Standard ..... 50&10&10%
Syracuse (Metal list) ..... 50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Douglass Mfg. Co ..... 20@20&10%
Disston's 50%
Buck Bros 30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles ..... 65&10%
No. 86 ..... 70&10%
Sargent & Co.'s
No. 1, Forged Blade ..... 60&10&10%
Nos. 20, 40 and 60 ..... 60%&10&10%
P. S. & W 70%
Knapp & Cowles
No. 1 ..... 60&20@70%
No. 2 ..... 60&10&10@70&5%
No. 3 ..... 60&5@60&10%
Nos. 4 and 00, Acme and Ideal ... 50&5@50&10&5%
Stearns' ..... 25&10&5%
Gay & Parsons 35%
Champion ..... 25&10%
Clark's Pat ..... 30@33⅓%
Ellrich's Socket and Ratchet .. 25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense .. ℔ doz., $6.00, 25&10%
Syracuse Screw-Driver Bits ..... 30&30&5%
Screw Driver Bits ..... ℔ doz., 50@75¢
Screw Driver Bits, Parr's .. ℔ gross, $6.25
Fray's Hol. H'dle Sets ... No. 3, $12.00, 45%
Cincinnati ..... 25&10%
Brace Screw Drivers ..... 25&10%
Buck Bros.' Screw Driver Bits ... 27½&5%
Goodell's Automatic 50%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
C. T. Williamson Wire Novelty Co ... 50%

Egg Beaters—See *Beaters, Egg.*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF.

	46 gr.	150 gr.	F.FF.
Kegs, ℔ ℔	4½¢	5 ¢	2½¢
½ kegs, ℔ ℔ ..	4¾¢	5¼¢	2¾¢
¼ kegs, ℔ ℔ ..	5 ¢	5½¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6½¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See *Ware, Hollow*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—
Door Lock ... Same dis. as Door Locks.
Brass Thread ..... 60@60&10%
Wood 25%

Expanded Metal—
List No. 5.
Lathing 10%
Fencing, Painted Sheets 20%
Netting, Painted Sheets 20%
Door Mats, Galvanized 25%
Window Guards, Paneled 15%
Tree Guards, Paneled 15%

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Mackrell's, ℔ doz., $1.00 ..... 20@20&10%
Van Sand's Screw Pat, $15 ℔ gr. . 60&10%
Van Sand's Old Pat., $15 ℔ gr ..... 55&10%
Austin & Eddy No. 2008 ..... ℔ gr., $9.00
Security Gravity ..... ℔ gr., $9.00
Zimmerman's ..... 50&10%

Faucets—
Fenn's 40%
Fenn's Cork Stops 33⅓%
Star 60%
Frary's Pat. Petroleum 60%
B. & L. B. Co.
West's Lock, Open and Shut Key .. 50%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list. 60%
Metallic Key, Leather Lined .... 60&10@60&10&10%
Cork Lined ..... 70&5@70&10%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots ... 50&10%
John Sommers'
Peerless Best Block Tin Key 40%
IXL, 1st quality, Cork Lined 50%
Diamond Lock 40%
Perfection, Fla. Red Cedar (in boxes) 40%
Boss Metallic Key 50%
Reliable Cork Lined 60%
O. K. Western Pattern Cork Lined. 50%
No Brand, Red Cedar (in bbls.) .. 50&10%
Western Pattern Metal Key 40%
No Brand Metal Key 60%
Self Measuring
Enterprise, ℔ doz., $36.00 ..... 20%
Lane's ℔ doz., $36.00 ..... 25&10%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—
Derby and Cincinnati ..... 45&5%
Brewster ..... 50&5%

Files—

Domestic—
Nicholson Files, Rasps, &c. 60&10&5@60&10&10%
Nicholson (X.F.) Files 25%
Nicholson's Royal Files (Seconds) 75%
(extra prices on certain sizes.)
American ..... 66⅔&10@66⅔&10&5%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Arcade ..... 60&10&5@60&10&10%
Eagle ..... 60&10&10@70%
Other makers, best brands .. 60&10&5@70%
Fair brands ..... 70&10@70&10&10%
Second quality ..... 80@80&5%
Heller's Horse Rasps ..... 50&10@60%
McCaffrey's Horse Rasps ..... 50&10%
Chelsea Horse Rasps, Hand Cut ... 50&10%
Arcade Horse Rasps .... 60&10@60&10&5%
Trojan Horse Rasps ..... 60&10&5%

Imported—
Butcher ..... Butcher's list, 20%
Stubbs ..... Stubbs' list 75@80%

Fixtures Grindstone—
Sargent's Patent ..... 70&10%
Reading Hardware Co ..... 30&10%
P., S. & W. Co ..... 50&10%
Moore's 55%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Hay, Manure, &c. Asso. List. 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—

Saw—
White Vermont ..... ℔ gro.. $9.00@$10.00
Red, Polished and Varnished .... ℔ doz., $1.50, 25%

Screen, Window and Door—
Porter's Pat. Window and Door Frame, 33⅓&10%
Warner's Screen Corner Irons .. 33⅓&10% 33⅓&10%
Stearns' Frames and Corners. 25@25&10%
Cortland ..... 40@40&5%
Phillips' Window Screen Frames .. 50@50&5%
Bonanza Window Screens .. 50&5@50&10%
Empire Fancy Screen Doors, ℔ doz .. $12

Freezers Ice Cream—
White Mountain ..... 60@60&5%
Granite State ..... 65@65&5%
Arctic ..... 70@70&5%
American 60%
Buffalo Champion ..... 65@65&5%
Shepard's Lightning ..... 65@65&5%
Gem 65%
Blizzard 70%
Double Action Crown 60%
Crown 60%
Star 60%
Peerless ..... 60&10%
Giant 60%
Zero 70%
Boss and Pet ..... 60&10&10&10%
Keystone, P., D. & Co., each, $1.50 .... 20%
Standard ..... 60@60&5%
Standard Double Action ..... 60@60&5%
Good Luck ..... 65@65&5%
Model ..... 60@60&5%
Confectioners' Machine 50%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fruit Pickers—
See *Pickers, Fruit.*

Fry Pans—See *Pans, Fry.*

Funnels—
Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro. 30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz. 25%

Furnaces, Soldering—
Burgess No. 3 Gem tin reservoir $7.00
Burgess No. 3 Gem, Copper reservoir, $8.50
Clayton & Lambert No. 1 Fire-Pot, complete $6.00

Fuse—Dis. 12½@15%. ℔ ℔ 1000 ft
Common Hemp Fuse, for dry ground. $2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground .. 3.85
Double Taped Fuse, for very wet gr.. 4.80
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water. 12.00

Gates Molasses—
Stebbin's Pattern ..... 80&10@80&10&5%
Stebbin's Genuine ..... 60&10&10%
Stebbin's Tinned Ends ..... 40&10%
Lincoln's Pattern ..... 70@70&10%
Weed's ..... 20&10%
Boss, ℔ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 ..... 60&10&10%

Gauges—
Marking, Mortise, &c ..... 60&10%
Starrett's Surface, Center and Scratch, 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 20&10%
Barrett's Comb. Roller Gauge .... ℔ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale ..... ℔ doz., $5.00
Without Scale ..... ℔ doz., $4.00
Wire, Wheeler, Madden & Co 10%
Wire, Morse's 25%
Wire, Brown & Sharpe's ..... 10@20%
Wire, P., S. & W. Co ..... 10&10%

Gimlets—
Nail and Spike ..... 50&10&5%
Eureka Gimlets ..... 60&10%
Diamond Gimlets ..... ℔ gr $5.00
Double Cut, Shepardson's ..... 45@45&5%
Doub e Cut, Ives' ..... 60@60&5%
Double Cut, Douglass' ..... 40&10%

Glue—
Le Page's Liquid ..... 25@25&5%
Upton's Liquid 35%
Improved Process ..... 25@25&5%
Dodd's Liquid Glue ..... 25@25&5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Fraser's ..... Keg ℔ ℔ 4¢, Pail ℔ ℔ 5¢
Fraser's, in boxes ..... ℔ gr $9.50
Dixon's Everlasting, in bxs.. ℔ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting .. 10-℔ pails, ea. 35¢
Lower grades, special brands.
℔ gr $5.50@$7 00
Axleine, tin boxes ..... ℔ gross $12.00
English Coach, wooden boxes ..... ℔ gross $8.50
English Coach, 5-℔ tin pails. ℔ doz, $3.50
Tiger, wooden boxes ..... ℔ gross $7.00
Tiger, 5-℔ tin pails ..... ℔ doz $2.85

Grindstones—
Family, regular list 60%
Family, Cleveland Stone Co 20%

Grindstone Fixtures
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
Sewing, Brass Fer. ℔ gr $1.75
Pat. Sewing, Short. ℔ doz ..... 45@50%
Pat. Sewing, Long ..... ℔ doz $1.20
Pat. Peg, Plain Top. ℔ doz .... 40@45%
Pat Peg Leather Top. ℔ doz ..... 45@50

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Halters—
Covert's Rope, Jute.....60&10&10&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ¼-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Saddlery Works Halters...33⅓&%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓&%
Covert's Saddlery Works Handy Web Halters.....33⅓&%

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.....
Humason & Beckley.....
Atha Tool Co.....
Verree..... } ....50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles, new list.....25&10
Peck, Stow & Wilcox.....35@40%
Sargent's.....40@40&10%

Heavy Hammers and Sledges—
3 ℔ and under...℔ 40¢ } 75&10@75&10
3 to 5 ℔.....℔ 36¢ } &5%
Over 5 ℔.....℔ 30¢ }
Wilkinson's Smiths.....10½¢@11¢℔

Handcuffs and Leg Irons
—See *Police Goods.*

Handles—
Cross-Cut Saw Handles—
Atkins' new list.....40%
Champion.....15%
Ely's Perfection.....℔ doz., $3.00
Sensible.....40%

Iron, Wrought or Cast—
Door or Thumb.

Nos	0	1	2	3	4
Per doz.	$0.90	1.00	1.08	1.35	1.50

60&10&10%
Roggin's Latches.....℔ doz 30¢@35¢
Bronze Iron Drop Latches..℔ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Barn Door, ℔ doz $1.40.....10&10%
Chest and Lifting.....70@70&10%

Wood—
Saw and Plane.....40&10@50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Brad Awl.....℔ gr $2.00
Hickory Firmer Chisel, ass'd..℔ gr 4.50 } 50
Hickory Firmer Chisel, large.℔ gr 5.00 } &
Apple Firmer Chisel, ass'd...℔ gr 5.00 } 10@
Apple Firmer Chisel, large...℔ gr 6.00 } 10@50
Socket Firmer Chisel, ass'd..℔ gr 3.00 } %
Socket Framing Chisel, ass'd.℔ gr 5.00 }
J. B. Smith & Co.'s Pat File.....50%
File, assorted.....℔ gr 2.75 }
Auger, assorted.....℔ gr 5.00 } 50%
Auger, large.....℔ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....℔ set $1.25
Pat. Auger, Swan's.....℔ set $1.00
Hoe, Rake, Shovel, &c.....60@60&5%

Hangers—
Barn Door, old patterns.....70@70&5%
Barn Door, New England.....70@70&5%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Steel Track.....55%
Champion.....60&10%
Climax Anti-Friction.....55%
Zenith for Wood Track.....55%
Sterling.....50&10@60%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Kidder's.....50@50&10%
Boss.....60&10@60&10&5%
Best Anti-Friction.....60&10@60&10&5%
Duplex (Wood Track).....60&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Ideal.....50&10@50&10&5%
Terry's Solid.....50&10@60%
Terry's Shield.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Cronk's Patent, Steel Covered.....50&10%
Carrier Steel Anti-Friction.....50&10%
Richards'.....30@30&10%
Lane's New Standard.....50@50&5%
Lane's Standard.....50&5@50&10%
Lane's Parlor.....40%
Warner's Pat.....20&10&10%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Cincinnati Nos. 1, $2.25; 3, $2.50; 4, $2.50.
Paragon Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15.....40&10@50%
Chicago Anti-Friction.....30&10%
Star.....40&10@40&10&5%
Barry.....50%
Interstate.....50&10@60%
Pendulum, Payson's.....40@40&10%
Moody.....45%
Economy, $6.00.....50&10%
Perfection.....50&10@50&10&5%
Lundy, Steel Parlor.....40%
Matchless.....50&10%
Magic.....45&10%
Wild West.....45&10%
Moore's Elevator.....33⅓&%
Moore's Baggage Car Door.....33⅓&%
Moore's Railroad.....55%

Harness Snaps—See *Snaps.*

Hatchets—
American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's..... } 40 & 10
Mann's..... @
Peck's..... } 40 & 10
Underhill's..... &5%
Fayette R. Plumb.....
C. Hammond & Son.....
Kelly's.....
Buffalo Hammer Co..... } 50 @ 50
Sargent's & Co..... } &10%
P. S. & W. Co.....
Schulte, Lohoff & Co.....
Ten Eyck Edge Tool Co.....
Collins.....10%

Hay and Straw Knives—
See *Knives.*

Hinges—
Blind Hinges—
Parker.....75@75&10%
Huffer.....50%
Clark's Nos. 1, 3, 5, 40 and 50 80&5@80&10%
Clark's Mortise Gravity.....50%
Sargent's Nos. 1, 3, 5, 11, 12, 13.75@75&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's.
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's, Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—
Western.....℔ doz $4.20, 60@60&10%
N. E.....℔ doz $7.80, 60@60&10%
N. E. Reversible ℔ doz..$5.60, 60@60&10%
Clark's, Nos. 1 2, 3.....60&10&5%
N. Y. State.....℔ doz $4.90,60@60&10%
Automatic.....℔ doz $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—
Geer's Spring and Blank Butts....40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's Japanned.....35%
Bommer's All other Kinds.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent Checking.....15%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem and Star.....20%
Oxford.....20%
Royal.....66⅔%
Reliable.....60%
Champion.....60%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ℔ gro., $30.....50&5%
Samson.....60@60&7½%
Wiles', No. 1, ℔ gro., $16; No. 2.....$13
Devore, No. 1.....℔ gro , $13.00
Rex.....℔ gro., $13.00
Freeport.....℔ gro., $12.00
New Idea Nos. 1 and 10....℔ gross $13.00
New Idea Dbl. Acting.....45%
Ideal No. 3.....℔ gross $10.00
Stearns' Noiseless Floor Hinge, ℔ set, $5.00.....20&10@30%

Extra 5@10% often given.

Wrought Iron Hinges—
List February 14, 1891.
Strap and T.....50&10@50&10&10%
Corrugated Strap and T.....50&10&5%
Screw Hook and Strap..... { 6 to 12 in., ℔ D.. 4¢ / 14 to 20 in., ℔ D..3½¢ / 22 to 36 in., ℔ D.. 3¢
Screw Hook and Eye.... { ⅜ in., ℔ D 7¾¢ / ½ in., ℔ D 5¾¢ / ⅝ in., ℔ D 4¾¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 252 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges { 8, 10 & 12 in., ℔ D.....5¢ / "Providence" { over 12 in. ℔ D.....4¢

Hoes—
Eye—
D. & H. Scovil.....20%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat } 60&5
Am. Axe and Tool Co., S. & O. Pat. } @60&10%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—
Garden, Mortar, &c.....70@70&5&2%
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%
Magic.....℔ doz $4.00

Hog Rings and Ringers—
See *Rings and Ringers—*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow-Ware—
See *Ware, Hollow.*

Holders—
Bag—
Sprengle's Pat.....℔ doz $18....60%

Bit—
Extension.
Barber's, ℔ doz $15.00.....40@40&10%
Ives, ℔ doz $20.00.....60&5@60&10%
Diagonal.....℔ doz $24.00, 40%
Angular.....℔ doz $24.00, 40&5%

File and Tool—
Bals Pat.....℔ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—
Motley's Adj. Sash, Medium Size..... ℔ doz $1.20, 40%

Hooks—
Cast Iron—
Bird Cage, Sargent's List ...
Bird Cage, Reading.....
Clothes Line, Sargent's list .
Clothes Line Moore's..... } 60&10&10%
Clothes Line, Reading list, 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading, 50&10@50&10&10%
Coat and Hat, Moore's.....70%

Wrought Iron—
Cotton.....℔ doz $1.25
Cotton Pat. (N. Y. Mallet and Handie W'ks.....30%
Tassel and Picture, T. & S. Mfg. Co....50%
Wrought Staples Hooks, &c. See Wrought Goods

Wire—
Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Celling Hooks.....50&10@60%
Belt.....80&15@80&20%
Atlas, Coat and Hat.....65%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Bright Wire Goods—See Wire.

Miscellaneous—
Grass, No. 2, $2.00; No. 3, $2.10; No. 4, $2.25
Nolin's Grass.....℔ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—
See *Shoes, Horse.*

Hose, Rubber—
Competition, Fair quality.....75@75&10%
Competition, Low Grade.....80@80&10
Standard.....70&10&70@10&5%
Extra.....60&10@60&10&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40&5@50%
N. Y. B. & P. Co., Dundee.....60@60&5%
Cotton Garden, ¾ in., coupled:
Fair Quality, ℔ D.....7¢
Good Quality, ℔ D.....8½¢

Huskers—
Blair's Adjustable.....℔ gr $8.00
Blair's Adjustable Clipper.....℔ gr 7.00
Hubbard's Solid Steel.....℔ gr 4.50

Indurated Fiber Ware—
See *Ware, Indurated Fiber.*

Irons.
Sad—
From 4 to 10, at factory....℔ 100 ℔, $2.30@$2.40
Self-Heating.....℔ doz $8.00
Self-Heating Tailors'.....℔ doz $18.00
Mrs. Potts' Sad Irons, per set:

No.	50	55	60	65
Small lots	.90	.85	1.05	.95

Crown Improved.....60&10%
Ideal Irons, new list...50&10@50&10&10%
Salamander Irons.....25%
B. B. Sad Irons, ℔ ℔.....3@3¼¢
Chinese Laundry (N.E.Butt Co.).8½¢, 15%
New England.....5¢, 20@20&5%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓&%
National Self-Heating.....30%

Soldering—
Soldering Coppers.....℔ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886, 35&2%
Tinker's Dread..℔ doz $1.75; ℔ gro. $18

Pinking—
Pinking Irons, ℔ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—
Daisy.....33⅓&%
Victor.....33⅓&%
Lockport.....40%

Kettles—
Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Stamped Brass Kettles.....℔ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—
Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.
Wilson's Butcher Knives, List Dec 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AA A1 Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....25@30%
Ames' Bread Knives, ℔ doz $1.50, 15@20%
Moran's Shoe and Bread.....20@20&10%
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—
Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—
Witherby..... }
P., S. & W..... }
Mix..... } ...75@75&10&5%
New Haven..... }
Merrill.....60&10@60&10&5%
Douglass.....75&75@5%
Watrous.....15&10@25%
L & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—
Lightning, from jobbers....$8.00@$9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle...℔ doz. $11.00@$11.50
Heath's.....℔ doz. $13.00@$13.50
Nolin's Hay.....℔ doz. $7.00@$8.00

Mincing—
Am. (2d quality), ℔ gr., 1 blade, $7 2 blades, $12; 3 blades, $18..... net
Lothrop's.....20&10%
Smith's, ℔ doz., Single, $2; Double $3 45@50%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable....℔ doz. $3.00, 33⅓&%

Knobs—
Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nicke..l...$2.00@$2.25
Drawer, Porcelain....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885..40%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....℔ gro 80¢. 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladders.
Davies Extension and Single..... 20&5%

Ladles—
Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, P., S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—
Tubular—
Regular, with Guard.....℔ doz $3.50
O. K., with Guard.....℔ doz $3.75
Side Lift, with Guard.....℔ doz $4.00
Square Lift, with Guard.....℔ doz $4.25
Anti-Friction, with Guard...℔ doz $4.5
Brass Plated, Sq. Lift, Guard.℔ doz $5.5
Cop. Plated, Sq. Lift, Guard..℔ doz $ 5.

Bull's Eye Police—
2¾-inch regular.....℔ doz $3.60
3-inch regular.....℔ doz $3.90
2¾-inch flash light.....℔ doz $4.00
3-inch flash light.....℔ doz $4.50

Lawn Mowers—
See *Mowers, Lawn.*

Leaders, Cattle—
Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—
See *Squeezers, Lemon.*

Lifters, Transom—
Wollensak's:
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Class 3 and 4, Brass.....50%
Skylight Lifters.....35%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....60@60&10%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—
Cotton and Linen Fish.....50%
Chalk.....60%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25..... 25%
Cotton Chalk..... 55%
Samson Cotton, No. 4, $2; No. 4½, $2.50 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ℔ gro.....25%
Mason's Linen, No. 3½, $1.50; No 4, $2.00; No 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes..Nos. 18 19 20
100 ft..... $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..℔ doz $7.50..20%
Ossawan Mills, Chalk, Twisted, 60%; Chalk, Soft Braided, 50% Chalk, Braided, 25%.

Links, Open—
Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—
Cabinet—
Eagle, Gaylord Parker and Corbin... } List, March '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39..... 40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96..... 30%
Champion Night Latches..... 40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk..... 25&10%
Champion Cab. and Combin.....33⅓&%
Yale.....net prices
Romer's.....25%

Door, Locks, Latches, &
R. & E. Mfg. Co., list Mar. 20, 1889..... } 60&10@70% Much lower net prices of a made
Mallory, Wheeler & Co., list July, '88..... }
Sargent & Co., List Aug. 1, '88 }

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Britain, Graham & Mathes, list Jan. 1890.....60&10&10%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Warner's Burglar Proof, ₩ doz. $8.00, 50%

Elevator—
Moore's.....33⅓%

Padlocks—
List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list....50&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505.....15%
A. E. Deitz.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₩ doz $9, 50@50&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Scandinavian.....90&40%
E. T. Fraim's Keystone Scandinavian,
1010 line.....90&40%
120 line.....90&25%
109 line.....65%
510 line.....70&10%
225, 610 and 209 lines.....70%
All other numbers.....50&5%
Ames sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker, Barry & Co.
No. 1010 line.....90&5%
No. 41 line.....50%
No. 61 line.....60%
No. 21 line.....80%

Sash, &c.—
Clark's No. 1, $10; No. 2, $8 ₩ gr.....33⅓&5
Ferguson's.....33⅓&5
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓&5
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₩ gr $4.00
Common Sense, Nickel Plated. ₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Ives' Patent.....60&10&5@60&10&10%
Fish (Liesche's pat.), No. 100, ₩ gr., $8; No. 105, ₩ gr., $10.....50%
Davis Bronze, Barnes Mfg. Co.....60%
Champion Safety list January, 1893.70&5%
Security.....70%
Giant, list Jan., 1892.....70&5%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—
See *Tools, Lumber.*

Lustro—
Four-ounce bottles.....₩ doz, $1.75; ₩ gross.....$17.00

Machines.

Boring—
	Without Augers.	Upright.	Angular.
Douglas	$5.50	$6.75	50%
Snell's, Rice's Pat...	5.50	6.75	40&10&10%
Jennings'	5.50	6.75	.50@50&5%
Other Machines..	2.25	2.50	

Phillip's Patent with Augur..... 7.00 7.50.....
Millers Falls..... 7.50.....25%
Boss, Carpenters' 3.60
Boss, Ship Bldrs'. 3.85

Fluting—
Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3½-inch Rolls, $2.15.....35%
Eagle, 5½-inch Rolls, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal, ₩ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25.....30%
Shepard Hand Fluter, No. 85, per doz $15.50.....40%
Shepard Hand Fluter, No. 110, ₩ doz $11.00.....40%
Shepard Hand Fluter No. 95, ₩ doz $3.00.....40%
Combined Fluter and Sad Iron. ₩ doz $15.00.....30%

Hoisting—
Moore's Hand Hoist, with Lock Brake.20%
Moore's Anti-Friction Differential Pulley Block.....20%
Moore's Rope Differential Pulley Block.....60%
Energy Mfg. Co.'s.....25%
See also *Blocks.*

Washing—
Anthony Wayne, ₩ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American.....₩ doz $36.00
Western Star ₩ doz, No. 2, $36; No. 3 $39
Weisell.....₩ doz $54.00
Fair and Square.....₩ doz $42.00

Mallets—
Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks—Regular list. 60&10@60&10&5%

Measures—
Standard Fibreware, No. 1, peck ₩ dozen, $3.50; ½-peck, $3.00

Meat Cutters—
See *Cutters, Meat.*

Menders, Harness—
Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—
Coffee—
Box and Side, List, Jan. 1, 1888..60@60&5%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%
Waddel's New Box Mills, Ideal Brand, New List.....60%

Mincing Knives—
See *Knives, Mincing.*

Molasses Gates—
See *Gates, Molasses.*

Money Drawers—
See *Drawers, Money.*

Mowers, Lawn—
Best Machines: 10-in., $4; 12-in., $4.50; 14-in., $5; 16-in., $5.50; 18-in., $6.
Low-Grade Machines: 10-in. $3; 12-in., $3.25 14-in., $3.50 each

Muzzles—
Safety.....₩ doz, $3.00, 25%

Nails.—
Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92.....85&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—
Nos.	6	7	8	9	10	
American	9½	9½	9½	9½	9½	net
Ausable	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	.30&5%
Essex	28¢	2C¢	25¢	24¢	23¢	40&10@50%
Lyra	9¼	1	9¼	9½		net
Snowden	9⅓	1	9⅓	9⅓	9⅓	net
Standard	23¢	21¢	20¢	19¢	18¢	.35%
Vulcan	23¢	21¢	20¢	19¢	18¢	.25%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	40%
A. C.	25¢	23¢	22¢	21¢	21¢	40&10%
Maud S.	25¢	23¢	22¢	21¢	21¢	50&10&5%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&2%
Champion	25¢	23¢	22¢	21¢	20¢	10&10&10%
Capewell	19¢	18¢	17¢	16¢	16¢	..10&5%
Anchor	23¢	21¢	20¢	19¢	18¢	.35%
Western	23¢	21¢	20¢	19¢	18¢	.50%
Empire Bronzed						13@14 ₩ ℔

Picture—
Brass Head, Sargent's list.....60@60&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list.40&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—
See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.
	Square.	Hex.
Hot Pressed	6.80¢	6.50¢ off list
Cold Punched	5.00¢	5.10¢ off list

In packages of 100 ℔, add 1-10¢ ₩ ℔, net; in packages less than 100 ℔, add ½¢ ₩ ℔, net.

Oakum—
Best or Government. . .....₩ ℔ 6¾@7¼¢
U. S. Navy.....₩ ℔ 5¾@6¢
Navy.....₩ ℔ 5¢@5½¢

Oil Tanks—See *Tanks, Oil.*

Oilers—
Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Steel, Draper & Williams.....50%
Wilmot & Hobbs Mfg. Co., Steel Anti-Rust.....60%

Openers, Can—
Messenger's Comet.....₩ doz $3.00, 25%
American.....₩ gross $2.75@$3.00
Duplex.....₩ doz 25¢, 15@20%
Lymax.....₩ doz $3.75, 20%
No. 4, French.....₩ doz $2.25, 55@60%
No. 5, Iron Handle.....₩ gr $6.00, 45@50%
Eureka.....₩ doz $2.50, 10%
Sardine Scissors.....₩ doz $2.75@3.00
Star.....₩ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 66⅔@70%
Excelsior, No. 1 $2.50; No. 2, $1.50.... 40%
World's Best ₩ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₩ doz $3.00.....55&5%
Domestic, ₩ doz $2.00.....45%
Champion, ₩ doz $2.00.....50%
Moore's.....70%

Packing, Steam—
Rubber—
Standard, fair quality.....70@70&10%
Inferior quality.....75@80%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₩ ℔ 80¢....25@25&5%

Miscellaneous—
American Packing.....10@11¢ ₩ ℔
Russia Packing.....14¢ ₩ ℔
Italian Packing.....13@14¢ ₩ ℔
Cotton Packing.....15@17¢ ₩ ℔
Jute.....7@8¢ ₩ ℔

Pails—
Creamery—
	Quarts	10	12	14
S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 ₩ doz.				5%

Galvanized—
Hill's Light Weight, ₩ doz.	$2.75	3.00	3.25
Hill's Heavy Weight, ₩ dz.	3.00	3.25	3.75
Sidney Shepard & Co.	2.50	2.75	3.00
Central Stamping Co.	2.50	2.75	3.00
Iron Clad	2.50	2.75	3.00
Fire Buckets	2.75	3.25	3.50

Buckets—See Well Buckets.

Indurated Fiber Ware
Star Pails, 12 qt.....₩ doz $4.20 } 25%
Milk, 14 qt.....₩ doz $5.40 }
Stable, 14 qu.....₩ doz $6.00 }
Fire Pails, deep.....₩ doz $4.80 }
Fire Pails, round bottom. ₩ doz $5.40 }

Standard Fiber Ware—
	Plain.	Deer'd
Water Pails, 12 qt., ₩ doz.	$3.15	$3.75
Dairy Pails, 14 qt., ₩ doz.	3.75	4.25
Fire Pails, No. 1, 12 qt., ₩ doz	3.75	
Fire Pails, No. 2, 14 qt., ₩ doz	4.25	
Sugar Pails	5.50	6.00
Horse Pails	4.50	
Buggy Pails	3.50	
Slop Jars (bal. trap)	7.50	8.50
Chamber Pails, 14 qt.	6.00	7.00

Pans—
Dripping—
Small sizes.....₩ ℔ 5½¢
Large sizes.....₩ ℔ 5¢
Silver & Co. (Covered).....40%

Fry—
Standard List:
No.	0	1	2	3	4
₩ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
₩ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....66⅔%

Dust—
Steel Edge, No. 1.....₩ doz $1.75

Roasting and Baking—
Columbian, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each.....60&10%

Paper and Cloth—
Sand and Emery—
List April 19, 1886.... 50&10@50&10&10%
Sibley's Emery and Crocus Cloth.....30%

Parers—
Apple—
Advance.....₩ doz $4.75
Baldwin.....₩ doz 5.25
Bonanza.....each 5.00
Daisy.....₩ doz 4.00
Dandy.....each 7.50
Eclipse.....₩ doz 4.00
Eureka, 1888.....each 16.00
Family Bay State.....₩ doz 12.00
Favorite.....₩ doz 5.00
Gold Medal.....₩ doz 4.00
Ideal.....₩ doz 4.00
Improved Bay State....₩ doz 27.00@30.00
Little Star.....₩ doz 4.50
Monarch.....₩ doz 13.50
New Lightning.....₩ doz 5.50
Oriole.....₩ doz 4.00
Penn.....₩ doz 3.00
Perfection.....₩ doz 4.00
Pomona.....₩ doz 4.00
Rocking Table.....₩ doz 6.00
Turn Table.....₩ doz 4.50
Victor.....₩ doz 13.50
Waverly.....₩ doz 4.00
White Mountain.....₩ doz 4.00
Reading 72.....₩ doz 4.25
Reading 78.....₩ doz 7.00

Potato—
White Mountain.....₩ doz $4.50
Antrim Combination.....₩ doz $5.50
Hoosier.....₩ doz $13.50
Saratoga.....₩ doz $5.50

Pencils, Soapstone—
See *Crayons.*

Pickers, Fruit—
Prize Fruit Pickers.....50%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10&5@60&10&10&5%

Picture Nails—
See *Nails, Picture.*

Pinking Irons—
See *Irons, Pinking.*

Pins—
Bow—
Humason, Beckley & Co.'s.....60&10%
Sargent & Co.'s, $17 and $18.....60&10%
Peck, Stow & W. Co....50&10@50&10&5%

Escutcheon—
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—
List April 13, 1893.
1¼ and under, Plain.....57½&10%
1¼ and under, Galv.....50&10%
1½ and over, Plain.....67½&10%
1½ and over, Galv.....57½&10%
Boiler Tubes, list Oct. 24, 1892....65&10%
Casing, list Nov. 16, 1892.....52½&10%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%
Cold Drawn Seamless Steel Tubing..50%

Planes and Plane Irons—
Wood Planes—
Molding.....40&10%
Bench, First quality.....45&10%
Bench, Second quality.....50&10%
Bailey's (Stanley R. & L. Co.) ..50&10%

Iron Planes—
Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steers' Iron Planes.....50@50&5%
Meriden Mal. Iron Co.'s.....50@50&5%
Davis' Iron Planes.....50@50&5%
Birmingham Plane Co.....60@60&5%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....50@50&5%
Sargent's.....60@60&10%
Standard Tool Co.....50@50&5%

Plane Irons—
Butcher's.....$5.00@$5.25 to ;
Buck Bros.....50

Auburn Thistle,.....
Ohio.....
Sandusky.....
} .30&10@30&10&10%
L. & I. J. White.....25%
Stanley R. & L. Co.....50&10%

Plates—
Felloe.....₩ ℔ 6¢@6½¢

Pliers and Nippers—
Button's Patent.....60%
Hall's No. 2, 5 in., $18.50; No. 4, 7 in., $21.00 ₩ doz.....40%
Humason & Beckley Mfg. Co. 50@50&10%
Lindsay's Giant.....33⅓&5
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P., S. & W. Cast Steel.....50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₩ doz, $12.00.... 30&5%
Cronk's 8 in., $15.00; 10 in.....$20
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels—
Regular List.....75&10@75&10&10%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Cook's.....40&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis Inclinometers.....10&10%

Poachers, Egg—
Buffalo Steam Egg Poachers, ₩ doz. No. 1, $6.00; No. 2, $9.00.....33⅓&5
Silver & Co., 6-Ring, ₩ doz, $4.00; 3-Ring.....$2.00

Pokes, Animal—
Bishop s I. X. L.....₩ doz $6.00
Bishop's Monarch.....₩ doz $4.50
Bishop's Pioneer.....₩ doz $4.00
Bishop's American.....₩ doz $3.00
Eagle, Double Stale.....₩ doz $5.75
Eagle, Single Stale.....₩ doz $3.75
Buckeye, Single Stale.....₩ doz $2.75
Bolding.....₩ doz $6.00
Metallic Horse Poke.....₩ doz $6.00

Police Goods—
R. I. Tool Co., Handcuffs, $15.00 ₩ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₩ doz 10%
Tower's.....25%
Daley's Improved Handcuffs; 2 Hands, Polished, ₩ doz, $48.00; Nickeled, $57.00: 3 hands, Polished, ₩ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish—
Metal—
Prestoline.....30%
Prestoline Paste.....33⅓&5
Gaston's Silver Compound.....33⅓&5

Stove—
Joseph Dixon's.....₩ gro, $6.00, 10%
Gem.....₩ gro, $4.50, 10%
Gold Medal.....₩ gro, $6.00, 25%
Lustro.....₩ gro, $4.75
Ruby.....₩ gro, $3.75
Rising Sun, 5 gro lots.....₩ gro, $5.50
Dixon's Plumbago.....₩ ℔ 8¢
Boynton's Noon Day.....₩ gro, $13.00
Parlor Pride Stove Enamel, ₩ gro,
Yates' Liquid, 2 3 5 10 gal
₩ gal...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ₩ ℔ 12½¢
Jet Black.....₩ gro $3.50
Japanese.....₩ gro $3.50
Fireside.....₩ gro $2.50
Diamond O. K. Enamel.....₩ gro $19.00
Bonnell's Liquid Stove Polish, ₩ gro $9.00
Bonnell's Paste Stove Polish, ₩ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₩ gro $6.00
Crown Paste.....₩ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ₩ ℔ 12¢
Black Flag.....₩ gro $7.20
Black Flag, 5 and 10 ℔ pails..₩ ℔ 12¢
Black Flag, liquid, in bottles, ₩ gro $8.00
Diamond Rock Nickel Cleaner ₩ gro $10 20
Raven Liquid, 6 oz. bottles... ₩ gro $8.00
Raven Liquid, 8 oz. bottles.. ₩ gro $9.00
Raven Water Polish, large boxes..... ₩ gro $7.20
Raven Paste in 5 lb. pails (cases of 6 pails), ₩ ℔ 10¢

Poppers, Corn—
Round or Square,
1 qt.....₩ doz $1.00; ₩ gr $8.00
1½ qt.....₩ doz $1.00; ₩ gr $9 00
2 qt.....₩ doz $1.50; ₩ gr $14.00

Post Hole and Tree Augers and Diggers—
See *Diggers, Post Hole, &c.*

Potato Parers—
See *Parers, Potato.*

Pots—
Glue—
Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Powder—
In Canisters—
Fine Sporting, 1 ℔ each.....$0.90
Duck, 1 ℔ each.....60
Rifle, 1 ℔ each.....3
Rifle, ½ ℔ each.....18

In Kegs—
Rifle, 25-℔ kegs.....$3.50
Rifle, 12½-℔ kegs.....2.00
Rifle, 6¼-℔ kegs.....1.15
Duck, 25-℔ kegs.....11.00
Duck, 12½-℔ kegs.....5.75
Duck, 6¼ ℔ kegs.....3.00

Presses—
Fruit and Jelly—
Enterprise Mfg. Co.....25%
Henis.....₩ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....₩ doz $2.75

Pruning Hooks and Shears—See *Shears.*

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Pullers Nail—

Scranton.. .....₩ doz., $18.00, 33⅓%
Giant, No. 1.....₩ doz., $18.00, 10%
Giant, No. 2.....₩ doz., $15.00, 10%
Pelican.....₩ doz., $9.00, 25%
Eclipse .....₩ doz., $24.00, 40%
Economy ....₩ doz., $6.00

Pulleys—

Hot House, Awning, &c.....66⅔@70%
Japanned Screw.....60&10&10%
Brass Screw.....70%
Japanned Side.....60&10&10%
Moore's Side, Anti Friction.....50%
Moore's Ceiling or End, Anti-Friction.40%
Moore's Dumb Waiter, Anti-Friction.50%
Moore's Electric Light ... .33⅓%
Japanned Clothes Line.....60&10%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 .....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5.70 .....50%
Hay Fork, "F" Common and Patent Bushed 20%
Hay Fork, Tarbox Pat. Iron..... ..20%
Hay Fork, Reed's Self-Lubricating....60%
Hay Fork, Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00.....40%
Shade Rack.....45%
Tackle Blocks—See Blocks.
Shepard's Niagara, No. 25..₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense.....60%
Empire.....60%
Ideal, Nos. 2, 4, 10 & 15 } 60% less 1₩
Acme ..... } doz net.
Star .....
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. ..₩ doz. 22¢ net.

Pumps—

Cistern, Best Makers..... .60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—

Saddler's or Drive, good..₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Springfield Socket..65%
Spring, good quality..₩ doz., $2.50@$2.60
Spring, Leach's Pat 15%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Check.....55%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44 .....55%
Tinners' Hollow Punches, P., S. & W. Co .....20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches.....20&2%
Niagara Solid Punches.....55%

Rail—

Sliding Door, Wr't Brass....₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron..₩ ft., 7¢
Sliding Door, Iron, Painted..₩ ft., 4¢, 40%
Barn Door, Light. In. ½ ⅝ ¾
Per 100 feet.....$2.00 2.50 3.10, 10%
B.D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet.....$3.15 2.70 3.25 Net
Terry's Steel Rail.....₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot.....50&2%
Carrier, double braced, Steel Rail, ₩ foot .....3½@4¢
Lundy Parlor Door, Planed Edge, ₩ ft.7¢
Moore's Steel Rail.....25&10%
Moody Steel Rail ₩ ft., 5¢.....45%

Rakes—

Cast Steel, Association g'ds...70@70&5&2%
Cast Steel, outside g'ds,.....70@70&5&2%
Malleable.....70@70&5%
Gibbs' Lawn Rake.....₩ doz., $4.90
Gibbs' Canton Lawn Rake...₩ doz., $3.75
Gibbs' Acme Lawn Rake....₩ doz., $4.75
Gibbs' Favorite Lawn Rake. ₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1. ₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake.....₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless.....65%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—

J. R. Torrey Razor Co.....20%
Wostenholm and Butcher, $10 to $....10%
Jordan's AAA1, new list.....Net
Jordan's Old Faithful, new list.....Net
Galvanic.....₩ doz., $15.00
Electric Cutlery Co..... .....Net
Campbell Cutlery Co..... .....50%

Razor Strops—

See *Strops, Razor.*

Registers —

Moore's Japanned.....75%
Moore's Electroplated..... .....75%
Moore's Bronze Finishes.....70%
Moore's Solid Bronze.....65%
Moore's Stove Pipe... .....33⅓

Rings and Ringers—

Bull Rings—

Union Nut Co.....55%
Sargent's.....75&10%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—

Top of the Hill Ringers.....₩ doz $2.00
Top of the Hill Rings.....₩ doz $1.25
Hill's Improved Ringers.....₩ doz $1.25
Hill's Old Style Ringers.....₩ doz $1.12½
Hill's Tongs .....₩ doz $3.00
Hill's Rings.....₩ doz bxs $1.00
Perfect Rings.....₩ doz bxs $1.50
Perfect Ringers.....₩ doz $2.15@$2.25
Blair's Hog Ringers.....₩ doz $2.00
Blair's Hog Rings.....₩ doz 90¢@$1.00
Champion Ringers.....₩ doz $2.00
Champion Rings, Double.....₩ doz $2.25
Brown's Ringers.....₩ doz $2.00
Brown's Rings.....₩ doz $1.15@$1.35
Electric Hog Rings.....₩ doz boxes $1.50
Electric Hog Ringers.....₩ doz $2.00
Major Rings.....₩ doz $1.25
Major Ringers.....₩ doz $2.00

Rivets and Burrs—

Norway Iron, list Nov. 17, '87....60&10%
Second quality.....70%
Copper .....60@60&10%
Coppered Iron, Betina Brand.....50&5%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—

Stair, Brass.....25@30%
Stair, Black Walnut.....₩ doz 40¢

Rollers—

Barn Door, Sargent's list. ....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.... .....70%
Moore's Barn Door Stay.....50%
Thompson Mfg. Co.'s Lawn Rollers ..30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ¼¢@½¢ on large lots; terms, 1½% for cash.

Manila, 7-16 in. diam. and larger₩ ℔ 8½¢
Manila.....⅜ in. ₩ ℔ 9 ¢
Manila.....¼ and 5-16 in. ₩ ℔ 9½¢
Manila, Tarred Rope.....₩ ℔ 8 ¢
Manila, Hay Rope, Medium....₩ ℔ 8½¢
Sisal.....7-16 inch and larger ₩ ℔ 6¾¢
Sisal.....⅜ in. ₩ ℔ 7¼¢
Sisal.....¼ and 5-16 in. ₩ ℔ 7¾¢
Sisal, Hay Rope.....₩ ℔ 6¾¢
Sisal, Tarred Rope.....₩ ℔ 6¼¢
Sisal, Medium Lath Yarn.....₩ ℔ 6½¢
New Zealand..7-16 in. & larger ₩ ℔ 6½¢
New Zealand.....⅜ inch, ₩ ℔ 6¾¢
New Zealand..¼ and 5-16 inch, ₩ ℔ 7¼¢
New Zealand, Hay Rope.....₩ ℔ 6½¢
New Zealand, Tarred Rope...₩ ℔ 6 ¢
Cotton Rope.....₩ ℔ 13¼@16¢
Jute Rope..... ....₩ ℔ 6½@7¢

Wire—

List February, 1892. All kinds.....45%

Rules—

Boxwood.. .....80&10&10@80&10&10%
Ivory.....50&10%
Starrett's Steel Rules and Straight Edges.....25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—

See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—*See Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Note.—Extra 5@10% often given.

Saws—

Disston's Circular.....45@45&5%
Disston's Cross Cut, list Jan. 1,'93.40&10%
Disston's Hand.....25%
Woodrough & McFarlin.
Hand, Panel and Rip.....25&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....30&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Atkins' Circular..... .....50&10%
Atkins' Cross Cuts, new list. 40%
Atkins' Mulay, Mill and Drag.....60&10%
Atkins' One-Man Saw.....40%
Atkins' Wood Saws.....40%
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip.....25@25&5%
Peace Cross Cuts, list Jan. 1,'93...45&10%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts, list Jan.1,'93.45&10%
Richardson's Hand, &c ..... .25@25&5%
C E. Jennings & Co.'s 25%

Hack Saws—

Griffin's, complete.....40&10@50
Griffin's Hack Saw Blades.....40&10@50
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—

Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab Makers'$15.25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—

See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—

Hatch, Counter, No. 171, good quality, ₩ doz $18.00@$19.00
Hatch, Tea, No. 161....₩ doz $6.50@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales.....50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10
Riehle Bros.' Platform.....40%

Scale Beams—

See *Beams, Scale.*

Scissors, Fluting.....45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%
Box, 1 Handle.....₩ doz $2.00
Box, 2 Handle.....₩ doz $3.00@$4.00
Defiance Box and Ship..... .....20&10%
Foot.....50&10@60%
Ship, Common..... .....₩ doz $3.50
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—

See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.... .....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....35%

Coach, Lag and Hand-Rail—

Lag, Blunt Point, list Jan. 1, 1890..... 80@80&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890..... .....80@80&5%
Hand Rail, Sargent's... .....33⅓@33⅓&5%
Hand Rail, H. & B. Mfg. Co....70&10@75%
Hand Rail, Am. Screw Co.....75%

Jack Screws—

Jack Screws, Millers Falls list.50@50&10%
Jack Screws, P., S. & W.....35%
Jack Screws, Sargent.....70%
Jack Screws. Stearns'.....40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's..... .....33⅓@33⅓&5%
Williamson's Forged Worm, Apple-wood Handle, ₩ doz., $5.00; Rose-wood, $5.50 .....40%
Detroit Cork Screw Co.....33⅓%

Machine—

Flat Head Iron.....65%
Round Head Iron.....60%

Wood—

List January 1, 1891.
Flat Head Iron.....70% } Extra
Round Head Iron.....65% } 10& 10% often given.
Flat Head Brass.....70% }
Round Head Brass.....65% }
Flat Head Bronze.....70% }
Round Head, Bronze:...65% }
Rogers' Drive Screws.....82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grain.....40&5@40&10%
Grass.....40&10&50%

Scythe Snaths—

See *Snaths, Scythe.*

Sets—

Awl and Tool—

Aiken's Sets, Awls and Tools, No. 20, ₩ doz$10.00..... .....60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....45%
Millers Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50...70&10&5%

Nail—

Square.....₩ gr. $4.00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr. $12, 20%

Rivet—

Regular list..... .....70%

Saw—

Stillman's Genuine....₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $6.50.....55@55&10%
Common Lever.....₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00.....40&20%
No. 11, $16.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00..40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
Leach's..No. 0, $8.00; No. 1, $15...15@20%
Nash's.....20&10@20&10&10
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat.45%
Bemis & Call Spring Hammer..... 30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Co.'s Cross Cut.....30&5%
Aiken's Genuine.....$13.00, 60@60&10%
Aiken's Imitation.....₩ doz $3.00@$3.25
Hart's Pat. Lever.....20%
Disston's Star..... .....25%
Leopold..... .....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10@50%
Avery's Saw Set and Punch.....50%
Kohler's Royal.....₩ doz $7.00
Kohler's Giant Royal.....₩ doz $12.00
Crescent.....₩ doz $3.00
Lloyd's Acme.....₩ doz $15, 40&10%
Taintor Positive.....₩ doz $18, 50%

Sharpeners, Knife—

Larkins'.
Applewood Handles...₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%

Shaves, Spoke—

Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.)..... .....40&10%
Stearns'.....30&10%
Cincinnati..... .....25&10%
Goodell's ₩ doz. $9.00.....25%

Shears—

American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers..₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality.....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Hatch Cutlery Co., Solid Steel Forged.60%
Davenport Cutlery Co.....60@60&10%
Clauss brand, Japanned.....70%
Clauss brand, Nickeled, same list.....60%
Galvanic 3½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co .....Net
Campbell Cutlery Co., Jap'd.....75%
Nickel Plated..... .....65%

Tinners' Snips—

Wrt. Handles, Steel Blades. ..20@20&10%
Niagara Snips and Shears. ...20&10%
Cast Handles, Laid with Steel 40%

Pruning Shears and Hook

Disston's Combined Pruning Hook and Saw..... ....₩ doz. $18.00, 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 20&10%
E.S.Lee & Co.'s Pruning Tools.50&10@70%
Pruning Shears, Henry's Pat. ₩ doz. $3.75@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₩ doz $12.00
Dunlap's Saw and Chisel, ₩ doz $8.50,30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co..... ..... 60%
Levin Pruner No. 1, $15.00 ₩ doz. 40&3%
Levin Pruner No. 2, $21.00 ₩ doz.. 40&3%

Tinners', &c.—

Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co 33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888....50&10@60&5%
R. & E., list Dec. 18, 1885..... 55&20%
Corbin's list..... 60&10&2%
Patent Roller..... 60&10&2%
Patent Roller, Hatfield's..... .75%
Russell's Anti-Friction, list Dec 18, 1885..... 60&2%
Moore's Anti-Friction..... 50%

Sliding Shutter—

R. & E., list Dec. 18, 1885.....60&10&2%
Sargent's list..... 70%
Reading list..... 60&10&10%

Shells—

First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list)..... .20&10&2%
Prize..... 40&2%
Star, Club, Rival and Climax Brands... 33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge..33⅓&10&2%
Selbold's Comb. Shot Shells..... 15&2%
Brass Shot Shells, 1st quality..... 60&2%
Brass Shot Shells, Club, Rival, Climax 65&2%

Shells, Loaded—

Standard List, July 19, 1890..... 40&10&10@40&10&10&5% 7% cash, 10 days.

Ship Tools—

L. & I. J. White..... 20&5%

Shoes, Horse, Mule, &c.

Horse—

Burden's, Perkins', Phœnix, Standard, Diamond State, Bryden's Boss and Crescent, at factory..... $4.00
Bryden's Frog Pressure, at factory .$5.00

Mule—

Add $1 ₩ keg to above prices.

Ox Wrought—

Ton lots..... ₩ ℔ 9¢
1000 ℔ lots..... ₩ ℔ 9½¢
500 ℔ lots..... ₩ ℔ 10¢

Shot—

Small lots.
Drop, up to B, 25-℔ bag....$1.45 } In ton lots a discount of 5¢ ₩ bag (25 ℔) is made, and 2½¢ for cash.
Drop, up to B, 5-℔ bag..... .35 }
Drop, B and larger, 25-℔ bag..... 1.70 }
Drop, B and larger, 5-℔ bag..... .40 }
Buck and Chilled, 25-℔ bag..... 1.70 }
Buck and Chilled, 5-℔ bag .40 }
Dust Shot, 25-℔ bag..... 2.00 }
Dust Shot 5-℔ bag..... .45 }

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885..... 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron..... 50&10%
Griffith's C. S..... 60@60&5%
Griffith's Solid C. S. R. R. Goods. 20%
St. Louis Shovel Co..... 20@20&7½%
Hussey, Binns & Co..... 15@25%
Hubbard & Co..... 20@20&7½%
Lehigh Mfg. Co..... 50&10%
H. M. Myers Co..... 30%
Payne Pettebone & Son..... 33⅓ &5%
Remington's (Lowman's Pat.)40&10@50%
Rowland's Black Iron.. 50&10@50&10&5%
Rowland's Steel..... 60&5@60&10%
Terra Haute Shovel & 25%

Shovels and Tongs—

Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves and Sifters—

Mann's Tin Rim..... 50&25%
Buffalo Metallic, S. S. & Co...50&25&20%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $21.00
Electric Light..₩ doz $1.50; ₩ gro $15 00
A. & W. Sifters..... .....₩ gr $15.00
Hunter's Genuine. ₩ doz $1 75, ₩ gr $16.50
Hunter's Imitation..... ₩ doz $1.75; ₩ gr $15.00

Sieves, Wooden Rim

	Iron	Plated
Mesh 18, Nested, ₩ doz....	$0.80	$1.00
Mesh 20, Nested, ₩ doz....	.95	1.10
Mesh 24, Nested, ₩ doz..	1.15	1.25

Sinks, Wrought Steel—

Columbus, Painted or Unpainted. 30@30&10%
Columbus, Galvanized and Enameled. 50@50&10%
New Era, Painted..... 40&10@50&5%
New Era Galvanized and Enameled.. 60&10&10@70&5%

Skeins, Thimble—

Western list.....75&5@75&10%
Columbus Wrt. Steel. Special net prices
Coldbrookdale Iron Co..... 60%
Seneca Falls Pattern..... 60%
Utica P. S. T. Skeins..... 60%
Utica Turned and Fitted..... . 35%

Slates—

School, by case..... .....40@40&10%
Large lots..... .....40&10&5@50%

Slaw Cutters—See *Cutters.*

Sleds, Hand—

Tubular Steel.....₩ doz. $24&50%.00, 40 (Lots of 6 doz. 50%)

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Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.)....65%
Fitch's (Bristol)....50&10%
Hotchkiss....10%
Andrews....50%
Sargent's Patent Guarded....70&10&10%
German, new list....40&10%
Covert....50&10&5&2%
Covert, New Patent....50&10&5&2%
Covert, New R. E....60&10&5&2%
Covered Spring....60&10&10%
Covert's Saddlery Works' Triumph. 33⅓%
John Frotz Snaps....75@75&5%
Kelley & Woolworth's Steel Harness....50&10@60%

Snaths—

Scythe....50&2@50&5&2%

oldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8½-inch, ₱ doz., No. 5, $8; No. 5X, $9.
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list....70&10%
Buffalo, S. S. & Co....33⅓&2%

Silver Plated—

4 months or 5% cash 30 days:
Meriden Brit. Co., Rogers....40&15%
Rogers & Hamilton....40&15%
C. Rogers & Bros....40&15%
Rogers & Bros....40&15%
Reed & Barton....40@40&5%
Wm. Rogers Mfg. Co....40, 15&5%
Simpson, Hall, Miller & Co....40, 15&5%
Holmes & Edwards Silver Co....40, 15&5%
L. Boardman & Son....50&12½&5%

Miscellaneous—

Holmes & Edwards Silver Co.:
No 37 Mexican Silver....50&10&5%
No 30 Silver Metal....50&10&5%
No 24 German Silver....50&10&5%
No 50 Nickel Silver....50&5%
No 40 Nickel Silver....50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal....50&10&6%
18% Rogers' German Silver....60&6%
22½ Rogers' Nickel Silver....50&6%
Rogers & Hamilton:
Steel Goods....40&10%
Cimetar, Flatware....40&15&5%
Cimetar, Steel Goods....40&10%
Crown Hamliton, Flatware and Cutlery....30%
German Silver....60@60&5%
Nickel Silver....50&5@50&10&5% cash
Brittannia....60@60&5%
Boardman's Nickel Silver, list July 1, 1891....60&7½&5%
Boardman's Brittannia Spoons, case lots....60&5% cash

Springs—

Door—

Torrey's Rod, 39 in....₱ doz $1.20@1.2
Warner's No. 1, ₱ doz $1.50; No. 2, $3.40....55@55&10%
Gem (Coil), list April 19, 1886....20%
Star (Coil), list April 19, 1886....20&10%
Victor (Coil)....60&10@60&10&5%
Champion (Coil)....60&10@60&10&10%
Cowell's, No. 1, ₱ doz $18.00; No. 2, $15.00....50@50&10%
Rubber, complete, ₱ doz $4.50....55&10%
Hercules....50@50&10%
Phœnix....33⅓%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll....60&10@60&10&10&10 or net prices
Cliff's Bolster Springs....25%

Squares—

Steel and Iron } ..80&10&10@80&25%
Nickel-Plated. }
Try Square and T Bevels....60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares....25%
Avery's Flush Bevel Squares....40%
Avery's Bevel Protractor....50%

Squeezers—

Fodder—

Blair's....₱ doz $2.00
Blair's "Climax"....₱ doz $1.25

Lemon—

Porcelain Lined, No. 1....₱ doz $6.00....25&30%
Wood, No. 2....₱ doz $3.00, 35%
Wood, Common....₱ doz $1.70@1.75
Duniap's Improved....₱ doz $3.75, 20%
Sammis No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz....25&10%
Jennings' Star....₱ doz $2.50
The Boss....₱ doz $2.50
Dean's..No. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant....50@50&5%
King....40&5%
Hotchkiss Straight Flash... ₱ doz $12.00
Silver & Co. Glass....₱ gro. $9.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Barbed Blind, ½ in. and larger. ₱ ℔ 7@7½¢
Barbed Blind, ¾ in....₱ ℔ 8@8½¢
Fence Staples, Galvanized. } Same price as B'rb Wire
Fence Staples, Plain. } See Trd. Rep
Grand Crossing Tack Co.'s list....75&10%

Steelyards....40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods....35%
Butterfield's Goods....35%
Lightning Screw Plate....25@30%
Reece's New Screw Plates....25@30%
Reversible Ratchet....30%
Gardner....25%
Green River....25@30%

Stove, Bench—

Morrill's, ₱ doz, No. 1, $10.00; No. 2, $11.00....40&20%
Hotchkiss'....₱ doz, $5, 10@10&10%
Weston's, No. 1, $10, No. 2, $9, 25&10&5%
McGill's, ₱ doz $3....10%
Cincinnati....25&10%
Terrell's Nos. 1 and 2, ₱ doz., $3; No. 3, $3.60....30%
Millers Falls....25%
Stearns'....20&10%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892....33⅓%
Cleveland Stone Co., list Nov. 1892..33⅓%

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₱ ℔....8¢
Sand Stone....5¢ } 40@40&10%
Turkey Oil Stone, 4 to 8 in....80¢
Turkey Slips....$2.00
Lily White Washita....60¢
Rosy Red Washita....60¢
Washita Stone, Extra....50¢
Washita Stone, No. 1....40¢
Washita Stone, No. 2....30¢
Lily White Slips....90¢
Rosy Red Slips....90¢
Washita Slips, Extra....80¢
Washita Slips, No. 1....70¢
Arkansas Stone, No. 1, 3 to 5½ in., $2.80
Arkansas Stone, No. 1 5½ to 8 in., $3.50
Lake Superior....₱ ℔ 13¢
Lake Superior Slips....₱ ℔ 20¢
(33⅓&33⅓&10%)

Stove Polish—

See *Polish, Stove.*

Stretchers Carpet—

Cast Steel, Polished....₱ doz $2.2
Cast Iron, Steel Points....₱ doz 75@80¢
Socket....₱ doz $1.75
Bullard's....25@25&10%

Strops, Razor—

Genuine Emerson....60@60&5%
Imitation " ..₱ doz $2.00, 20&10&5%
Torrey's....20%
Badger's Belt and Com....₱ doz $2.00
Lamont Combination....₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50%
Electric Cutlery Co....Net
Campbell Cutlery Co....Net

Stuffer, Sausage—

Miles' Challenge, ₱ doz $20....50@50&5%
Perry....₱ doz, No. 1, $15.00; No. 0, $21.00....50&5@50&10%
Draw Cut No. 4, each $30.00....20%
Enterprise Mfg. Co., list Jan 17, '93..25%
Silver's....40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5....₱ doz $17.00
Bissell No. 8....₱ doz $20.00
Bissell, Grand....₱ doz $36.00
Standard....₱ doz $24.00
Domestic....₱ doz $21.00
Domestic, No. 2....₱ doz $22.00
Grand Rapids....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic....₱ doz $15.00
Improved Parlor Queen, Nickeled....₱ doz $27.00
Japanned....₱ doz $24.00
Excelsior....₱ doz $22.00
Garland....₱ doz $18.00
Parlor Queen....₱ doz $24.00
Housewife's Delight....₱ doz $15.00
Ladies' Friend....₱ doz $15.00
Ladies' Friend No. 2....₱ doz $16.00
Advance....₱ doz $18.00
Our Leader....₱ doz $19.00
Triumph....₱ doz $20.00
Supreme....₱ doz $22.00
Easy..Jap'd, ₱ doz $22.00; Nickel, $24.00
Gilt Edge....₱ doz $24.00
Acme....₱ doz $26.00
Imperial....₱ doz $26.00
Grand Republic....
Jap'd, ₱ doz $30.00; Nickel, $33.00
Banner....
Jap'd, ₱ doz, $22.00; Nickel, $24.00
The Star....₱ doz $21.00
Reliable....₱ doz $22.00
Rapid..Jap'd, ₱ doz, $22.00; Nickel, $24.00
Our Own....₱ doz $27.00
Model....₱ doz $27.00
Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months....₱ doz $1.00
10 dozen in 6 months....₱ doz $2.00
Except on L. F., when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co....30%

Swings—

Davies Lawn....25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.
Carpet Tacks—
American, Blued....66⅔%
American, Tin'd and Cop'd....70%
Steel, Bright and Blued....66⅔%
Steel, Tinned and Coppered....70%
Swedes Iron, Blued....72½%
Swedes Iron, Tinned....75%
American Iron Tacks, Domestic.66⅔%
Swedes Iron Tacks—
S. S., Blued....66⅔%
S. S., Tinned....70%
Lanc., Blued....55%
Lanc., Tinned....60%
Gimp and Lace Tacks—
S. S., Blued....62½%
S. S., Tinned....66⅔%
Lanc., Blued....55%
Lanc., Tinned....60%
Basket and Trimmers' Tacks—
Lanc....52½%
S. S....55%
Hungarian Nails....60%
Common and Patent Brads....55%
Leathered Tacks....10%
Brush Tacks, S. S....60%
Looking Glass Tacks, S. S....35%
Picture-Frame Points, S. S....35%
Finishing Nails....60%
Trunk and Clout Nails—
Black....65%
Tinned or Coppered....67½%
Basket Nails....60%
Chair Nails....52½%
Cigar Box Nails....45%
Tin Capped Nails....50%
(Extra discount 25&2%)

Miscellaneous—

Double Point....90&10@90&10&10%
Wire Carpet Nails....50&10%
Claw Handle Carpet....₱ gross $4.00
Bonnie Blue....₱ box $1.50
Bill Nye Brad Box....4 00
Parisian Gilt Nails, cartoon....50
Home Tacks, No. 50 ₱ case (12 cartons), $36.00; No. 100, ₱ case (12 cartons) $72.00. } 50&2%
Home Nails, No. 200, ₱ case (12 cartons), $30.00; No. 400, ₱ case (12 cartons), $60 00.
Upholsterers' Nails....50&10%

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list 50&10%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each....50&10&5%

Tapes, Measuring—

American....40@40&10%
Spring....40%
Chesterman's, Regular list....25@30%

Thermometers—

Tin Case....80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list....50&10&5%

Tinners' Shears, &c.—

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's....20%
Barton's....20@20&5%
L. & I. J. White....20&5%
Albertson Mfg. Co....25%
Beatty's....30%
Sandusky Tool Co....30@30&5%
Shaves Cincinnati Tool Co....20%

Lumber—

Ring Peavies, "Blue Line"..₱ doz $20.00
Ring Peavies, Common....₱ doz $18.00
Steel Socket Peavies....₱ doz $21.00
Mall. Iron Socket Peavies...₱ doz $19.00
Cant Hooks, "blue Line"....₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks....₱ doz $18.00

Saw—

Atkins', new list....40%

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse....40@40&5%
Oneida Pattern....75@75&10%
Game, Blake's Patent....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₱ doz holes, 9@10¢
Mouse, Round Wire....₱ doz $1.50 10%
Mouse, Cage, Wire....₱ doz $2.50 10%
Mouse, Catch-'em-alive..₱ doz $2.50 15%
Mouse, Bonanza....₱ doz 0.90@$1.00
Rat, Decoy....₱ gr $10.00, 10%
Ideal....₱ gr $10.00
Cyclone....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 75¢; in full cases, ₱ doz. 60@65¢
Hotchkiss Imp. Rat Killer...₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer....₱ gro $15.00
Dandy....₱ doz., $1.75
Waddel's Go Bang, ₱ gro....$12.50

Fly—

Harper, Champion or Paragon....₱ doz. $1.75, ₱ gro. $16.50
Balloon, Globe or Acme....₱ doz. $1.50, ₱ gro. $13.50

Triers—

Butter and Cheese....25%

Trimmers, Spoke—

Bonney's....₱ doz $10.00, 50%
Stearns'....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'....₱ doz $9.00, 20%
Cincinnati....25%

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering....15%
Disston's Br'k and Plastering.25@25&10%
Peace's Plastering....25@25&5%
Clement & Maynard's....20@20&5%
Rose's Brick....15@20%
Brade's Brick....25%
Worrall's Brick and Plastering....20%
Garden....70%
Cleves' Angle Trowel, ₱ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list....40%
Thompson Mfg. Co....40¢
Barnes' Barrel Trucks....40¢
Daisy Stove Trucks, Improved pattern, ₱ doz. $18.00

Tubes. Boiler—

See Pipe.

Twine—

Flax Twine—

	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls....	25¢	31¢
No. 12, ¼ and ⅛ ℔ Balls....	22¢	30¢
No. 18, ¼ and ⅛ ℔ Balls....	20¢	29¢
No. 24, ¼ and ⅛ ℔ Balls....	20¢	29¢
No. 36, ¼ and ⅛ ℔ Balls....	18¢	28¢

No. 264 Mattrass, ¼ and ⅛ ℔ Balls, 52@54¢
Chalk Line, Cotton, ⅛ ℔ Balls....25¢
Mason Line, Linen, ⅛ ℔ Balls....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine)....15½¢
3-Ply Hemp, 1 ℔ Balls....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔...15¢@16¢
2, 3, 4 and 5 Ply Jute, ⅛ ℔ Balls....10¢
Wool....6½¢@6¾¢
Paper....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz. 18¢

Vises—

Solid Box....50&10@60%

Parallel—

Fisher & Norris Double Screw....15&10%
Stephens'....25@30%
Parker's....20@25%
Wilson's....55%
Howard's....40%
Bonney's....50%
Millers' Falls....40@40&10%
Trenton....40&5@40&10%
Merrill's....15@20%
Hollands'....35@40%
Sargent's....70&10%
Backus and Union....40%
Double Screw Leg....15&10%
Prentiss....20@25%
Simpson's Adjustable....40%
Moore's....20%
Massey Quick Action....20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00....40&10@50%
Stearn's....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises....33⅓@35%
Hopkins'....₱ doz $17.50, 10%
Reading....40&10%
Wentworth....20&10%
Economy, ₱ doz., Nos. 110, $10.00; 120, $15.00....50&10&10&5%

Miscellaneous

Phœnix Vises....33⅓%
Phœnix Hand Vises....₱ doz $3.60, 33⅓%
Cowell Hand Vises....20%
Bauer's Pipe Vises....10%
Cincinnati....25&10%
Enterprise Pipe Vises.... each $3.00, 40%
Massey Combination Pipe Vise. 40%

Wads—Price Per M.

U.M.C. & W. R. A.—B. E., 11 up.. 68¢
U.M.C. & W. R. A.—B. E., 9&10.. 82¢
U.M.C. & W. R. A.—B. E., 8.... 96¢
U.M.C. & W. R. A.—B. E., 7.... $1.10
U.M.C. & W. R. A.—P. E., 11 up 1.15
U.M.C. & W. R. A.—P. E., 9&10.. 1.50
U.M.C. & W. R. A.—P. E., 8.... 1.70
U.M.C. & W. R. A.—P. E., 7.... 1.80
(Dis 20&2%)
Eley's B. E., 11 and larger... $1.70@$1.75
Eley's P. E., 12 to 20.... $3.00@$3.25

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow

Stove Hollow-Ware—
Ground....60&10@60&10&10%
Unground....65&10@70&5%
White Enameled Ware—
Maslin Kettles....70&10@75%
Boilers and Saucepans....60@60&5%
Tinned Boilers and Spans....60@60&5%
Rustless Hollow Ware....50@50&5%
Gray Enameled Ware—
Stove....50%
Maslin Kettles....60@60&10%
Boilers and Saucepans....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889....33⅓% } Extra 10% on many leading articles.
Ironclad Enameled Ware....dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	6¢	65¢	75¢

Standard Fiber

	Per Doz. Plain.	Decorated
Wash-Basins, 10½ in....	$1.80	$2.00
Wash-Basins, 12 in....	2.00	2-50
Keelers, 11¼ in....		3.50
Cuspidors....		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure....	3.50	
Half-peck Measure....	3.00	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₱ doz.... $6.00
Basins, Ringed, ₱ doz., No. 2 .2.80
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), ₱ nest.... $5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest.... $2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest.... $1.50
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), ₱ set.... $1.20
(25%)
See also Pails.

Silver Plated, Hollow

4 mo. or 5% cash in 30 days

Reed & Barton.... } 40&5%
Meriden Britannia Co.... }
Simpson, Hall, Miller & Co.... } 40&5%
Rogers & Brother.... }
Hartford Silver Plate Co.... } 40&5&5%
William Rogers Mfg. Co.... }

Washers—

Size hole.... 5-16 ⅜ ½ ⅝ to 1¼
Washers.... 5½ 4½ 3¼ 2¾
In lots less than 200 ℔, ₱ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Washer Cutters—

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Iron....₱ ℔ 3¼¢@3½¢
Steel....₱ ℔ 3¾¢

Weights, Sash—

Solid Eyes....₱ ton, $18.00@19.00

Well Buckets Galvanized—See *Buckets, Well Galvanized.*

Wheels, Well—

8 in., $2.00; 10 in. $2 50; 12 in., $3.75

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Whips

American Whip Co.: Length.	4½	5	5½	6	6½	7	7½	8 ft.
X. L. Whalebone Driving	$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone	....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whale bone	....	....	11.00	12.00	13.00	15.00	....	....
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors	....	....	....	6.00	....	....	....	....
Americus, 93 Pen Whip	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106	....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No. 108	....	....	3.75	4.00	....	....	....	....

Per dozen.

A large variety of cheaper grades.....50%@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....₩ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Wire and Wire Goods—

Iron—

Market,

Br. & Ann., Nos. 0 to 18. 75&10@75&10&5%
Cop'd, Nos. 0 to 18. 75&5@70&10%
Galv., Nos. 0 to 18. 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18. .70@70&10%

Extra 5@10% often given and net prices often made on large lots.

Stone,
Br. and Ann'd,
Nos. 16 to 18. 80%
Nos. 19 to 26. 80&5%
Nos. 27 to 36. 82½&5%
Extra 10% often given.

Tinned Broom Wire, 18 to 21, ₩ ℔....43½
Galvanized Fence.....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Ossawan Mills, An'ld and Tinned on Spools.....60&10%
Ossawan Mills, Brass and Copper on Spools.....50&10%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported....60@70% ₩ ℔
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....85&10@85&10&10%

Wire Cloth and Netting—

Painted Screen Cloth ₩ 100 ft.....$1.75
Galvanized Wire Netting.....75&10@75&10&5%

Wire Barb—

See Trade Report.

Wire Rope—

See *Rope, Wire.*

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50@50&10%
Coes' "Mechanics'".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
W. & B. Diamond.....
75&10@80%

Bemis & Call's:
Pat. Combination Bright.....40&5%
Pat. Combination Black.....40&10%
Merrick's Pattern.....45%
Brigg's Pattern.....30&10%
Cylinder or Gas Pipe.....45&5%
No. 3 Pipe.....55%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz., $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....30%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Eagle.....50&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70@70&5%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes

Am. Wringer Co.'s list, July 1, '93..2% cash
Colby Wringer Co., list Sept. 1, '93..2% cash
Lovell Mfg. Co., list July 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1893..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	40
Linseed, City, boiled....	..	@	43
Linseed, Western, raw.....	38	@	40
Lard, City, Extra Winter...	75	@	77
Lard, City Prime.....	..	@	75
Lard, City, Extra No. 1.....	..	@	50
Lard, City, No. 1.....	..	@	45
Lard, Western, prime.....	..	@	75
Cotton-seed, Crude, prime..	34	@	36
Cotton-seed, Crude, off grades.....	32	@	34
Cotton-seed, Summer Yellow, prime.....	39	@	40
Cotton-seed, Summer Yellow, off grades.....	36	@	37
Sperm, Crude.....	70	@	..
Sperm, Natural Spring.....	75	@	77
Sperm, Bleached Spring.....	80	@	82
Sperm, Natural Winter.....	81	@	82
Sperm, Bleached Winter.....	86	@	88
Whale, Crude.....	..	@	..
Whale, Natural Winter.....	48	@	..
Whale, Bleached Winter.....	..	@	51
Whale, Extra Bleached.....	..	@	52
Sea Elephant, Bleached Winter.....	..	@	..
Menhaden, Crude, Sound...	35	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed...	39	@	40
Menhaden, Bleached W'ter.	..	@	43
Menhaden, Extra Bleached.	..	@	46
Tallow, City, prime.....	..	@	60
Tallow, Western, prime....	..	@	55
Cocoanut, Ceylon.....	5½	@	5¾
Cocoanut, Cochin.....	6½	@	6¾
Cod, Domestic.....	38	@	40
Cod, Foreign.....	42	@	45
Red Elaine.....	44	@	46
Red Saponified..... ₩ ℔	4¼	@	4¾
Bank..... per gal	38	@	..
Straits.....	39	@	..
Olive, Italian, bbls.....	58	@	60
Neatsfoot, prime.....	75	@	80
Palm, prime, Lagos..... ₩ ℔	7¼	@	8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test..... per gal	7	@	7½
Black, 29 gravity, 15 cold test.....	7½	@	8
Black, 29 gravity, summer ..	6	@	6½
Cylinder light, filtered.....	14	@	16
Cylinder, dark, filtered.....	10	@	13
Paraffine, 23½@24 gravity..	11	@	12
Paraffine, 25 gravity.....	10	@	11
Paraffine, 28 gravity.....	7½	@	8
Paraffine, red.....	9½	@	10½

Paints and Colors—

Barytes, Foreign, ℔ ton..	$22.00	@	24.00
Barytes, Amer. floated....	29.00	@	32.00
Barytes, Amer. No. 1.....	16.00	@	18.00
Barytes, Amer. No. 2.....	13.00	@	15.00
Barytes, Amer. No. 3.....	11.00	@	12.00
Blue, Celestial..... ₩ ℔	6	@	8
Blue, Chinese.....	40	@	50
Blue, Prussian.....	25	@	40
Blue, Ultramarine.....	8	@	25
Brown, Spanish.....	½	@	1
Brown, Vandyke, Amer...	3	@	3½
Brown, Vandyke, English.	6	@	8
Carmine, No. 40, in bulk..	2.75	@	..
Carmine, No. 40, in boxes or barrels.....	2.85	@	..
Carmine, No. 40, in ounce bottles.....	3.75	@	..
Chalk, in bulk..... ₩ ton..	1.75	@	2.00
Chalk, in bbls.. ₩ 100 ℔...	33	@	40
China Clay, English..... ₩ ton.	13.00	@	18.00
Cobalt Oxide, prep'd.....	9.00	@	11.00
Cobalt Oxide, black..... lots 100 ℔.	1.90	@	....
Cobalt Oxide, black..... less 100 ℔.	1.96	@	....
Green, Paris, in bulk.....	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs.....	10½	@	11
Green, Paris, small pack.	12	@	17
Green, Chrome, ordinary.	6	@	12
Green, Chrom., pure.....	22	@	25
Lead, Eng., B.B. white....	8½	@	10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔...	7	@	7¼
Kegs, lots 500 ℔ to 5 tons....	6½	@	6¾
Kegs, lots 5 tons to 12 tons..	6⅜	@	6⅝
Kegs, lots 12 tons and over..	6¼	@	6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price.....	..	@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.	..	@	2¼
Lead, Red, bbls. and ½ bbls...	6	@	7
Lead, Red, kegs.....	6¼	@	7¼
Litharge, kegs.....	6¼	@	7¼
Litharge, bbls. and ½ bbls.....	6	@	7

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed.....	1½	@	2½
Ocher, German Washed....	1¼	@	3
Ocher, American.....	½	@	1¼
Orange Mineral, English....	8½	@	9
Orange Mineral, French.....	10	@	10½
Orange Mineral, German....	8½	@	9
Orange Mineral, American.	8¼	@	8¾
Paris White, English Cliff-stone.....	1.00	@	1.15
Paris White, American.....	65	@	75
Red, Indian, English.....	5½	@	7
Red, Indian, American.....	2	@	6½
Red, Turkey.....	9	@	14
Red, Tuscan.....	9	@	11
Red, Venetian, American... ₩ 100 ℔..	1.00	@	1.10
Red, Venetian, English.....	1.20	@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔.....	4	@	5
Sienna, Ital., Burnt Lumps.	1½	@	3½
Sienna, Ital., Raw, Powd...	4½	@	5½
Sienna, Ital., Raw, Lumps..	1¾	@	3½
Sienna, American, Raw.....	1½	@	1¾
Sienna, American, Burnt and Powdered..... ₩ ℔	1½	@	1¾
Talc, French.....	..	@	1¼
Talc, American.....	1¼	@	1⅝
Terra Alba, Fr'ch. ₩ 100 ℔	95	@	1.25
Terra Alba, English.....	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered..... ₩ ℔	3½	@	4
Umber, Turkey Bnt. Lu....	2¾	@	3
Umber, Turkey, Raw and Powdered.....	3¼	@	....
Umber, Turkey, R'w Lumps	2¼	@	2¾
Umber, Turkey, Bnt. Amer..	1¼	@	1½
Umber, Turkey, R'w Amer.	1¼	@	1½
Yellow, Chrome.....	10	@	25
Vermillion, American Lead.	11¼	@	12
Vermilion, Quicks'er, bulk..	57	@	..
Vermilion, Quicks'er, bags..	58	@	..
Vermilion, Quicksilver sm'r pkgs.....	62	@	..
Vermilion, English Import.	85	@	90
Vermilion, Imitation, Eng..	8	@	35
Vermilion, Trieste.....	90	@	92½
Vermilion, Chinese.....	92½	@	95
Whiting Common, ₩ 100 ℔	37½	@	42½
Whiting Gilders'.....	45	@	55
Zinc, American, dry.... ₩ ℔	4	@	4¾
Zinc, French, Red Seal.....	7½	@	..
Zinc, French, Green Seal	9	@	..
Zinc, French, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal....	7½	@	..
Zinc, Antwerp, Green Seal..	7¾	@	..
Zinc, German, L. Z. O.....	6¾	@	7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¾	@	11½
lots less than one ton.....	11	@	11½
Zinc, V. M. in Poppy Oil, Red Seal..	..	@	..
lots of 1 ton and over.....	10	@	10½
lots of less than 1 ton.....	10¼	@	10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort.....	25	@	30
Black, Drop, English.....	12	@	15
Black, Drop, Domestic.....	7	@	10
Black, Lampblack, Best....	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory.....	8	@	15
Blue, Chinese.....	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramarine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	16	@	18½
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber, Raw.....	7	@	10
Umber, Burnt.....	7	@	10

Putty—

In barrels and ½ bbls.....	.013½	@	.013¾
In tubs.....	.015½	@	.015¾
In tin cans.....	.01½	@	.02½
In bladders..	.01½	@	.02½

Spirits Turpentine

In regular bbls.....	..	@	29½
In machine bbls.....	..	@	30

Glue—

Low Grade..... ₩ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	22
English.....	10	@	15
Irish.....	12	@	..

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

OCTOBER 25, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:	
¾ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in....	₩ lb 1.80 @ 1.90¢
Refined Iron:	
¾ to 2 in. round and square. 1 to 4 in. x ⅜ to 1½ in.... 4½ to 6 in. x ⅜ to 1 in.	₩ lb 1.90 @ 2.00¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.10 @ 2.20¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.00 @ 2.10¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price.	₩ lb 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.80¢
"Ulster"	₩ lb 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store—

	Per lb
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2½¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

Black—

Best Refined Iron.

Nos. 14 to 20	3 @ 3½¢
21 to 24	3¼ @ 3⅝¢
25 to 26	3⅜ @ 3¾¢
27	3½ @ 3⅝¢
28	3⅝ @ 3¾¢

Common ¼¢ less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 16	2½ @ 2⅝¢
" " " 18 to 20	2⅝ @ 3¢
" " " 21 to 24	3⅛ @ 3¼¢
" " " 25 to 26	3⅜ @ 3⅝¢
" " " 27 to 28	3⅝ @ 3¾¢

Best Bloom Sheets, ¼¢ extra over above prices.
Best Bloom, Galvanized, jobbing dis. 70 @ 70&5%
Ordinary Bessemer, ⅛¢ @ ¼¢ lower than above prices.

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 12¢ @ 13¢
Patent Planished	₩ lb A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel	₩ lb, 8½¢

English Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 20 ¢

METALS—

Tin—

	Per lb
Banca, Pigs	22¢
Straits, Pigs	21¢ @ 21½¢
Straits in Bars	22½¢

Tin Plates—

Duty: 2.2¢ ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade.	IC,	10	x14..	@ $6.50
" " "	IC,	12	x12..	@ 6.75
" " "	IC,	14	x20..	@ 6.50
" " "	IC,	20	x28..	@ 13.00
" " "	IX,	10	x14..	@ 8.50
" " "	IX,	12	x12..	@ 8.75
" " "	IX,	14	x20..	@ 8.50
" " "	IX,	20	x28..	@ 17.00
" " "	DC,	12½	x17..	@ 6.00
" " "	DX	12½	x17..	@ 8.00
Allaway Grade	IC,	10	x14..	@ 6.00
" "	IC,	12	x12..	@ 6.25
" "	IC,	14	x20..	@ 6.00
" "	IC,	20	x28..	@ 12.00
" "	IX,	10	x14..	@ 7.50
" "	IX,	12	x12..	@ 7.75
" "	IX,	14	x20..	@ 7.50
" "	IX,	20	x28..	@ 15.00
" "	DC,	12½	x17..	@ 5.50
" "	DX,	12½	x17..	@ 7.00

Coke Plates—Bright—

Steel Coke.	IC,	10 x 14, 14 x 20..	$5.40	@ $5.50
		10 x 20..		@ 8.50
		20 x 28..	11.50	@ 12.00
	IX,	10 x 14, 14 x 20..		@ 7.00
BV Grade	IC,	10 x 14, 14 x 20..		@ 5.50

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.	IC,	14 x 20	@ $5.65
		20 x 28	@ 11.00
	IX,	14 x 20	@ 6.40
		20 x 28	@ 12.80
Abecarne Grade.	IC,	14 x 20	@ 5.55
		20 x 28	@ 10 75
	IX	14 x 20	@ 6 40
		20 x 28	@ 12.80

Tin Boiler Plates—

IXX, 14x 26	112 sheets	@ $13.35
IXX, 14 x 28	112 sheets	@ 14.50
IXX, 14 x 31	112 sheets	@ 16.00

American Terne Plates.—Apollo.

IC, 14 x 20	$6.25
IC, 20 x 28	12.50
IX, 14 x 20	7.25
IX, 20 x 28	14.50

Copper—

Duty: Pig, Bar and Ingot, 1½¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot—

Lake	@ 11 ¢
Ansonia grade Arizona	@ 10½¢
Ansonia grade Casting	@ 10 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 25 %, according to size of order. Stubs' gauge standard.

Not wider than	Not longer than	And longer than	Weights per sq. foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	...
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅜ inch diameter and over, ₩ lb 22¢
Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per lb.
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter, 2¢ ₩ lb additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned ₩ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz.	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

July 6, 1892. Net.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1½
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional
Brazed Brass Tubing. (To No. 20 inclusive.)
Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	$1.50
Fancy Tubing, Brass, to No. 20, inclusive	48¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list	30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2	in. 10	in. 12	in. 14	in. 16	in. 18	in. 20	in. 22	in. 24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33	
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34	
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35	
Nos. 27 and 28	.23	.24	.2	.28	.30	.32	.34	.36	

Common High Brass: Wider than and including	in. 24 26	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in 36 38	in 38 40
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0.30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.62
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.80	1.82	1.84	2.00
No 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

— % discount.
Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

	Per lb.		Per lb.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No. 10	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive	17¢ ₩ lb.
Over 3½ to 5 inches inclusive	18¢ ₩ lb.

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive	18¢ ₩ lb
Over 3½ to 5 inches inclusive	19¢ ₩ lb.

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	4½¢@4¾¢
Bertha (pure)	8¢@8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.

600 lb casks	5¾¢@6¢
Per lb	6½¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	4¢@4.10
Bar	4¼¢
Pipe, subject to discount 20%	6¼¢
Tin-Lined Pipe, subject to discount 20%	15¢
Block Tin Pipe, subject to discount 20%	37½¢
Sheet, subject to discount 20%	7¢

Old Lead in exchange, 3¼¢ ₩ lb.

Solder—

½ @ ½ (Guaranteed)	13½¢ @ 14½¢
No. 1	11¾¢ @ 12½¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson	₩ lb 11 ¢
Hallett's	10½¢

Aluminum—

Duty: 15¢ ₩ lb.

No. 2 grade metal, in ton lots	₩ lb .75
No. 1 (guaranteed to be 98 % pure and over), in ton lots	₩ lb .90
Lots less than 1 ton	10¢ ₩ lb additional

Old Metals—

Prices Paid in New York.

Heavy Copper	₩ lb	7½¢
Light and Tinned Copper	₩ lb	6½¢
Heavy Brass	₩ lb	5½¢
Light Brass	₩ lb	4½¢
Lead	₩ lb	3 ¢
Tea Lead	₩ lb	2 ¢
Zinc	₩ lb	2¾¢
No. 1 Pewter	₩ lb	14 ¢
No. 2 Pewter	₩ lb	7 ¢
Wrought Scrap Iron	₩ gross ton	$10.00
Heavy Cast Scrap	₩ gross ton	8.00
Stove Plate Scrap	₩ gross ton	5.00
Burnt Iron	₩ gross ton	3.00

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THE IRON AGE

THURSDAY, NOVEMBER 2, 1893.

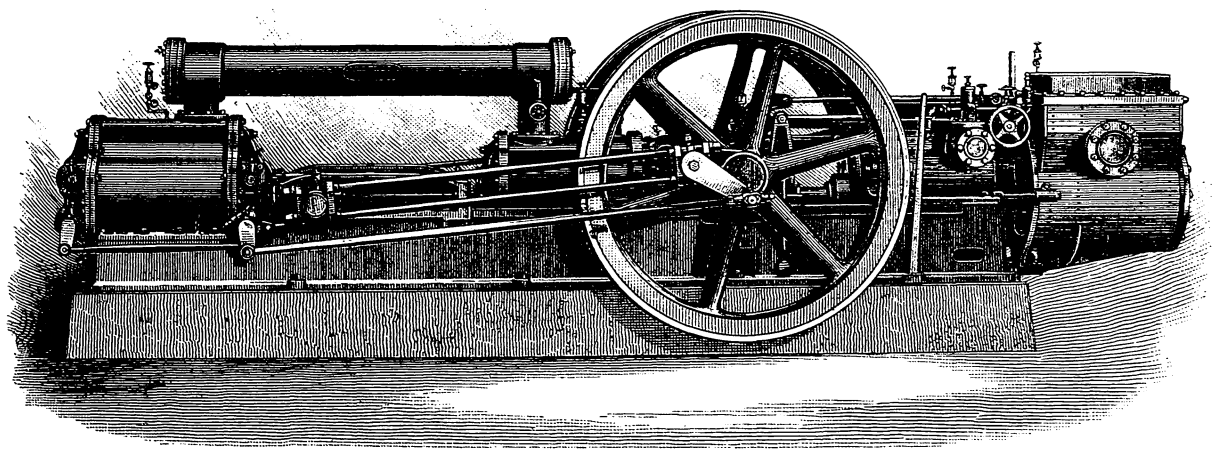
The Norwalk Double Compound Air Compressor.

We have the privilege on this and the following pages to present in perspective and vertical section engravings showing the main features of the 28 x 30 inch double compound air compressor built by the Norwalk Iron Works Company of South Norwalk, Conn.

Steps Leading to Present Construction.

Before describing the compound air compressor as at present designed, it may be of interest to briefly outline the various steps through which the machine passed before reaching its present development, confining this matter to the compressor as developed by the company above referred to. In their compound air compressor as built in 1880, a compressing air cylinder was placed between the steam and the intake air cylinders. The air valves were of the poppet variety, of the most improved construction and very liberal in area. Both air compressors were provided with water jackets. The air was taken into the large cylinder, where it was partly compressed and from which it was conducted by a large pipe to the smaller compressing cylinder, where it was compressed to the desired pressure. These cylinders were similar, although, of course, the operation was reversed, to the cylinders of a compound steam engine, the low pressure cylinder being the intake and the high pressure the compression cylinder. The objects aimed at in this construction, were: 1. To make the resistance of the air to compression an average resistance throughout the stroke, instead of the excessive and maximum resistance at end of the stroke, which is obtained in all single compressors. 2. To reduce the losses of clearance spaces to the smallest amount by having the pressure in the intake cylinder a light pressure. 3. To have the advantages of two water jackets and more time for cooling the air.

The next change was the addition of an intercooler between the two air cylinders, which consisted of a large pipe or reservoir filled with thin brass water pipes. The air in its passage to the second cylinder becomes divided into thin streams by the water pipes and thus each particle is brought into contact with a cold surface and its temperature rapidly reduced. This was found, as will be explained further on, to produce economic results of a degree unlooked for. The reason for its introduction and the reason for its maintenance at the present time may be briefly stated. The compression which takes place in the initial cylinder heats the air, which if allowed to pass directly to the compression cylinder would fill that cylinder with gas at a certain temperature and certain volume. It is evident that by reducing the temperature the volume of air that would be introduced in the second cylinder would thereby be increased and the capacity of the machine correspondingly augmented.



THE NORWALK DOUBLE COMPOUND AIR COMPRESSOR.

Another important change made shortly afterward was the doing away with the poppet inlet valve and the introduction of one inlet valve of the Corliss steam engine pattern placed in each head of the intake cylinder. This improvement did away with much trouble caused by the little poppet valves and, furthermore, had the advantage of insuring a full supply of air at every stroke. The valves were opened and shut by a connection with the main engine shaft and no vacuum or pressure in the air cylinder was needed to insure their proper working.

The next change, while retaining the Corliss valve, was in the valve connections, which were made more direct by employing a wrought iron return crank attached to the main crank pin. This pattern also had removable air hoods which connected the inlet valves with the cold air conduit beneath the floor, through which cold air from outside the engine room was led to the compressor. This was introduced for the reason that it is far preferable to obtain air as cold as possible and also as free from dust particles and vapor as possible, the pure cold air not only adding to the economy of the machine, but also increasing its durability. Tests showed that this method of obtaining air from outside rather than from the engine room secured a saving of about 1 per cent. for every 5° lower temperature obtained.

The Corliss valve for admission of air having proved to be such an important improvement, its use was still further extended in the next pattern, and it was applied as a discharge valve on the intake air cylinder, as illustrated in Fig. 2.

The amount of compression which is performed in the intake air cylinder is always uniform, for the reason that the pressure produced here is simply the pressure required to compress the air into the smaller or compressing cylinder. Hence there being a uniform discharge pressure for this cylinder it is a simple matter to adjust a mechanically moving discharge valve to open at the exact and proper point of discharge. This arrangement has proved to be highly gratifying and has been adopted for all these standard compressors.

Although the next change involved no alteration in the general features of the machine it covered important points in the details where experience had shown that changes might be made conducing to the better working of the compressor or for other advantages to the user. An automatic pressure regulator of new and patented design was attached to the steam cylinder. Lubricators of new design were also placed on the air cylinders having sight feed and fine adjustment.

The next change of importance was in the valve gear. In the usual patterns of the standard Norwalk compressor air pressure in the inlet cylinder at the period referred to was about 25 pounds. This pressure was so light that its effect on the wearing of the Corliss valve had been regarded as of little consequence, but the demand having been made for compressors for pressures to thousands of pounds to the square inch made it expedient to use higher pressure in the inlet cylinder. The valves were, therefore, moved by cams, the shape of which was such that the valve remained at rest until the pressure below it had become nearly equal to that above it. Then the movement commenced and the valve was quickly thrown wide open. In closing, the cam allowed a rapid movement, so that the valve be-

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came seated before any considerable pressure came upon it. The connection which threw it shut was elastic, so that if a valve seat became dry no cutting occurred. This form of movement having such desirable features for heavy pressure was considered to be in a degree useful on any pressure, and was therefore adopted for the standard compressors.

Description of Compressor as Built Now.

Ordinary poppet valves were considered to have serious objections when used for inlet valves. They are closed by springs, and to insure prompt closing at all speeds, especially when the valve stems became foul with dust and gummy oil, the springs must have quite a little strength. Springs exerting a force of less than 8 ounces per square inch of valve surface are too weak. The slight throttling of the inlet by these springs, although scarcely to be seen on indicator cards of the usual scale and taken in the ordinary way, causes loss amounting to 3.41 per cent. in capacity at the sea level, while at higher altitudes it is greater. These and other considerations led to the adoption and retention of the well-known Corliss valves, which have a positive movement from the main shaft. With these the port is large, is clear of obstructions and opens directly into the cylinder. Indicator cards when running at 250 revolutions and at piston speeds up to 500 feet a minute have been taken of these compressors. With ordinary indicator springs no vacuum is discernible, but with an extremely light spring of only 4 pounds to the inch the slightest indication of a difference of pressure within and without the cylinder can be detected.

The process of compression has two interesting features—viz, the increasing resistance to the advance of the pistion and the increasing temperature of the air due to the compression. A steam engine is usually the source of power. In the steam cylinder the pressure is greatest at the beginning of the stroke and least at the end, while in the air cylinder the direct reverse is the case. To equalize in some measure this vast difference between power and resistance has been the task presented to the ingenuity of mechanics. The most common method of overcoming this difference has been in the employment of heavy fly wheels and extra strong connections. We quote from a pamphlet on these compressors, from which most of the particulars here presented are taken, which has just been issued by the Norwalk Company.

"To obtain nearly uniform resistance the air cylinder should be conical, large at one end and small at the other. Of necessity this would be single acting, and the piston should be capable of expanding and contracting to fill the bore of the cylinder at any point. In such a cylinder at the first of the stroke, when the piston is large, it would encounter a light pressure, but at the last of the stroke, when the pressure is very great, the piston would be small and the engine would be able to overcome the resistance with ease. A machine constructed in this manner is in the present state of the art an impossibility. Its result is, however, very closely imitated in the Norwalk compound air compressor, in which a large cylinder is employed to make the initial air pressure, while a small cylinder is used to effect the final and heavier compression. The air is forced from the larger cylinder into the smaller, and in the smaller

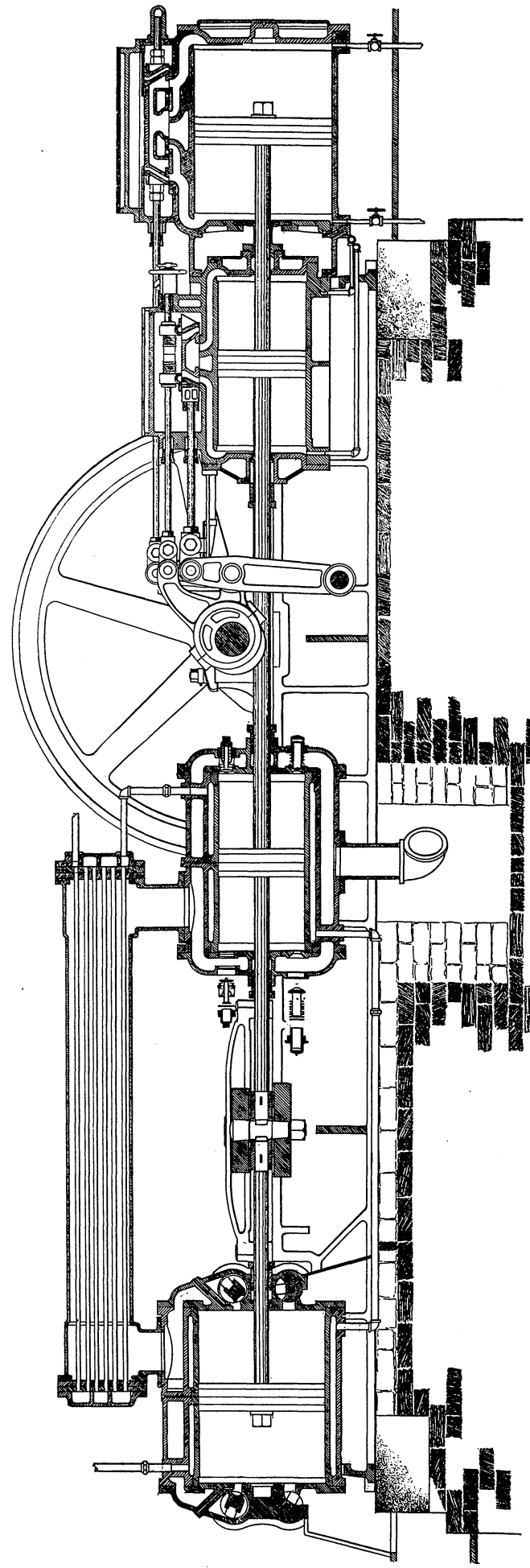


Fig. 2.—Vertical Longitudinal Section through all the Cylinders.

THE NORWALK DOUBLE COMPOUND AIR COMPRESSOR.

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cylinder is compressed to the extent desired. By such an arrangement much of the resistance is transferred from the end to the beginning of the stroke, and a more nearly uniform resistance for the whole stroke is obtained."

A large air cylinder, that on the left in Fig. 2, determines the capacity of the compressor. Assuming this to have a sectional area of 100 square inches, the small air cylinder would have an area of 33⅓ square inches. The small piston only encounters the heaviest pressure and at 100 pounds pressure the resistance to its advance would be 3333 pounds. The resistance against the large piston is its area multiplied by the pressure which is caused by forcing the air from the large cylinder into the smaller cylinder. In this case it is 30 pounds per square inch, but as this pressure acts on the back of the small piston and hence assists the machine, the net resistance of forcing the air from the large into the small cylinder is equal to the difference of the area of the two pistons multiplied by the 30 pounds pressure. This is 66⅔ by 30 and equals 2000 pounds. The resistance to forcing the air from the larger into the smaller cylinder, plus 3333 pounds, the resistance in the smaller cylinder to compressing it to 100 pounds, is the sum of all the resistance in the compound cylinders at the time of the greatest effort and is 5333 pounds. The time of the greatest effort is at the end of the stroke or when the engine is passing the center. It is stated that in the single machine this resistance has been seen to be 10,000 pounds and hence in the compound machine the maximum strains are less by over 46 per cent. or nearly one-half. By thus reducing the work to be done at the end of the stroke, more work is done in the first part of the stroke and the resistance is made nearly uniform for the whole stroke.

The next step is to render the application of power also uniform for the whole stroke. This is accomplished in a very simple and effective manner. The steam and air pistons and cross head are mounted on the same piston rod. These parts have considerable weight, so that it requires most of the power of the steam over and above the air resistance at the beginning of the stroke to start them forward at the required speed. At the end of the stroke, when the steam has become weak by expansion, the power stored up in the momentum of these reciprocating parts is given out in useful work, and the parts are brought to a state of rest by expending their force upon the air in compressing cylinders. As the energy which can thus be stored and given out by the reciprocating parts depends upon their weight and the square of the number of revolutions, it is evident that rotative speed is the most important factor. Hence very long strokes are not desirable, because at the same piston speed the machines make fewer revolutions than machines of shorter strokes. Therefore, the power is not applied to the work so uniformly, and greater strains are brought on shafts, connecting rods and other parts, while larger fly wheels and frequently double engines are necessary for successful operation, especially where steam is to be used expansively.

The uniform resistance and uniform power both applied, as in this compressor, and direct end thrust and pull through a straight steel piston rod, do not leave much work for fly wheels to perform. Their presence is necessary, however, to regulate the steam valve motions, to control the length of stroke, to even up and balance trifling inequalities of power and resistance, and to secure a uniform speed to the machine.

No water is allowed in the cylinders in contact with the air and all cooling is effected by surface coolers. This intercooler is shown connecting the two air cylinders above which it is placed. The advantages of surface cooling in comparison with the use of water in the air cylinders are stated to be several. The first consideration is that the product of compression with surface cooling is dry air. This is a matter of much importance. When the air is heated by compression and brought in contact with water it becomes saturated with moisture. Air when exhausted after doing work has a temperature far below zero. So low a temperature quickly freezes up all moisture in the air and deposits it as ice in the exhaust passages of the air engine, which in a short time are choked up or entirely closed. The remedy for these evils is to keep the air dry.

The value of cooling attachments is that they effect a direct saving of the power required for compression, and by keeping the parts cool make it possible to obtain thorough lubrication. Air compressed to five atmospheres, or 60 pounds pressure on the ordinary gauge, in a compressor without cooling arrangements, would be raised in temperature from 62° to 373° F. Assume that the amount of air is such that it requires an engine of 100 horse-power to do the work. If now a perfect cooling apparatus be added to the compressor, the power required would be reduced from 100 down to $78\frac{4}{10}$ horse-power. Or in other words the value of a perfect cooling apparatus to that compressor would be $21\frac{6}{10}$ horse-power. So much cooling cannot be obtained from a single cylinder jacket for the reasons already cited.

In the compound compressor doing the same work the temperature of the air on leaving the first cylinder would be 199°, if the cylinder had no jacket. All this heat above the atmospheric temperature can be taken out in the intercooler. By thus cooling the air the original 100 horse-power required will be reduced to $88\frac{1}{10}$ horse-power. We have seen that by perfect cooling another gain of $9\frac{7}{10}$ horse-power is possible. For this a water jacket is put on each of the two air cylinders, which return a useful effect of $4\frac{85}{100}$ horse-power. It is, therefore, concluded that in a 100 horse-power compressor when compressing to 60 pounds it is possible to gain $21\frac{6}{10}$ horse-power by perfect cooling.

The steam engine attached to these standard compressors is designed to attain the highest economy, the one shown in the engraving being of the tandem compound type. The steam cut off valves have a wide range and are quick in their action, giving a clear sharp point of cut off and a very perfect expansion line. The cut off is changed by turning a hand wheel placed at the back end of the high pressure steam chest and it is easily accessible. The point of cut off can be changed while the machine is in motion to meet any requirements of speed. Its position is shown by an index. The general arrangement of the steam cylinders, their valves and the connections with the eccentrics, which are placed on the shaft which carries at each end a fly wheel, are clearly brought out in the sectional drawing.

The experience gained in building a large number of machines by this company, and careful investigations with the indicator, have resulted in the production of an engine particularly well adapted for this duty.

Launch of the Battle Ship "Oregon."

The United States battle ship "Oregon" was successfully launched from the yard of the Union Iron Works, at San Francisco, Cal., on Thursday, October 26, in the presence of an immense crowd of people, including some of the most prominent representatives of the States of Oregon and California. The "Oregon" is one of the three ships the bids for which were opened at the Navy Department, on October 1, 1890. These ships are technically known as armed coast line battle ships of the first class. The two sisters of the "Oregon" are the "Massachusetts" and "Indiana," both of which have been constructed at the yard of the Cramps, in Philadelphia. By a provision of the act of Congress authorizing their construction it was directed that one of the three vessels should be built on the Pacific coast, and the contract was awarded to the Union Iron Works, at San Francisco. The appropriation for each ship was $4,000,000, exclusive of armament. The "Oregon" is similar in all respects to her sister vessels, and is of great fighting power, with adequate protection in strength of armor. Her length on the water line is 348 feet, extreme breadth 69¼ feet, and draft 24 feet, the latter feature being designed to enable her the better to navigate the shallow waters of the American coast. Her displacement will be 10,200 tons, her maximum speed 16.2 knots, and sustained sea speed 15 knots. The vessel has a powerful ram bow.

The armor of the ship lies in a water line belt, which rises 3 feet above the water and extends to a depth of 4½ feet below the water. This armor belt consists of 18 inches of the most improved type of modern armor. Rising from this water line belt at each end are armored redoubts of 17 inches in thickness. These redoubts extend above the main deck 3½ feet, and give an armored freeboard of 15 feet 2 inches. These redoubts protect the turning gear of the turrets and all the operations of loading. The turrets are designed to be inclined. They are 17 inches thick and are powerfully strengthened. The horizontal thickness of the inclined turrets is 20 inches. The side armor belt of the "Oregon" is backed by 6 inches of wood, two ¾-inch plates and a 10-foot belt of coal. Above the water line armor belt the "Oregon" has 5 inches of armor protection.

The battery of the "Oregon" will consist of four 13-inch breech loading rifles; 20 6-pounder rapid fire guns; 6 1-pounder rapid fire guns; two Gatlings, and six torpedo tubes; constituting a weight of armament equal to that of any modern battle ship of the foreign powers. The engines of the ship are of the twin screw, vertical, triple expansion, inverted cylinder type, placed in water tight compartments and separated by bulkheads. The diameters of the cylinders are: High pressure, 34½ inches; intermediate, 48 inches, and low pressure 75 inches, with a 42-inch stroke. There are four double ended and two single ended auxiliary steel boilers of the horizontal return fire tube type. The main boilers will be about 15 feet outside diameter and 18 feet long. The auxiliary single ended boilers will be about 10 feet 2 inches in diameter and 8½ feet long.

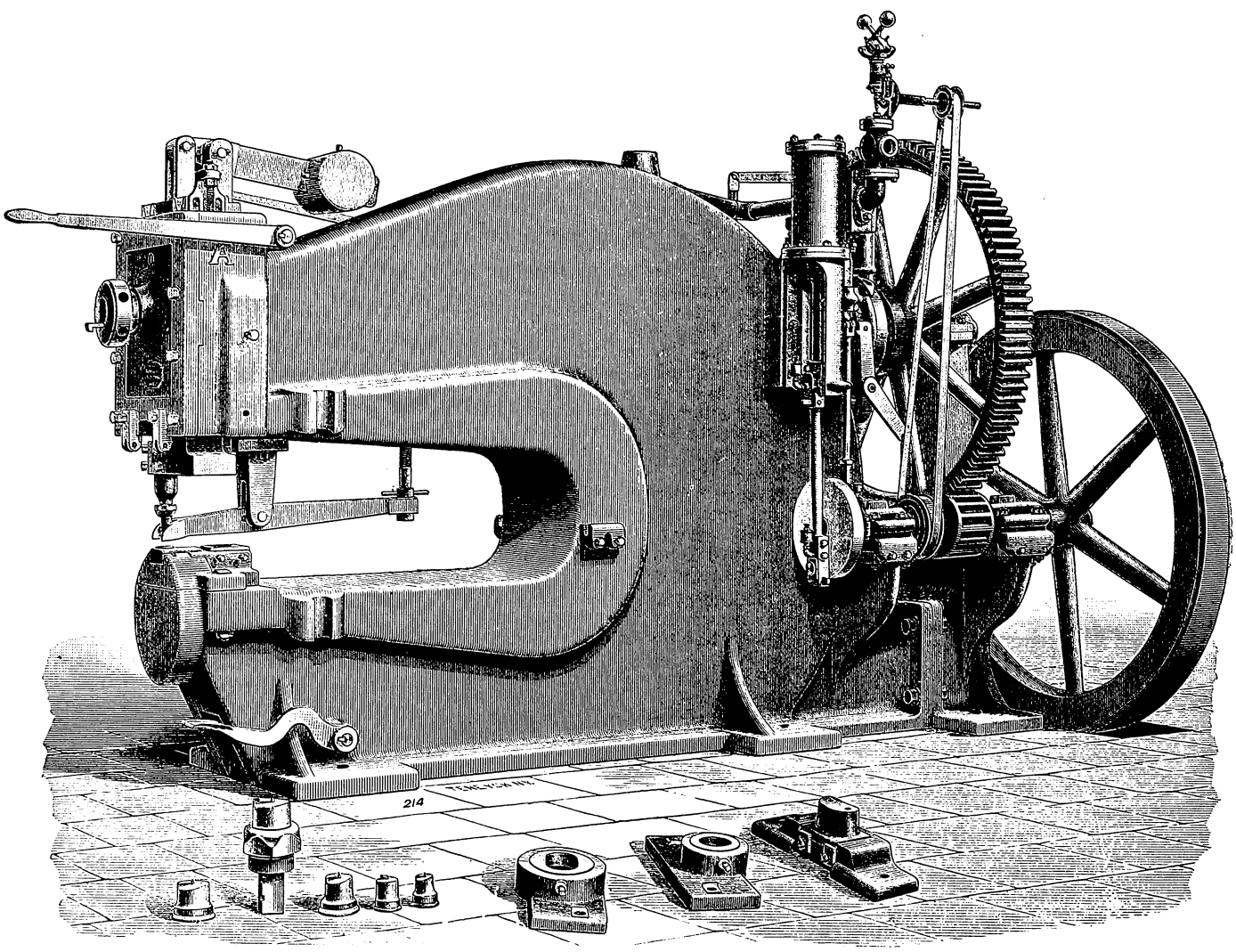
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Single Boiler Punching Machine.

The accompanying engraving represents a machine intended for general punching on boiler work, but which is particularly arranged for punching close in the corner of flanges, the punching tools moving out to the extremity of the lower jaw when such work is being done. The machine illustrated has capacity to punch a 2-inch hole through 1⅛ inch metal, or a 4½-inch hand hole through ¾ inch metal, and is shown with throat 50 inches deep, which will punch to the center of 100-inch plates. The throat is made various depths, from 12 to 60 inches.

The tools shown attached to the machine are for punching rivet holes; these tools are easily and quickly removed and others attached for punching hand holes, flue holes, &c.; shears, either cross cut or splitting, can also be used. Flue and hand hole tools are shown lying on the floor.

The machine is driven by a heavy steel cam shaft, and a hand wheel is provided in front for setting the tools. An automatic stop is provided which brings the slide to rest at completion of the stroke. The attached steam engine, with governor, makes the machine self contained and independent of belting and shafting. When desired, tight and loose pulleys are furnished for driving by belt. The makers are the Long & Allstatter Company of Hamilton, Ohio.



SINGLE BOILER PUNCHING MACHINE.

The Riedler Compressor.

L. de Thurrimont has reported in the *Génie Civil* the results of the coal consumption trials of the Riedler air compressors at Paris. The plant consists of four triple expansion Corliss engines of 2000 horse power each, with 20 Babcock & Wilcox boilers, furnished with Green's economizers, the whole made by Schneider & Co. of Creusot. The specification prescribed as a maximum for coal consumption on trial, 1.54 pounds per indicated horse-power per hour, the fuel being Anzin briquettes. The trial was to last eight hours, the speed to be 60 revolutions per minute, the steam pressure on the high pressure pistons about 150 pounds per square inch, and the compressed air pressure 114 pounds per square inch. A deduction was to be made from the total consumption for condensation in the steam pipes. The eight hours' trial was divided into 16 periods, and diagrams taken simultaneously from the three cylinders in the middle of each period. The condensation in the steam pipes was ascertained by special experiments subsequently. The results of the trials showed, for a total indicated horse-power of 1996, a consumption of 1.29 pounds per indicated horse-power per hour.

Other experiments, made in December, 1891, on the efficiency of the machinery, to determine the ratio between the indicated work done by the air pistons and the indicated work in the steam cylinders, showed a ratio of 0.8997. The engines had then only been in use a few days.

A device recently introduced by an Ohio trolley road is calculated to prevent collisions between electric cars and railroad trains. The appliance consists in a safety switch for railroad crossings, which is so constructed that an electric car cannot pass a railroad track until the conductor or motorman has first crossed the track and set the switch. The idea is to compel the conductor to precede the car to the track, and so make a collision almost an impossibility.

Crowds of unemployed workmen are said to be flocking to San Francisco on the chance of getting work on the midwinter fair. The city has already more unemployed of her own than she can care for.

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The Sague Galvanizing Machine.

Samuel A. Sague, vice-president of the Britton Iron & Steel Company of Cleveland, has invented a galvanizing machine which is in operation at the mill in question. The machine galvanizes 3000 sheets per turn of ten hours at a labor cost of $6.30 per day, the force being two men and a boy. In the ordinary dipping pot process the daily product is 800 to 1000 sheets at a labor cost of $10.25 for a crew of seven men and one boy. There is also some saving in acid and a lessened consumption of spelter.

The object of Mr. Sague's invention is to substitute continuous galvanizing for the ordinary process, which is described as follows:

The sheets or plates, as received from the rolling mills, in all cases, are first immersed in what is called a "pickling bath" which is composed of sulphuric acid heated in any suitable manner, the object of thus pickling the sheets or plates being to clean the same—that is, to remove scales and dirt that may be adhering to the surface of the sheets or plates. The action of the sulphuric acid, however, produces a spongy and irregular surface, the original smooth surface of the sheets or plates being destroyed. After pickling, the sheets or plates are washed in a tank of water; thence taken and laid upon a table and scraped by hand. Workmen, by means of hand scrapers, remove dirt and scales that still adhere to the sheets or plates. The work last referred to is not only necessarily slow and laborious, but it is almost impossible to thus satisfactorily remove all impurities and foreign substances from the surface of the sheets.

Next the surfaces of the sheets or plates are prepared for the zinc or spelter coating by immersing the sheets or plates in a tank supplied with muriatic acid, resulting in the formation of a flux upon the surfaces of the sheets or plates to enable the zinc or spelter to adhere thereto more closely and serving also to still further and more thoroughly clean the sheets or plates.

The sheets or plates undergoing treatment must be thoroughly cleaned preparatory to their immersion in the zinc or spelter bath. From the muriatic acid bath the sheets or plates are loaded on an iron car and conveyed to a kiln, where the sheets or plates are thoroughly dried. When dried the sheets or plates are ready for the zinc or spelter bath. This loading and unloading of the sheets or plates and their transportation to and from the kiln also requires much labor and time. The sheets or plates are next, with a longitudinal edge lowermost and in batches, immersed or dipped in the zinc or spelter bath. A tank or pot, as it is technically called, is filled with melted spelter or zinc, which is kept liquid by coke fires constantly burning around the tank or pot, the zinc or spelter bath being protected in any suitable manner to prevent oxidation of the molten metal, and sal ammoniac or a suitable flux being employed to give the coated sheet or plate a brighter appearance. Workmen handle the sheets or plates by means of tongs.

The treatment of the sheets or plates by the means just described is not only objectionable in that it is exceedingly slow and laborious, but the sheets or plates are not coated with uniformity. Some sheets or plates remain in the bath longer than others, and consequently the coating of the different sheets or plates of a bath varies in thickness. Then again, in withdrawing the sheets or plates from the bath it is impossible, by the means just described, to withdraw them at a uniform speed, and the sheets or plates are very liable to be jerked. This irregularity in the withdrawal of the sheets or plates from the bath causes the spelter to adhere to the sheets or plates unevenly and in patches, resulting in a waste of zinc or spelter, which is the more costly metal. Since the sheets or plates are placed in the tank lengthwise on edge, in withdrawing the same from the bath the molten metal coating of the sheets or plates necessarily gravitates to the lowermost longitudinal edges of the sheets or plates, resulting in an objectionable increase in thickness in the coating along these edges. After being coated with zinc or spelter the sheets or plates are wiped by hand, usually by means of canvas. The sheets or plates are lastly run singly through calendering rolls, for the purpose of straightening and smoothing them and putting them in good condition for shipment.

The continuous process which Mr. Sague uses in his machine pursues a more rational course. The accompanying engraving shows the apparatus designed. Mr. Sague pickles the sheet of iron or steel as heretofore and places it upon a table, A, at one end of the apparatus. From table A the sheet is fed to cold rolls, B, located in the required proximity to the delivering end of the table A and being of any suitable construction. Table A declines somewhat toward rolls B to facilitate the feeding of the sheet, water being discharged upon the rolls by means of the perforated pipe W to keep them clean. The effect of powerful cold rolling under water, after pickling the sheet or plate, is pronounced of vast importance by Mr. Sague, not only entirely removing the irregularities in the surfaces of the sheet, which irregularities are the result of the action of the pickling acid, but rendering the surfaces of the sheet or piate beautifully smooth and crushing and washing away all impurities and foreign substances. Rolls B deliver the sheet to the muriatic acid coating vat C. At the receiving end and ex-

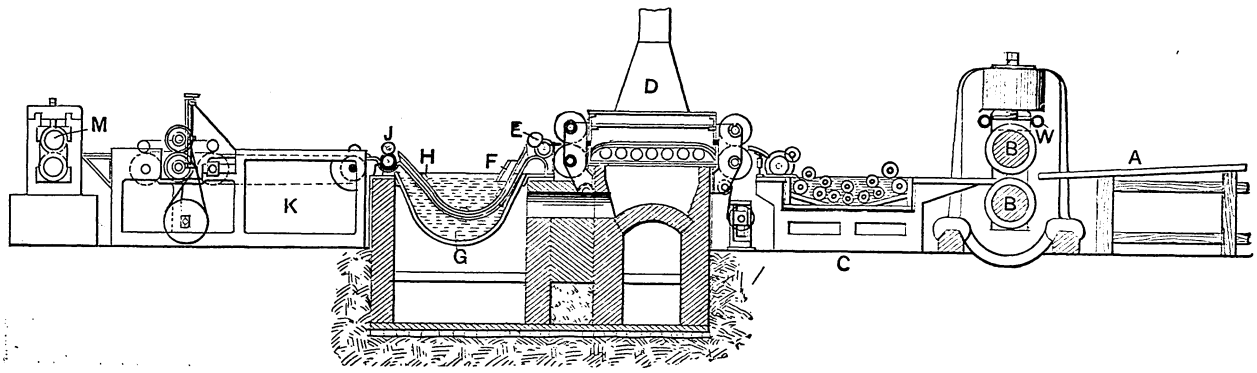


Fig. 1.—Elevation.

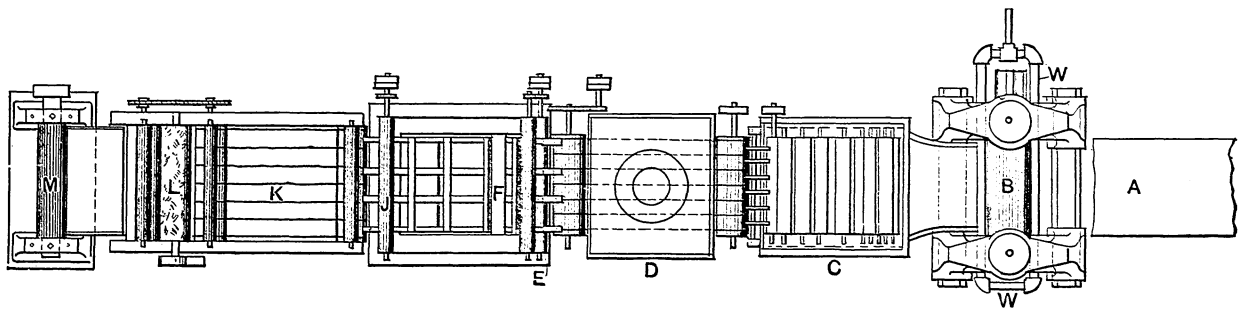


Fig. 2.—Plan.

THE SAGUE SHEET GALVANIZING MACHINE.

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tending transversely of vat C are located a pair of suitable rolls adapted to receive the sheet from the rolls B, and the sides of the vat afford bearing for the trunnions of a series of guide rolls. At the delivering end of vat C are located suitable wringer or wiper rolls. The sheet is thus fed endwise through the muriatic acid bath between the upper and lower guide rolls to wringer or wiper rolls, whence the sheet or plate is fed between rolls to and through the drying chamber of a furnace, D. A pair of rolls is provided at the delivering end of the drying chamber of the furnace, from which the sheet passes to guide rolls E and is thence conducted through a suitable flux in box F into and through the zinc or spelter in the so-called "galvanizing" pot G. The sheet or plate is guided in its passage through the spelter bath by a pair of curved and parallel open frames, H.

Rolls, J, carry the sheet on to endless chains, K, that lead it to the brushing machine L, where the sheet is brushed clean. It is then fed to calendering rolls, M, that are adapted to smooth and finish the sheet or plate, and deliver it in proper condition for shipment.

The products of combustion from the furnace which is used to melt the zinc are conducted under the drying chamber, in order to utilize the waste heat.

WORLD'S FAIR NOTES.

Maris & Beckley

of Philadelphia exhibit at Column O 30 a hand traveling crane and Teal's portable hoists. The crane is mounted on a light frame of angle iron, which serves very well to show its special features. The hoists are shown in a variety of sizes, adapted to a wide range of work. The firm are manufacturers of power as well as hand traveling cranes.

The Andrews & Johnson Company

of 241 to 247 South Jefferson street, Chicago, have an interesting exhibit of ventilating apparatus at Column M 31. They manufacture not only fans and blowers, but also the Johnson high speed engine, adapted especially for direct connection to these devices, although it can be used for other purposes. It is a double piston engine, the pistons being placed opposite each other on the crank shaft. The pistons and valve gear are inclosed so that the bearings run in oil and water. It has a somewhat singular appearance, with its horizontal projections on each side of the crank shaft, but it runs noiselessly, maintains a very high speed, is economical in the use of steam and is said to be capable of long service, provision being made for taking up wear. The exhaust is used to furnish warm water for the center bearings. A large number of disk fans are constantly in operation in this exhibit, showing many ways of applying them, as for instance in the ceiling, in the wall, in the side of a shaft and on the floor.

Hawley Down Draft Furnace Company

of Security Building, Chicago, at Column H 25, make a joint exhibit with John Mohr & Son, boiler manufacturers, whose works are at 32 to 42 Illinois street, Chicago, and Ninety-sixth street and Calumet river, South Chicago. A well finished flue boiler is shown, with brick work complete, except for a small portion of one side of the fire box, which permits an inspection of the method of fitting the Hawley smokeless furnace to the boiler. This furnace has an upper and lower fire chamber. The upper fire chamber, into which coal is shoveled, has grate bars of pipes inclined upward to the rear. These pipes are connected with the boiler to secure a circulation of water, which they assist in heating. The lower fire chamber is fitted with ordinary grate bars, and is connected under the boiler with the chimney. Partly consumed coal drops from the upper fire chamber to the lower, which soon becomes so hot that it burns all gases drawn downward from the fresh coal above, and thus prevents the formation of smoke by securing more perfect combustion than if the coal was burned by direct draft.

The H. C. Frick Coke Company

of Pittsburgh, Pa., make one of the most attractive and instructive exhibits in the east gallery of the Mines and Mining Building to be found at the exposition. It is, perhaps, as perfect a representation as can be made of the business of manufacturing coke aside from the actual work itself. In the foreground of the exhibit is a complete model of the coke ovens, hoisting works, engine house, &c., of the company's Standard mine. It is built on a large scale, and shows the network of railroad tracks running through the yards, with miniature cars standing on them, while the long double row of ovens looks remarkably true to life, with a gas jet at the top of each as though the ovens were being fired. A row of workmen's houses stands in the vicinity of the ovens. Fine coke has been strewn over the ground, giving it the natural appearance of coke yards. This model is built on a platform the sides of which are furnished with glass doors inclosing samples of large pieces of coke. In the rear of this splendid piece of work is a model of the Leisenring No. 2 shaft, with its double hoist in operation. It includes all the buildings, engine house, &c., which were built by the Keystone Bridge Company of Pittsburgh. The model is one-sixteenth of the actual size of the plant, and was made by the Jones Bros. Electric Company of Cincinnati. It is a piece of exquisite work. To the right of this model stands a huge pyramid of coke, 18 feet square at the base and extending to the roof of the gallery. It is built of large pieces of coke, and has on one side a tablet giving the daily capacity of Frick coke at 21,000 tons. Next comes a 34 bushel mine car built by Kenney & Co. of Scottdale, Pa., which is filled with "run of mine" Connellsville coal, and stands on a short piece of mine track. Beyond this is a long table on which is a train of five cars, perfect models of standard coke cars for the transportation of coke. They are filled with coke, and so faithfully are details carried out that each has on it a shipping tag. They stand on a complete track. Numerous photographic views of mine buildings are shown in frames revolving on a pedestal having a base of coke inclosed in glass. A large relief map is shown of the entire Connellsville region, giving the location of every mine and faithfully reproducing all the natural features. It is on a scale of 1200 feet to the inch, a horizontal scale of $\frac{1}{14400}$ of nature and a vertical scale of $\frac{1}{4800}$ of nature. It was modeled by Edward B. Harden of Philadelphia from the surveys of the H. C. Frick Coke Company, J. H. Paddock being chief engineer and Kenneth Allen engineer in charge. On the walls hang a large topographical map of the region on a scale of 1600 feet, a plan of the underground workings of the Leiseuring mine, &c. The company distribute as a souvenir a beautifully printed pamphlet, with photogravure illustrations, entitled, "Connellsville Coke." It gives a history of the development of the coke industry of the Connellsville region and shows the magnitude of the interests now involved.

The Rand Drill Company,

23 Park Place, New York, and 1327 Monadnock Building, Chicago, have two exhibits of a high order. One of these is located in Machinery Hall, in the engine section, and the other in the Mines Building, on the east side near the southeast entrance. The exhibit in Machinery Hall consists of a large compressor of a new and greatly improved type, having a number of interesting features. It is of the duplex pattern, and has a capacity of 2500 cubic feet of air per minute. It is provided with a compound condensing Corliss engine having an automatic pressure regulator to the cut off, and has compound air cylinders with an intermediate cooler between the cylinders, through which the air passes to become cooled by water preparatory to the second compression in the high pressure cylinders. The air cylinders are fitted with mechanical valves, which obviate the fluttering and chattering of the valves upon their seats and thereby give a full and unobstructed passage for the air both into and out of the air cylinder. The steam cylinders are 22 and 40 by 48 inches, while the air cylinders are 22 and 34 by 48. The engine is about 350 horsepower, and the machine is constantly at work under steam, supplying air to a system of piping through the fair grounds for use in operating air brakes, moving locomotives and hoisting elevators, thus supplying power in numerous locations where steam is not allowed or not available. It has done most excellent service during the entire term of the Fair, having proved itself to be thoroughly reliable, efficient and economical.

The exhibit in the Mines Building is of a more varied character, comprising air compressors, rock drills and other mining appliances. The air compressors shown here are of several classes. One is a 14 x 22-inch duplex, Class B. This is a standard machine, and is fitted with mechanical valves also. It represents a type of air compressors made by this company which will be found in world wide use. It is in regular operation, furnishing air to run the drills exhibited. Other compressors are the straight line 16 x 24, 12 x 16 and 8 x 12 Class C machines, a duplex 12 x 16 belt compressor and a 7 x 9 belt machine for pneumatic tube work in class D and a powerful three-stage vertical high pressure machine capable of compressing air or gases to 4000 pounds to the square inch. The drills comprise the Slugger, Little Giant, Kid and Acrobat rock drills and a blast furnace tapping drill. The Kid is a small drill for lightest work. The blast furnace tapping drill is one of the company's latest machines, and saves the labor of a large force of men in tapping a furnace. Among the notable mining appliances are Derby hollow drill bits, through which exhaust air is forced down to the face of the cutter, and the powdered stone is thus blown out of the hole as fast as it is cut,

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which increases the cutting capacity of the bit by keeping a clean rock surface under the cutting tool. Various styles of tripods are shown, also drifting or tunnel columns, shaft and stoping bars, quarry bars, &c. A model is shown in a glass case of the first rock drill invented, in which the steel bit was made the extension of the piston rod. It was invented by J. W. Towle of Boston, in 1851, and covers the chief points in use to-day. There are few exhibits more attractive to miners than the fine display made by this company, whose compressors and drills are known all over the world wherever mining operations are conducted on a scale involving the use of machinery. The company's achievements have been recognized by the bestowal of ten awards, covering the large compressor in Machinery Hall, and the compressors, drills, furnace tapping drill, shaft bar, columns and Derby bit, as well as a separate award on the collective exhibit of compressors and drills in the Mines Building. The Chicago office of this company is under the direct charge of J. F. Lewis, than whom very few men are better known to or more highly esteemed by the mining fraternity.

Lidgerwood Mfg. Company

of New York and Chicago make an exhibit of hoisting machinery at Column F 28, Machinery Hall. Six different styles of engines are shown and two styles of mining hoists. One of the latter is a 50 horse-power friction drum reversible engine and the other is a 20 horse-power reversible engine. Among the engines is a 30 horse-power six spool erecting engine for use in bridge and large building erections. There is also a double friction drum 20 horse power contractors' hoist, with boiler complete. The others comprise a 12 horse power single friction down hoisting engine, and a 30 horse-power Locke-Miller cable way engine used in operating the Locke-Miller cable way, for open pit mining, canal excavation, dam building, &c. In the Electricity Building the company also show a 110 horse power mining hoist, run by a Thomson-Houston motor. The smallness of the space allotted prevented the company from exhibiting log skidding and stone quarry engines, rapid unloaders, &c. They manufacture in all 300 sizes and styles, but those exhibited are selected as fairly representative of their machines.

Fraser & Chalmers

of Chicago and London have a large exhibit of mining machinery in the Mines Building, in the southeast corner. One of the most interesting features of this exhibit is a huge Chilian mill, which consists of a pair of large rolls about 7½ feet in diameter and weighing 8½ tons each, moving at a speed of 14 revolutions per minute. These rolls revolve in a huge pan, not only turning on their own axis, but revolving in opposite directions. They grind 18 tons of rock to 160 mesh, or 24 tons to 80 mesh in 24 hours. Other appliances shown are a complete water jacketed lead furnace and improved stone breaker, Eckart's fine crushing rolls, Standard, Blake and Dodge crushers, a prospector's hoist, with a mining cage rigged and in full operation, the Bridgman sampling machine, revolving screens, a moving belt with small samples of perforated metal completely covering it, a retort and bullion furnace, grinder for preparing assay samples, a sectional mortar for muleback transportation, double discharge dry and wet crushing mortars, the Huntington roller quartz mill, improved frue vanners, a modern five-stamp quartz mill, making 90 drops per minute, with wearing parts of ferro-alumina, and one of the famous Riedler mining pumps, now used in so many deep mines. All this machinery is in order for operation, so that its action can be shown to those interested. The same firm have a 1000 horse-power Corliss quadruple expansion engine in active service in Machinery Hall.

The P. H. & F. M. Root Company

of Connersville, Ind., make a good display of pumping, blowing, ventilating and exhausting apparatus in the Mines Building. A peculiarity of this exhibit is that the same principle runs throughout their blowers, pumps and exhausting apparatus. Two revolving parts are inclosed in the body of the machine, so constructed that they keep up continuous contact with each other and with the case in which they are inclosed during their entire revolution, thus forcing forward and utilizing all the air or water taken into the case. The firm also make a water motor on the same plan. The principle is simple, but ingenious, and appears to be remarkably effective. A belt pump is shown, constructed in this way, having a capacity of 3850 gallons per minute. It is connected with a tank, from which it draws a supply and into which it discharges. This pump is meeting with special favor for irrigation purposes. One of them, at Grand Junction, Col., runs with an 87-inch turbine, the largest size made, and hoists water 180 feet high. It has a 24-inch nozzle and discharges 4000 gallons per minute. A positive high pressure blower is shown, with engine attached, which is capable of sustaining a pressure of 12 pounds to the square inch. Samples are exhibited of the new Acme portable forge for light, general and heavy smith work.

Fairbanks, Morse & Co.

of Lake and La Salle streets, Chicago, exhibit steam pumps and hoisting machinery in the Mines Building. Six pumps, a pump and receiver and two styles of hoising engines are shown. All are duplex pumps. The largest is a compound 8 x 12 x 12 inches. These pumps are manufactured by the firm in Beloit, Wis. The pumps shown are therefore of the firm's own patterns. They have been made for only a year, but are meeting with great success. They range from water works pumps down to small boiler feeders. Most of those exhibited are shown connected and in working order. The hoists have been made for several years. One shown is double and the other single. These hoists are in wide use in the mines of the West, and the specimens shown are of the general type.

Webster, Camp & Lane Machine Company

of Akron, Ohio, make an excellent exhibit in the Mines Building, which gives a fair idea of the company's products. They show a portable hoist with boiler complete, as well as a steel frame work to support the sheave for the rope. A miners' cage is in position, a hole having been cut in the floor to receive it. A double tail rope haulage engine is shown, having two drums. This is set up as if for regular work, the platform in the center between the cylinders being equipped with the levers, but it is not in operation. There is also a Corliss engine neatly mounted on foundations, so as to show its proportions and finish, but it is not connected for work.

The Ingersoll-Sergeant Drill Company,

Havemeyer Building, New York, and 100 West Washington street, Chicago, have two exhibits. The exhibit in Machinery Hall consists of one of their latest improved compound duplex piston inlet cold air compressors. The principal features of this compressor consist in the manner of receiving the free air into the cylinder through a tube (which acts also as a piston rod), creating a uniform draft of air in one direction only, this uniform movement giving a certain momentum to the air and causing it to fill the cylinder to its fullest extent at each end of the stroke. The air inlet valves are large metallic rings which open and close by the natural momentum caused by the movement of the piston, admitting of a large area of inlet, with but a small throw of the valve. The cooling is effected by means of a new form of water jacket, the construction of the air cylinder admitting of an unusually large cooling surface being presented to the compressed air, near the end of the stroke, when the air is hottest. Another important feature is the new unloading device, maintaining a uniform pressure in the receiver and a uniform speed of the engine by means of connections with a discharge valve on each end of the air cylinder, a weighted valve of the safety valve pattern connected with the receiver, and a balanced throttle valve in the steam pipe. This compressor is driven by a compound Corliss condensing engine of a little over 300 horse-power. The high pressure steam cylinder is 18 x 42 inches and the low pressure cylinder 34 x 42, while the air cylinders are 18¼ x 42. This compressor has been in constant use during the fair, furnishing power to exhibitors in the Transportation Building who could not use steam.

The exhibit of this company in the Mines Building consists of compressors, drills and quarrying and coal cutting machinery. A straight line compressor is operated for the purpose of furnishing power to the other machines. The bar channeler on exhibition, for quarry work, will drill a round hole or cut a smooth open channel and takes out every cubic foot of stone in a marketable shape without blasting. Fourteen hundred feet of channel per month has been cut with this machine, and it is feasible to make cuts to a depth of 10 feet. The Ingersoll steam channeler, the Ingersoll standard gadder and the Ingersoll-Sergeant quarry bar are also shown. The Sergeant drill is in operation and presents many new features; also their standard mining drill, mounted on column for drifting or general tunnel work. The coal mining machine made by this company is peculiarly adapted to mining small veins of coal. Being simple and light it may be used in any place where a miner can swing a pick, and is extensively used by the leading coal miners in this country. The Sergeant air head has proved a great attraction to mining men. By means of a cup leather in this head a piston packing is secured, replacing the glands and packing usually applied to rock drills. Their Crescent battery is a positive and reliable blasting machine and discharges a uniform current of electricity, not depending on the skill of the operator; requires no violence or rapid movement when making the blast; is not liable to break or get out of order, and is very

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simple in construction. The Moran flexible steam joint is also shown. By using a combination of these joints iron pipe may be used to conduct steam or air to drills instead of hose. Awards were made both on the compressor shown in Machinery Hall and on the machines exhibited in the Mines Building. The Chicago agency of this company is with Parker, Melcher & Ingraham, Incorporated, 100 West Washington street.

Gates Iron Works

of Chicago exhibit in operation in the Mines Building one of their great rock breakers of the next to the largest size made. Its capacity is 150 tons per hour, breaking rock from 14 x 30 inches down to 2½ inches. They also show stone screening machinery in operation, for sizing stone for macadam roads. A large sized working model is shown of a macadam crushing plant, automatic throughout, for crushing, elevating, screening and distributing stone in bins. A set of Cornish rolls, a dry ore concentrator and an amalgamator are exhibited. The company manufacture a general line of mining machinery, but were not able to show as much as they desired, on account of the limited space allotted them.

James Leffel & Co.

of Springfield, Ohio, make an interesting exhibit of their turbine wheels in the Mines Building. Large ones are shown, indicating the sizes which are manufactured by the firm, while smaller ones are exhibited, beautifully finished in brass, with all parts complete. In connection with the turbines is shown a specimen of Leffel's small steam engines. It is set on the back of a return flue boiler, to which it is rigidly fastened ready for the usual belt connections. Thus the only floor space required is for the boiler.

R. McCully

of 1518 Spring Garden street, Philadelphia, exhibits the McCully rock and ore crusher in the Mines Building This is a gyratory crusher, which has its shaft and crusher head supported and adjusted from the top of the machine. It also has a marble bottom for detaching the shaft operating mechanism without dismantling the entire machine. A very large output is claimed for this machine with a comparatively small expenditure of power.

The Connersville Blower Company

of Connersville, Ind., exhibit in the Mines Building one of their cycloidal blowers, the invention of their engineer, John T. Wilkin. This blower is driven by a direct engine, and develops a positive pressure of very great force for the size of the machine shown. It is a rotary blower, of which the internal operating parts consist of two impellers shaped accurately on cycloidal lines. The box in which they are inclosed is internally in the form of an ellipse. The cycloidal impellers perfectly fit in the ends of the ellipse and in the corresponding parts of each other, so that there is no leakage of air but a positive pressure forward of the full supply entering the chamber. Gas exhausters, pumps, motors, &c., are to be built on this principle.

The MacKay Electric Reciprocating Tool Company

of 733 Exchange Building, Boston, exhibit in the Mines Building a full sized specimen of one of their electric drills, while a handsomely finished model of small size is shown at practical work drilling in rock. The company manufacture a full line of reciprocating tools operated by electricity for cutting, drilling, molding and carving all kinds of stone and for riveting and calking boilers and ships.

E. Moreau

exhibits in the Mines Building one of the Sterling-Moreau hand rock drills. These drills are intended to take the place of hammer and drill in ordinary mining. They are mounted on a tripod and operated by a double crank, so that a workman can use both hands or two men can work the machine and secure more power. It is a percussion drill with a pair of hammers, cam shaft and reciprocating springs. One size of machine only is built. It is claimed that with it one man can do as much work as three with hammers and drills in the usual way. The drill is shown in actual operation on hard rock. It will shortly be manufactured in Philadelphia, arrangements now being under way.

Borden & Selleck Company,

48 and 50 Lake street, Chicago, show in the Mines Building the Harrison soft coal conveyor, consisting of triangular vertical heater attached to an endless chain, working in a V-shaped trough. They also exhibit a double strand wrought chain bucket elevator, a single strand wrought chain bucket elevator, a Harrison conveyor and shaking screen, and a coal and slack scraper for yards and mines. The company are large manufacturers of conveyors for all classes of materials.

Nelsonville Foundry & Machine Company

of Nelsonville, Ohio, exhibit in operation a double tail rope haulage engine. The cylinders are 11 x 16 inches, are geared six to one and drive 5-foot drums holding 2½ miles of rope. The engine has a steam friction clutch and is reversible. The drums are independent, and one can be reversed without regard to the other. It is a very compact engine, and takes up remarkably little floor space. The cylinders are so placed as to bring the drums inside the front and back lines of the engine.

James H. Lancaster

of New York exhibits in the Mines Building a rock and ore crusher, breaking rocks from 13 x 8 to 2 inches, with a capacity of 7 tons per hour. This crusher has corrugated jaws. The motion is applied to the rocking jaw by a double cam, which works with hardly any friction and gives the precise movement needed.

S. J. Meeker

of Newark, N. J., makes a very interesting exhibit in the Mines Building of malleable and gray iron castings, from car couplers down to small parts of harness. The large samples are shown on the floor, while the smaller ones are fastened to show boards placed on the wall.

Cookson Mfg. Company

of Kansas City, Mo., exhibit in operation in the Mines Building, pumping very muddy water, the Cookson duplex steam pump. Its size is 14 x 10 x 10 inches, and it delivers a solid 6-inch stream of water. This pump has the Lewis rotary valve in both steam and water cylinders, rigidly connected on the same stem. There are no poppet or check valves, the movement of the valve being independent of the water pressure. The ports open gradually to the full capacity of the water cylinder and close in the same way. The pump is not only adapted to raising pure liquids, but is specially adapted to pumping sewage, muddy water, water soaked grain or other very heavy duty.

Sullivan Machinery Company

of Claremont, N. H., exhibit in the Mines Building a great variety of coal and stone cutting machinery. They also show a number of diamond core drills, capable of doing very heavy work. This exhibit is very comprehensive, taking in not only large steam drills but small hand drills for prospectors' use, capable of boring 300 feet.

The New Jersey Steel & Iron Company

of Trenton, N. J., exhibit in the northwest section of the annex to Transportation Building a revolving model of the center panel of the 356 foot 6-inch double track span of the Chicago, Burlington & Quincy Railroad bridge across the Mississippi River at Burlington, Iowa. The model is some 6 feet square and 8 feet high, constructed of small beams, channels, angles and tie rods, riveted and connected precisely like the bridge itself. It is mounted on a revolving table of the kind used for swinging bridges. A circular railing incloses this specimen of a bridge, and on it are hung samples of trace and other chains made by the company. On a display board at the side are tacked specimens of chains of numerous sizes and kinds, as well as sections of the beams and channels made by the company. On another part of the space is shown a model to one-fifth size of the superstructure of the Brooklyn Elevated Railroad. A full-sized section is shown of the top chords of four 440-foot double track spans of the St. L., K. & N. W. bridge now being erected over the Missouri River at Belle fontaine Bluff, Mo. Immediately adjoining this exhibit is that of

The Trenton Iron Company

of Trenton, N. J., whose display is largely of wire rope, even the ornamental railing in front being formed of such rope, arranged in decorative patterns. Two pyramids formed of coils of wire rope, properly braced, are used as posts to support a rope tramway, on which is shown a patent cable hoist carriage having a carrying capacity of 1 ton. There is also shown a 20-ton block for a cable hoist, of the kind used at Glen Union, Pa., where an extensive rope tramway system is in regular use. Nearby is a new patent dump car composed wholly of iron and steel, known as the Weber dumping car. It has a capacity of 2800 pounds, hangs on pivots, and is emptied by a crank at the end, which works in cogs, carrying the car just off the center, when it dumps out the entire load sideways. Some of the cars and part of the track system of the Bleichert overhead tramway are also exhibited here. A number of nicely arranged showboards give specimens of hoisting rope, Tiller, Lang, Lay and standard galvanized and transmission rope, patent locked wire rope in smooth coil, interlocking and locked wire hoisting rope, patent tramway couplings and lugs, patent tramway parts, such as anchorages, bolt sockets, &c., specimens of reduction in rolling from a 4-inch billet to No. 4½ rod and 1 inch flat, reduction in drawing wire by the different stages from ⅝ inch to No. 44, wire specialties in tempered cast

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steel, such as spiral coil and flat springs, coils of coppered iron wire, tinned iron wire, galvanized spiral ribbon, and tele graph wire. Tests are shown of the comparative strength of iron and steel wires, by weights suspended from a beam by a specimen of each kind of wire. A reel of patent locked wire rope is shown, 3400 feet long and 1¼ inches in diameter, which has been in continuous service day and night for 24 months hoisting loads of 6½ tons at a speed of 3000 feet per minute at the Central Copper Mine. It is in such condition that it will be put in service again immediately after the close of the exposition. Showcases contain samples of fine wires, such as are used for all kinds of musical instruments, book stitching, broom, bottling, tempered cast steel card wire and weaving wire. A coil of bright iron wire, No. 50, is shown weighing 11½ pounds, which measures over 3 miles in length. Two whip-like pieces are shown which are specimens of reduction in drawing wire from ⅝ rod to No. 36 wire, the intermediate reduction being shown in lengths of about 1 inch. An Acme patent tramway car is also shown, which is intended for use on overhead tramways, but also has wheels at the bottom to facilitate handling on the ground. It is made of iron and steel, holds half a ton and the bottom drops automatically.

The Trenton Iron Company have another exhibit which attracts a very great deal of attention in the shape of a completely equipped wire rope tramway operated on quite a large scale. It is located in the open air, running from the southwestern corner of the Mines Building to the Sixty-fourth street entrance to the grounds. It is used for transferring diamondiferous earth from the store yard on the grounds to the Mines Building, in which it passes to the crushers in the South African diamond exhibit. This tramway is built on the Bleichert system. As operated here it works backward, bringing material in toward the operating station instead of taking it out as usual, but works just as well under such conditions. This tramway has a total length of about 1000 feet and the ropes are supported on iron posts of lattice work. The posts are 15 to 20 feet high except at one place in passing over the intramural elevated railway, where they are about 40 feet high. Motive power is supplied to this plant by electricity. During the whole period of the fair there has been a constant stream of buckets passing back and forth over this tramway, automatically weighing and unloading themselves. The practical value of the system has thus been demonstrated in a much more effective way than by any other possible method. Inside of the Mines Building, under the floor, is shown a system of underground haulage by the same company. A passageway has been constructed which runs from one side of the building to the other. It resembles in every respect a passageway in a mine. The company's special styles of mine cars are shown, drawn by a steam tail rope Lidgerwood engine. At one place, under Fraser & Chalmers' exhibit, a mining cage comes down through the floor of the building to this railway. The company deserve and have received a great deal of credit for their enterprise in making such a complete exhibit of their products and devices.

F. C. Austin Mfg. Company

of Carpenter street and Carroll avenue, Chicago, exhibit a number of road making machines and other road and street devices in the northwest corner of the annex to the Transportation Building. The New Era grader and ditcher is the principal feature of the exhibit. It is intended to be drawn by a traction engine, but when that is not available 12 horses will be used. It can handle from 800 to 1000 cubic yards per day, which brings the cost of grading very low. One of them is now being used on the Chicago drainage canal, handling loose rock, with good results. It is, however, best adapted to making concrete roads. One will build 30 miles per day of good roads. It delivers the earth from 14 to 22 feet from the plow and at an extreme hight of 8 feet. The Austin rock crusher, for macadam and stone roads, is a portable crusher that can be put in position at any desired location and run by a portable engine or other source of power. Next comes the Austin reversible road machine, for building and repairing roads. Its steel scraper is mounted between the front and back wheels of the frame and is reversible. The Austin street sweeper shown is of very solid construction; it has a huge brush attached diagonally under the rear wheels, which revolves by gearing connected with the wheels and is thrown out or in by an easily operated double clutch, also being susceptible of elevation in passing over a large obstruction. A hand garbage cart for use in connection with street cleaning is shown. It is a metal can, pivoted in a frame supported on two wheels. The Austin reversible road roller is a huge machine weighing 5 tons, having a large circumference and ball bearings, so that it is drawn easily on a level by two horses. A dump wagon is also shown, which is a most convenient article for contractors' use. It has a steel lined body, and the interior is composed of a steel pan which holds the load. The pan is pivoted nearly in the center and is swung easily by the driver at the touch of a lever by his side. It is strongly built and is capable of very heavy work. A model is displayed of the Austin tubular truss bridge for highways. This is a new field into which the company have but recently gone. The bridge is remarkably strong and light, the main parts being composed of wrought iron pipe held together by the usual tie rods and turn buckles. It appears to be particularly adapted for the construction of moderately long spans for ordinary highways.

The Link-Belt Companies,

as they are called, are the Link-Belt Machinery Company of Chicago and the Link-Belt Engineering Company of New York and Philadelphia. They have a joint exhibit in the northeast section of the annex to Transportation Building. Here they have erected a great frame work in which they show in operation six styles of freight and coal handling machinery, conveyors, elevators, &c., all based on applications in some form of the link belt. These six styles shown are as follows: Horizontal box conveyor, horizontal and inclined coal conveyor, continuous bucket elevator, light package elevator, continuous freight elevator with an automatic discharge, and an automatic discharge barrel and sack elevator. They also show a system of manila rope power transmission, operating the entire exhibit. The power is taken from a 25-horse power motor, transmitted to a jack shaft and thence driven by a single manila rope.

San Francisco News.

The hardware and iron trades of this city State and Coast is gradually, slowly, but surely, undergoing radical changes. There have been whisperings of changes during the whole of the past year. This, that and the other house was going out of business. At one time it was rumored that three were going to drop out, and the air was thick with rumors as to the causes. It was said that they could not stand the competition of the East, which could undersell them even in their own markets, and that thus they had to go. The houses have not gone, but some of their proprietors have, some of the most notable men in the hardware trade having passed away forever from the busy scenes of trade and traffic during the past year. Both heads of the house of Baker & Hamilton have left the business, one of the finest in the country, to their successors, and now the heads of the old hose of Huntington, Hopkins & Co. are retiring. Albert Gallatin, the head of the house, and his partners retire with comfortable fortunes and leave the business to five of the leading employees, who will start out in business anew and on new lines. The statement in the local papers that the house was going out of business was entirely devoid of truth. The house was founded away back in 1849–50, in the City of Sacramento, by the gentlemen whose names it bears. The old head of the house, Mr. Huntington, is the only one that survives. It has a historic fame, as the partners were among the founders of the Transcontinental Railroad. But long ago they parted with their interests in the business, which meanwhile had been extended to San Francisco, and for many long years Mr. Gallatin was the head of it. During the year the Sacramento house was discontinued, or, rather, sold out to new men, and now the same thing has happened in regard to the San Francisco house. The railroad people had long ago ceased to have more than a nominal connection with it.

The importation by sea threatens to make an entire change in the currents of trade, as there has been a decided falling off in the importations by rail, and a still more decided increase in the importations by sea. This means that the greater part of the Coast will be supplied from this city as soon as there is any business of moment. The dull state of the general markets has had, of course, considerable to do with the falling off in rail receipts, but it is evident that the railroad will never again be the factor in the hardware and iron and steel trades that it has been in the past. When Oregon, Washington and Southern California have recovered from the effects of the recent financial troubles our San Francisco house will have a very good trade with them—a something which has not happened since the overland road was first opened.

There has been an improvement in the volume of trade during the past two weeks, though the improvement has not been great. The trade are disappointed at the ruling prices, the result of excessive competition, which really in many cases leave no margin of profit whatever. This may be expected to settle itself next year—not, however, before the end of the present season, as the stocks are large and were laid in some time ago. There is, therefore, little room for variation in prices, and in fact there has been none of any importance for some time past.

We have had very few arrivals of

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nails during the fortnight, but there were 1215 kegs by sea. There are not much signs as yet of the rebuilding of the Oakland factory, and for months the trade will have to depend on hold over stocks and Eastern supplies.

We are obtaining considerable quantities of Eastern pig iron, the "Shenandoah" and the "Francis" arriving with 450 tons. The market is duller than anything ever on record in this city, the quotation being $18 to $19 per ton. There may be said to be no demand for English or Scotch at $22 to $23.

There have been no more importations of tin plate for the past two weeks and there does not need to be any for we have enough on hand at present for a five months' supply at the rate of consumption for 1893. There has been a slight appreciation in the market. Coke tin is quotable at $5.50, though the jobbing rate is $5.75. Pig tin is very dull at 22 cents.

Labor Troubles at Apollo, Pa.

During last week the Amalgamated Association of Iron & Steel Workers made two direct appeals to the public for sympathy in their disagreements with employers. The first appeal was made on behalf of puddlers, bar rollers and others at Pittsburgh, and the second was made in the interests of locked out sheet mill operatives at Apollo, Pa. In both cases the public were asked to lend their influence for the support of a body of organized workmen who have had steady employment for 12 years past and whose daily earnings up to July 1 this year averaged $3.75 per day, the minimum individual earnings being about $1.60 and the maximum $20 per day. Speeches were made at Apollo last Saturday which were worthy of some great national cause. Attempts were made to introduce patriotism into the questions under consideration, and the right of the Apollo Iron & Steel Company to protect their investment according to their best judgment was entirely ignored. They were told in effect that their desire to operate their works with workmen who were not members of any labor organization, but free and independent individuals selling their labor at a price and upon terms mutually agreed upon, was a direct request that their employees should waive their rights of citizenship.

The facts in the case are that some of the workmen of the Apollo Iron & Steel Company absolutely refused to abide by the provisions of the scale adopted in Pittsburgh in June last, and the Amalgamated Association not taking any action in the matter, the firm was finally compelled to start its plant nonunion. At this time eight mills are in operation, and as fast as the wants of their customers demand other portions of the plant will be started up. The firm have experienced but little difficulty in securing competent employees when needed. Realizing the success which was attending the company's efforts, a mass meeting was called and several thousand people listened to speeches made by officers of the Amalgamated Association, preachers and others, who had a direct or indirect interest in the struggle. The speeches were such as are usually heard at meetings of this description. Retail tradesmen were told that their interests were identical with the workmen's, and the conditions of the struggle were likened unto those that have passed into history as fights for personal liberty. So far as the direct question at issue was concerned—that of the company's right to make new agreements with its workmen individually, after it was known that the agreement made with the men collectively was not being strictly adhered to—nothing was said. Resolutions were passed condemning the action of the Apollo Iron & Steel Company, but so far as can be learned at this writing they will not change their course of action.

Photographing Colors.

On Wednesday week, says the *Engineer*, Leon Warnerke of Champion Hill, London, brought under the notice of the Congress of the Photographic Society at the Society of Arts an item not entered in the official programme. It related to the latest advances in real photography in natural colors. For some months past photographic circles in Paris, according to the French journals, have been delighted with the progress which Lumière et Cie. of Lyons have made with Professor Lippmann's process, and Mr. Warnerke was lent by that firm of dry plate makers about half a dozen of their photographs for exhibition in London for but three days, as they are in demand all over Europe among the scientific societies. The photographs themselves are 3 inches or 4 inches square, in a gelatino-bromide film on glass, and faced with a slightly wedge-shaped piece of glass, to throw aside reflexions not required when the pictures are exhibited on the screen by reflected light by means of the lantern. On the screen on Wednesday night the subjects resembled water or oil paintings, the iridescence being then quenched; their pictorial beauty exceeded all expectation. They were magnified to about 18 inches by 12 inches, and differed in nothing from colored works of art, but in the fact that gold, which was represented in one of the pictures, came out with something like metallic brilliancy; and that in another picture of the laboratory of a chemist, a pictured vessel containing a solution of fluorescine appeared almost fluorescent. The pictures were landscapes, portraits, and a photograph of a colored print.

The following are the main features of the process used by Auguste and Louis Lumière for taking the photographs exhibited. They make a fine almost transparent emulsion of bromide of silver, consisting of: A, distilled water, 400 grams; gelatine, 20 grams. B, distilled water, 25 grams; bromide of potassium, 2.3 grams. C, distilled water, 25 grams; nitrate of silver, 3 grams. To C half of A is added, and the other half of A to B. The two gelatinous solutions are then mixed by pouring that containing the silver into that containing the bromide. A color sensitiser, such as cyanine, methyl violet, or erythrosine, is then filtered, and the plates coated with exceedingly thin films by the aid of the whirling table, at a temperature not higher than 40° C. The plates are then soaked for a few seconds only in alcohol and dried. Before use they are immersed for a few minutes in distilled water, 200 grams; silver nitrate, 1 gram; glacial acetic acid, 1 gram, and dried; then at once exposed with the film in contact with a reflecting backing of mercury. Messrs. Lumière used the following developer: A, water, 100 parts; pyrogallol, 1 part. B, water, 100 parts; bromide of potassium, 1 part. C, ammonia, specific gravity, 0.960. From these solutions the developer was thus mixed: A, 10 volumes; B, 15 volumes; C, 5 volumes; water, 70 volumes. The developed plate was washed, fixed for 10 or 15 seconds in a 5 per cent. solution of cyanide of potassium and dried. During exposure a colored screen was used; one of them consisted of a solution of primuline in a glass trough with parallel sides. The amount of ammonia present has great influence on the results.

Messrs. Lumière stated to the Photographic Society of France that the foregoing formulæ differ little from those previously made known by M. Valenta of Vienna, whose formulæ in their turn differed little from some which Messrs. Lumière had published at Lyons still earlier. They claim that they get a finer grain in the emulsion than did M. Valenta, and in photographing interference phenomena approximate absence of grain is a vital point.

The chief difficulty with Professor Lippmann in trying to make his scientific discovery practical—work which he might better earlier have left to others—was the length of exposure. Messrs. Lumière et Cie. began with exposures of 40 minutes' duration, and at last, by experience, became able to reduce them to four minutes, no doubt using a portrait or some other lens which would give them abundance of light.

Treasury Decisions.

White Brass.

Before the U. S. General Appraisers at New York, October 14, 1893. In the matter of the protest, 19,129*b*–133, of Edw. A. Bigham, against the decision of the Collector of Customs at Boston, as to the rate and amount of duties chargeable on certain so-called white brass, imported per "British Empire," January 9, 1893. Opinion by Sharretts, General Appraiser.

The merchandise in question is metal in pigs. This metal is known as white brass, and is composed of 67 per cent. tin, 32 per cent. zinc, and a trace of copper. The appellant claims the merchandise should be classified under paragraph 736. The Collector assessed duty on the same at 45 per cent. ad valorem under paragraph 215. We cannot sustain the claim of the appellant.

We find on the face of the papers that the merchandise is something more than bar, block or pig tin, nor is it known as tin in pigs in trade and commerce. The board is in doubt whether metal of the kind in question in pigs, which is as crude a form as metal is usually imported into the United States, should be classified as metal unwrought under paragraph 202, or as a manufacture of metal under paragraph 215, but inasmuch as we are not called upon to decide this question, we overrule the protest and the Collector's decision stands.

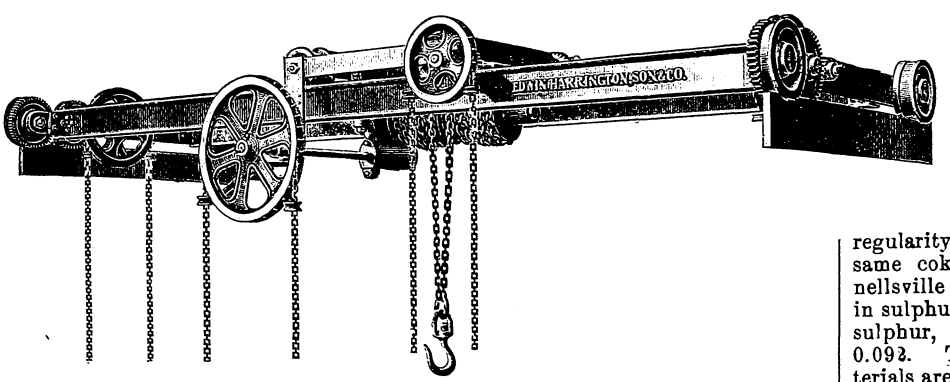
A series of interesting experiments have recently been made at Marseilles, France, on board some tugs, with blocks of solidified petroleum made by a process invented by Lieutenant Maestracey of the French Navy. Weight for weight, it was found that the blocks gave three times the heat of ordinary coal, and it is thought that, with some simple modifications in the furnace, they can be made to yield four times the heat. The blocks, in addition, have no waste matter, and it is probable that measures can be adopted to suppress their smoke. It is certain, says *Le Génie Civil*, that solid or liquid petroleum is a combustible of the future which will be of prime importance in connection with steam vessels.

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The Harrington Special Foundry Crane.

Edwin Harrington, Son & Co. (incorporated) of Philadelphia have designed a crane especially adapted for use in stove foundries and other places where fine work is required. For the lifting of copes or molds the ordinary chain and sprocket wheel hoist is claimed to be unsuitable, as, no matter how carefully it is made, a chain running over a sprocket wheel will, as each link leaves its pocket, jar the load, which generally results in a cracking of the sand and a breaking down of the mold.

This crane was designed with a view to obviate this difficulty. It will be noticed, by reference to the engraving, that the sprocket wheels of the hoist have been replaced by a drum having right and left spiral grooves, in order to insure the hanging of the hook continuously over the same point. A sure and steady movement, without jumping or jarring, is in this way secured, the chain winding and unwinding with the regularity of a rope on a windlass, and allowing a cope to be lifted and lowered without danger of the sand sifting out or the mold breaking down. The internal gears of the hoist are operated by means of a shaft extended far enough beyond the beam of the bridge to preveut the chain from interfering with the load; this also enables the operator to stand at a respectful distance from a pot of metal. The crane is operated by geared wheels throughout, and the shaft, which is placed inside of the beam to save room, moves the crane by pinions and intermediate gears, all of which are furnished with roller bearings, producing easy movement.



THE HARRINGTON SPECIAL FOUNDRY CRANE.

At Detroit last week bids were opened by the Board of Water Commissioners for 3500 tons of pipe ranging in size from 4 to 16 inches, inside diameter. The following bids had been presented: Lake Shore Foundry Company of Cleveland, $19 45 per ton, delivered in Detroit; Addyston Pipe & Steel Company of Cincinnati, $19.80 per ton, delivered; Dennis Long & Co. of Louisville, $20.39 per ton; Howard Harrison Company of Bessemer, Ala., 2000 tons at $19.20 and 1500 tons at $21.20.

The House of Representatives has passed a bill authorizing the President to make an international agreement with the governments interested in North Atlantic navigation, for reporting, marking and destroying dangerous wrecks, derelicts and other menaces to navigation on the seas outside the waters of the respective countries bordering on the Atlantic Ocean.

Progress in Foundry Practice.

Thomas D. West of Sharpsville, Pa, in the paper read before the Western Foundrymen's Association, discusses as follows some of the phases of progress in foundry practice:

With our present methods, one field now presenting itself for the acquisition of knowledge in matters of melting and cast iron is in the chemical action taking place in the remelting of iron. I have been greatly interested in the papers and discussions emanating from this organization upon the questions of chemistry, and think the subject of the utmost importance to many foundries. There are those that can get along without having chemical service, but they are very few who could not obtain practical benefit from a use of the knowledge now obtainable upon the question. I know that in the ingot department of our foundry we could not afford to abandon chemistry. Not only do we know the chemical qualities of every charge of iron that goes into our cupola, but also that of the coke. When running full our heats range from 50 to 70 tons per day, and the product is analyzed and a record kept, so that we are enabled to ascertain if anything is going wrong and chemically compute what goes in and what comes out of the cupola.

The adoption of chemistry in our foundry was not a question of choice. We were compelled from self defense to know what our product contained, as we found our customers often attributing short service in particular molds to excessive silicon or sulphur when it was plainly not due to these causes. To protect ourselves against claims of this nature, as well as to insure uniform analyses, we found it necessary to know not only the analysis of our pig iron, but also of our product. Comparison of analysis with service naturally followed, which in time resulted in a somewhat elaborate system of records. It might be advisable to state here that in our practice we use all pig iron, and that such practice gives an advantage for obtaining reliable data that foundries purchasing scrap to mix with pig metal could not secure as readily. Generally speaking, purchased scrap iron is a miscellaneous collection of everything, and to attempt to know its chemical composition would generally involve so much labor and expense as to make it impracticable. With some scrap piles, by taking several samples and mixing their drillings, so as to obtain an average, an analysis might often work very fairly, but such a case would be the exception to the rule. It would be best in such cases, when special results are desired, to abandon the use of scrap and use all pig iron.

The president of our company, Geo. H. Boyd, has formulated quite an elaborate system for recording the chemical and physical qualities of our iron and product coming from it. The way the subject is classified enables us to obtain some very valuable data. As an illustration we will take up the question of silicon and sulphur. Here we find, by remelting or by the action of the fuel and blast in the cupola, that we reduce the silicon from one tenth of 1 per cent. to four-tenths of 1 per cent., but this reduction is generally uniform. We think it is only through some radical change in manipulating the blast to the cupola it is caused to be reduced below two-tenths of 1 per cent. On the other hand, we increase the sulphur one time two-tenths of 1 per cent., and perhaps the next five-tenths of 1 per cent., when using coke of same analysis and in uniform ratio to iron charged. The manipulation of the cupola alone seems to affect the sulphur to a greater degree than the silicon, for the silicon is generally reduced uniformly, while the sulphur seems to have no regularity about its increase; and I am inclined to think the varying temperature existing at time of melting is the main cause of the irregularity found in the sulphur when same coke is being used. The Connellsville coke we use will average 0 80 in sulphur; the iron 1.50 silicon, 0.040 sulphur, manganese 0.34, phosphorus 0.093. The analyses of the above materials are given so as to enable any one that might be inclined to do so to take the matter up and compare notes with us.

There is a large field for investigation in chemical matters for the founder to explore, and the information to be obtained will enlighten us upon many mysteries we now find ourselves at a loss to fathom. I do not wish it understood that we are wholly relying upon the chemical analysis of iron, for there is too much to be discovered in that line ere we can ignore the physical qualities of iron in judging of and attaining results. While cupola work is progressing in respect to chemistry, I think from my late efforts and results there will be further achievements in melting barring what might come from the little explored region of electricity.

An investigation of the experiments made in cupolas with a view to economy in fuel shows that there have been many failures and we find almost all plans imaginable have been tried. Europe far surpasses this country in originality and novelty of designs, but I question if America has not excelled in the points of good general utility. The first radical benefical step we find to have been taken is in the adoption of the "drop bottom," an American invention. Ere this came in use bottoms were composed of solid masonry or fire proof material from the ground up to the spout and in order to get the "dump" or refuse out of the cupola after a heat was finished the "front breast," being made large, would be knocked out and by means of pokers the refuse and cleanings would be raked out. I am led to believe that this plan

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is still being used in some parts of Europe. From the adoption of the "drop bottom," improvements have been mainly in the line of securing greater economy in the use of fuel. The most radical divergence from the common cupola has been caused by experiments in designs arranged as in the Woodward cupola, which sought to create a blast economically by means of a steam jet blowing up the stack; also as in the Krigar cupola, which instead of forcing the blast upward reversed the order; then, again, as in cupolas arranged to utilize gas for a fuel. In examining some of the cupolas that have been tried one would surely think that if crooks and oddity had any virtue, perfect combustion would have been accomplished long ago. This may be secured, but we find more founders have faith in the common cupola. My definition of common cupola is one of plain cylindrical form having one or more rows of tuyeres. The question of inside formation and illogical shapes given to cupolas have about ran their course of absurdity and this has been helped by late literature upon melting. We are rapidly advancing in understanding the principles and sciences involved in the proper construction of cupolas and melting, and to-day we find the only element of any value that has been grasped from out the chaos of ruined expectations in the construction of cupolas is that of economical combustion being attained by two or more rows of tuyeres. In order that all may be able to follow this paper intelligently and understand the philosophy and advantages to be gained by "upper tuyeres" we will first note the action of fuels in order to obtain perfect combustion. "According to Dulong 1 pound of carbon combining with the necessary quantity of oxygen to form carbonic acid develops 12,906 units of heat. The specific heat of cast being about 13, the melting point 2190°, and the coke containing 82 per cent. of carbon, then to heat a ton of cast of a temperature of, say, 40° to a temperature of 2190° would require $\frac{2150 \times 2240 \times 0.13}{12906 \times 0.82} = 59.1$ pounds coke. This is supposing that the whole of the carbon is converted into carbonic acid, but if by any means carbonic oxide is formed a very different result is obtained; then 1 pound of carbon to carbon oxide only evolves 4453 units of heat. If, however, by admitting air above the zone where the oxide is formed we recover 4478 units, this plus 4453 gives 8931, which is a little over two-thirds of the available heat to be gotten out of 1 pound of carbon. Allowing 10 per cent. for moisture in the coke, 10 per cent. for radiation and 20 per cent. for loss of heat passing off at the top of the cupola, or 40 per cent. in all, the amount of coke per ton of metal should not exceed 112 pounds, although the actual consumption is, as we have shown, usually much higher."

The combination of carbon with oxygen or air blown through the "lower tuyeres" produces carbonic acid gas in the bottom bed of fuel and this in passing up through fuel heated to incandescence takes up more carbon and is converted into carbonic oxide gas. Now, if the carbonic oxide can again have sufficient oxygen or air admitted to it we will again have carbonic acid, or more nearly complete combustion, and by such alternate zones, which at every repetition become less volient, we could, if it were only practical to hit the right spot of the descending stock with the proper amount of air, almost achieve the theoretical figure of melting 1 ton of iron with 59 pounds of fuel, as given in above table; but instead of that we consider if we can accomplish such with 200 pounds of fuel we are doing exceptionally good work.

We have cupolas figured to achieve the above results by combination in tuyeres and in reality cupolas having two or more rows of tuyeres can be the only ones properly entitled to the claim of being scientifically constructed as far as the admission of blast is concerned. Were it only possible for the blast passing through their tuyeres to penetrate to the center of the cupola and have an immovable zone of fuel to play into, they might successfully accomplish the end intended, but as it is the results are but partial. It is a question if the extra burning out of the lining which two or more rows of tuyeres cause by having more melting zones does not often more than compensate for what saving in fuel may be acquired.

Power House Engines for Electric Railways.

Concerning power house engines for electric railways the most essential points—as pointed out in a report submitted by E. G. Connette to the American Street Railway Association in convention at Milwaukee—to be considered are: 1. Perfect regulation. 2. Highest economy. 3. Greatest durability. 4. Division of power into units.

On an electric railway the variation of load amounts to a very considerable fraction of the whole maximum load; in small plants it may be 95 per cent. of the maximum, and in large plants it is frequently 50 per cent. The governor should be so constructed as to control the engine under any variations of load, with a variation of speed not to exceed 2 per cent.; be easy of access to all its parts and capable of being oiled while the engine is running. The cut off must be larger than in engines for less variable load and should be easily regulated between the limits of one-tenth and seven-tenths of the stroke. The severe conditions of high speed and sudden and extreme variations of load make it especially important that the engine have the best possible construction, with extra weight in the fly wheel and bed plate, and that the foundation be more than usually substantial, and also that the engine be placed in the hands of a competent engineer.

In order to obtain the highest economy in operation the engine should be properly adjusted to its load. Underloading or overloading is undesirable, though the compound condensing engines of the largest stations will stand underloading better than the simple high speed engine. Careful attention should be given to the setting of the valves so that the cut off will be the same at both ends of the cylinder. The report refers to the steam turbine and mentions that the Parsons has developed power at the rate of $20\frac{3}{10}$ pounds of water per electrical horse-power per hour. This is a strong rival to the reciprocating engine as a steam motor for electric power and light stations.

The boiler plant should have ample capacity, as there are few cases where the draft and setting are so excellent as to allow heavy forcing without a serious loss of economy. A good plan to encourage economy in the use of fuel on the part of the fireman is to pay him a coal premium at the end of each month, basing the amount of the premium paid on the average number of bushels of coal consumed each day during the month for a certain number of cars run. When the plant is of such size as to require more than two firemen, it will always be good economy to employ mechanical stokers.

The report cites the test of the Twin City Rapid Transit Company of Minneapolis and St. Paul. On the comparative value of the two fuels, coal and oil, this test showed that with the ordinary Lima oil weighing $6\frac{6}{10}$ pounds per gallon and costing $2\frac{1}{4}$ cents per gallon, and coal that gave an evaporation of $7\frac{1}{2}$ pounds of water per pound of coal, the two fuels were equally economical when the price of coal was $3 85 per ton of 2000 pounds. With the same coal at $2 per ton the coal was 37 per cent. more economical, and with the coal at $4.85 per ton the coal was 20 per cent. more expensive than the oil. These results include the difference in the cost of handling the coal, ashes and oil.

Local surroundings and conditions will, to some extent, govern the division of power into units, but, as a rule, the following principle will be safe to follow: The size of the proper unit of subdivision should be such as to give the required relay or reserve above the maximum power adopted. This will apply equally to boilers, engines and dynamos. The following table will serve to show approximately the proper proportion:

Maximum horse-power required to operate road.	Number of engines required,	Horse-power of each engine.
200	2	200
400	3	200
600	3	300
1,000	3	500
1,500	4	500
2,000	4	750

It will be observed from the above table that enough engines are provided to furnish the maximum horse-power required to operate a road and have a surplus of one engine. This is very essential, as it enables the engineer to keep his engines in perfect adjustment and repair, having at all times an extra engine to work on, or, in case of breakdown, the extra engine is ready to take the place of the disabled one. The "maximum horse-power required to operate the road," referred to in this table, is not to be taken as the sum of the power needed by each car in service, except in case of small installations, since the maximum power required does not increase in proportion to the number of cars in use, since the line losses are not materially increased with increased traffic, and because, as the number of cars increases, the fluctuations of load tend to balance themselves and to reduce the maximum load nearer to the average load. Thus in a ten car plant, cases will occasionally occur when all of the cars will require their full power at the same time, and the power plant must be planned accordingly, and there is no probability that all of the cars of a 100-car plant will all require their full power at the same time; from 60 to 75 per cent. of this power, depending upon local conditions, will be sufficient for this plant.

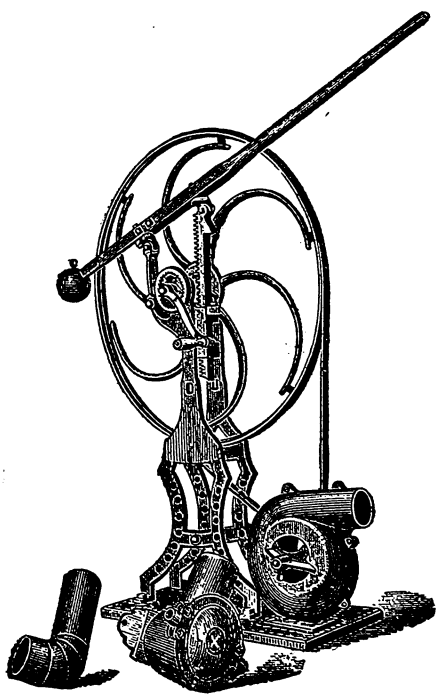
In selecting a type of engine, the size of the installation must largely govern, as well as local conditions, such as water supply and price of fuel, though some consideration may be given to opportunities for station room and arrangement. For small plants to run 10 or 15 cars, simple high speed engines, belted direct to generators, are unques-

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tionably the proper choice. For 20 to 50 car plants, compound engines, with condensing apparatus where it is possible; with tandem compound engines for the smaller plants and cross compound engines for the larger ones, geared direct to generator, will probably be found most economical. While for the larger systems compound or triple expansion condensing engines, using steam at a high initial pressure and either driving a countershaft or coupled direct to generator, whichever the conditions of the case will warrant, will be found a proper selection. In every case, except for small plants, where engines are belted direct to generator, the vertical type of engine is recommended.

The Tornado Fan Blower.

This blower, which is made by J. G. Hoffman of 4937 Forrestville avenue, Chicago, can be operated by either



The Tornado Fan Blower.

crank or lever, as each works independently of the other. The fan proper is of cast iron, while the fan shaft is cold rolled machinery steel. This shaft runs on centers, which can be adjusted as may be necessary. The steel crank shaft is mounted in cast iron bearings. The crank hangs loosely on the shaft with which it is brought in connection, when turned, by a simple arrangement of pawl and ratchet wheel. Provision is also made for operating the fan by means of the lever shown, which connects with the shaft by a ratchet wheel and pawls. All the parts of these blowers are made on the interchangeable plan.

The London *Ironmonger* reports that the Thomas basic patent, which is owned by two concerns in Germany—viz., the Hoerde Verein and the Rheinische Steel Works—will expire in April next, and thereafter these two companies, which have for some years past received considerable sums from other ironmasters for the right to use the process, will be deprived of an important source of revenue. The Hoerde Works will endeavor to find compensation by granting licenses for the desulphurizing patent, which belongs to them exclusively, but the Rheinische Works have no such resource available. During the last financial year the Hoerde Company are stated to have received in payments from German firms on account of the Thomas process 211,487 marks, against 87,992 marks in the previous year, while the Rheinische Works netted 238,344 marks, against 123,637 marks. As the Thomas patent expires at the same time in Austria-Hungary, the Hoerde Company will also lose their royalty rights in those countries, the amount received therefrom for the past year being reckoned at about 137,000 marks.

Use of Storage Batteries in Electric Generating Stations.

At the recent meeting of the American Street Railway Association in Milwaukee, C. O. Mailloux presented a valuable report on the use of storage batteries in electric generating stations for utilizing and regulating power. In this report the author uses the term "variation" to designate the effect caused on the station plant by putting on or taking off a certain number of cars, and the term "fluctuation" to designate those incessant and erratic ebbs and flows of current which are so familiar to us all, due to the starting and stopping of cars, changes of speed, grades, &c. It is for the purpose of better utilizing and economizing this power that the storage battery is proposed to be used, by taking advantage of its property of being able to give and take energy, and thus keep the load balanced and equalized at all times.

The author illustrated by curves the performance of the storage batteries placed in the Edison station in Fifty-third street, New York. Their chief function is to relieve the other stations at the hours of heavy load, by delivering into the mains a certain amount of current that would otherwise have to come, and at greater loss or "drop," from one or another of the stations connecting with the network of mains. Hence the load may be varied more or less arbitrarily at these stations according to the proportion of load that the larger stations are desired or able to carry.

The battery is installed on the second floor above the engine and dynamo room, and consists of 140 cells each of about 1000 ampère hour capacity, weighing some 750 pounds, and of about 48 inches in length, 21 inches in width and 15 inches in depth. The battery has a normal discharge rate of about 200 ampères, but can be discharged, if necessary, at 500 ampères.

The first curve, giving the record for April 22, 1893, was taken when the station was running only 12 hours per day, from noon to midnight. Calculation shows that the battery furnished about 23.2 per cent. of the total energy delivered to the mains. The maximum rate of discharge attained by the battery was about 270 ampères. Thus, in this case, we have an example of a battery which is used for the purpose: 1. Of giving a load to station machinery that would otherwise be idle. 2. Utilizing the stored energy to increase the rate of output of the station at the time of heavy load, which would otherwise necessitate greater dynamo capacity. In the second curve, taken five months later, the conditions have been changed. In the first place the station output has increased greatly, being now about 2.9 times greater, and it is also continuous. The next station now runs from 8 a.m. one day to about 2 a.m. the next day, or 18 hours. When it starts at 8 a.m. it carries a twofold load: 1, the regular load allotted to this station, and, 2, in addition thereto, the current absorbed by the batteries in charging. The total load is much more uniform than if the station were feeding into the mains alone, for the extremes of current fluctuations represent a total variation of only 80 ampères on an average load of 850, or less than 9½ per cent. The battery is now being made to play an additional part of some interest. The maximum load has increased to such a point that the station plant is no longer adequate; and consequently the battery is put on to "cap" the summit of the load and supply the excess for current required above the capacity of the dynamos. When the load begins to fall off (about midnight) a part of the plant is shut down; but since the load is still too heavy for the other dynamos, the batteries again serve to supply the excess.

In Europe great headway has been made in this branch. In London eight stations, aggregating 200,000 lights, are provided with storage batteries, the batteries in some instances being situated in substations. In Paris there are nearly 30 such substations, all charged from the same central station. In the "Edison sector" of the city an interesting application is made of a large (2800 ampère hours) battery, which is located at a point somewhat distant from the central station, and connected with the mains from which it is charged at those hours when the load is light by taking current from the mains themselves, the potential being regulated by means of a continuous current transformer. Thus the battery in this case saves the cost of larger feeders, while it also furnishes a load for the hours of small load.

This plan suggests itself as of possible service in electric railway systems covering a large area of territory all fed from a single central station. The batteries could be located at distant points, or at such points as would give the best distribution of current to the trolley lines with the least expensive line work. The station machinery would then virtually work at constant load to feed the batteries, which latter would supply the power needed for the car motors. In this way not only would an economy in the cost of conductors be effected, but there would be more uniformity of potential all over the system.

As regards the batteries used the author stated that the principal object to be aimed at was long life and high efficiency, even at the expense of increased first cost. The Planté process of formation and its modifications would seem to have proven itself superior to the pasting or Faure process, if one can make a criterion of the fact that at least nine-tenths of the aggregate of the central station batteries used are of the Planté type or some modification thereof. The Planté batteries are conceded to be, usually, of lower capacity per pound, but on the other hand they have the advantage of being able to carry heavier rates of charge or discharge.

A commission, appointed by Secretary Herbert, has proceeded to New Orleans to make a survey of the site for a proposed naval dry dock in or near that city.

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Washington News.

(*From our Special Correspondent.*)

WASHINGTON, D. C., October 31, 1893.

The annual summing up of the operations of the Naval Steel Inspection Board, composed of Capt. J. A. Howel, Chief Engineer David Smith and Lieut.-Commander J. G. Eaton, shows the most flattering results in the matter of tests at the place of manufacture.

Lieutenant-Commander Eaton remarked:

"At first manufacturers complained of the severity of these tests, and they did find some difficulty in complying with the Government requirements. At first the rejections were up to 80 and 90 per cent.; now they range from but 1 to 5 per cent. There are some differences in the product of different establishments, affected, however, more by fuel or impurities of the oil. Some firms try to work in cheaper ores, others use pure ores and are invariably up to the requirements. The manufacturers are now satisfied with the wisdom of the schedule of tests laid down and of the steady improvement of their product in consequence of being kept up to the specifications."

Chief Engineer Smith and Lieutenant-Commander Eaton agreed that there might be some trouble at first in working the bolt holes of armor plates first and tempering afterward on account of expansion. Although this difficulty has been in a great measure overcome, it is now found practically impossible to work the plates for fastening after they have been tempered.

The tests of armor plates at Indian Head were not under the Steel Inspection Board, but under the Bureau of Ordnance. The results have, however, in every case sustained the care and accuracy of the tests at the place of manufacture by the inspection officers of the Steel Inspection Board.

The assertion of Chairman Wilson of the Committee of Ways and Means that he would be prepared to report the tariff revision bill by November 1 is amended by him in conversation to-day on the subject.

It is more likely to be ready in December or January than November, and if it were practicable to get out of the dilemma in some satisfactory way it is evident that some of the former revision members would not seriously antagonize a withholding of the subject until a more auspicious period of industrial energy and business activity.

The majority on the committee in some cases have been receiving some very plain letters from constituents whose opinions they are disposed to regard. These have infused a more conservative spirit among them than exists among their colleagues representing districts with few industries and those unimportant.

The silver question in the Senate has so overshadowed all other public questions that the tariff situation has been lost sight of in a measure. But now that the end of the silver discussion has been reached they intend to work under forced draft and get the bill before the House as soon as practicable. Chairman Wilson admits that the committee are not going ahead as rapidly as they had planned owing to the written protests which are being filed. They still adhere to the free raw material theory, with coal and iron ore prominent on the late proposed free list, and a 25 to 30 per cent. horizontal reduction on all other articles. For the purpose of raising revenue as a substitute for reductions or loss in the customs the Subcommittee on Internal Revenue are working on a graduated income tax and an increase in the internal tax on malt liquors and spirits. This has been practically agreed to. It is expected that the last two items will afford increased revenue enough to warrant a very radical revision of the rates on customs. It is also expected that the reduction of the rates on pig iron, steel rails and all other metallurgical products, as well as other manufactures, will still further increase the revenues through enlarged importations.

Chairman Wilson of the Committee on Ways and Means, speaking about the statements having their orbit in the press concerning the tariff revision bill, said to the correspondent of *The Iron Age* to-day:

"It is safe to say that you can put down ninety-nine out of every hundred assertions about our work in committee as the merest guesses and untrue. The sub-committees are at work and are making progress slowly. We do not expect to have the bill before the whole committee for quite a while, and when it gets there it may be a little while before it gets to the House. That will depend, of course, upon how far the minority members of the committee may wish to go into details. If they simply record their opposition in gross to the whole bill and make a minority report, that will not take much time, but it looks now as if it would be some time before the bill reaches the House. I cannot say how long, as such matters are subject to many contingencies.

"I have not received any letter from Mr. Carnegie, nor has any member of the committee so far as I am aware. The metal schedule is not being adjusted in rates to his views nor to these of any one else except the members of the subcommittee at present. They are giving this, as all other schedules, careful investigation, but no definite conclusions have been reached. The fixing of tariff rates should be a matter of careful adjustment, so that all parts shall bear a relation to each other and be harmonious.

"It was known at the time that during the arrangement of the present tariff act of 1890 Mr. Carnegie got the credit of having made some statements which, as a manufacturer, did not harmonize with the claims of his contemporaries in certain branches of metallurgical industries. It was alleged that he said to a certain member of the committee of that day that steel rails could stand a reduction of duties to $5 a ton, and that $8 would be fair. That gentleman, a Republican who was credited with having obtained that information and communicated it to his colleagues, is on the present committee. If it is stated that I have a letter from Mr. Carnegie on that subject I have not seen it. We intend to deal fairly with all branches of industry."

The following important interview took place between a prominent member of the majority of the Committee on Ways and Means and the correspondent of *The Iron Age:*

"The two articles, coal and iron ore, will be placed on the free list. I do not see how we can do otherwise. One of the cardinal features of the tariff revision is free raw material, and those two items are prominent in that catagory. I believe it will be done by a strict party vote in committee."

It is known that the subject has already been talked over and that is the drift of opinion. In reference to the prospect in the House it was replied:

"I think when these items on the free list get into the House they will give rise to a bitter contest. It would be difficult to give the result in advance of a canvass with the bill before the House, but in a general way it might be anticipated that States like Virginia, West Virginia, Georgia, Alabama and Tennessee would have a strong influence upon the action of members from the Southern States. The contest would be to strike coal and iron ore from the free list. On a full vote it would take a change of about 65 votes to defeat the committee's recommendation on these items. This is a large vote, but with the New England, Middle States and some of the Western with the Southern States directly interested, it could be done. The item of coal might stand, but it is very doubtful whether the committee can hold iron ore on the free list. This is a very widely spread industry and will find many champions on the floor of the House."

There is very little doubt that the committee will put these items on and it is equally apparent that they will not make a very desperate struggle to keep them there.

Engineer in Chief Melville has been more than gratified by the behavior of the engines on the "Columbia" during their recent preliminary trial. Between the lines while reading the report of the officers on board, he said, "$200,000 in Cramp's pocket, with a possible $250,000. I do not believe Cramp would take that for his chance. A speed of 21.8 knots without forcing makes her sure of 22 knots, with a possible 22¼ that will make the 'Columbia' the fleetest cruiser afloat.

"The 'Blenheim,'" added Chief Melville, "About the size of the 'New York,' claims 22 knots. The other British ship, the 'Blake,' claimed to be the fastest war ship on the ocean, has never run off her forced draft. She has only had her steam trial. We would now like to know what she can do under the highest conditions. I think when the official record is made the United States can claim in the 'Columbia' the fastest cruiser in the world.

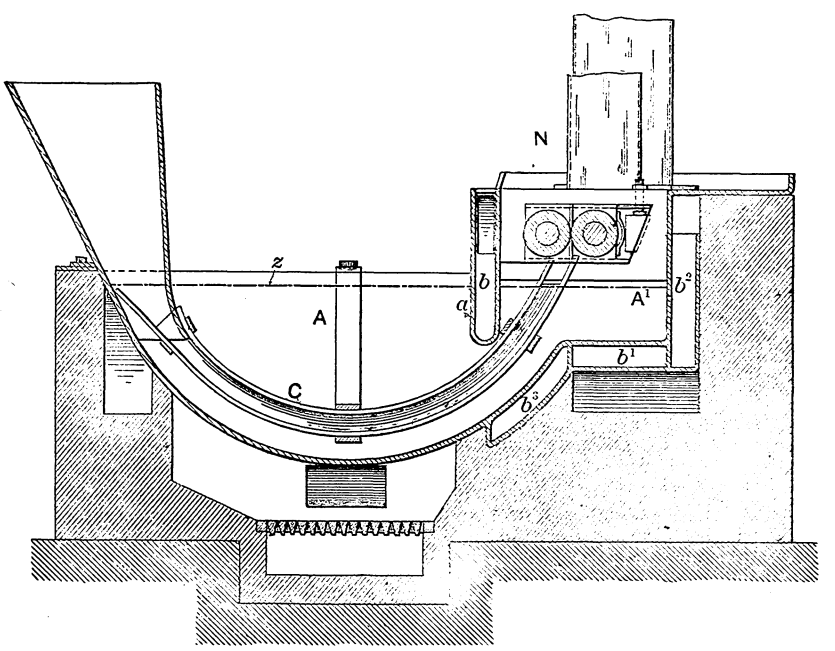
"I think the eyes of the naval experts of the world will be centered upon the 'Columbia' when she starts on her official test of speed."

To promote the proper care of boilers when not in use the following order has been issued to the French Navy by the Government: On board all ships in the reserve, as well as those which are laid up, the boilers will be completely filled with fresh water; and this is to apply to shell boilers as well as to those of the tubulous or pipe type. In the case of large boilers with large tubes there will be added to the water a certain amount of milk of lime, following the instructions furnished by Belleville & Co. for the preservation of the tubes of their boilers, or a solution of soda may be used instead. In the case of tubulous boilers with small tubes milk of lime or soda may be added, but the solution will not be so strong as in the case of the larger tube, so as to avoid any danger of contracting the effective area by deposit from the solution; but the strength of the solution will be just sufficient to neutralize any acidity of the water.

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The Jaques Tinning Pot.

We show in the accompanying engravings a new tinning pot for which a patent has just been granted to George W. Jaques of the firm of A. A. Thomson & Co. of New York City. Our section shows the position of the bath and the arrangement of the special feature of the pot, which is the air flue at the exit N. The object in the construction is to obtain two temperatures at the bath with one fire and to regulate the temperature of the metal under the grease pot. The great difficulty heretofore has been that plates in their continuous passage through the metal became so highly heated at the delivery end that they ignited the oil, while if two fires were used to regulate the temperature greater expense was involved. Another method of overcoming the difficulty, to which the patentee refers, is the passage of air currents about the cooling flues the air enters either through the flue in the chimney or into a separate uptake. The front flue b and back flue b^2 are connected by a cross flue; on the other side, where the uptake is situated, the several flues b, b^3, b^1 and b^2 open into a cross flue, which forms the enlarged base of the uptake. The arrangement is such that the air may be allowed to flow through any one or more flues, and may be regulated by register slides, thus controlling the temperature of the metal and oil within the inclosure A^1 and keeping it normally below the temperature of the main portion of the bath instead of permitting the oil and metal to become gradually hotter from the passage of the hot plates.



THE JAQUES TINNING POT.

the grease. A is the main portion of the bath with the furnace under it. The sheets are fed at the left hand and delivered at the right hand, being guided along the bottom of the bath by the guides C. They are drawn out through the grease through rollers. At the delivery end is an inclosure, A^1, the side A of which dips down into the metal in the bath, thus cutting off from the main bath a portion, within which inclosure the oil rests on the molten metal. The dotted line z shows the usual level of the metal in the bath, the oil level being at about the axes of the rollers. A special feature of this apparatus is the control of the temperature within the grease pot A^1, maintaining it lower than the main body of the pot by means of air flues. The walls and bottom of the inclosure A^1 are made double, so as to leave flues around the inclosed metal and oil through which the air may be made to circulate. In the illustration four flues are shown, b, b^3, b^1, b^2. The flue b^3 is under the curved portion of the bottom of the bath, the flue b^1 is under the flat portion or shelf of the bottom of the inclosure A^1, and the flue b^2 is in the wall opposite A. After circulating through

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The Chicago, Milwaukee & St. Paul Railroad is now testing a 12-wheel passenger engine recently built under a guarantee by the Rhode Island Locomotive Works of Providence. Although in all there are 12 wheels, the machine is of ten-wheel type, six of these being drivers of unusual size for this class of locomotives—6 feet 6 inches in diameter. The total length of engine and tender is over 63 feet, the wheel base is 50 feet 6¾ inches, the driving wheel base is 13½ feet, the total weight in working order is 150,000 pounds; the weight of the tender is 75,000 pounds, the weight on the drivers is 90,000 pounds, the cylinders are 21 and 31 inches in diameter by 26 inches stroke, the heating surface covers 1788 square feet, the steel boiler has 272 tubes, the fuel capacity of the tender is 6 tons and the tank holds 4000 gallons.

The Bethlehem Iron Company, Bethlehem, Pa., have shipped a conning tower weighing 17 tons to the Norfolk Navy Yard for the gunboat "Amphitrite."

James A. Potter, late of the Potter & Atherton Machine Company, Pawtucket, R. I., has sailed for England, where he will enter into business in Accrington.

Speed Premium for War Vessels.

Although the Government has been compelled to pay vast sums as premiums to vessels that exceeded the requirements called for by the specifications, the policy of offering prizes has been wise. In addition, in more than one case the premiums obtained by the vessels have permitted the builder to make a profit, whereas, at the contract price and without the premium he would have to shoulder a loss. In the early stages of the building of the present navy bidders were inexperienced and in some cases were not perfectly equipped for doing the work. Without the premiums they would therefore have lost on the job.

In earlier years, when horse-power was paid for instead of speed, the "Yorktown," at $100 per unit of excess, earned $39,825, while the "Baltimore" gained what was then considered the magnificent sum of $106,441.80 by an excess of 1064.418 horse power. The "Newark," on a similar reckoning, earned $36,857.70 as her premium. The "Philadelphia" was built on the speed basis, under a guarantee of 19 knots, with an allowance of $50,000 for every additional quarter, and made 19.678 on her trial trip, thus receiving $100,000 extra, the Government not allowing premiums or exacting penalties for fractions of a quarter knot. The "San Francisco," on the Pacific Coast, was another great premium winner. The gunboat "Concord" earned only $453 premium, her horse-power in excess of the contract being but 4.53; but her sister ship, the "Bennington," had an excess of 36 horse-power, and so earned about $3600. The "New York," on an allowance of $50,000 per quarter knot, made $200,000 extra. The "Detroit," with $25,000 per quarter knot, made six and nearly seven additional quarters, as has been said, and earned $150,000.

The "Montgomery" and "Marblehead," two sister ships of the "Detroit," are expected to do as well, making $300,000 for the pair. The "Olympia," on the Pacific Coast, counts on a big premium, and the "Castine" has already beaten the preliminary trip of the "Machias," her sister ship, which was a premium winner. The "Columbia" alone is expected to win at least $200,000, and will only have to show a knot above the contract to get it. A knot and a quarter will earn $250,000.

There are, on the other hand, penalties for shortcomings exactly equal to the premiums offered. Thus the "Charleston," which was guaranteed to produce 7000 horse-power, reached only 6666, so incurring a loss, at $100 per unit, of nearly $33,400. The little "Petrel" fell short in like manner of her contract speed. The "Monterey" is still another vessel that did not reach her guaranteed horse-power, and the loss was over $32,800 to the builders. But Congress remitted the "Charleston's" penalty, as there was something misleading in the plans and information procured from England for her builders to work from; and it also came to the relief of the builders of the "Petrel."

The time penalties afford a considerable source of offset for the Government's outgoes in premiums, and can easily be borne where a heavy speed bonus is secured. In the case of the "Concord" and "Bennington," however, the small premiums were more than wiped out by the time penalties.

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THE WEEK.

The Standard Oil Company have just received what is probably the finest oil barge ever built. It was constructed at Roach's shipyard, Chester, Pa., and is built of steel throughout. The vessel has a molded length of 248 feet, beam 37 feet and depth 19 feet, and possesses a carrying capacity of 760,000 gallons in bulk, with a gross tonnage of 1599. She is schooner rigged and carries four masts.

Japan claims to have the swiftest cruiser afloat, in the "Yoshino," lately built for the Japanese navy by Armstrongs. The vessel, which is 350 feet long and of 4000 tons displacement, is said to have made an average speed, with and against tide, of 23 knots an hour.

Crop failures and the large migration of farmers to the newly opened Cherokee strip are said to have almost depopulated a section of Southwestern Kansas. The secretary of the State Senate reports that in six counties at least the general exodus has been sufficient to disentitle them to representation in the Legislature.

The Irrigation Convention, lately in session at Los Angeles, Cal., is likely to give considerable impetus to the irrigation movement in the West, where nearly 300,000,000 acres of land might be made productive and populous by the general adoption of such a system. Congress will be urged to take up the matter at as early a date as possible.

The State Pardon Board of Pennsylvania, in session at Harrisburg last week, refused to recommend executive clemency to Hugh F. Dempsey, ex-master workman of District 3, Knights of Labor, and Robert Beatty, convicted for participation in the Homestead poisoning cases and now undergoing sentence in the Riverside Penitentiary.

Coastwise traffic between New York and Southern ports has shown a large increase during the past week or two, a number of extra steam vessels having been put on to meet the demand for freight. Provisions and dry goods compose to a large extent the cargoes going south, while cotton fills the north bound steamers. An unusually large amount of cotton is now in this city awaiting shipment to Europe.

The mysterious purchase by a New York commission house, within the past few days, of the new American built steamer "El Cid" of the Morgan line and her alteration into an armed cruiser, together with the acquisition by the same parties of some $200,000 worth of arms, has given rise to much speculation as to the destination of the purchases The general conviction is, however, that the Brazilian Government are the principals in the transaction. Later reports have it that Ericsson's submarine torpedo boat "Destroyer" and the swift steam yacht "Feiseen" have also been secured for the same quarter, as well as "El Rio," sister vessel to "El Cid."

A delegation of merchants and carriers doing business with Venezuela, Colombia and Hayti interviewed the President, at Washington, on Saturday, with the object of obtaining a suspension of the policy of retaliation against those republics.

The new United States gunboat "Machias" returned to the Brooklyn Navy Yard from her final trial at the end of last week. The trial trip extended a distance of about 360 miles, and the "Machias" was kept under persistent headway for 48 consecutive hours, being put through a searching inspection in every detail. The Board of Inspection reported her as acceptable, and the vessel was accordingly accepted by the Government. She will probably be ordered to the China Station shortly.

Statistics of the coal production of the United States for the year 1892, just issued by the Geological Survey, showed that 179,000,000 tons were put out last year, valued at the mines at $207,566,381. Of this amount Pennsylvania furnished 99,000,000 tons, or more than one-half.

The bill to grant an American register to foreign built vessels has been favorably reported to the House by the Committee on Merchant Marine. The bill will probably secure the early consideration of Congress.

Petroleum has been discovered in Susquehanna County, Pa. The Standard Oil Company are leasing all the land possible and will proceed with the boring of wells immediately.

Trade Publications.

THE VENTURI METER.—This meter—the invention of the well known hydraulic engineer, Clemens Herschel—is very fully described in a pamphlet by the Builders' Iron Foundry of Providence, R. I., who manufacture it.

The meter is named from the Italian philosopher Venturi, who first called attention, in 1796, to the relation between the velocities and pressures of fluids when flowing through converging and diverging tubes.

It consists of two parts—the tube, through which the water flows, and the recorder, which registers the quantity of water that passes through the tube.

The tube takes the shape of two truncated cones, joined at their smallest diameters by a short throat piece. At the up stream end and at the throat there are air chambers, at which points the pressures are taken.

The action of the tube is based on that property of the Venturi ajutage which causes the small section of a gently expanding frustum of a cone to receive, without material resultant loss of head, as much water at the smallest diameter as is discharged at the large end, and on that further property which causes the pressure of the water flowing through the throat to be less, by virtue of its greater velocity, than the pressure at the up stream end of the tube, each pressure being at the same time a function of the velocity at that point and of the hydrostatic pressure which would obtain were the water motionless within the pipe.

Usually the tube is made of cast iron, with a bronze throat piece, or a bronze lining in the throat.

The recorder is connected with the tube by pressure pipes which lead to it from the chambers surrounding the up stream end and the throat of the tube. It records the flow of water so that readings may be obtained in the ordinary way, and is as durable and not more complicated than an ordinary eight-day clock. It may be placed in any convenient position within 1000 feet of the tube, and there may also be an electric device by which the record may be made at any distance (several miles if desired) from the meter. It is operated in part by a weight and in part by clock work.

The difference of pressure or head at the entrance and at the throat of the meter is balanced in the recorder by the difference of level in two columns of mercury in cylindrical receivers, one within the other. The inner carries a float, the position of which is indicative of the quantity of water flowing through the tube. By its rise and fall the float varies the time of contact between an integrating drum and the counters by which the successive readings are registered.

Usually the integrating drum revolves once in every ten minutes, and at each revolution the counter registers, on ordinary dials, the volume flowing for that period of time. This interval of time may be shortened if desired.

There is no friction of stuffing boxes to retard the movement of the float and impair its accuracy, for the integrating drum is inclosed in a shield or vessel which is practically an enlargement of the receiver in which the float moves, and the shafts passing through the stuffing boxes are driven positively by the motive weight, the province of the clock work being to pull a lever and set a stop at the required periods.

There is no limit to the sizes of the meters nor the quantity of water that may be measured. Meters with 24-inch, 36-inch, 48-inch and even 20-foot tubes can be readily made, and can be set with no more difficulty than ordinary pipe.

The meter is not affected by water hammer or substances in the water. It is accurate and enables measurement of large volumes of water to be obtained with little difficulty where, perhaps, they could be measured only laboriously or approximately and clumsily.

The meter is useful for irrigation systems and for mills and factories as well as for water works. A 36 inch meter measured the main water supply of the World's Columbian Exposition and a 6-inch meter was on the supply of the Waukesha Hygeia Mineral Springs Company, who furnished the drinking water for the fair.

TWO CATALOGUES have been received from D. Saunders' Sons of Yonkers, N. Y., one illustrating their well-known pipe machinery and the other their hand tools for cutting and threading gas and steam pipe. These catalogues cover the entire line of pipe threading machinery and the necessary parts and attachments The facilities of this establishment are such as to enable them to present a class of tools made from carefully studied designs, and intended to meet the present demands of the trade, which call for strong, accurate and durable hand tools and machines.

WE HAVE RECEIVED from the Waterbury Farrel Foundry & Machine Company of Waterbury, Conn., a catalogue of their drop presses. Among others the following machines are illustrated: Round and square slide foot presses, foot press with iron kick treadle, foot press extra high and with extra wide bed, weighted compound lever foot press, screw presses, portable drop presses, drop hammers with automatic lifters, die sinking machines and die grinders, bicycle spoke upsetting and heading, and threading machines, &c.

We take the following from the *Railway Age* because it has a much wider application than to railroads alone: "A certain president was saying the other day that popularity among his employees was one of the worst traits that a railway official could have. It was always, he said, expensive to the road in the long run, and when a man came to be too well liked it was time he went to some other road. There is a good deal of shrewd truth in the remark, however unkind and illiberal it may sound. There is a kind of popularity which degenerates into familiarity and slapping on the back, and that, if it does not breed contempt, is certain sooner or later to injure the discipline of the road. Popularity which is won at the expense of respect is a dangerous attribute for any man who has to keep control of others; and even worse is that popularity which an official sometimes gains at the expense of his own superiors and of the other officers of his road. As soon as a division superintendent or an assistant of any kind stoops to win popularity among his subordinates at the expense of his chief, it is time he was got rid of. Perhaps the chief may deserve it and ought to be got rid of, too. But the other should go first."

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The Iron Age

New York, Thursday, November 2, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Outlook.

A study of the causes which have led to the prolonged business depression possesses interest chiefly because their correct appreciation will enable business men to observe the signs of a return to a normal condition. We believe that it is quite generally acknowleged that the distrust on the part of foreign holders of securities as to the inability of our Government to continue the monthly purchase of silver safely was the first impetus on the downward path. When the financial cyclone struck first our banks and then our business and manufacturing community, consumption was proceeding at a normal rate. The condition of the money market cut off all those enterprises of a public character which depend upon the marketing of new issues. The iron industry was among the first to feel the effect. A second effect was to lead to the cessation of all repair work on our railroads, which induced the canceling of old orders and held back any new work. Simultaneously the frequent failures brought about a very cautious method of operations among large traders. The rapid decline in prices induced buyers all over the country to purchase from hand to mouth, since they were convinced that every successive purchase could be made at lower and lower figures.

The wholesale suspension of work threw out of employment many thousands of men, while the mass of the industrial population had to submit to reductions in wages. Enforced economy reduced consumption of the staples, and the retail trade which was last to feel the effects of the panic began to suffer severely.

The recovery must be along the line traversed in the downward path. One of the troubles which has been at the root of the evil has been cleared away. Money is as plentiful as it ever has been. But it will take a long time before it galvanizes commerce and industry with renewed life. There are elements in the situation which make moneyed men still cautious. It takes time before a capitalist grows tired of having his money unproductive, before the eagerness for better interest overcomes the fear for the safety of the principal. The wage earner who has been forced to draw on his hoard of savings, or has run into debt, does not become a liberal buyer as soon as his income is restored to its usual amount. In other words, consumption rallies only slowly from the check which it has been subjected to, and that holds true as well for the requirements of great undertakings as for the necessities of the mass of the working people.

A good deal of stress is laid by merchants upon the fact that stocks of all classes of manufactured goods in the hands of the traders and jobbers who are nearest to the consumer are lighter than ever before. It must be conceded that that is an important element in the situation. But it is not likely to have much influence upon prices, so long as the buyers know that there is a very large reserve manufacturing capacity. At the present rate of consumption there must be considerable swelling of trade before manufacturers are sufficiently confident of future orders to hold back for better figures. Another point which aids in retarding recovery is that a period of sinking prices causes buyers to adhere to a policy of purchasing in small amounts and withholding orders as long as possible. It is true that this ultimately creates a very rapid upward movement, which in the past has culminated in historic "booms." There are those who see in the present situation all the elements of such a phenomenal rise, but with the tariff question looming up as a very disturbing factor there is no prospect of any marked advance in any quarter in the near future.

Engineers and Mechanics in the Navy.

Chief Engineer Melville, in his report just issued, again calls attention to the fact that there are not enough engineers in the navy to properly care for the machinery placed in their charge. The efficiency of the members of the engineer corps has never been disputed, but no matter how capable and energetic an engineer may be there is a limit to his physical endurance and he can stand only a certain amount of overwork. That there is danger of serious trouble some day arising from this paucity of numbers has been pointed out in former reports. Spending millions of dollars on a vessel and then compelling a few overworked men to be responsible for its welfare seems to be ridiculous in the extreme; and yet this is the exact condition of affairs in the United States Navy at the present time.

The marine engineer of to-day must be a man of the highest attainments and of unimpeachable character. Natural aptitude, long and close study, quick insight and the ability to do the proper thing at the right time and under the most adverse circumstances are the qualifications needed to fit him for his position. Young men of this stamp are loath to enter the engineer corps, and perhaps the most notable debarring influence is that the engineer is practically without rank. His position is one of vast responsibility, but it is not recognized. That this evil should be remedied and that, if remedied, the service would be benefited are points brought out in this report. On this subject Chief Engineer Melville says:

> Coming to the question of conferring positive rank, instead of the meaningless "relative rank" now held by members of the Engineer Corps, I earnestly trust that the department will recommend to Congress some measures looking toward this just and proper recognition of the service performed by the officers of this corps. Why officers devoting their lives to the service, who have always had a certain portion of the crew to organize, muster, discipline, station and drill in the various maneuvers intended to make the vessel efficient and destructive, and who, from this time on, will have under their control from 25 to 60 per cent. of the entire ship's company, should be denied recognition as a military element in a fighting organization would be incomprehensible to any one not familiar with the inside workings of the navy.
>
> In the naval battle of the future a ship will fight with her engines as well as with her guns; the ram will be a more dangerous weapon and one more feared than the battery, and if her boilers or her engines fail, the vessel will become a drifting mass, absolutely at the mercy of the enemy.

There is a further difficulty in obtaining high grade mechanics, and especially coppersmiths, at the wages paid—$50 per month. There is much work for the coppersmith and his services are constantly in demand, but this work is now always done on shore. The recompense, so insignificant compared with that to be had on shore, the restraint under which the men are placed and the killing of their ambition because there is no chance for advancement, all tend to keep out men of the right stamp who do not crave the privilege "of sleeping in a hammock" for $50 a month and "found."

One of the Pittsburgh mills has demanded of the men making application for work that they sign a paper binding themselves not to become members of the Amalgamated Association of Iron and Steel Workers. This course has thoroughly aroused the union men, and has led to a large mass meeting in Pittsburgh, at which vigorous speeches were made and resounding resolutions were passed. We believe that it is a very grave mistake to demand of any man that he make a promise of this kind. The workingmen have a right to organize, and it is far better that they do so openly than that they be forced to secrecy. No man will sign a paper of the kind, under the stress under which the unemployed are during this depression, without making the mental reservation that he is doing it under unfair compulsion. He is simply made to feel mean, a feeling which must rankle and create enmity and trouble later on. Few will blame a workman who breaks a pledge extorted under such circumstances. It is unwise to insist upon an agreement which the employer has no means of enforcing. The Amalgamated Association has become the victim of its

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own folly and of developments in the iron trade over which it has no control, although it attempted to resist them. To unnecessarily aid it by investing its members with the glories of martyrdom is a very serious mistake.

Shop Transportation

Recent developments in methods and appliances have brought to the front the importance of adequate means of transportation of materials within the limits of the shop and modern manufactory. The means to be adopted and the relative expenditure advisable must, above all, depend upon whether the goods to be transported are manufactured or built, as those two words are usually understood.

Where manufacturing has become a fine art the transportation facilities may be so specialized as to be capable of handling only specific classes of materials or individual parts of standard machines, either separately or in bulk. But when it becomes a matter of building only one article or machine of a kind, the arrangements must be of such general character as to meet all possible conditions.

Between these two extremes lies the golden mean to be attained in most manufacturing establishments. Special arrangements are almost universally provided for individual machines, but usually as a means of ready handling and for movement through only a short distance, rather than for actual transportation about the plant.

But the mechanism and arrangement which serve to convey a piece from one machine to another, as the process of completion is carried forward, enters most decidedly as a factor in the transportation facilities. Such is the convenient scheme of overhead traveling trolley with switches for individual machines, and even the ancient jib crane swinging the piece from each machine to its neighbor. The introduction of the pneumatic hoist has aided much in the operations of such arrangements.

For moving small pieces in bulk or larger pieces of symmetrical shape the belt or chain conveyor has proved an economical means, while the pneumatic tube still presents ample opportunity for its utilization. The massive traveling crane, developed from the hand trolley, has almost leaped into prominence, and its latest development in connection with the electric motor as a means of propulsion has placed at the command of all a method of transportation from one part of a building to another that cannot be excelled.

The place of the hand truck has been usurped by the modern narrow gauge shop railway, with its switches and turntables. its easy running cars and its ready adaptability to all conditions and arrangements. Whether the motive power shall be human or animal, or whether the work shall be done by steam or electric locomotive, by cable or by electric trolley system must depend upon the weight, character and number of the pieces and the distance they are to be carried.

When the interest and depreciation account upon such appliances is compared with the running expense for manual labor, which would otherwise be necessary, it is surprising to see what expenditures the manufacturer would be justified in making, and what economies would result from the introduction of improved facilities for transporting his manufactures about the establishment.

CORRESPONDENCE.

The Effects of Cheap Beams.

To the Editor: Referring to the article in your issue of yesterday on "The Effect of Cheap Steel Beams," it would have been more complete if you had added that, as a result of the present low prices of beams, several firms interested in these concerns are in the hands of receivers or assignees, and every beam now made is made at a positive loss to the mills. X.

TRENTON, N. J., October 27.

The Orinoco Iron Mines.

To the Editor: There is so much being said in regard to cheap iron ore from the Mesaba region, and furnacemen east of the Allegheny Mountains are looking for a cheap high grade ore, that I would like to call their attention to the large body of iron ore on the Orinoco River, at Imataca, S. A. This ore is fully as high in iron and as low in phosphorus as the Lake ores, and the following will show what the cost of each ore would be:

Mesaba Ore.

Royalty	$0.50
Freight to Duluth	.65
Mining	.25
Freight to Buffalo	1.20
Freight from Buffalo	1.75
Total	$4.35

Imataca Ore.

Royalty	None
Freight to New York	$1.80
Mining	.50
Freight from New York	.60
Duty	.75
Total	$3.65

Yours truly,
"MINING ENGINEER."

OBITUARY.

O. B. NORTH.

Oliver B. North, senior member of the firm of O. B. North & Co., New Haven, Conn., died on Monday, 23d ult. Mr. North had suffered from a severe attack of apoplexy a few days previously, but this attack was merely the culmination of organic troubles to which he had been a victim for years. Mr. North was born in March, 1817, in New Britain, Conn. He was the son of Alvin North of New Britain, and a grandson of James North, the first manufacturer of hardware in Connecticut. The latter and three brothers, Seth J., Henry and James, were all manufacturers of hardware in New Britain. This family of manufacturers were the first to manufacture hooks and eyes for ladies' dresses, and either the first or second concern to make sleigh bells. These hooks and eyes were made by hand, and in 1828 Alvin North invented the first machine for making hooks and eyes. A. North & Son ran the first steam engine in New Britain, and the second in the State. The firm of O. B. North & Co. were formed in 1843 as manufacturers of saddlery and harness hardware in New Britain, Conn. In 1863 the establishment was destroyed by fire, and the firm removed to New Haven. Before leaving New Britain a brother-in-law of Mr. North, Mr. Brace, was admitted as a partner. The firm have been located in New Haven since that time and have done a successful business. Mr. North was a man of varied information and good judgment in business matters and had many excellent qualities, and appreciative tributes are paid to his worth.

Induced Draft in Marine Boilers.

Some very important results are likely to follow the trials of boilers in the navy during the maneuvers of the past summer, says the *Enquirer*. Many opinions have been expressed concerning the value of the induced draft system as compared with the forced draft system, some engineers holding that there is no ground for comparison, as both systems result in the same thing—namely, a mere difference of pressure between the fire grate and the top of the chimney. However this may be, it is certain that several of the attempts made to stop the destruction of boilers in the navy by means of ferrules of various kinds have only proved to be palliatives, for there are several ships now which cannot be driven at anything like the full power of the engines in consequence of the tender care necessary with the boilers. On the other hand, some of the most recent additions to the navy are reported to do very well, but the experiences with the "Barfleur," the "Barham" and the "Bellona" all point to the necessity for an examination into the causes of perhaps the most unsatisfactory boiler performances ever known. Something of this kind will no doubt result from the experiments, or rather trials, which the Admiralty have now ordered to be made with the "Gossamer," presumably as a result of the report of Commander Rowland E. Berkeley, who commanded the "Gossamer" during the recent maneuvers. As is very well known, it was the duty of all those who commanded the vessels during these maneuvers to report on the behavior of that which is included under the head of machinery. Commander Berkeley's report on the boilers and stoke hold arrangements and performances on the "Gossamer," which is fitted with both the forced draft closed stoke hold and the induced draft open stoke hold, is remarkable for the very strong terms in which he speaks of the superiority in every respect of the boilers worked under the induced draft system. He deals with every leading question, such as steaming capacity, condition of stoke hold, the ability of the stokers to do their work without fatigue, the cleanliness, the coolness—not only in the stoke hold, but of the funnel, while the other funnel was dangerously heated—the working throughout without hitch, and the quickness with which steaming up for increase of speed may be done to order without fear of boiler damage or leaking. On all these points, he says, the induced draft system was so much the superior that there can be no comparison made between the two systems. Now that the induced draft system is at last to be fully tried, we may hope that the information which will be obtained will be made public, for if, as is maintained by some, there is an essential difference between the induced draft of the thick fired successful locomotive boiler and the plenum of the forced draft leaky marine boiler, then we ought to be told why. That there is a difference the Admiralty seem now to be satisfied, for two new ships are specified to be fitted with induced draft.

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Manual Training Schools.

At the dedication of the Louisville School of Manual Training, which occurred a short time since in the city named, Prof. C. M. Woodward delivered an address, in the course of which he reviewed at some length the subject of manual training. In the course of his remarks a number of points were touched upon in a way to interest a large number of our readers, and we therefore present copious extracts in this connection. He said that the occasion was one which seemed to demand an exposition of the principles involved in the manual training movement, and he considered it proper, therefore, to speak of the history and character of manual training. In describing its evolution he said :

Manual training, as an educational factor, owed its existence to a widespread conviction that the education of the schools had been dealing too exclusively with the abstract and the remote, and not enough with the concrete and the present. The thought product of the school was too dim and uncertain, and the knowledge gained had no sufficient bearing upon the matters of daily life. Consequently the pupil lacked mental vigor and clearness, and his school experience was deficient in practical elements. Manual training embodies pre-eminently the modern idea of substituting things for words, observation for printed description, and personal experience for the recorded experience of others.

ENGINEERING SCHOOLS.

Schools for civil engineering were established some 50 years ago to train men to build the railroads, bridges and canals that increasing traffic demanded. With the steam engine and its application, not only to commerce, but to every field of labor, came the demand for mechanical engineering. Similarly with the development of electricity, electrical engineering has sprung forth in full stature as a new profession.

All these branches of engineering require as preliminary studies a knowledge of the theory and use of tools, and the methods of precise and scientific construction. This requirement was met by incorporating shop work into the professional courses, as was first done at the Polytechnic, at Worcester, Mass. ; at the Massachusetts Institute of Technology, in Boston ; at the State University of Illinois, at Washington University in St. Louis, and at other places in a less marked degree. Then came the thought that tool work and drawing should be classed among the preparatory branches with elementary science and mathematics. With this thought came an effort to reduce the teaching of the theory and use of tools to a science. Let me illustrate the evolution of our methods by analogy. There must have been a time when, with a view to economy and better instruction, some one, reflecting upon the various calculations of the accountant, the builder and the financier, discovered that all numerical operations came under four heads—viz., addition, subtraction, multiplication and division. The suggestion was then made that it would save time to teach those fundamental rules carefully and well before attempting to teach their application. Children could be taught to multiply and divide rapidly while too young to appreciate exchange, taxes and mensuration.

In precisely the same way, after ages of failure to comprehend the problem, the fundamental rules of tool work have been discovered and arranged in logical order suited to class or individual instruction. It is now seen that old systems of apprenticeship, by which one mastered the use of certain tools and acquired a knowledge of a certain trade, was wasteful and narrow to the last degree. Much time and many opportunities for broad culture were thrown away, and only a narrow and one-sided training was secured. To be sure, tools have improved and multiplied and the stock of materials has increased ; nevertheless, the fundamental principles once recognized are readily applied.

MANUAL TRAINING.

In manual training, pure and simple, only tools and methods of use are taught. The shop exercises are almost as abstract as in "long division." A mortise and tenon joint typifies nearly everything in joinery—the tenon may be single, double or multiple ; it may be plain or dovetailed, or without a pin or wedge. The joint may be blind or open, rectangular or oblique. In its construction, one may use the plane, the try-square, the bevel, the gauge, the saw, the bit, the chisel, the mallet, the knife, the vise, the bench hook ; and it may be put together with paint or glue. However, before an elaborate joint can be properly undertaken, the theory and use of each tool, and how it can be put in order and kept so, should be carefully taught and learned by abundant practice. Beyond a few examples, possibly a single example, of synthetic construction for the sake of illustrating the application of general principles, the manual training school need not go. Similar statements can be made in reference to wood turning, wood carving, forging, tempering, molding, pattern making, metal fitting, &c. Almost the only thing a student should be able to show at the end of his training is the discipline, the knowledge and the clear insight he has gained. If he is able to make a merchantable article of any sort—a bureau, a horseshoe, a chisel or a dynamo when he is through school—well and good; there can be no objection, but there would be serious objection to his stopping his studies at school for the purpose of making such articles.

It thus appears that the graduate of the manual training school has acquired no trade, though he is familiar with the underlying principles of many trades ; he has earned no money, he has earned no business, he has not even an adequate notion of the practical and educational value of his experienced skill. These latter things are not the fruit of schooling ; they come from subsequent experience. As the trained gymnast, has developed every muscle, co-ordinate physical actions, and learned to use his judgment and maintain his self control at all times and in all positions, with no definite idea of how such training will serve him in life, so the broadly and rationally trained user of tools does not know in what emergency he will call to his aid the skill and training he has gained here. Both he and the world have yet to rise to a proper appreciation of the trained intelligence which quickly comprehends the thought of a new mechanical appliance and the force of new conditions. It should now be clear that in every craft, whether lower or higher, there are certain foundation principles, mental and physical, which underlie actual practice, and that it is the province of the manual training school to furnish opportunity for the mastery of these foundation principles, and that its claim to be a school for general education permits it to go no further. Finally, in a single phrase, manual training is that department of general education whereby one acquires the mastery of tools and materials.

HISTORICAL SKETCH.

About the year 1868 Victor Della Vos, Director of the Imperial Technical School of St. Petersburg, published a report giving for the first time the correct method of tool instruction. In his school three years were spent in training, and three years in actual technical work. His method, which was that of separating instruction from construction, was not made known in this country until the Philadelphia Exposition of 1876. The credit of calling attention to the Russian educational exhibit is due to president John D. Runkle of the Massachusetts Institute of Technology, who made a full report of their method of tool instruction to his Board of Trustees that year. In 1877 President Runkle opened shops for instruction in tool work, on the Russian plan, in the institute. Soon after the School of Mechanic Arts was opened as a subdepartment of the institute for the instruction of mechanics not less than 15 years old. It had a two-year course of study, including drawing and English studies. The attendance at the school was never large. It was discontinued two or three years ago.

Meanwhile shop work for the sole purpose of instruction had been introduced into the Polytechnic School of Washington University, St. Louis, as early as 1874. In 1877 three shops were fitted for the complete round of tool work, and classes from preparatory schools were admitted. On the strength of that experience a distinct and separate preparatory school, known as the St. Louis Manual Training School, was opened September 6, 1880. The course of instruction covered three years, and was very broad and general. This school is now in its thirteenth year, with 300 students under the charge of a director and 14 assistants. The immediate and acknowledged success of the St. Louis school led to the establishment of the Chicago Manual Training School by the Commercial Club of that city. The school was opened February 4, 1884. The school has upward of 300 pupils, all seats being occupied. Baltimore opened its Manual Training School March 5, 1884, as a part of the public school system. Including some classes below ordinary high school grade, its enrollment is upward of 500. Manual training was introduced into the High School of Toledo, in Ohio, in December, 1884, and during the following year the Scott Manual Training School was built in connection with the high school building. Under joint management the school is open to both boys and girls as a part of the public school system. Manual training was introduced into the College (high school) of the City of New York, in 1884. The Miller "Manual Labor" School, now very nearly a school for manual training, was established at Crozet, Albermarle county, Va., early in the 80's.

Philadelphia opened its Central Manual Training High School in 1885. The school was soon filled to its utmost, and a second one was opened by the School Board. The last report shows that these schools are crowded with a total enrollment of 576 pupils. The Cincinnati Technical School (really a school for manual training) was opened by a corporation in 1886. Following these schools the growth of manual training has been rapid, and the interest is still increasing. It is impossible to give even an approximate list of the schools established either independently or in connection with existing high schools. Nearly every State agricultural and mechanical college has a manual training department of about the high school grade, conspicuously those of Kansas, Indiana, Pennsylvania, Texas, Arkansas, Mississippi, North Carolina and Ohio.

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MANUFACTURING.

Iron and Steel.

Last week the Linden Steel Company of Pittsburgh went out of the hands of the assignee and again took possession of their own business. The change was the result of an order made by the courts discharging the Safe Deposit & Trust Company as assignee. This was caused by an agreement between the firm and their creditors, all of the latter to whom sums exceeding $100 were due agreeing to an extension. The creditors for $100 or less were paid in full, their claims aggregating $2409.14.

Clinton Furnace of the Clinton Iron & Steel Company, at Pittsburgh, has been banked down, owing to a large stock of pig metal being on hand.

Nearly all departments of the Wayne Iron & Steel Works of Brown & Co., Incorporated, at Pittsburgh, were put in operation last week. The puddling department of the firm, which was closed down temporarily owing to the refusal of the puddlers to sign an agreement not to join any labor organization while in the employ of this firm, has also been put in partial operation.

The works of the United States Iron & Tin Plate Mfg. Company, at Demmler, Pa., manufacturers of tin and terne plate, are in full operation, the firm having a very active demand for their various brands of plate. A fact generally known to the trade is that to this concern belongs the distinctive title of being classed as the pioneer manufacturers of tin plate in this country. In 1873 this concern engaged in the manufacture of tin and terne plate at their present location, but of course their plant was considerably smaller at that time than it is to-day. When the change was made in the tariff by which the duty on tin plate was considerably lowered, the company were compelled to abandon its manufacture, and confined themselves exclusively to the production of iron and steel sheets, dripping and bread pans and other goods of a similar nature. The restoration of the duty on tin plate by the passage of the McKinley bill resulted in this firm spending over $100,000 in the remodeling and enlarging of their plant in order to engage again in an industry which they were compelled to abandon many years before. During the worst period of the business depression their tinning department was kept in constant operation, and nearly all the time to full capacity. This company have published recently a pamphlet giving valuable information to users of tin plate.

Taking effect on November 1, the wages of day laborers in the employ of the Sharon Iron Company, Limited, at Sharon, Pa., were reduced 10 cents per day. The wages of blast furnace employees have also been reduced 10 per cent, taking effect on the same date.

A short time since the Brilliant Iron & Steel Company of Brilliant, Ohio, manufacturers of iron and steel bars and special shapes in iron and steel, had an opportunity to close a contract for puddling which would have given their employees at least two months' work. But owing to the fact that this firm have been paying $5 per ton for boiling, it was impossible to continue to pay this price and accept the contract. The firm therefore made a proposition to their men, offering to pay $4 per ton for boiling, stating at the same time that Pittsburgh mills were having their boiling done at this price, and unless their employees would accept the proposition they could not start the plant. The workmen refused to go to work at $4 per ton and thus the matter stands. We understand the entire plant of this concern is idle for an indefinite period.

The rolling mill of the Chicago Forge & Bolt Company, at Fortieth street and Stewart avenue, Chicago, was leased some time since to Thomas S. Blair, Jr., and E. Protzman of Pittsburgh, who fitted it up to manufacture small steel angles, channels, Z bars and special steel shapes of small size. They operate the mill under the name of the Chicago Rolling Mill Company, with Chas. W. Goodrich & Co , The Rockery, Chicago, as purchasing and sales agents. It is closed at present, but will be started up again as soon as trade revives.

The West End Rolling Mill Company, Limited, of Lebanon, Pa , are running their chain works at their full capacity. They claim that they have enough work ahead in this department of their plant to last until spring.

The Joliet Steel Works of the Illinois Steel Company have been greatly changed and improved since they were last in operation. The old converters have been replaced by two 10-ton converters, which will cast in molds on a car instead of in a pit, as had heretofore been the practice. This will obviate the necessity of handling the ingots, to load and remove them after the molds are filled. The car will then be drawn out and as soon as the ingots are sufficiently cooled they will be mechanically stripped. Electrical appliances have been introduced in some departments to save labor and increase the efficiency of the machinery. Cold metal will be hauled up an incline and automatically dumped from a skip into the cupola, precisely as ore or coal is hauled. The billet mill has been completely overhauled and remodeled, and a much greater output is assured than before as soon as the new machinery gets to running smoothly and the workmen become accustomed to handling it. The converters and billet mill are the only part of the works to be put in operation at present. The rod mill will not start up until there is a better demand for rods, while the blast furnaces will remain idle until the large stock of pig iron on hand is consumed.

The Ohio Iron & Steel Company, at Lowell, Ohio, announce that they will start their Mary Furnace about November 1. During the past four months' stoppage many improvements have been made and the furnace relined throughout. The company state that it is not from any favorable indications in the outlook that the start is made, but having made a specialty of Mary Ohio Scotch foundry iron for many years, and the supply on hand being about exhausted, they feel called upon to take care of a trade whose demands at present, although limited, are none the less imperative in order to preserve the uniformity of their cupola practice.

Blast furnace No. 1 of the Burden Iron Company, Troy, N. Y., which had been idle five months while being rebuilt, was blown in on the 26th ult. Employment was given to 100 additional men.

The employees of the Birdsboro Nail Works of the E. & G. Brooke Iron Company, at Birdsboro, Pa., have returned to work at a slight reduction in wages.

One of the two blast furnaces of Richard Heckscher & Sons, at Swedeland, Pa., has closed down.

The Ohio Falls Iron Works, New Albany, Ind., have resumed operations in all departments after a shut down lasting two weeks. During the temporary suspension of work a large new fly wheel and two large cog wheels were set up.

The employees at the furnace plant and steel works of the Sharon Iron Company, Limited, Sharon, Pa., have been notified of a reduction in wages of 10 to 15 per cent.

The Salem Iron Company of Pittsburgh have purchased the Grafton blast furnaces at Leetonia, Ohio, from the creditors of Graff, Bennett & Co. At this time one stack is in blast, but if the iron market does not show early improvement it will probably be banked about the first of the year.

The works of the Ellwood Shafting & Tube Company, at Ellwood City, Pa., are now in full operation in all departments, turning out a large product of seamless steel tubing for bicycle and other purposes for which this tubing is particularly adapted.

We are advised that the statement that the Elba Iron Works and the Continental Tube Works, owned by the Oil Well Supply Company, Pittsburgh, would be put in operation at an early date is untrue. At present there is no prospect of either of these mills being started up.

Operations were resumed at the Portage Iron Works, Duncansville, Pa. The management and the employees adjusted their differences and the workmen in the finishing mills accepted an average reduction of 25 per cent. in their wages.

At Muncie, Ind., the Whitely Malleable Iron Works have commenced the work of building a new structure 125 x 50, which, when completed, will be operated as a gray iron works in connection with the present malleable iron works.

The Penn Iron Company, Limited, of Lancaster, Pa., have decided, it is stated, to close their rolling mill and other works on account of lack of orders. The company employ 350 men.

At Muncie, Ind., the White River Iron & Steel Works have started making bar iron and steel, and the Whitely Reaper Works have announced that they will resume operations October 30.

Machinery.

The Lebanon Boiler, Foundry & Machine Company of Lebanon, Pa., successors to I. Pott & Co., are making a specialty of furnace barrows, and are meeting with much encouragement in this line. Their regular line includes boilers, engines, pumps, tanks, stacks, bells, troughs, kettles and stable fittings. They are fitting up a large brick building near their works as a machine shop and expect to have it running very shortly. This will materially increase their capacity.

A new firm, W. J. & W. E. Davison, have commenced business at 226 North Fourth street, Philadelphia, as manufacturers' agents. They will, among other lines, push the sale of Prouty's wire valve wheel.

The Harrisburg Boiler & Mfg. Company of Harrisburg, Pa., have recently shipped a 75 horse-power water tube boiler to the Fayetteville Water Works, Fayetteville, N. C.

Geo. W. Fifield, Lowell, Mass., manufacturer of engine lathes, is erecting a new steel covered shop 250 x 60 feet, with two L's, each 120 x 60 feet. The new building will be connected with the main line of the Boston & Maine Railroad by a side track.

Hereafter all machines made by the Egan Company of Cincinnati, Ohio, builders of wood working machinery, will have placed upon them a number commencing from 50,000 and then onward, so that when repairs are ordered the mere mention of the number of the machine brings forward its pattern and class, for a complete record is made of every machine that goes out.

The cast iron pipe foundries of R. D. Wood & Co., whose headquarters are at 400 Chestnut street, Philadelphia, with foundries at Millville, Florence and Camden, N. J., have been kept running steadily through the summer, the company having experienced practically no dropping off in the volume of trade until the present month. They have, however, shared with competitors the generally prevailing low prices.

The D. E. Whiton Machine Company of New London, Conn., manufacturers of gear cutters, centering machines, lathe and drill chucks, are at present running their plant four days per week, making two-thirds time with about their regular force. They do not regard the immediate outlook for business in their particular lines as very promising.

The Common Sense Engine Works of Muncie, Ind., which went into the hands of receivers some time since, will probably start up at an early date. It is stated that the stockholders and the creditors have compromised their claims, and that under the new arrangement G. Campbell Janney will be president, J. C. Johnson, vice-president, James R. Sprankle, secretary and treasurer, and Benj. F. Howell, general manager. When running to full capacity the plant employs about 200 men. It is stated that a number of good sized orders are on the books, and it is believed that the works can be successfully operated and placed on a paying basis.

The foundry of William Tod & Co., at Youngstown, Ohio, has closed down on account of lack of orders and the general depression in business. There is a probability also, it is stated, that the machine shop will close down entirely if the present conditions of trade continue.

The Ball & Wood Engine Company of Elizabeth, N. J., whose works have been running only five days a week, have resumed on full time.

The J. I. Case Threshing Machine Company of Racine, Wis., are further increasing their capacity by the erection of a new molding shop. The structure will be in the shape of two L's, 210 x 80 feet and 84 x 80 feet respectively. It will be of brick, with an iron truss roof having a span of 80 feet. Two cupolas, capable of melting 50 tons a day, will be furnished by the Detroit Foundry Equipment Company. There will be seven steel cranes, electrically driven, the same medium furnishing power to run 800 incandescent and 14 arc lights and four motors on the hoisting derrick. In every respect this new department will be in keeping with the model establishment of which it will be a part.

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The machine shop of the Anderson Foundry & Machine Works, at Anderson, Ind., has been closed. The foundry and pattern department are still running with only small forces.

The Skinner Chuck Company of New Britain, Conn., have equipped their plant with additional new machinery for the manufacture of their New Model drill chuck and new improved planer chuck and face plate jaws. The company have been awarded patents on two of these, and the slight improvement in business already noted leads them to hope that the demand will soon keep them fully occupied.

The Mechanical Boiler Cleaner Company of Montclair, N. J. have been incorporated, with a capital stock of $100,000, for the manufacture of a mechanical appliance for cleansing boilers.

The Collins Mfg. Company of San Antonio, Texas, have recently expended about $10,000 in fitting up a plant for turning out foundry and architectural iron work. Machinery to a like value is still to be purchased.

The plant of the Springfield Emery Wheel Company has been removed from the corner of Howard avenue and Spruce street to the corner of Water street and South avenue, Bridgeport, Conn. The present location is nearer the business center of the city, while the shipping facilities are much better than the old location afforded. The company have had enough business to keep their works going all the time and have several good orders on hand at the present time. They have recently put a new dynamo brush grinder on the market which is meeting with universal approval, while their specialty, emery wheel machinery, is being constantly improved.

The Pond Machine Tool Works of Plainfield, N. J., have reduced their working time to five days per week of eight hours each. Twenty-three men were recently laid off in the foundry department.

When the *personnel* of a concern remains unchanged for 13 years, it is a pretty safe evidence of the fact that harmony has existed and the affairs of the company been successfully managed. Such has been the record of the Waterbury Farrel Foundry & Machine Company of Waterbury, Conn. During the last three or four years the company have laid out $200,000 in increasing the capacity of their plant. A large foundry has been built and equipped with new cranes and new cupolas, &c.; also a new three-story brick building for making and storing patterns, and an entirely new machine shop erected on the site of the original foundry. A large amount of heavy machinery has been installed, so that the equipment of the plant at the beginning of the year was adequate for employing 350 men, which the company have been doing ten hours a day for six days in the week. With the falling off in business, they have been compelled recently to reduce this number from time to time until only 150 men are now employed. The company have been working on extensive orders for machinery for the Pope Mfg. Company of Hartford, Conn., for use in their new tube works. They have also been turning out special nail machinery for the Capewell Horse Nail Company of Hartford.

The Lane & Bodley Company of Cincinnati, Ohio, are operating their plant nine hours a day with about three-eighths of their usual force of men. While the amount of business transacted is less than usually at this time, the company are seizing the opportunity to make improvements in their products, so as to be ready for the demand which they anticipate will come at an early date.

The Lloyd Booth Company, founders and machinists, of Youngstown, Ohio, have nearly a full force of men at work, and while no very large contracts are on hand it is thought enough small orders will be received to keep their plant in operation to nearly full capacity during the winter months.

The Mahoning Boiler Works of William B. Pollock & Co., at Youngstown, Ohio, have resumed operations in full, and the firm expect to receive sufficient orders to keep running right along.

The Lodge & Davis Machine Tool Company of Cincinnati, Ohio, have recently received a number of orders from the Government for machine tools for the navy yards in Washington, D. C. Also a large order for machinery from Germany, and one from the Big Four Railroad for its machine shops in Bellefontaine, Ohio. The order from Germany is from a large sewing machine manufactory, employing about 500 hands.

The Westinghouse Electric & Mfg. Company of Pittsburgh have procured a contract for the construction of three 5000 horse-power dynamos for the Cataract Construction Company.

The Vulcan Steam Boiler Works have been incorporated at Albany, N. Y., to manufacture steam boilers, steam engines and general steam machinery in Brooklyn. Capital, $10,000, and directors, Lucian Knapp of Long Island City; Frank M. Woodruff of Brooklyn and Charles Balloch of New York City.

Later advices from the Cincinnati Milling Machine Company, Cincinnati, are to the effect that they have received a number of good orders, including several from European countries, for their specialties—milling machines and grinders—and that their working force has been increased, while part of their shops are now running 55 hours per week.

The I. & E. Greenwald Company, Cincinnati, Ohio, are running their foundry on two-thirds time, while their machine shops are running full. They report an average amount of orders, some of which, however, were booked previous to the dullness so prevalent. The company report the outlook for the future as being much brighter than for some time past.

The Tudor Boiler Mfg. Company, Cincinnati, Ohio, are operating their establishment on full time on orders, and feel very much encouraged over the prospects for new business.

Hardware.

John Booth, manufacturer of ornamental wire and iron work and successor to the Chicago Wire & Iron Works, 110 Lake street, Chicago, makes a specialty of carrying out the designs of architects in elevator inclosures, heavy wrought iron grilles, fences, railings and guards. He is also manufacturing heavy wire cloth for the use of miners and ore crushers.

At a recent meeting of the creditors of the Youngstown Stamping Company, held in Youngstown, Ohio, who were forced into the hands of a receiver by reason of the failure of Robert L. Walker, an examination of the property was made, and entire satisfaction was expressed at the manner in which operations are being conducted under the supervision of W. C. Hine, receiver. The concern are now filling large orders for oil cans and other of their products for Eastern shipment.

The New York Knife Company, at Walden, N. Y., are building a new fire proof storehouse to be 28 feet in width and 100 feet in length. The side walls will be of brick and the roof of iron, designed and built by the Berlin Iron Bridge Company of East Berlin, Conn., covered with their well known anti-condensation corrugated iron.

Chicago Brass Company, 76 Monroe street, Chicago, with rolling mill and factories at Kenosha, Wis., confine their business to the rolling of sheet metals and the manufacture of organ reeds. They advise us that they notice an encouraging increase in orders during the past few weeks.

Reed & Prince, Worcester, Mass., manufacturers of rivets, burrs and stove bolts, have just completed a new building adjoining their old plant. The addition is built of brick 175 x 40 feet, five stories and an L for engine and boiler rooms. The manufacture of wood screws, a new departure for Reed & Prince, will be begun at once.

Buck Bros., Millbury, Mass., are in receipt of a communication from the Commissioners of Awards at the World's Fair, stating that the firm's exhibit of chisels at the exposition has been awarded a diploma. The firm are at present at work on orders fpom a number of manual training schools in different sections of the United States. A large order was recently filled for export to Africa. The firm are not running their plant to its full capacity owing to the business depression.

The lawn mower factory of the F. & N. Mfg. Company, Richmond, Ind., started up on the 20th ult. They are running nearly a full force and expect to run steady during the winter.

The Waltham Screw Company, Waltham, Mass., have shut down for an indefinite period.

The plant of the Marlin Arms Company, New Haven, Conn., is now running 54 hours a week instead of 40, as heretofore.

The employees of the Atlas Tack Corporation, Taunton, Mass., suffered a reduction of 30 per cent. in their wages on October 30.

The West Muncie Tack & Novelty Works, Muncie, Ind., was destroyed by fire on the 22d ult. The factory gave employment to about 30 hands. The damage is estimated at $20,000, on which there is $3500 insurance.

The Upson & Hart Company, Unionville, Conn., have fitted up their works with the most improved machinery for the manufacture of knives, forks and spoons in nickel, silver and German silver. The production, it is expected, will reach 100 gross per day by July 1. The company refer to their process of manufacturing these goods as reducing the cost materially. Patents on the process have been taken out in England and Germany. H. C. Hart, vice-president and secretary of the company, is the inventor. The company state that they are prepared to treat with parties who are desirous of obtaining a license to manufacture under these patents.

Nicol & Co., 55 West Washington street, Chicago, manufacturers of hardware and other specialties, had an exhibit at the World's Fair of their high art hair tools and curling iron heaters, on which they advise us they have received awards. Ever since the exposition opened they state that they have been selling goods in England, Canada, Australia and South American countries, and they express the opinion that the fair will do them and other manufacturers much good.

Alfred Hess announces under date of November 1 that he has purchased the entire plant of the Union Axle Spring Works, situated at Carthage, Hamilton County, Ohio, and the concern will hereafter be known as the Hess Spring & Axle Company. Mr. Hess refers to his experience of the past 25 years, together with the latest improved machinery, as enabling him to produce goods of excellent quality and finish.

Miscellaneous.

The Allen Electric & Supply Company is the name of a new concern commencing business at 232 Carter street, Philadelphia. They will manufacture trolleys and undertake general repair work. They will also make a specialty of a self oiling bushing.

The Philadelphia Traction Company have placed the order for their new power house with the Berlin Iron Bridge Company of East Berlin, Conn. The side walls will be of brick and the roof will be of iron. The building is 190 feet in width and 168 feet in length, divided into boiler room, engine room and dynamo room.

The Locust Point Iron & Steel Works, Baltimore, Md., who were incorporated in October, 1892, for the manufacture of tin plate, with a capital stock of $100,000, have been placed in the hands of receivers. The bill of complaint alleges that notes amounting to $10,000 have recently matured which the company are unable to pay. The works are said to have cost $150,000, on which there is a mortgage of $26,000. The inability to make collections is given as the cause for the appointment of receivers.

The Dallas Stamping Company, Dallas, Texas, have suffered a loss of $10,000 by fire.

The Great Northern shops at Hillyard, near Spokane, Wash., are nearly completed, and will be in operation, it is expected, by the middle of this month.

The employees of the Calumet & Hecla Mining Company in Michigan have been notified of a reduction in wages of 10 per cent. to take effect November 1.

MANUAL TRAINING is about to be introduced into the public schools of Brooklyn, a sum of $10,000 having been appropriated to this object by the Board of Education. This will defray the expenses of the first experiment in this direction, which will be in the shape of a manual school to be established in the Boys' High School, where the rudimentary principles of several trades will be taught to lads recommended by the principals of the schools.

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TRADE REPORT

The West, which has been the leader in the decline during the greater part of this year, seems destined to take the first steps toward improvement. The low prices made have evidently attracted a good deal of business from outside quarters, and the result is that the volume of orders has increased. Thus far this has not resulted in any hardening of prices, but has had only a negative effect in stopping a further giving way.

Foundry and Forge Pig in all markets are still very dull, but there are indications that a little more work is in sight. Within the next week contracts will be let for 9000 tons of Cast Iron Pipe at Philadelphia, and for 6000 tons at Waterbury. To judge from recent sales, prices promise to be low. A small lot was sold in New York recently at $19.40, delivered in the streets, and in Detroit low prices were also made. We understand, also, that about a dozen city pumping plants are being bid on, the aggregate value being about $500,000.

Sales of Steel Billets have been made during the past week at figures netting $17.30 at mill, the buyer being unable to get near the lower prices which rumor claimed as current. In fact, some of the Pittsburgh mills decline to do better than $18. Against this is the fact that the Joliet mill will soon start, and thus restrict the territory of the Pittsburgh works.

The prospect of considerably lower prices on Steel Rails is discussed with some interest. If it should stimulate buying and thus increase largely the consumption of Bessemer Pig, the whole line of Steel products might be favorably affected. During its existence the Steel Rail Association has always been looked upon as adversely influencing Steel Billets.

Chicago records the fact that sales of Bars have been made in that market as low as 1.35¢, delivered, the lowest on record, from which the price has recovered a little since. Some buyers argue that as yet the rolling mills have not given away the whole of the decline in raw material, Steel Billets and Scrap and in wages, and that, therefore, there is still room below. While this may be true so far as the nominal published quotations are concerned, it is not the fact where the private terms granted for good specifications are taken as the basis. In some markets there has not been any business likely to bring out such figures.

In Structural work Pittsburgh has again captured the latest building in Philadelphia. In Chicago there is some good work coming out, but otherwise the markets are very bare and the outlook is still gloomy.

From the sale of American craft to Brazil it is inferred that the vessels will be replaced by others and thus give our shipyards some badly needed work.

How changed the financial situation is, is shown by an incident which happened to-day. A firm received two checks from iron manufacturers, both anticipating payment by deducting 23 and 51 days' interest respectively.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., October 31, 1893.

The situation shows very little change from last week. Billets are 50¢ dearer, but with that exception anything and everything can be bought at last week's prices, and for an extra sized lot or prompt cash settlement it may be possible to do a little better than that. There is no snap to the market, and so far as regards mills and furnaces in this vicinity there is no increase to the amount of business on hand, the week's deliveries being about equal to the week's new engagements. There is a somewhat better feeling, however, due to the reports from Washington and from the West, but at this late season it is doubtful if it will stimulate the demand, without which it is useless to expect better prices. Careful inquiry among consumers fails to reveal anything likely to improve the situation, those running fullest being on about half or three-quarters time, while in the majority of cases a considerable proportion of the capacity is doing little or nothing. Low prices seem to be no inducement whatever, the general reply being, "It is not a question of price; we will buy what we cannot do without, but low prices are no inducement for anything we do not need." This represents the situation all the way through, and explains an apathy which is almost without precedent.

Pig Iron. — Notwithstanding extremely low prices, and a surprisingly small production compared with that during the past three or four years, there is plenty of Iron, and decidedly more pressure to sell than there is to buy. This condition of affairs cannot last very much longer, but all the same it is as hard to move buyers as ever it was. Prices are not quotably lower, but they are irregular, and in spots easier, particularly when there is a pressure to realize, or when spot cash or something near to it seems to be in sight. Everybody recognizes the fact that prices cannot go any lower, but on the other hand there are no indications of an upward movement, and until something occurs to force an advance, buyers are likely to remain stolid and immovable. The chances are that something of that kind will happen before long, as the drop from a supply of 180,000 tons per week to less than 80,000 tons is too great to meet the consumptive requirements for any length of time, and as soon as indications of scarcity begin to crop up it will probably set people thinking. Meanwhile, however, business is mostly in small lots at prices varying from $13.75 to $14.25, delivered, for No. 1 Foundry, $13 to $13.50 for No. 2, and $12 to $12.50 for Standard Mill Irons, and for Southern No. 3 as low as $11.25 @ $11.50 has been accepted. It is difficult to give exact quotations, as a good deal depends on brand, quantity, terms of payment, &c.

Steel Rails.—Prices are down to $27, but there is not much demand, and it is doubtful if the year's deliveries will reach 1,000,000 tons. There is no inquiry for large lots, so that prices will probably remain at $27 until there is a class of business worth considering at a lower figure.

Steel Billets.—There is a firmer tone to the market for Billets, but only a small demand, as consumers are not using anything near to their usual quantity. Sales have been made at $20.75, delivered, for 500 and 1000 ton lots, and this is now said to be an inside figure. It is not unlikely that prices will remain firm, although with such a large falling off in consumption it will be difficult to secure an additional advance unless there is a sympathetic movement along the entire line.

Finished Material.—All that can be fairly said is that the market holds its own. There is certainly no improvement, and no business of sufficient amount to cause improvement, nor is there likely to be until after the turn of the year, if then. Large work is not coming out to any extent, without which it is impossible to get up any semblance of activity. The current demand for small lots is pretty fair, but as that comprises about all the new business there is mills are not getting themselves into any better shape than they have been in for some weeks past. Prices under such conditions are naturally weak and unsatisfactory, and while nominal quotations are about as follows very much better terms can be had on good sized lots, particularly for good deliveries and a certainty of prompt settlements:

Grooved Skelp, delivered	1.47½¢	@	1.50¢
Best Refined Bars	1.52½¢	@	1.55¢
At interior points	1.40¢	@	1.50¢
Tank Steel	1.60¢	@	1.65¢
Heavy Plates	1.65¢	@	1.70¢
Shell	1.75¢	@	1.85¢
Flange	2.00¢	@	2.20¢

Old Material.—There is no material change in this department. Holders appear to be unwilling to do business at the low figures usually offered; but the demand is so much out of proportion to the supply that it is difficult to find good buyers unless by making more or less of a reduction from the asking rates, which are about as follows:

No. 1 Wrought Scrap, delivered	$12.00	@	$13.00
Machinery Cast, delivered	10.00	@	11.00
Heavy Steel Scrap, delivered	12.00	@	13.00
Old Iron Rails, delivered	14.00	@	14.50
Old Street Rails, delivered	16.00	@	17.00
Wrought Turnings, delivered	10.00	@	11.00
Cast Borings, delivered	6.00	@	7.00
No. 2 Light Scrap	6.00	@	7.00

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, November 1, 1893.

While there was little, if any, increase in the volume of business in Pig Iron during the week, there is certainly a more confident undertone to the market at the close, because there is more inquiry for forward delivery and less disposition on the part of furnaces to accept orders for delivery after January except at an advance. Gray Forge can yet be bought at $7, f.o.b. Birmingham, to a moderate extent for this year, but the furnaces ask an advance of 25¢ ₱ ton for the first half of next year, but no transactions have been made public. There has been rather more than the usual run of consumptive orders in this district during the week and there have been fairly liberal orders from the East for these times, although they are far short of what they would be in a normal condition of the trade. The Iron Pipe works continue to be the largest melters of Iron, and but for them there would have been in the recent past a nearer approach to stagnation in the trade. The repeal of the Silver Purchase law is hailed as the beginning of recuperation in the Iron

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trade, but not time enough has elasped for its effect to make much impression. Collections have decidedly improved and now there is little complaint of backwardness except on the part of chronic lame ducks. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$12.75 @ $13.00
Southern Coke No. 2	10.75 @ 11.00
Southern Coke No. 3	10.25 @ 10.50
Ohio Soft Stone Coal, No. 1	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2	14.50 @ 14.75
Lake Superior Coke No. 1	15.00 @ 15.25
Lake Superior Coke No. 2	14.00 @ 14.25
Hanging Rock Charcoal, No. 1	18.50 @ 19.00
Hanging Rock Charcoal, No. 2	17.50 @ 18.00
Tennessee Charcoal, No. 1	14.00 @ 14.25
Tennessee Charcoal, No. 2	13.00 @ 13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @ 18.00
Lake Superior Car Wheel and Malleable	17.00 @ 17.25

Forge.

Gray Forge	9.75 @ 10.00
Mottled Coke	9.50 @ 9.75

Pittsburgh.

(*By Mail.*)

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, October 31, 1893.

While it is a bold statement to make just now, and may be received with some doubt, it can be truthfully stated that for the first time in many weeks the condition of the Iron and Steel trades is commencing to show some signs of betterment. This improvement, it should be stated, does not apply to prices, but to volume of business now going and to the outlook for the near future. In the first place, the repeal of the purchase clause of the Sherman act will undoubtedly have a good effect on finances and will give a stability to business that has been sadly lacking for some time. In the second place, personal investigation shows that there is a heavier volume of business offering and this applies all along the line of Raw and Finished Material. Commencing with Pig Iron we can state there is more actual buying being done and more inquiries are coming in from buyers than at any time within the past three or four months. Steel is in considerably better demand, the tonnage for the week being the heaviest for some time past. Going right through the entire list of Finished Material there is more or less business doing, some lines of course making a better showing than others. It would also seem that the conviction is becoming stronger among buyers that the level of low prices has about been reached, and that there is no risk in buying for future wants at prices now ruling. The fact is fully recognized by buyers, or should be, that the period of severe depression through which we have gone, and which made it necessary for mills to practically allow customers to make prices, must come to an end some time, and when trade again resumes its normal condition there is bound to be a recovery in values sufficient to allow a fair legitimate profit to the producer. Indications are already present which show it to be possible for this recovery to set in at no distant date.

Pig Iron.—During the week inquiries were more plentiful, with the result that a fair amount of Iron has changed hands since our last report. The increased activity in the Steel market has resulted in a heavier demand for Bessemer Pig, and several fairly large sales have been made within the last few days. There is also a little more doing in Gray Forge, but prices show no signs of improvement. One or two additional Edgar Thomson stacks have been started, and it is stated that the entire equipment of nine furnaces will be running before this month is out. It is also likely that the Monongahela Furnace Company will put their second stack on Bessemer within a week or so to make stock for the new Steel plant. We quote as follows:

Neutral Gray Forge	$10.50 @ $10.75	cash
All-Ore Mill	10.75 @ 11.00	"
Bessemer Pig	11.25 @ 11.50	"
No. 1 Foundry	12.50 @ 13.00	"
No. 2 Foundry	11.50 @ 12.00	"

We note a sale of 2000 tons of Bessemer at $11.25, Pittsburgh, for balance of the year delivery. Also one of 500 tons of Gray Forge at $10.75, Pittsburgh.

Billets.—There is a fairly large amount of Steel selling, and the disposition among makers to turn down business offered them at prices below their ideas of the market is becoming more pronounced. We are advised of quite a number of fair sized orders placed within the past week, and the promptness with which buyers accepted prices named by makers was a pleasing revelation and would seem to indicate that the downward tendency of the market has been checked, and also that buyers are becoming impressed with the idea that now is a good time to enter the market. In addition to the sales referred to above, some Eastern buyers are said to be in the market for considerable Steel. The local plants are in full operation and all have a fair amount of orders booked. Prices continue to range from $17.60 to $17.75, according to size of order and terms of delivery. It is not believed that $17.50 would be shaded, however desirable the order. We note a sale of 500 tons for early delivery at $17.75 at maker's mill.

Plates.—Competition for business is as keen as ever, and prices have been shoved a peg lower. There is only a moderate volume of business, and there is nothing to indicate that it will be heavier in the near future. We quote as follows: Tank, 1.40¢ @ 1.50¢; Shell, 1.60¢ @ 1.70¢; Flange, 1.65¢ @ 1.75¢; Fire Box, medium quality, 2.50¢ @ 3¢; best quality, 3.50¢ @ 4¢.

Structural Material.—The approaching close of the building season is having its effect, and business has recently fallen off perceptibly. Bridge work is also slow, although there are some old orders yet to fill. Should we be favored with a return to prosperity when the building season opens next year it is certain that there will be a very heavy demand for Structural Material, owing to its very low cost. We quote as follows: Beams up to 15 inches, 1.50¢ @ 1.60¢, according to order. Angles and Universal Plates, 1.60¢ @ 1.65¢; Tees, 1.75¢.

Rails.—Makers claim that the combination price of $29 at mills is still in force. As against this we have reliable information that this price has been shaded very materially on some recent sales. The local mill continues in operation, though not to full capacity.

Ferromanganese.—We continue to quote nominally at $55 for 80 % domestic. An order placed on the market just now would shade this price.

Muck Bars.—We are advised of a sale of 500 tons for November delivery at $20.50, delivered at buyer's mill. This may be considered the ruling price in this market. Very little Muck Bar has been sold here for some time.

Wire Rods.—The market continues fairly active, there being but few prompt Rods to be had. For delivery during the next two or three months $25.50 at maker's mill would be accepted.

Bars.—There is only a fair amount of business offering, and with the mills all desirious of running as full as possible there is naturally very severe competition and prices are somewhat lower. We quote Soft Steel Bars at 1.30¢ @ 1.35¢, with Bar Iron extras. Refined Iron Bars are held at about 1.40¢ at mill, half extras.

Merchant Steel.—There is nothing new to report. Trade is only fairly satisfactory, some of the mills having considerable business while others have very little. Prices are ruling about as follows: Open Hearth Spring Steel, 1.90¢ @ 2¢; Bessemer Machinery, 1.65¢ @ 1.75¢; Toe Calk, 1.90¢ @ 2¢; Tool Steel from 5½¢ upward, according to quality.

Wire Nails.—The active condition of the market referred to in our last report continues. Prices, however, show no improvement, but on the contrary have shown a weaker tendency. While we quote at $1.25 in carload lots at mill, it can be stated that this price is being shaded to some extent. In the Cut Nail market there is nothing new to report. Mills in the Wheeling district have a fair amount of orders on their books, but could take care of considerable additional business if offered. The market is represented by the quotation $1 @ $1.05 at maker's mill for the usual averages.

Barb Wire.—There has been no improvement in demand and the present condition of this industry is unsatisfactory. While we continue to quote $2.25 for Four-Point Galvanized in carload lots, it should be noted that some recent transactions were at a slightly lower figure. We continue to quote Painted at $1.85 in carload lots, but this price is also shaded.

Connellsville Coke.—For the week ending Saturday, October 21, there were 5454 ovens in the Connellsville region in blast and 12,006 idle, with a total estimated production for the week of 48,435 tons. We can report a better demand for Foundry Coke, and prices are being maintained on the basis of $1.50 to dealers and $1.65 to consumers. Coke makers expect an early improvement in the demand for Furnace Coke, and it is the impression that higher prices will prevail on the opening of the new year. We continue to quote Furnace Coke at $1.10 in tons of 2000 pounds, f.o.b. cars in Connellsville region.

St. Louis.

(*By Telegraph.*)

Office of *The Iron Age*, Bank of Commerce Building, ST. LOUIS, November 1, 1893.

Pig Iron.—Reports of low prices are not now so frequently heard, and the impression gains ground daily that the bottom at last has been reached. We have had occasion to make this remark before, when Iron was higher, and this prediction may prove erroneous, like its predecessors, but the fact remains that statistically the market was never in better shape to respond to an increased trade, and it seems unreasonable to assume that furnaces will continue to sell at prices which they claim

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net them an absolute loss. Sales during the week are about on a par with preceding weeks, and prices are practically unchanged. We quote as follows for cash, f.o.b. cars St. Louis :

Southern Coke, No. 1 Foundry	$13.25 @ $13.50
Southern Coke, No. 2 Foundry	11.50 @ 11.75
Southern Coke, No. 3 Foundry	10.75 @ 10.95
Southern Gray Forge	10.25 @ 11.50
Southern Car Wheel	17.25 @ 18.25
Lake Superior Car Wheel	16.50 @ 17.00
Ohio Softeners	16.00 @ 16.50

Bar Iron—Local jobbers report a better demand both from the city and country trade. Prices for lots from store are a trifle higher and are now quoted at 1.70¢ @ 1.75¢. Mills quote 1.45¢, half extras, f.o.b. East St. Louis.

Barb Wire.—The scarcity of Rods has prevented mills from shipping promptly, and they are now pushed to fill their orders. Texas freight rates are again lower and some large shipments are made into that section. Prices are fairly firm, as follows: Mills quote Painted at $2, terms 60 days or 2 % discount for cash Jobbers ask $2.10 for Painted and $2.45 for Galvanized.

Wire Nails.—The weakness noted in our last report continues and $1.40 in carload lots to jobbers is now freely made. Indeed, rumors are afloat of $1.35 and even $1.30 for lots of from 2000 to 3000 kegs, net cash. Jobbers quote $1.50 @ $1.55, according to quantity.

Rails and Track Supplies.— A slight improvement is noted in this department, particularly for Track Supplies. Steel Rails are inactive at $30 @ $31. Splice Bars, Spikes, Bolts, same as last reported. Old Iron Rails dull at $15.

Pig Lead.—This metal is up one day and down the next, so much so that it is almost impossible to keep track of it. Since our last report sales were made at 3.35¢, but offerings are now made for November and December delivery at 3.15¢, with a possibility of 3¢ before the week is out.

Spelter.—No change to report. We continue to quote 3.30¢, but nothing doing at this price.

Chicago.

(*By Telegraph.*)

Office of *The Iron Age*, 59 Dearborn street, } CHICAGO, November 1, 1893. }

There is a distinctly better feeling in several branches of the Iron trade, and the opinion is quite general that a recovery in business will be experienced within the coming 90 days. Inquiries are much better, and in a few instances there is a perceptible hardening in prices.

Pig Iron.—In this branch there is no improvement to be noted. The only line in which there has been an increased business is in Lake Superior Charcoal. It is believed that within the past two or three weeks a considerable quantity of Charcoal Iron has been placed with large consumers at low prices. The only transactions which have come to light are two of 1000 tons each for delivery in this vicinity at about $15.25, on which the terms of payment run until the middle of next summer, although the Iron is to be delivered immediately. Coke Iron is quiet, only one sale of any size being reported, which was 500 tons of Soft Southern. Even the carload business is not any more active than it has been. Inquiries are light. Quotations are now as follows for cash :

Lake Superior Charcoal	$15.25 @ $16.00
Local Coke Foundry, No. 1	13.50 @ 14.00
Local Coke Foundry, No. 2	12.75 @ 13.00
Local Coke Foundry, No. 3	12.25 @ 12.75
Local Scotch	14.00 @ 14.50
Ohio Strong Softeners No. 1	15.50 @ 16.00
Southern Silvery, No. 1	@ 14.50
Southern Silvery, No. 2	@ 14.00
Southern Coke, No. 2	12.10 @ 12.35
Southern Coke, No. 3	11.35 @ 11.60
Southern, No. 1, Soft	12.10 @ 12.35
Southern, No. 2, Soft	11.35 @ 11.60
Southern Gray Forge	10.85 @ 11.10
Tennessee Charcoal, No. 1	16.00 @ 16.50
Alabama Car Wheel	18.50 @ 18.75
Jackson County Silvery	16.50 @ 17.00
Other Ohio Silvery	15 00 @ 15.50

Bars.—The lowest level in this depression seems to have been struck last week when Bar Iron was sold here at 1.35¢, half extras. Since then the market has hardened and the lowest price now quoted on local brands is 1.40¢. The valley mills are standing at 1.45¢, Chicago, and from present indications that quotation will soon be the market rate. Large season contracts are still making their appearance from time to time, and one of this class was closed during the past week at better figures than such contracts realized early in the fall. Inquiries are increasing from the general class of consumers, and carload sales are more frequent than they have been. The local mills are well supplied with business for at least two weeks, which is quite an improvement in their condition. Soft Steel Bars are quoted by most sellers at 1.52½¢ @ 1.55¢, Chicago, and transactions in this line, as well as in Bar Iron, seem to be on the increase. Jobbers report a continued good movement from stock, their best customers still being the Agricultural Implement manufacturers. Store prices remain at 1.60¢ @ 1.70¢ on Bar Iron and 1.65¢ @ 1.70¢ on Soft Steel.

Structural Material.—Revised bids are being received on the Calumet Club Building and specifications are out for a new seven-story hotel. Outside of this there are no large buildings in sight. The demand for Shapes is a little larger from the bridge works, who seem to be in the possession of more orders than for some time. Quotations are maintained at the following prices on mill shipments, Chicago delivery : Beams, 1.75¢ @ 1.90¢; Tees, 1.95¢ @ 2.05¢ ; Angles and Universal Plates, 1.75¢ @ 1.80¢.

Plates.—Inquiries are very light, but dealers are adding to their stock in anticipation of a much better trade during the winter. At present they report only a light demand from stock. Mill shipments, Chicago delivery, are now quoted as follows: Tank Steel, 1.70¢ @ 1.80¢; Shell Steel, 2¢ @ 2.10¢; Flange Steel, 2.10¢ @ 2.20¢; Fire Box, 2.75¢ @ 5.50¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2.25¢ @ 2.40¢; Tank Steel, 2 10¢ @ 2.20¢ ; Shell Steel, 2.20¢ @ 2.40¢; Flange Steel, 2.50¢ @ 2.65¢; Boiler Tubes, 70 %.

Sheets.—The labor troubles in the Sheet mills are interfering with deliveries on contracts and jobbers find much difficulties in supplying their customers. Some of them have just about caught up with sales made during the summer for September delivery. Mill prices show no improvement, but continue to be quoted at 2.75¢, Chicago, for No. 27. Common prices from stock, however, are firmer, and small lots are now held at 3¢. Galvanized Iron is in about the same condition as Black Sheets, with deliveries from mills considerably behind the orders. Juniata Galvanized is still quoted at 75 % off for mill shipment, freight added. Copper Sheets unchanged at 35 % off.

Merchant Steel.—New business continues to come in steadily in moderate quantities, but specifications on contracts are discouragingly slow. Large Steel consumers are of the opinion that there will be a shortage of Steel in January, by which time they expect that the agricultural works will all be in full operation and all trying to get deliveries from the mills at the same time. More sales have been made of Steel Billets at $20. The demand in this direction looks very favorable. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel at 1.90¢ @ 2¢; Ordinary Bessemer Machinery, 1.60¢ @ 1 65¢; Ordinary Bessemer Tire, 1.55¢ @ 1.60¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Rails and Track Supplies.—Steel Rail manufacturers report calls for small lots only of a few hundred tons, which they were able to supply from stock on hand. A considerable proportion of such orders is for Light Rails running down to 30 lb. Standard sizes are unchanged at $30 @ $32; Light Rails to 30 lb, $31.50 @ $32; 12 lb and upward, $34.50; Iron and Steel Splice Bars, 1.50¢ @ 1 55¢; Spikes, 1.85¢ @ 1.90¢.

Old Rails and Car Wheels.— Negotiations are pending for several lots of Old Iron Rails, but no sales have transpired; in the meantime quotations are continued at $14. Considerable more business has occurred in Old Steel Rails, which are quoted at $10 for long lengths and $7.50 @ $8 for short pieces. Old Car Wheels are neglected, with holders asking $13 @ $13.50 for carload lots.

Scrap.—Old Material is moving much better than at any time since June. Every kind of Scrap is in some demand except Steel. Old Rubber is in active demand with advancing prices. Shipments of Iron and Steel Scrap are coming in more freely from the country. Holders are getting anxious to realize and in some cases are selling for but a little more than they are obliged to pay for freight. Dealers' selling prices, net ten, are as follows: No. 1 Forge, $10; No. 1 Mill, $8; Sheet Iron, $4.50; Pipes and Flues, $8 ; Axles, $16; Horseshoes, $11; Fish Plates, $13 ; Spikes and Bolts, $10; Cast Borings, $4.50; Wrought Turnings, $6.50; Axle Turnings, $8; Heavy Cast, $9 50; Stove Plate, $7.75; Malleable Cast, $8 ; Mixed Steel, $7, gross ton; Leaf Steel, $14 50. An error was made in Axle quotations last week which was so apparent that a correction is hardly necessary.

Metals.—Carload lots of Lake Copper are unchanged at 10⅜¢ and casting brands 9¾¢, with very little doing. Consumers of Pig Lead are coming in to some extent and quotations have been advanced to 3.30¢ on large lots and 3.35¢ on single carloads. Spelter seems to be a little firmer and is quoted at 3.45¢.

Samuel Yahres, for some time connected with the Sharon Steel Casting Company, Sharon, Pa., has been elected secretary and treasurer of the Pneumatic Hammer Company of Chicago.

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New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, November 1, 1893.

Pig Iron.—Current business is light and the market is without any strengthening tendency. The last sales of Charcoal Warrant Iron, covering 200 tons, went at a shade over $9, buyer to pay storage, which makes it equivalent to about $10. The previous sales at $3 and $1 were made in the absence of any members of the Iron trade at the Real Estate Exchange. Arrangements have now been made to conduct such sales at the Metal Exchange. We quote Northern brands $14 @ $15 for No. 1; $13 @ $14.25 for No. 2; $12.25 @ $12.50 for Gray Forge at tidewater. Southern Iron, same delivery, $13.25 @ $14.25 for No. 1; $12.25 @ $13.25 for No. 2; $11.50 @ $12.25 for No. 3; $11.75 @ $12.25 for No. 2 Soft, and $12.25 @ $12.50 for No. 1 Soft. Gray Forge is $11.25 @ $12.

Spiegeleisen and Ferromanganese.—No business of any consequence has transpired. We quote: Foreign Spiegeleisen, nominally, for 10 % @ 12 %, $21.50 @ $22, and 20 % $25.50 @ $26, on cars, Jersey City, and Ferromanganese, $55 50 @ $56.

Billets and Rods.—There have been sales of round lots of Billets by Western works to Eastern mills, several thousand tons of special and common Billets being involved. The terms were private, but were not as low as some of the rumors have made them. Open Hearth Billets have sold down to $23.75 at Western mill. Small lots of foreign Special Steel have also been asked for. We quote nominally: Domestic Billets, $20.25 @ $22.50, and foreign Billets, $28 @ $28.50, tidewater; domestic Wire Rods, $28.25 @ $29, and foreign Rods, $39.50 @ $40, tidewater.

Steel Rails.—There is a growing uneasiness in the Rail trade, and indications seem to substantiate the claims that lower prices have been made at other points. In this market no sales have yet taken place to test the matter thoroughly. There is reason to believe that distant mills are making efforts to find customers in the markets tributary to the Eastern mills. The situation will probably be cleared up at an early date.

Track Material.—Small lots are selling at the following prices: Spikes, 1.80¢ @ 1.90¢; Fish Plates, 1.40¢ @ 1.60¢; Track Bolts, Square Nuts, 2.25¢ @ 2.40¢, and Hexagon Nuts, 2.40¢ @ 2.50¢, delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—The work for the Paterson City Hall has been placed, going to the mills in that locality. There has been no relief from the paucity of orders, so that current values have not been tested for some time by any specifications of consequence. As yet the prices for finished material do not appear to have followed the recent heavy decline in raw Steel. We quote nominally: Beams up to 15 inch, 1.75¢ @ 2¢; 20-inch, 2¢ @ 2.25¢, for round lots; Angles, 1.75¢ @ 1.90¢; Universal Mill Plates, 1.65¢ @ 1.90¢; Tees, 2¢ @ 2.15¢; Channels, 1.80¢ @ 2¢, on dock. Steel Plates are 1.60¢ @ 1.70¢ for Tank; 1.75¢ @ 1.90¢ for Shell; 2¢ @ 2.15¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.50¢ @ 1.9¢, on dock, and Common, 1.40¢ @ 1.50¢; Soft Steel Bars are 1.50¢ @ 1.70¢; Scrap Axles are quotable at 1.70¢ @ 2¢, delivered; Steel Axles, 1.70¢ @ 1.90¢, and Links and Pins, 1.70¢ @ 1.80¢; Steel Hoops, 1.75¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ ℔ 45 lb bundle, at mill.

Old Material.—Old Iron Rails are nominally at $13 @ $14; Old Steel Rails, $8 @ $9, and Wrought Scrap $9 @ $11.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, November 1, 1893.

Pig Tin prices have dropped about £2 ℔ ton during the week, prompts selling at as low at £76. 10/ on Tuesday. On the decline there has been only moderate trading in prompts, but transactions in three months' futures were quite heavy, reaching a total of several hundred tons. The sales were chiefly by operators who became alarmed over the decline in silver, unfavorable advices from the American market and very heavy shipments from the Straits. At the close the market was rather quiet; sales at £76. 17/6 for prompts and £77. 10/ for three months' futures.

Copper has averaged somewhat higher. Merchant Bars for prompt delivery sold up to £42. 15/ under the influence of better advices from America, but upon dealers taking profits there was a reaction to £42. 6/3. From the latter point there was some recovery, due chiefly to purchases for American account. Outside speculative interest is quiet and confined to moderate ventures in futures. Prices at the close were £42 @ £42. 2/6 for Merchant Bars, prompt delivery, £42. 10/ @ £42. 12/6 for three months' futures, and £46 for Best Selected English.

Tin Plate prices are still rather irregular, and some business has been done at 3 pence decline from late quotations. Demand is chiefly for moderate quantities of ordinary Cokes, and for special sizes. Stocks at Swansea have increased somewhat and are now estimated at 236,000 boxes. Liverpool quotations are as follows:

IC Charcoal, Alloway grade	12/9 @ 13/3
IC Bessemer Steel, Coke finish.	11/6 @ 11/9
IC Siemens " " "	11/9 @ 12/
IC Coke, B. V. grade, 14 x 20	11/6 @ 11/9
Charcoal Terne, Dean grade	11/3 @ 11/6

Pig Lead has remained stationary in price, and the market is slow, with sellers at £9. 12/6 for Soft Spanish.

Spelter has met with slow sale, and the market is unchanged at £16. 15/ for ordinary Silesian.

In the various branches of the Iron and Steel trade business has continued slow, and prices, while rather weak, show no radical change. Last dealings in warrants were at 42/2 @ 42/3 for Scotch, 34/6 for Cleveland, and 44/6 for Hematite.

The furnace of the Tonawanda Iron & Steel Company, at Tonawanda, N. Y., will go into blast on the 13th inst.

Metal Market.

Copper.—Home consumers have purchased moderate quantities of Ingot through local sales agents and brokers, the aggregate of which, while problematical, seems to have been sufficient, in connection with exports on previous orders and on consignment, to prevent really burdensome accumulation of stock in first hands. The movement has sufficed to steady values a trifle. Further than that, however, it has had no particular influence aside from holding speculative offers of futures in check for the time being, since all indications are that there will be quite enough Copper to go around during the balance of the year. Lake Superior was offered in some quarters at 9¾¢, although the leading producers quote ⅛¢ @ ¼¢ above that price. On Electrolytic the range is 9¼¢ @ 9½¢, and common casting stock is 9⅛¢ @ 9⅜¢, according to brand, delivery, &c.

Pig Tin.—In the price of Straits Tin there has been a decline during the past week of about ¼¢ ℔ lb. Spot stock went as at low as 20 45¢ on Metal Exchange contracts and quite as cheaply at private sale. A month ago the spot price was 21¢, bid. In the interval there has been more or less buying to "average down," with the expectation that the restriction of importations by the McKinley duty should naturally turn the tide by November 1. The speculation, however, has proved to be one of those frequent experiences wherein buyers found it easy to purchase goods, but difficult to realize profits. Steadily declining prices in London, due chiefly to heavy shipments of Tin thence from the primary sources of supply, have doubtless had a certain unfavorable bearing, but lack of local support and absence of outside speculative demand leaves the principal holders at some disadvantage. Apropos of the movement from the Straits, it is worthy of note that 1850 tons were sent to Great Britain and 200 tons to the Continent during the last half of October, and that the total shipments for the month were 3500 tons, against 3225 tons during October last year. This would indicate that the excess in European supply more than balances the decrease in American stocks. The stock in the United States, exclusive of Pacific Coast ports, is, according to the Metal Exchange data, down to 3635 tons, against 6710 tons on August 1. Prices were a shade firmer at the close, with 20.50¢ bid for current month delivery, 20.60¢ for November and 20.70¢ @ 20.80¢ for later deliveries.

Pig Lead.—Under speculative manipulation the price for common domestic Lead was raised to 3.50¢ for November and slightly higher for more distant future deliveries. Lead came out and speculative buyers at the advance went out. Prices eased off, as a matter of course, and very few contracts changed hands at the decline. Meanwhile some business was effected quietly at 3.40¢ outside of the speculative circle and the latter price fairly reflected market value at the close for carload or large lots deliverable during the next 30 days. Consumers have been very indifferent buyers of late and their best bids at present are considerably below those made by speculators. At the end of the week actual Lead was on sale at 3.40¢, prompt shipment, in the face of speculative bids of higher prices for distant future deliveries.

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Spelter.—The higher range of value established last week has been fully maintained, and surface indications are that sellers have gained some further slight advantage. In any event 3.60¢ @ 3.65¢ stand as close quotations on ordinary Western brands in carload or larger lots, and some few sales were reported at those figures. Dealings in this quarter have been on a rather small scale, however, and the demand at present is rather slow.

Antimony.—Only a moderate business is passing, and the market shows no decided change in any particular. On wholesale lots the quotations are about 9⅝¢ @ 9¾¢ for Hallett's, 10¢ for L. X., and 10⅛¢ @ 10¼¢ for Cookson's, in round lots.

Tin Plates.—Although somewhat irregular, the demand for Cokes for both prompt and future delivery has been fairly active, and enough business resulted to impart an air of firmness to the market. Bright Charcoals and Ternes have also met with slightly better sale, chiefly in small lots. In a few instances, where assortments are poor, prices rule a shade higher, but the general line of quotations is very similar to that which prevailed a week ago. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $5.35; J. B. grade, do., $5.40; Bessemer full weight, $5.35 @ $5.40; light weights, $4.95 @ $5 for 100 lb, $4.85 for 95 lb, $4.70 @ $4.75 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60; Siemens Steel, IC basis, $5.65; IX basis, $6.75 @ $7. Charcoals—Melyn grade, IC, $6.37½ @ $6.50; Crosses, $8; Allaway grade, IC, $5.60; Crosses, $6.75; Grange grade, IC, $5.75; Crosses, $6.85. Charcoal Ternes—Worcester, 14 x 20, scarce; do., 20 x 28, $11.35; M. F., 14 x 20, $7.75; do., 20 x 28, $15; Dean grade, 14 x 20, $5.30 @ $5.37½; do., 20 x 28, $10.50 @ $10.60; D. R. D. grade, 14 x 20, $5.15; do., 20 x 28, $10.10; Alyn, 14 x 20, $5.32½ @ $5.35; do., 20 x 28, $10.40; Wasters—S. T. P. grade, 14 x 20, $4.75; do., 20 x 28, $9; Abercarne grade, 14 x 20, $4.60; do., 20 x 28, $8.87½.

Mortimer H. Cort, who was connected for over 17 years with the firm of N. L. Cort & Co., has started in business at 9 Burling slip as importer and dealer in Tin Plates, Pig Tin, Sheet Iron and Zinc.

Financial.

The week under review has seen the long looked for vote in the Senate, which decrees the unconditional repeal of the Silver Purchase law. To-day the House passed the Senate bill with its amendments and all doubts are at rest. That this circumstance will have a most important bearing on the general financial situation throughout the country is undoubted. It is for this event that the business and banking communities in particular have been waiting, and it is but reasonable to expect that its consummation will be followed by a general improvement in the country's financial and industrial condition. That this improvement will be a gradual one is more than likely, as it will naturally take some time before confidence—proverbially a plant of slow growth—will recover from the rude shocks which it has received during the past months of suspense and financial stringency. It is too early yet to discover any substantial evidence of a revival in trade and commerce, but most of the requisite conditions exist for such recuperation. The banks of the country hold an abundant supply of money ready for profitable investment, and with the assurance of stability in the currency, they are now in good shape to afford the necessary accommodation to borrowers. The New York banks in particular have made enormous gains in their reserves. Last Saturday's statement of the Associated Banks displayed a gain of $9,000,000 currency through interior remittances. The surplus of reserve above legal requirements increased $6,140,000, the total now standing at nearly $49,000,000; figures which have been rarely equaled at this time of the year. The fact of such an abundance of unemployed money being available just at the time when other favorable conditions are developing is a good sign for the prospects of an active revival of business in the near future.

The outstanding Clearing House loan certificates in New York have all been canceled, and, for the first time for many weeks, mention is made of a resumption of gold imports. The sum of $1,500,000 has been secured by a New York house from London, and is now afloat. London advices state that a large withdrawal for the United States is expected in that city; and although exchange rose early in this week above a point at which it would be possible to import specie, this condition is regarded as only transitory, while it is known that much capital is waiting on the other side for a favorable time to purchase American securities.

Speculation on the Stock Exchange during the week has been most active, the market prices of nearly all securities rising at one time to a higher level than had been reached since the panic, with a large volume of business. The following statement, giving the business of the exchange for the week ended October 28, shows the remarkable impetus given to speculation by the favorable reports from Washington:

	1893.	1892.	Changes.
Stocks, shares...	2,400,065	2,247,896	Inc.. 152,069
Governments ..	$19,800	.....	Inc.. $ 19,800
State and railroad bonds...	11,714,500	$7,519,000	Inc..4,195,500
Silver certs. oz	30,000	302,000	Dec.. 312,000
Stock rights...	7,451	.....	Inc.. 7,451

The last days of the week witnessed a strong and buoyant market, with a large and well distributed volume of trading. Saturday's transactions aggregated 233,195 shares of stock and $1,126,000 of bonds, a remarkable record for a half holiday. The market closed on Saturday with the whole list of active stocks marked from 5 % to 10 % higher than on the previous Monday, the upward movement continuing to the end of business. Monday saw, however, a not unexpected reaction in speculation, which carried down the list an average of 1½ points. Erie and Union Pacific suffered in particular from well authenticated rumors that these companies would default in the payment of the November interest on their several bond issues. Tuesday's announcement of the passage of the repeal bill by the Senate failed to stimulate the stock market, which, indeed, suffered from a most decided reaction under a heavy "bear" attack, prices dropping along the whole line. This was accounted for by the fact that the action of the Senate had been already discounted and acted upon in the advance of from 10 % to 15 % that had occurred in active stocks during the previous fortnight. It was also said that many speculators had chosen the present time to sell the shares they had bought at low prices during the panic. This was also given as the reason for heavy selling orders from London, which were a marked feature of the day's business. Shrewd foreign operators who acquired stocks during the summer were believed to be intent on securing the handsome profits which have accrued since that time on their purchases. Foreign selling orders of this nature were said to have approached in value about $3,500,000. The market showed firmer, however, at the close of business. The following list shows the extreme fluctuations of the more active stocks since October 25, with closing quotations for November 1:

	Highest.	Lowest.	Closing, Nov. 1.
Am. Sugar Ref.....	105⅓	99	102¼
Atchison, T. & S. Fé....	23⅛	20¼	20⅞
Balt. & Ohio.....	77⅞	73	75⅛
Chicago Gas.....	69¾	63½	67¾
Chic., B. & Q.....	87⅝	82	84
Chic., Mil. & St. Paul...	68¾	63½	66⅝
Chic., Rock Isl. & Pac..	72½	68⅛	70⅛
Del. & Hudson.....	131⅞	128	130¾
Del., Lack & Western...	172	165	171⅞
Gen. Electric.....	52	46¼	48¼
Lake Shore.....	129	127	127¾
Louisville & Nashville...	53	47¼	50⅞
Manhattan.....	135	131	133¾
Missouri Pacific.....	29⅝	25⅝	27½
Minnesota Iron, asked...	....	....	60
National Lead, Common.	29⅝	27½	28¼
New Jersey Central.....	119½	116	119⅜
New York Central.....	104	103	103⅞
N. Y., L. E. & Western.	16	14	14¼
Northern Pacific, Pfd. .	25¼	22⅝	23⅛
Philadelphia & Reading..	23¾	19⅞	21⅝
Richmond & West Pt., Terml.....	4¼	3⅛	3⅝
St. Paul & Omaha.....	39⅜	37¼	39¼
Union Pacific.....	21	17¾	18¾
Western Union.....	93⅞	87¼	90

Government bonds have been strong and unchanged, with no sales on call. Closing quotations on Wednesday were as follows:

	Bid.	Asked.
2s, 1891, registered.....	96	.....
4s, registered.....	111	112
4s, coupon.....	111	112

The movement in the railroad and miscellaneous bond market last week kept pace with that in the stock market, and nearly 100 issues showed advanced prices, dealings being very large, and over 50 % in volume above those of the corresponding week of last year. Values at the same time advanced from 5 % to 10 % in the more active issues. The general bond market was, however, less active in the early part of the present, week, with a downward tendency in prices.

Money on call has been in ample supply at 1½% @ 2 %, a number of special transactions having been made at even as low as 1 %. The demand for accommodation has not yet, however, expanded to any appreciable extent, and the market is entirely in sellers' favor. Time loans are quoted on readily marketable collateral at 3 % @ 3½ % for 30 and 60 days, 3½ % @ 4 % for three and four months, and 4½ % @ 5½ % for longer terms. Commercial paper continues in good demand by out of town banks, rates being quoted at 5 % @ 6 % for choice indorsed receivables, 6½ % @ 7 % for the next grade, and 7 % @ 8 % for choice single names having from four to six months to run.

Foreign exchange was weak and irregular up to Tuesday, with an increase in the volume of cotton bills offered. On that day, however, the market for sterling stiffened appreciably, notwith-

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standing the Senate's action, and bills were in sharp demand against heavy sellings of stocks for London account. Offerings of cotton bills were also lighter. On Wednesday rates were reduced. Actual rates for sterling were quoted at the close as follows: 60 days', $4.80½; demand, $4.83½; cables, $4.83¾ @ $4.84; commercial, $4 79½ @ 4.79¾.

Domestic exchange on New York is quoted as follows: New Orleans, commercial 200 @ 250 discount, bank par; Charleston, buying ⅛ discount, selling par; San Francisco, sight 15, telegraph 20 premium; Savannah, buying ⅛ discount, selling ¼ discount @ par; Chicago, 75 premium; St. Louis, 60 premium. Boston, 15¢ @ 17¢ discount.

Silver continues to decline, the London price for bars being down to 31½ pence ℔ ounce, and in New York 68½¢ ℔ ounce. The latest purchases at the Treasury Department were made at 70¢ ℔ ounce, being a decline of 4½¢ from the price paid for Silver on the first purchase day of October. A large amount of silver has been exported during the week.

The anthracite coal trade shows steady improvement; the output, amounting to about 1,000,000 tons per week, being regularly absorbed. The total amount of anthracite coal sent to market for the week ending October 21, as reported by the several carrying companies, was 1,034,086 tons, compared with 869,105 tons in the corresponding week of last year, an increase of 164,981 tons, and for the year to that date the total tonnage has been 34,264,530 tons, compared with 33,394,150 tons in the corresponding period of 1892, an increase of 870,380 tons

The M. C. Bullock Mfg. Company.

The main exhibit of the M. C. Bullock Mfg. Company, in the southeast central section of the Mines and Mining Building, occupied a space of 45 x 47 feet. These exhibitors applied for a much larger space, intending to exhibit several of their newest designs of transfer and underground rope haulage plants, large geared and first motion plants of the conical drum type, like the various plants which they have furnished the great Chapin Mine, and also a pair of tandem compound Bullock-Corliss engines, operating first motion flat rope reels, similar to the plant which they furnished to the famous Huanchaca Mine of Bolivia, the largest silver mine in the world.

Standing in the center of their space was a fine sample of their sectional portable steel derrick tower, triangular in shape, 16 feet wide at the base, while the apex carrying and supporting the sheave towers 52 feet high in the air. This company are the sole manufacturers of these towers, which were designed and brought out by them to send to tropical countries where the ravages of the weather and insects destroy timber so rapidly that the ordinary timber derrick is both costly and dangerous.

The company showed eight different sizes and styles of diamond pointed prospecting core drills, ranging from their small machines for light prospecting, boring holes to a depth of 300 feet, to their regular sizes of prospecting machines capable of boring holes to depths of 1000 feet to 2500 feet, and to their larger size, the Favorite, which has capacity to bore to a depth of 3000 feet. They also showed one of their new Giant drills, the most powerful diamond drill ever built, and which they will guarantee to bore a hole 1 mile deep. The president of the company, Milan C. Bullock, was the pioneer of this valuable mining appliance, which is and has been such a boon to prospectors and mining engineers in all parts of the world. In passing it may be of interest to state that the first diamond drill was invented by an eminent French engineer, Rudolph Leschot, for use in driving the Mont Cenis tunnel. His idea of arranging and securing the diamonds so as to retain them in the steel setting was complete, and was in itself a great invention, but his lack of combined practical knowledge of mechanics and mining prevented his making practical working machines which could be successfully introduced for prospecting purposes.

Space will not permit a detailed description of all varieties of the Bullock diamond drill, but the following outlines may be interesting to the reader: Their little hand power drill, the Bravo or prospector's friend, for surface or inside prospecting will bore a hole 1⅓ inches in diameter to a depth of 350 feet, taking out a solid cylindrical core $\frac{15}{16}$ inch in diameter, showing an exact cross section of all strata penetrated. The machine is so portable that it can be readily divided into 20-pound packages for transportation by men or muleback.

The Badger is a new type of machine especially adapted to underground prospecting. It is mounted on columns fitted with extension screws and is designed especially for drilling holes to distances of 500 feet ahead of proposed developments. Its single cylinder engine, designed for use either of steam or compressed air, is of the trunk type with patent valve, readily reversed. The feed screw and feed gears are carried in a hinged swivel head, allowing them to be swung back out of the way while removing and returning the drill rods to the hole. The weight of the machine on columns is but 585 pounds, which can be divided into 50-pound packages for muleback transportation.

The Beacon drill is also of new design, especially adapted for light underground work. It is provided with Bullock-Brotherhood three-cylinder engine, with large ports to prevent freezing when using compressed air, its working parts balanced and arranged to run at a high rotative speed. The feed screw and feed gears are carried in a hinged swivel head which is inclosed to prevent injury to the working parts and for the protection of the operator when working in confined localities. The feed gears are so arranged that the rate of advance or reverse (running back the screw) can be changed while the machine is running by simply moving one lever. The Beacon drill will bore a 1⅜-inch hole, taking out a $\frac{15}{16}$ inch core to a depth of 650 feet. It weighs but 530 pounds and can be divided into packages of 50 pounds or less.

The Beauty drill was designed to meet the demand for a light, strong, compact, durable and economical drill, which could be used either on the surface or underground. This machine is driven by a pair of their standard type of trunk engines. It is very compact and light running, and the moving parts are so well balanced that it will run from 1000 to 1500 revolutions per minute without any undue vibration. The valves, ports and passages are short and direct, adapted for use either of steam or compressed air. The swivel head is mounted upon their patent hinged swivel plate, allowing holes to be bored at any desired angle, and can be opened out from the line of holes to facilitate the manipulation of the rods. It is manufactured as a column drill with elevating reel for adjusting to the required hight for work inside of mines, and presents an appearance similar to the Beacon, and can be used either upon bed plate or columns, as desired. This drill is fitted with a hoisting drum capable of handling the required amount of rods, and when mounted on its bed plate weighs only 490 pounds, occupying a space 20 inches square, and can readily be divided into packages weighing not over 75 pounds each. The Beauty bores a 1⅜-inch hole, taking out a core $\frac{15}{16}$ inch in diameter to a depth of 800 feet.

The Crescent is a neat, compact machine, somewhat similar in design to the Dauntless, having its hoisting drum and gearing underneath the crank shaft, arranged to be thrown into and out of gear very readily by the movement of one lever. It is also provided with a brake attachment for lowering long lines of heavy rods. This machine is provided with an improved double cylinder type of hydraulic feed, the cross head being provided with a steel guide, which not only steadies the driving of the spindle, but can also be graduated to show the degree of speed at which the bit is penetrating the rock. The Crescent will bore a hole 1¾ inches in diameter, taking out a $1\frac{3}{16}$-inch core, to a depth of 800 feet.

The Champion is the smallest drill fitted with Bullock's thrust register, and will bore a 1¼-inch hole, taking out a $1\frac{3}{16}$-inch core, to a depth of 1500 feet. The machine weighs only 1200 pounds and can be divided into 100-pound packages for mountain transportation. One of these machines has bored over 100,000 feet of hole and is still in use.

The Dauntless is powerful, durable and economical; is fitted with the patent thrust register and other improvements, and will bore a hole 2 inches in diameter, taking out a $1\frac{7}{16}$-inch core to a depth of 2000 feet. In June, 1893 one of the Dauntless drills completed a 2-inch bore hole at a depth of 2500 feet (the deepest 2-inch hole ever bored), on the Rand-Victoria gold mines at Johannesburg, South Africa, cutting at a depth of 2397 feet a solid blanket vein 5 feet 8 inches wide, carrying a high percentage of visible gold.

The Favorite is one of the latest designs. It is fitted with thrust register, reversible engines and double hoisting drums adapted to handle rapidly and safely long lines of heavy drill rods or casing. It is also fitted with the new device for removing cores from the bottom of deep holes without the loss of time and the labor required for withdrawing and removing the bit and rods and again returning them to the bottom of the hole. For instance, it required ten hours of hard labor for a gang of men to hoist out and return to the bottom of the hole a line of rods 2000 feet long, while with this new apparatus the operators have frequently removed cores from the bottom of holes ranging from 1800 to 2400 feet in depth in 20 to 40 minutes, which covered full time of stopping. The improvement not only effects a saving of time in handling the rods in deep hole prospecting or well boring, but what is of equal importance is the fact that this method of rapid drilling and withdrawal of the cores permits prospecting of the swelling or caving ground which is frequently encountered in the soft coal measures. Among the great number of holes which have been bored with it are three, as follows: One reaching a

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depth of 2006 feet 4 inches, another reaching a depth of 2401 feet 10 inches and another reaching a depth of 2463 feet.

The Giant is the largest diamond drill ever built; it is powerful enough to drill holes varying from 8 inches to 14 inches in diameter to a depth of one mile, and is especially designed for very deep hole prospecting or well boring. It handles a long heavy line of casing, rotating it to the left while at the same time the regular boring tools are as rapidly rotating to the right, boring ahead of the casing. The machine is so arranged that by the movement of a single lever the feed can be stopped, while both the lines of drill rods and casing are kept rotating in opposite directions. Or, if desired, the machine can be put to "jacking up" all of the boring tools, or the casing or the boring tools can be "jacked up" separately, and the machine is so powerful that it will lift 40 tons at the rate of 12 feet per minute. This arrangement is valuable in prospecting in loose, swelling or caving ground. On the upper cross head is carried a pair of the patent thrust registers, one of them showing the weight of the rods, while the other registers the pressure on the face of the bit against the rock, showing accurately all changes of measures the instant they occur, and their distance from the surface. The lower cross head carries a similar register gauge which indicates the condition of the casing bit, when the casing becomes clogged by caving ground, &c.

The exhibitors also showed a small air compressing plant consisting of a 6 horse-power Simplex gas engine belted to a 7 x 7 inch water jacketed air compressor. This engine is a new claimant for honors in America. It was invented in France by M. Delamare Debouteville and M. Malandin, and is being manufactured there in large numbers. It receives one impulse for every other revolution, like other successful gas engines. It has a very simple yet sensitive form of governor, and it will regulate so accurately that it is used extensively for driving electric lighting plants. The charge is fired by electricity, which permits the use of fuel gas of very low illuminating power. In fact, the fuel gas produced by the Lencauchez process "from meager coals" (and which is successfully used with the Simplex gas engine) is so poor in illuminating qualities that it cannot be fired by the ordinary "torch" or incandescent tube used on the English and German gas engines. The arrangement of the valves, firing device and primary battery for furnishing the spark is simple and economical in its action. The larger types of engines are supplied with self starters.

The M. C. Bullock Mfg. Company make a new percussion rock drill, the Monarch. The drill can be operated either by steam or compressed air; it is simple, compact and easily handled. Various sizes of these drills are made, mounted for different classes of quarry and mining work. The patent quarry bars, tunnel columns, shaft bars and adjustable tripods contain many new and novel points of excellence which will readily commend them to the practical quarryman or miner. The following outline covers a few (only) of the special claims for excellence and superiority which the manufacturers make for these drills :

1. The piston strikes an uncushioned blow on the rock.

2. While the recovery is very rapid it is impossible for the piston to strike the back head, for at a certain point of the inward stroke live steam or air at full pressure is admitted behind the piston, thus forming by compression a live cushion which not only receives and arrests the momentum, but starts the piston on its forward stroke with a greater force than that due to the initial pressure of steam.

3. The drill has only two reciprocating parts, the piston and the valve, and the weight of metal is so judiciously distributed that breakage is rare and the cost of repairs is reduced.

4. The drills are all manufactured by the use of jigs and templates, so that all parts are interchangeable, which is of great value to purchasers.

The band friction hoists are built with double engines connected at right angles to the driving shaft, to which is keyed a steel pinion shrouded on both sides for strength; the pinion drives a spur gear which is keyed fast to the drum shaft. The drum is loose on the shaft, the bearing being lined with hard brass bushes to insure longevity and a ready means of repair. The drum is driven by Lane's band friction clutch, which enables the operator to have control of the starting, stopping and lowering of the load without reversing and while the engines are running at full speed. The drum is provided with a powerful band brake for lowering the load without running the engines. Both hoisting and lowering are controlled by the single movement of a hand wheel, which automatically loosens the brake band while tightening the driving band, thus simplifying the manipulation of the machine and diminishing the liability to accident caused by the operator losing his presence of mind. The load may be started gradually, without shock or jar, while the engine is running at full speed, thus bringing the full power of the engine to act on the load in starting it from the bottom, and when the load has reached the top the steam may be shut off, and by one turn of the hand wheel the drum is released and the empty car, bucket, skip or cage is lowered quickly, but under control.

PERSONAL.

James P. Witherow of Pittsburgh sailed for Europe last week.

Sir Henry Wood, secretary of the British World's Fair Commission, has returned to England.

Daniel Adamson of Hyde was a recent visitor in New York.

The statement has been made that low prices for certain grades of pig iron necessarily prove that the metal is being sold below cost of production. It does not follow that because a Southern furnace is selling gray forge at $6.50 when the cost is $7.50 that the plant must be losing money. Let it be assumed that a furnace is making pig iron at that figure and that it is producing, say, equal quantities of gray forge, No. 2, and No. 1 foundry. If the furnace is getting $7.50 for No. 2 and $8.50 for No. 1, it is evidently selling its whole product at an average of $7.50, or at cost, even though there may be an apparent loss of $1 per ton on its sales of gray forge. While our figures are, of course, only chosen by way of illustration, we do believe that there are cases where they are not far out of the way.

Patent and Trade-Mark Laws.

A committee of the Patent and Trade-Mark Congress having had the subject of formulating resolutions before them, reported as follows:

One of the rules under which auxiliary congresses are held is that no resolutions shall be passed relating to controverted matters. We have, therefore, confined those here presented to such matters as seemed to us to have the consensus of all of the opinions which have been heretofore expressed, without attempting to cover many of the valuable suggestions made.

Resolved, By this congress, assembled under the auspices of the World's Congress Auxiliary of the World's Columbian Exposition, for the purpose of considering inventions and trade-marks, and the various systems and laws relating thereto :

1. That for the purpose of encouraging improvements in the useful arts; the development of new industries; and to make it an object for inventors or licensed manufacturers to practically put inventions into operation, a sufficient protection should be given to them to warrant such an undertaking.

2. That as steam and electricity have brought all civilized nations near to each other, some practically uniform international system of granting patents should be adopted under which all of the patents of these several nations may be issued.

3. That some international system for repatenting or registering patents should be adopted by the several nations granting them, whereby patents granted in one country may be made effective in each of the others without burdensome fees, taxes or annuities.

4. That a requirement of working or of putting the invention into use within a stated time is an onerous condition which leads to the non-patenting and to a consequent non-use of inventions which require extensive plants or machinery, and that it is a condition which retards the introduction of inventions in the countries requiring it.

5. That all patents should for their duration be independent of patents for the same invention in other countries and be granted for the same term as that allowed by law for patents in the country granting them, and with no further restrictions than that the applications therefor be limited to the time fixed for applications by citizens and the date of grant antedating that of the oldest prior patent.

6. That a trade-mark valid in one country should be valid the world over to the first user, except only when antagonistic to local laws as to good morals.

7. That priority in the matter of trade-marks should be referred to the time of the commencement of a continuous user, and not to the date of a registration.

8. That a mark connected with a false indication of origin should be considered contrary to good morals.

9. That a committee of five be appointed by the president of this congress charged with the duty of bringing these resolutions before the Congress of the United states and the legislatures of other countries, as well as any future conference under the convention for the Protection of Industrial Property concluded at Paris, March 20, 1883, and to take such steps as they shall deem

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proper to perpetuate this congress as a body for the amelioration of patent and trade-mark laws in their international relations; that this committee have power to fill vacancies and to add to their number members from each country desiring to aid in these enterprises. L. L. Bond, J. M. Thacher, James Buchanan, R. J. Gatling, Francis Forbes, committee.

The committee also reported the following as proposed by Dr. Carl Pieper of Germany: That the culpability of dishonest competition should be universally established and efficiently enforced on the wide field of industrial property. This was also adopted.

The Evolution of the Nail.

The first nails produced in the United States were made by hand, and Fisher Ames of Massachusetts, in a speech made before Congress in 1789, when it was proposed to put a duty of a cent a pound upon all imported spikes, nails, tacks and brads, in order to foster the home product, said of this industry: "It has become common for the country people in Massachusetts to erect small forges in their chimney corners, and in winter and on evenings when little other work can be done, great quantities of nails are made, even by children. These people take the rod iron of the merchant and return him the nails; and in consequence of this easy mode of barter, the manufacture is prodigiously great. This business might be prosecuted in a similar manner in every State exerting equal industry."

In August, 1797, Samuel Briggs of Philadelphia, in connection with his son, is said to have received the first patent for a nail making machine ever issued by the United States, but as at about the same time several inventions for manufacturing nails were made by various persons in different parts of the country, it is still a somewhat disputed point to whom the credit of absolute priority is due.

In 1817 the device known as the Blanchard machine, an invention of Thomas Blanchard and others of Boston, was successfully demonstrated in practical use, and the patent sold to a company for the comparatively small sum of $5000. This Blanchard machine was intended particularly for small nails, brads and tacks, and is the basis of the inventions which are in use to-day.

It is a curious contrast presented by the contemplation of a family engaged at odd hours in their home laboriously shaping nails by hand a century ago and the product of a single day of any one of the many nail and tack factories in States which were then an unknown wilderness, or inhabited by wild animals and wilder Indians.

Fifty millions of small nails and tacks is the daily output of several of these factories, weighing in the aggregate a dozen tons or more, and distributed in all the markets of the world. A single machine is capable of cutting and heading over 15,000 tacks an hour, and shoe nails are cut at the rate of 2000 a minute.

It is not many years since it was the custom in many wholesale houses to keep the boys employed in idle moments picking up and straightening out stray nails which had been removed from packing cases. The wire nail, which in its present form is a comparatively recent invention, has from its convenience and lesser cost so completely superseded the finishing nail and patent cut brad that there is little demand for these one time favorites.

Test of Fire-Resisting Materials.

A rather curious and instructive experiment was carried out in Berlin not very long ago, some account of which may prove interesting to our readers. An old building, which was to be removed to make way for new constructions, was secured, and a competitive test of fire-resisting materials instituted. Of course it was impracticable to rebuild the house with real fire proof construction, but in Germany, as here, there are many manufacturers of materials for building fire proof partitions, or for protecting ordinary wooden construction against fire, and the architects and fire engineers who instituted the test thought, with justice, that a thorough trial of these was of great importance, and that the opportunity of making it should not be neglected. In order to make the test conform as closely as possible to the conditions likely to be met with in practice, the different rooms were fitted up in various ways. Several were left as simple living rooms, with such furniture as would be found in ordinary dwellings; one was fitted up as a furniture manufactory, another as a drug store, a third as a molding mill, a fourth as a storage room for furniture and two others as petroleum stores. The rooms were then assigned to the manufacturers who wished to compete for them to protect according to their systems. In order to make the test as comprehensive as possible, however, the manufacturers were required to protect various pieces of iron work by their own systems, and in some cases, where there was a doubt as to the capacity of the fire-proofing material for enduring a sudden shock, heavy weights of iron were supported above them by light wooden frames, so that on the burning of the frames the weights would fall. Arrangements were made for extinguishing the fires both by hydrant streams and hose from a steam fire engine, so as to test the resistance of the various materials to sudden cooling and to the violent impact of the engine stream, and, with the scientific thoroughness characteristic of the Germans, a set of pieces of different substances, made for the purpose and fusible at known temperatures, was placed in each room, so that the temperature produced by the fire would be registered.

JURY OF EXPERTS.

A jury of experts was appointed, and a large company of architects, fire engineers, builders and scientific men was invited to witness the test. As this lasted several days, the rooms being separately set afire and extinguished, a restaurant in the neighborhood was engaged for the use of the guests, and there the manufacturers displayed drawings and models of their systems, while the preliminary discourse, by the veteran Herr Stude, the Director of the Berlin fire service, was given, and the decisions of the jury announced, in the same place. According to the admirable description in the *Deutsche Bauzeitung*, from which we can only borrow the most important particulars, says the *American Architect and Building News*, it appears that the fire was first set in an upper chamber, which had been treated by an exhibitor from Breslau, a carpenter named Schubert. The novel portion of Herr Schubert's construction consisted in plastering on a network of square wooden rods, interwoven with wire. Plastering in Germany is usually done on reeds, instead of wooden lath, so that the Schubert construction was particularly interesting to the company, and, as his square laths were set with the edge toward the front, he secured a good key, besides protecting a larger part of the surface of the laths than is usual with wooden lathing. In the room tested this sort of lathing was applied in various ways. The old walls and the underside of the rafters were covered with it, and plastered; a partition was made of two thicknesses of it, the laths of the two thicknesses crossing, and plastered on both sides; another partition was made of two thicknesses, but on studding, and the space between filled with slag, and a floor was laid with it and covered with cement, the ceiling under being lathed in the same way, and plastered, while a deafening of earth, in the ordinary German manner, was put between the beams. After the fire was extinguished it was found that, although the temperature, as shown by the fusible standards, had exceeded 1000° C., which is about the melting point of cast iron, the plastering on the Schubert laths showed only unimportant cracks. Where the laths were exposed in these places they were charred, but the mortar at the back of the charred laths was uninjured. The floor of cement on lath was in good condition, and water tight. Besides this construction, however, Herr Schubert showed other devices of a less simple and sensible sort. Among these was a door, consisting of a single sheet of magnesite, applied on a double layer of jute fabric. This door, although it was very small, being only 2 feet wide and less than 6 feet high, had warped under the heat so as to allow the fire to pass through the opening into the next room and patches of the magnesite had scaled off. He had also treated the wooden stairs by soaking them for two weeks with brine and then covering them with asbestos linoleum, a process which the *Deutsche Bauzeitung* calls an "excuse for protection, very disproportionate to the object sought," while it describes the appearance of the staircase as "anything but pleasing."

ONE OF THE MATERIALS TESTED.

The next exhibitor showed a material which reminds one strongly of the so-called "fire proof" materials to which the attention of architects here is frequently called. This substance was a linen canvas, made "fire proof" by impregnation with some mineral salt, and water proof by painting, and represented to be desirable for protecting wood work, covering roofs and laying over floors. According to the report of the jury, who watched its behavior, this valuable material "immediately blazed up" as soon as it was touched by the fire, and, so far as they could see, it presented "no noticeable resistance to fire," although they thought it possible that, being freshly painted, it might not have done so well in this instance as it would under more favorable circumstances. Next to the linen canvas fire proofing came a system of covering with plates of cement-concrete, which was applied to walls, ceilings and floors in one of the rooms, as well as to iron beams; while a partition was built up through the middle of the house, consisting of two thicknesses of it, with an air space between. Although the heat in the room exceeded 1000°, the cement plates resisted admirably. Here and there the cement was slightly cracked, but the wood and iron under it was perfectly protected, the iron beams showing no loss of strength in testing subsequently. The report of the jury pronounced this system, known in Germany as "Boklen's construction" to be "thoroughly fire proof," so far as the results of the test showed.

Sewer pipe manufacturers of the Ohio Valley will, it is stated, form a combination.

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HARDWARE.

Condition of Trade.

OCTOBER BUSINESS was on the whole somewhat disappointing, having failed to come up to the more sanguine expectations of many in the trade. The month opened well, with an evident increase in the volume of business, but this increased demand fell off, and the trade of the month as a whole was only moderate, covering in nearly all cases such goods only as were imperatively required. The delay in repealing the purchasing clause of the Sherman bill is generally regarded as the cause of not a little of the curtailment of business, and now that repeal may be regarded as consummated it is anticipated that there will be the return of a more confident feeling, which will be followed, it is hoped, by a steady improvement. The business of the past month was thus considerably less than that of the average October, and fell still further behind that of last year, which was especially good. A similar comparison might be made between the four months of the current half year and the corresponding time of other years. A somewhat extended inquiry among manufacturers in regard to the way in which the business of July, August and September of this year compares with last year develops a wide diversity, all, however, agreeing that this year there has been a very material falling off in the volume of trade. Some manufacturers refer to this year's business in the three months mentioned as being about half of last year's, and in a few cases this year's proportion is still smaller. Other manufacturers advise us that their business this year is as much as 70 or 75 per cent. of last year's, but so large a proportion is not reported by any considerable number. An average figure for the business of Hardware manufacturers during July, August and September of this year, as compared with the same months of 1892, would be probably not far from 60 or 65 per cent. The amount of business of different manufacturers naturally varies largely with the character of the goods and the class of trade to whom their goods are principally sold. It is the general experience of manufacturers who sell the bulk of their goods to a few large houses that the falling off in this year's trade has been exceptionally heavy, while those who sell to a larger number of customers, including the retail trade and the smaller jobbers, have had a business more nearly normal.

There is little to report in regard to prices except the somewhat lower figures which are ruling on Wire and Cut Nails and Barb Wire, as referred to more fully in the following columns. The tone of the market, however, is not so strong as it has been, and in other lines concessions are made more freely. Some of the leading jobbing houses are also cutting prices with a view to effecting sales and thus lightening their at present not over heavy stock. Some manufacturers, also with a view to securing orders, are yielding somewhat in the matter of prices, but on the whole a conservative disposition prevails among manufacturers and prevents them from seeking business at unprofitable prices. A reduction in the price of raw material in some lines, with lower wages, enables them, however, to produce some goods at a slightly diminished cost. The production of goods in nearly all lines is largely curtailed, manufacturers avoiding the accumulation of stocks, and throughout the country, in the hands of both the wholesale and retail trade, stocks are unquestionably much lighter than usual. When the demand for goods is again vigorous there will probably be difficulty in obtaining them. Much less complaint is made of late in regard to collections, and the financial condition appears to be constantly improving.

Chicago.

(By Telegraph.)

Shelf Hardware jobbers report their trade very dull. The demand for season goods is over for the time, and orders now being received are for general Hardware, but in only very small lots. The country merchants are buying merely what they are absolutely compelled to take, and are keeping their stocks as low as possible. They report that they are cutting down their credits as much as they can, and keeping themselves in good financial shape for what they fear is a period of decided dullness. Jobbers here are inclined to the opinion that the coming two months will be productive of very little business in Shelf Hardware. A great deal more is doing in Heavy Hardware, but mainly in the line of Iron and Steel to the implement manufacturers. The wagon and carriage builders are still doing very little or nothing.

St. Louis.

(By Telegraph.)

There is a gradual improvement in the demand for Hardware, more particularly for shelf goods. A few straggling orders for Builders' Hardware are also received, and a general assortment of winter goods are found in orders now coming in. The general opinion is now current, based on the absolute certainty of repeal, that a largely increased trade will be in order after the turn of the year. One of the largest jobbing houses has just sent out specifications for goods, the delivery of which in former years commenced in January, but which now call for delivery commencing with December and a guarantee that the shipments will be made according to contract. This is a strong indication that this house at least are firm believers in better times in the very near future. Prices are inclined to be a trifle firmer, and some considerable improvement is expected in this direction as the demand continues to improve.

Boston.

BIGELOW & DOWSE.—The Hardware trade is comparatively busy, but no one claims that the volume is as large as it should be at this season. As no one expects it every one is happy in the thought that he is in good company. Dealers' stocks are light and orders from retailers cover the whole line. Outside of a few staple goods prices are being well sustained. Prices of both Steel Cut and Wire Nails are lower. Cordage, Carriage and Machine Bolts and Lag Screws are lower. What the effect of the repeal of the silver clause of the Sherman bill will be no one is willing to prophesy, but all seem to agree that if the Senate had been as prompt in its action as the House every one would have been benefited, but that it is too late now to help trade this fall.

The ease in the money market must help trade in the future. It is helping the remittances now. The indebtedness of the Hardware trade is less now than it has been for a series of years and it is not thought that there will be many failures this fall.

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Baltimore.

CARLIN & FULTON.—Stimulated by cool weather, trade seems more active than when we last wrote, and orders, though not large, are more numerous. Seasonable goods are moving fairly well, and with the recollection of last winter's experience with Skates there is a disposition this year not to wait until the last moment to purchase that line, but to exercise a little faith in the probabilities of ice and snow during the coming winter.

Our travelers in the cotton States report a scarcity of goods in the hands of the retailers, but at the present time they are more interested in marketing the cotton crop and in making collections than in buying goods, and in fact there is never much business done in that section at this time of the year.

It will take some time yet for the trade to recover from the paralysis caused by the action of the United States Senate, but there will undoubtedly be a reaction in the not distant future.

Omaha.

LEE-CLARKE-ANDREESEN HARDWARE COMPANY.—The improvement in the volume of business noted in our previous report still continues. Although orders are not large the aggregate is augmented by the excessive number received daily.

October closes with a record fully up to the same month two years since. It could not be expected to rival October, 1892. Dealers, of course, are not buying with the freedom that formerly characterized their purchases, and economy is more popular just now than extravagance.

Stocks of all kinds are kept down to lowest possible limit, and it is a matter of surprise that the total volume of business should be as large as it is, taking all the drawbacks into consideration.

Collections are strongly inclined to drag, and complaint of the slowness of the country in meeting obligations is frequently heard.

The tremendous draft that the World's Fair has made upon this country is about exhausted, and the immense sums of money left in Chicago by Western visitors, it may be assumed, will return before long, and business must soon feel the effect of the restoration of the natural order of things.

Portland, Ore.

CORBETT, FAILING & ROBERTSON.—With a favorable change in the weather one's ideas of the future are likely to rise with the barometer. In Eastern Oregon and Washington the harvesting machinery is again at work. Should the good weather continue for a month undoubtedly a large amount of grain will be saved that was looked on as lost. The outlook, however, for an increase in business has not improved since our last. While better weather may help some to make payments on accounts now too large and long past due, there will be a necessity of carrying over to the fall of 1894 many that have been expected to pay up sure this fall.

The news of the probable repeal of the Sherman bill that has just reached us gives general satisfaction. Of late it has been hard to find silver men. Many that were for free coinage do not even stop at bimetallism, but go to the extreme of gold only. The curtailment in credits and locking up of money has taught them the evil of their ways where argument only failed to reach them.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—There are but few items of special interest to the trade to report. Business is moving along in about the usual current, to which we have grown accustomed this year. There is considerable demand for seasonable goods, and also some trade in the general line of shelf goods, but the volume of trade is considerably less than that of the corresponding time last year, and jobbers have accepted the situation and have adapted themselves to it to the fullest extent possible. Retail dealers have bought so sparingly for some months past that their stocks are very low, and they are obliged to send in orders more frequently, thus increasing the number of orders, but the amount of sales is, as stated, considerably below those of '92.

Prices have been fairly well maintained in almost all lines of goods; the only special exception being that of Ammunition, which, for some reason, seems to have become somewhat demoralized. It is remarkable that this should occur, as orders for Ammunition have been filled sparingly and quite unsatisfactorily, and jobbers have been more or less out of stock all the while. Still it is a fact that some houses are cutting prices on Ammunition and this is not confined alone to the goods made by those houses whose reputation as to the quality of the goods has not been of the foremost. What the result will be the future alone will determine.

Collections are up to expectations. They might be better, and, again, they might have been considerably poorer. If wheat were bringing 15 cents per bushel higher price trade and collections would be both decidedly improved, but thus far there does not seem much hope of advance at an early date.

Louisville.

W. B. BELKNAP & CO.—A fair volume of business is maintained, based on the barest necessities of consumption. The amount of purchasing is more than usually limited, inasmuch as prices show especial strength, or at least not any tendency toward reaction from their very low level.

There is not an overplentiful supply of goods. It is difficult really to get an assorted order filled at the factory with any degree of promptness.

There is still a marked scarcity of Ammunition and Loaded Shells—factories claim to be several weeks behind in orders, and delayed shipments would confirm this.

Continued low water in the Ohio River has thrown all of the Wheeling and Pittsburgh tonnage, which often comes by river, on to the railroads. This freight with the unusual passenger travel has conspired to keep the railroads tolerably busy, although many of them are showing a heavy decrease in earnings.

A firm belief in the ultimate triumph of repeal in the Senate is the only thing which has given business any life at all. The success of the measure is now fully discounted. The accumulation of money in the various financial institutions (which is noticable here as elsewhere) is doing us very little good until there is a willingness to lend it out on reasonable security. The shrinkage in values and general liquidation have been something extremely unpleasant to reflect on. Possibly it may delight us at some future date to remember these things, but that possibility seems so very remote that it can hardly be taken into account.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—If there has been any change in the volume of trade since our last letter it can be safely said that it is on the side of improvement over the preceding two weeks. Orders have been more frequent and covered a greater line of goods, although in the aggregate they will in no way compare favorably with the trade of one year ago.

We fear in many cases customers have lost their aggressive ambition which existed one year ago; otherwise the hopeful signs as seen in the blue skies at a distance would inspire them with greater confidence for the future.

Credits are scrutinized more carefully than one year ago, especially with the class of trade who were unfavorably located, or who have heretofore been looked upon as "chronic slow pay."

A little incident quite appropriate to the occasion is told by a traveling salesman. While discussing the financial stringency with a customer the customer stated: "Well, I simply at present cannot pay my merchandise accounts as they fall due. My creditors must wait." Said the salesman, "Why, this is a perfect picnic for you. You never did pay your bills promptly. You now have a reasonable excuse, while before it was a chronic disease with you."

We fancy all houses have had some similiar experiences during the last four months. Fortunately, however, a large portion of the trade have a higher regard for their credit, and, under ordinary trade conditions, so systematically manage their business and so watch their maturing accounts that it is unusual for them to be behind in their payments; but, as a rule, we find it is always wise to deal cautiously with a customer who "becomes mad" when one asks for his just dues.

The country has had great occasion and necessity during the last five months to practice what is first impressed upon them in early youth: "Faith, Hope and Charity, and the greatest of these is Charity."

The shock given to our finances some months ago entered the vitals of our banking institutions and trust companies, as well as savings banks, where the mechanic, farmer and wage earner had deposited their slim savings. It closed the doors of hundreds of banks, which resulted in business failures unprecedented, and further extended into the Government's old vaults, and affected our revenue receipts, so that our gold reserve has been largely encroached upon, and the receipts are

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running behind daily expenditures; industrial enterprises became embarrassed; manufacturers closed their doors, throwing millions of people out of employment, and have compelled many thousands to ask assistance even for their daily bread.

Never was there a time when the country needed more quick and active legislation, in order to quiet the nerves of a diseased nation, yet never has there been shown in the Halls of Congress such partisan insincerity, such calm insolence, total disregard for the welfare of the nation, such insulting indifference to the strong appeals, not only from the President himself, but from 1500 mercantile and trade organizations, non-political Boards of Trade, political organizations (both Democratic and Republican), from manufacturers and jobbers, from merchants (both wholesale and retail), mechanics and farmers. North, South, East and West have all joined in the pressing demand for relief.

No stronger demonstration or evidence of what a majority of the American people desire could possibly have been furnished. Besides this the millions of unemployed throughout manufacturing districts, and the cry from the throats of many thousand hungry wives and children, with the possibility of families being turned from their homes because they could not pay their rent, have had no effect upon those Senators who were sent to Congress to legislate intelligently for the welfare of 65,000,000 of people.

The assumption that the representatives from seven silver mining States, showing a population at the last census of less than 1,000,000, as against 65,000,000 (population of the United States), have controlled the action of the Senate, is misleading. It has been the undercurrent of those Senators unfavorable to repeal, who at heart desired free coinage, while on the surface they favored repeal, who encouraged Senators from the silver mining States in this prolonged struggle.

The comparison of our Senate with the House of Lords, as made by some of our papers, places the thing entirely too mildly. There has not been a time during the last half a century when the House of Lords would dare ignore such demands of the people as have been made upon our Senators. There has never been a time during the last 50 years when the House of Lords were not compelled to adapt themselves to the will of the people less clearly expressed than has been the case in our country during the last five months.

It is always in the power of the Prime Minister, when defeated, to go before the country and the House of Lords invariably concede in their action any overwhelming defeat, while in the case of the Senate, through many long tedious weeks, they have been persistently determined that no vote should be taken.

We have always contended that the silver purchasing clause was but one of the four causes of our financial trouble. Had it been otherwise, while waiting for action of the Senate we would have seen ten failures where one has occurred. Had it been otherwise we would not have seen confidence partially restored at a time when a compromise, far worse than the original bill, was assuming vast proportions and repeal looked doubtful.

The pressing necessity for its repeal becomes more apparent each day, as the amount of gold in the United States Treasury is fast becoming depleted, and there is great anxiety and uneasiness in the minds of many, who fear that there will be delay in increasing our reserve after the silver bill has been passed by the Senate.

A strengthening of the United States Treasury by $150,000,000 to $200,000,000 in gold would leave us in a position to assure the world that we could protect our large outstanding indebtedness. Without this, should Congress adjourn, we are liable to a second panic, which, in its effects, may be greater than the first.

Cleveland.

THE W. BINGHAM COMPANY.—We are sorry to be unable to report any increase in trade since our last, but are thankful to report that it is no worse. It seems to have settled down to a hand to mouth basis that is likely to continue throughout the remainder of the year. Prices are fairly steady, but without that firmness characteristic of a rushing trade. In the cities and manufacturing towns business is rather worse than in agricultural districts. Factories still remain closed altogether or are running on short time. Retailers in this city are not busy. Buildings that have been under way are about completed, and the outlook for the winter is not encouraging. Trade in Mechanics' Tools seems to have dropped off entirely. Collections are fair.

San Francisco.

HUNTINGTON HOPKINS COMPANY.—Trade has of late been without special feature. The grain harvest is over, continuing much later this season than usual. The crops in the northern section of the State are rather light, while in the middle and southern sections they are good. The prices, however, are so very low that it is very discouraging to the farmers. As the crops are marketed money becomes more plentiful and collections have been fairly good of late. As a result of the prevailing hard times economy is the rule, and people are satisfied with the necessities of life, so that trade in some lines is very dull.

Locally the prospects of the coming Midwinter Fair have stimulated trade to a certain extent, and from this source we anticipate a lively winter.

Notes on Prices.

Wire Nails.—The past week has developed lower prices on Wire Nails and the market is now represented by $1.25 base for carload lots at mill, but orders for large lots can be placed at $1.20. The aggregate of business has been fairly large, a good many of the trade purchasing for the replenishing of their stocks and most of the mills running, though not to their full capacity. A large sale is reported in the West at a figure somewhat below $1.20, but it is understood to have been for a lot exceptionally large for these times.

Chicago, by Telegraph.—The Wire Nail manufacturers report a continued flow of orders. Inquiries are coming in from a fresh lot of buyers from time to time, showing that the belief generally prevails that this is a good time to stock up, with prices down to the lowest point on record. Quotations are based on $1.32½, Chicago, for largest lots from factory, and $1.40 to $1.45 for single carloads. Small lots from stock are quoted in a regular way at $1.50, but prices show a weakening tendency and good buyers can shade this rate.

Barb Wire.—The Barb Wire market is in an unsettled condition and prices are lower and weak. The market is perhaps fairly represented by the quotation of $2.15 for carload lots of Four-Point Galvanized at mill, but sales have been made at a lower figure. Some manufacturers are, however, holding at a somewhat higher price. The demand is light.

Chicago, by Telegraph.—The Barb Wire trade seems to be getting lighter. Manufacturers talk discouragingly about the present condition of business and prospects for the winter. The factories in operation are running only on part time and even then seem to be overstocking the market. Ordinary Galvanized Barb Wire is quoted from factory $2.40 to $2.50, while 10 cents advance is asked on less than carloads. Jobbers report their trade very quiet, but quote small lots from stock at $2.55.

Cut Nails.—The weakness developed in the Wire Nail market naturally has its effect on Cut Nails, and prices are not as high or as steady as for the past week or two. The market is represented by the quotation of 95 cents to $1 basis for carload lots at mill, but sales have been made at somewhat lower figures. The production of the mills is considerably diminished, and in the East is probably not over 60 per cent. of the capacity of the mills. The New York price for small lots from store is $1.20 to $1.25.

Chicago, by Telegraph.—The Cut Steel Nail manufacturers are doing a better trade than at any previous time this fall. Orders are coming in quite freely for carload lots and meanwhile specifications are being received in better shape from those having time contracts. Prices are unchanged at $1.20 to $1.25, while small lots from stock are still selling at $1.30.

Champion Egg Opener.—The Champion Egg Opener is put on the market by the Magic Introduction Company, 321 Broadway, New York. A description of the Opener appeared in our last issue. The device is sold to the trade at the following net prices:

	Per dozen.
Nickel plated, handsomely embossed	$2.00
Silver plated, in satin lined case	4.50

Crescent Lock Joint Stove Pipe.—This Pipe was illustrated in our last issue as put on the market by Logan, Gregg & Co., Pittsburgh, Pa., by whom it is sold to the trade at the following prices:

4-inch	$2.50	6-inch	$3.00
5-inch	2 75	7-inch	3.25

Solid Steel Putty Knife.—A description of this article appeared in *The*

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Iron Age of last week. It is put on the market by Chas. J. Healy, 106 Chambers street, New York, and is sold to the trade at $1 per dozen. The Knife is nickel plated, with embossed handle.

Forg's Adjustable Door Stop and Holder.—This article is manufactured by P. Forg, Somerville, Mass., and was illustrated in our last issue. It is sold to the trade from the following list, which is subject to a discount of from 20 per cent. to 20 and 15 per cent.:

	Per dozen.
No. 155, 2½-inch, with wall bracket or holder	$6.00
No. 155, 3-inch, with wall bracket or holder	7.25
No. 156, 2½-inch, with floor bracket or holder	5.50
No. 156, 3-inch, with floor bracket or holder	6.75

Plumbers' Self Clamping Tacks.—Evory Mfg. Company, 21 and 23 Ann street, New York, are putting these goods on the market, a description of them having appeared in our last issue. The Tacks are sold to the trade from the following list, which is subject to a discount of 20 and 10 per cent. on the plain and galvanized and 20 per cent. on the nickel plated, the prices given being per 100:

Regular Pattern.

	P. I.	Galv.	N. P.
For ⅜ and ½ inch Pipe	$9.00	$10.00	$15.50
For ⅝ and ¾ inch Pipe	10.00	11.00	16.50
For 1 to 1½ inch Pipe	11.60	12.75	18.25

Single Corner Pattern.

For ⅜ and ½ inch Pipe	$9.00	$10.00	$15.50
For ⅝ and ¾ inch Pipe	10.00	11.00	16.50
For 1 to 1½ inch Pipe	11.60	12.75	18.25

Half Pattern.

For ⅜ and ½ inch Pipe	$5.00	$6.00	$9.00
For ⅝ and ¾ inch Pipe	6.00	7.00	11.00
For 1 to 1½ inch Pipe	8.00	9.00	13.00

Flush and Supply.

For ⅜ to 1½ inch Pipe	$22.50	$35.00	$50.00

Star Pattern.

For ⅜ to ½ inch Pipe	$7.00	$8.00	.....
For ⅝ to ¾ " "	8.00	9.00	.....

Glass.—In round numbers there is a capacity for the manufacture of Window Glass in this country equivalent to 1800 pots. Of these about 10 per cent., or 182 pots, are reported as now in operation. It is understood that the Workmen's Wage Committee are willing to sign an agreement for the coming fire upon the same basis as last year's scale; and are, in addition, willing to submit to a reduction equivalent to the reduction in tariff on Glass should the tariff be revised. Indiana and Pittsburgh manufacturers demand a reduction from last year's scale, and are unwilling to accede to the workmen's terms. There are no printed quotations on Glass, but a fair factory price for Window Glass in car lots is probably 85 and 5 per cent. discount for Single, and 85 and 10 per cent. discount for Double, with freight allowance. Special assortments made up by manufacturers could probably be bought for spot cash in car lots at 85 and 20 per cent. discount. Imported Window Glass is sold at from 75 and 10 and 5 to 80 and 5 per cent. discount. In Plate Glass the price depends entirely upon assortment, and prices from jobbers range from 50 and 10 and 7½ to 60 and 5 per cent. discount. Trade in all lines of Glass is quiet, with little of encouragement for the future.

ANNOUNCEMENT IS MADE by William Rothery, Wm. A. Rothery and Frederick Rothery that the recent death of John Rothery, senior member of the firm of J. & W. Rothery, Matteawan, N. Y., will in no wise change the business carried on by them for so many years. It will be continued as formerly by the surviving member of the old firm and the two sons of the deceased member under the style of Wm. Rothery & Co.

Price-Lists, Circulars, &c.

BELLEVILLE PUMP & SKEIN WORKS, Belleville, Ill.: Air Power and Hand Mining Drills, Ventilating Fans for mines and coal cars, Chilled Car Wheels, Jack Screws, Ratchet and Track Jacks, Copying Presses, &c. These goods are represented in catalogues which illustrate the various lines, with prices and descriptions. Attention is directed to their Post Hand Drill, and the Smith Double Rotary Air Drill, both of which are for use in coal mines.

THE GILBERT & BENNETT MFG. COMPANY, 44 Cliff street, New York, and 148 Lake street, Chicago: Three catalogues—Nos. 125, 126 and 127. The first is devoted to Screens for coal, sand, gravel, &c., Wire Cloth, Coal Dealers' Supplies and Wire Goods. A great variety of Screens is shown for use in handling coal, covering Car Screens, Yard Screens, Pocket or Shute Screens, House Screens, &c. Among these are some new constructions, specially designed to meet particular requirements. The Wire Goods shown in this catalogue consist of Fencing, Poultry Netting, Stove and Grate Guards, &c. The second catalogue is entitled "Fencing and Netting," and covers these subjects thoroughly, including ornamental gates and tools for erecting, fastening and stretching Wire Fencing and Netting. The third catalogue covers Wire Goods in general, such as Flower Stands, Spark Guards, Corn Poppers, Rat Traps, Wire Cloth, Window Guards, Counter and Desk Railing, Stable Fittings, &c. All are profusely illustrated.

NICOL & Co., 55 West Washington street, Chicago: High Art Hair Tools, Hardware specialties, &c. In a catalogue, No. 17, devoted to Hair Tools illustrations, descriptions and prices are given of Nicol's Curling Iron Heater, Ætna Curling Iron Heater, and of the following Curling Irons: Cute, Moustache, Columbia, Queen, French, Favorite, Silver Tipped, Grace Darling, and Cape May; also of Electric Comb Curlers, Cape May Adjustable Wave or Crimping Iron, Lillian Russell silver tipped Crimping Iron and Cape May Pinching Iron. Catalogue No. 18 is devoted to Broom Holders, Twine Boxes, Paper Bag Holders, Wagon Jacks, Bill Files, Showcard Holders, Mail Boxes, House Numbers, Lemon Squeezers, Tourist Lamp Stove, Nut Cracks, Flag Holders, &c.

BRUCE & MARKS, Gas City, Ind.: Marks' patent Grass Hooks, Weymouth patent Hay Knives, Electric and Clip per Corn Knives. An illustrated descriptive price-list shows these goods, with double backs to Corn Knives and Grass Hooks; Corn Knife with hook for picking up fallen corn; also Hay Knife.

THE YOUNGSTOWN STAMPING COMPANY, Youngstown, Ohio: Kerosene Oil Cans, sheet metal specialties, &c. A catalogue devoted to glass oil cans, galvanized iron spout Cans, Tip-top Cans, galvanized Buckets, Sap Pails and Fruit Cans, calls attention to the company's facilities for manufacturing these goods. In addition to the Friend glass Oil Cans, other grades are made including Excelsior, Favorite and Globe. Selected names for quantity orders are made a specialty. Blue brand galvanized iron spout Cans are made in 1, 2, 3 and 5 gallons. Galvanized faucet Cans, Blue brand, are made in 3 and 5 gallons. Cans to tip, Blue brand, are made in 5-gallon sizes only.

How to Keep the Store Neat and Clean.

BY WALTER EIKEL.

That depends on the store—will be an answer which naturally forces itself upon one, when he considers the diversity of store buildings. Where the store means simply a salesroom, with samples only of large goods, and small quantities of shelf goods, the matter of neatness is not nearly as difficult as it is in a store where a single room represents salesroom, office and warehouse combined.

It is absolutely impossible to even imagine a perfectly clean Hardware store. There must be a corner, or a room, and often a number of corners or rooms, where unsightly and dirty things can be stored. Dirt is simply a question of distribution.

Neatness and cleanness mean not so much the absence of dust and dirt as the distribution of these unavoidable evils. When a portion of a store building is devoted only to the display of goods it is not a very difficult matter to keep this portion of the store perfectly neat and clean. Of course, goods will be left on ledges and in improper places during a rush of custom, but a clerk or clerks with an eye for neatness will soon find an otherwise unoccupied moment in which to remedy these irregularities.

INCLINED TO SLOVENLINESS.

"To have a place for everything, and everything in its place," is the great desideratum. This will only be reached when each individual is held responsible for a certain portion of the store, and when clerks who are by nature inclined to slovenliness (and there are such) are forced to be neat in their persons as well as in their surroundings, because a person slovenly dressed, standing behind the counter, will completely counteract the beneficial influence of a neat-looking store on a customer. Of course, it goes without saying that cleanness and neatness are a great attractive feature in a store. Unhappily, many Hardware stores are so unclean and disorderly that ladies

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are afraid to enter them. In such stores goods are usually covered with dust; bright goods are to a greater or less extent corroded, often through careless sprinkling, all of which detracts from the selling qualities of the goods. It is a well-known fact that whoever buys goods wants them to be new, and wants them to look new. Even such people as will leave a new Axe in the open yard during a rainy night will not be satisfied to buy an Axe with a rust spot on it.

A SPRINKLING POT.

It is necessary to have a "general cleaning up" of the store once a day. This should commence on opening the store in the morning. It should be made an inflexible rule that all goods should be in their proper places before closing in the evening. By this the accidental sprinkling of water on goods left on the floor during the day will have been avoided. Much importance attaches to the use and abuse of a sprinkling pot. It is a very easy matter to spray a few drops of water into a Nail bin now and then, or on the base of counters and the legs of Stoves; but each drop will count, and will detract from the general appearance of the store. Even in so insignificant a matter as sprinkling it is necessary to use care and judgment. Of sweeping and dusting, the same may be said. It is impossible that these daily cleanings should be anything more than superficial. To make the cleanness of the store as nearly perfect as possible, it is necessary that on each day, after the general cleaning, and during leisure moments, a small portion of the stock be cleaned thoroughly. To do this, goods must be moved from their places and replaced after thorough cleaning. It is very disgusting for a would-be purchaser to have a cloud of dust blown into his face from the top of a bird cage which is being taken from its hook, and where it had hung unmoved since its arrival in the store.

SHOW WINDOWS.

Show windows (and showcases also, to a more limited extent) should contain samples only, so that it is not ordinarily necessary to remove part of a display to supply a customer. When it is unavoidable to thus "rob" a show window, the missing article should be immediately replaced, since nothing is less attractive than a show window with empty spaces in it. Better have no show window than to have one that is not absolutely neat and clean at all times.

CUSTOMERS SEE TOO MUCH.

New goods should in all cases be unpacked and marked as far away from the interference of customers as possible, preferably in the warehouse, and should be stored as quickly as circumstances will permit. It is very undesirable to have customers see too much of the inside workings of your business. It is therefore a necessity to have a place set apart for the storage of goods pending delivery, or the arrival of invoices, for unpacking and marking. Odd goods, such as samples of articles not in stock, should not be allowed to accumulate in any one place, but should rather be distributed among other similar articles. This will greatly increase the chance of selling, and thus removing them. Never should imperfect goods be allowed to lay about, least of all such as have been returned for imperfections. Broken articles should be either repaired at once, or, when that cannot be done, they should be removed, since all imperfect goods discredit perfect ones of the same kind. Next in importance to the buying and selecting of goods is the keeping of them neat and clean.

Local Hardware Associations.

WE HAVE already referred to the association of Hardware merchants in Chattanooga, Tenn., which has been in successful operation during the present year. Information in regard to the manner in which it is constituted and its method of organization may be of interest to Hardwaremen in other cities and towns, and may suggest the lines on which similar associations may be organized. We accordingly give below a copy of the constitution and by-laws of this association:

Constitution and By-Laws of the Chattanooga Retail Hardware Association.

OFFICERS AND TERMS OF OFFICE.

The officers of the association shall be a president, vice-president, a secretary and a treasurer. The term of office shall be for one year, and the officers shall be elected on the second Monday of March of each year, and shall serve without salary unless the association should see cause to vote a special salary at any time.

DUTIES OF PRESIDENT.

The president shall preside at all meetings. He shall appoint all committees and perform all the duties incident to the office of president.

DUTIES OF VICE-PRESIDENT.

The vice-president shall preside instead of the president in his absence or inability to act.

DUTIES OF SECRETARY.

The secretary shall keep a correct record of all actions taken by the committees and when directed by the association or the committee he shall report same in writing to each member of the association. He shall keep a record of date on which information is given to members, and shall keep a copy book and copy each communication sent out, and perform any duty incumbent upon the office of secretary.

DUTIES OF TREASURER.

The treasurer shall have entire control of the finances of the association. He shall collect all dues and pay all bills and perform any duties incident to the office of treasurer.

MEETINGS.

The regular meetings of the association shall be held on every Monday night unless changed by the president, but the president may call a meeting at any time without stating purpose and action to be taken, and any action taken at such meetings shall be legal and binding.

GOVERNMENT IN MEETINGS.

Parliamentary usage as laid down in Cushing's manual shall govern this body in meetings.

REGULAR COMMITTEES.

The president may appoint a committee of three on prices. It shall be the duty of this committee to adjust all matters pertaining to prices of goods and any special matter that may be referred to them. He may also appoint a committee on railroad rates, &c. This committee shall take action on matters relating to railroads, such as overcharges, demurrage, &c., where such matters are brought before the association for action, and such other matters as may be referred to them. Also a committee of three on credits and finances. This committee shall have charge of all matters pertaining to giving and taking away credits, reporting on past due accounts unpaid, bad debts, &c., and such other matters as may be referred to them from time to time.

Also a committee of three on legislation. This committee shall keep posted on the laws directly affecting the Hardware trade and where in their judgment any good effect can be brought about in any way, the same shall be reported to the association for action.

ALL ACTION BINDING.

Every member of the association shall be bound by the action of the association and the committees on any matter referred to them.

TERMS OF STANDING COMMITTEES.

All committees shall serve for six months, but the same committees may be reappointed at the option of the president.

DUES.

The dues of each member shall be $— , payable quarterly, in advance.

ASSESSMENTS.

The association may at any time assess the members by a two-thirds vote of the entire membership.

ELIGIBILITY.

Any Hardware firm in good standing, doing business in Chattanooga, is eligible to membership, and all members of firms are entitled to attend meetings of the association; but each firm will be entitled to one vote only.

This constitution may be amended at any meeting by a two-thirds vote of the entire membership.

Trade Items.

THE CHICAGO HARDWARE SPECIALTY COMPANY, 147 and 149 Lake street, Chicago, are handling a number of novelties in the Hardware line. Among these is the Standard Stove Mat, made of asbestos, and intended for use on oil, gas or gasoline stoves, to place directly over the flame and thus keep food from burning while cooking. It is claimed that articles which usually require constant attention and stirring to keep them from burning can be cooked without stirring by the use of this Mat. They also sell the Spery combination Grater and Slicer, illustrated in these columns some time since. They further handle the Sunol Express, which is a Tricycle with a box about 28 inches square fastened in the rear to carry merchandise. The rider

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sits on a Bicycle saddle on a center post and operates Bicycle pedals which propel the machine by suitable gearing connecting with the rear wheels. The machine is fitted with ball bearings and is otherwise well and durably made.

WE ARE ADVISED that the H. W. Johns Mfg. Company, who handle Peck, Stow & Wilcox Company's insulated linemen's Pliers, have received a letter to the effect that in a recent trolley accident involving a human life it was not necessary to use rubber gloves to remove the live wire, an 8-inch molded mica Plier being the only tool used. The highly charged and dangerous wire was cut quickly and easily without the least shock to the operator.

THE ELMIRA STAMPING & PAPER COMPANY, Elmira, N. Y., make a specialty of Ithaca red rosin sized Sheathing Paper, put up in rolls of 500, 809 and 1000 square feet. They emphasize the point that this Paper is especially desirable for sheathing purposes.

CHARLES N. HIGHBERGER of the Hardware firm of D. P. Highberger & Son, Wilkinsburg, Pa., died on the 10th ult., after an illness extending over two months. The deceased was in the twenty-fifth year of his age and had assisted his father in establishing the business in which they were engaged, which was started about two years ago. Previous to engaging in the Hardware business Mr. Highberger had been in the service of the Pennsylvania Railroad Company. Mr. Highberger was married in December last to Miss Grace W. Anderson, youngest daughter of William Anderson of the Pittsburgh *Commercial Gazette.* He is highly spoken of for his integrity and personal qualities.

THE SPECIAL HOLIDAY ANNOUNCEMENT of the Bissell Carpet Sweeper Company for the coming holiday season has just been issued, and comprehends a handsome line of Bissell Sweepers, in the construction of which 12 handsome woods will be used. The Sweepers will be packed, one of each wood in each dozen, and will be furnished at regular prices. In order to stimulate the sale of these goods in the hands of the dealers the Bissell Company propose to first spend several thousand dollars in advertising to consumers through the weeklies and monthlies to create a demand for the Sweepers as Christmas presents. Attached to each one of the Christmas styles of Sweepers will be a lithographed gift card by which this special Sweeper can be identified by customers with the one used in their advertisements. In connection with the cards a line of display cards for the dealers' use will also be distributed. The company state that their aim will be to so widely create a demand for the coming holiday season for their high grade goods that dealers will be warranted in stocking up without fear of carrying any over. A pamphlet is issued by the company illustrating and describing the Sweepers; also showing lithograph gift card, display cards and other advertising matter to accompany the Sweepers.

THE BARB WIRE ACT recently enacted in England is now in force. Under this act, when there is on any land adjoining a highway a fence made of Barb Wire, or on which Barb Wire has been placed, and such Barb Wire is a nuisance to such highway, the legal authorities are authorized to have it removed. It is expected that little time will be lost in abolishing the use of Barb Wire along the highways, and the authorities are referred to by our English contemporaries as beginning to enforce the provisions of the act. The suggestion is made to ironmongers that they should give attention as to how they may best avail themselves of the opportunities thus presented for supplying and fixing up other sorts of fencing to replace the Barb Wire which is removed. They also suggest that the action of the authorities might advantageously be anticipated, and that business might in this way be secured by the trade.

E. J. HUSSEY & Co., 80 John street, New York, have been appointed sole agents for the Falls Heater in the State of New York, and are also prepared to handle export trade. The Heater consists of a metal drum, with short pipes extending out from its sides. The drum is hung upon a projective from a standard, directly over the chimney of a lamp, for heating small rooms, offices, &c. The Heater can be adjusted in hight to suit the lamp over which it is used.

SAMUEL M. NICHOLSON, who for several years has held the positions of vice-president and secretary of the Nicholson File Company, Providence, R. I., was on October 21 elected president to succeed his father, the late William T. Nicholson.

Horseshoe Rack.

WE ARE INDEBTED to Murphy, Maclay & Co., Great Falls, Mon., for a description of the Horseshoe rack shown in the accompanying illustrations, Figs. 798 and 799. The rack consists, it will be observed, of an arrangement of boxes, 12 x 12, 18 inches deep, which are suspended in a frame, as shown in Fig. 798. The construction of the boxes and dimensions are shown in Fig. 799. The boxes have on the sides a ¾-inch hole bored a little above their center, with wrought washers screwed against the sides to serve as bearings. A corresponding hole is bored in the uprights and a machine bolt used as an axle. Each box will hold about 125 pounds of Shoes. By tilting the boxes it is easy to get at Shoes for customers and also to replenish the boxes from stock. A sample of the Shoes kept in each box is fastened to the outside, with a printed designation of the kind and size of Shoe. The extreme hight of the frame is 4 feet 2 inches, and the frame is made of sufficient length to accommodate the required number of boxes. Murphy, Maclay & Co. use 32 boxes, which accommodate the three kinds of Shoes they carry. These boxes are divided among four frames, two of which have eight boxes each, one ten boxes, and one six boxes. They are located in the warehouse adjoining the store.

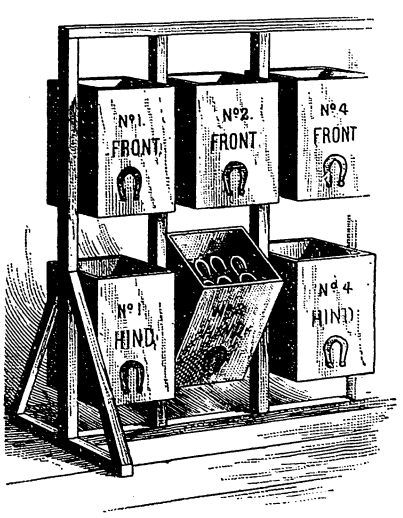


Fig. 798.—Horseshoe Rack.

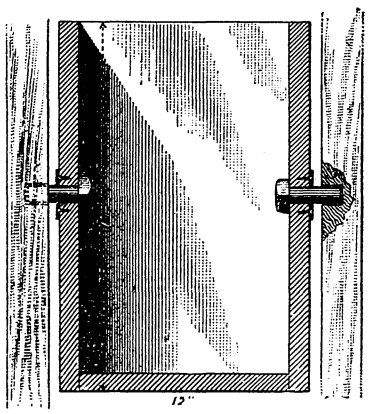


Fig. 799.—Size and Construction of Boxes.

Selling At a Loss.

WE HAVE RECEIVED the following interesting communication from an esteemed Western correspondent:

"I sold two carloads out of store Saturday, but did not make a cent—there was no profit in it." The speaker was a young salesmen representing one of the largest houses in the iron trade in the West. And why "no profit in it?" Was it because the young man lacked capacity to transact business profitably, or are his employers brainless? If no profit, then a loss. There is no other ending, except the final one of bankruptcy. And bankruptcy brought about by a policy so deliberately suicidal is positive dishonesty. All merchandise ought to be sold at a profit to the merchant. Not a profit that will enable him to just live and finally die poor, but a profit that pays his reasonable expenses of doing business and leaving him a comfortable income for old age and his family. But the policy of "there was no profit in it" induces the merchant to contend fiercely for still lower prices when buying goods, thereby forcing values downward. No sooner has he obtained a slight concession than he wires his traveling salesman "take the order at any price." And the man who has just bought at "any price" at once proceeds to "knock out" his hated rival in business by taking the contract or order when there is "no money in it." And so he swings surely toward the point where he "cannot pay," and the one who sold him "two carloads of goods with no profit in it" is struck with possibly $15,000 worth of hopeless debt, and then proceeds to tell everybody that these are terrible times. A house strongly intrenched in capital may stand up for many years under such a policy, but the weaker ones die young.

In my experience I recall no instance of a business governed by a sound policy being forced to the wall and com-

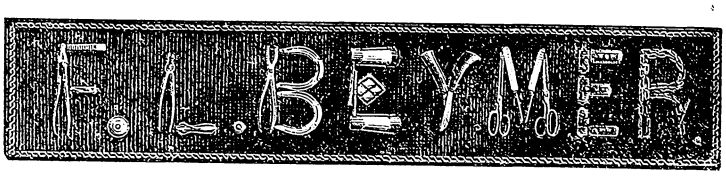
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pelled to accept defeat. I recall a marked example of selling goods with no profit. A buyer for a large house, in my presence, made a strong attempt to secure a concession on a bill of goods, claiming that they were resold at cost. The house is noted for selling goods at low prices, and while they have secured trade in several of the Oriental countries, I have known profitable business almost at their own doors to be neglected. Why send goods to Japan while home trade goes uncared for? Why sell a carload of goods with a value of, say, from $1000 to $1500 for less profit than could be realized on one-tenth of the sum named? When we engage in business we hope to succeed; but we can only have success by getting back our dollar with interest and a profit added. Any other policy than this leads to dishonest bankruptcy.

It is time the press called attention to this subject. It ought to be placed before the eyes of every man in business, and in such a way that when he goes home he will carry the matter in his mind. Thinking about a thing at home generally results in something good.

Closely related to this matter of selling goods at no profit is this: Every traveling man ought to be instructed never to make a price on his goods unless there is a reasonable ground for securing an order. It is not good policy to walk into a wholesale Hardware house in St. Paul and, knowing that the house is already heavily stocked with nails and does not wish to buy, offer 30,000 kegs at 10 cents less than market rates. This is bound to "come back" at the traveling man's house sooner or later with bad results.

Business men, you do not like a loss in dollars and cents, but you do like to see good round profits. Some of you are not on the right track to secure the latter. Think of this matter with care and you may adopt a policy that will secure you a good return on your money invested and at a reduced risk. Better sell less and make more profit than make little profit and sell more.



A Hardware Sign.

A Hardware Sign.

THERE is much ingenuity shown by Hardware merchants in the arrangement of their names in articles of Hardware, for window or store display, or for use in connection with exhibits at fairs, &c. The arrangement illustrated in the accompanying cut was used by F. L. Beymer of Indianola, Iowa, and was placed in connection with a wall exhibit at a fair. The sign was made on a board 7 feet long and 1 foot wide, surrounded by molding and covered with red plush, a bright chain surrounding the whole as a border. The letters were 8 inches in hight and composed of Tools, as shown. The F was formed of Pliers, Rivet Set and Pocket Level; the L of Hog Ringers and Recapper; the B of Spring Punch and two Horseshoes; the E of two Rattle Boxes, two Nutmeg Graters and a fancy Cake Cutter: the Y of two Farrier Knives; the M of two pairs of Scissors and two Table Knives; the E of Cupboard Catches and the R of Halter Chain. Washers, Octagon Machine Nut and Picture Nail were used for periods. The sign attracted the attention of old and young and was a pronounced success. Above it was an exhibit of Tools and Tinware tastefully arranged on a black background, and beneath it on the floor stood cook and heating Stoves, Coal Vases, &c. In front of the Stoves on the floor was a piece of black cloth 2 x 5 feet in size, upon which was written with small brass Safety Chain, in one piece. "Beymer is on south side of square." The i's were dotted with three links of the Chain, and a small steel Square placed after "of" represented the word square. This was read by nearly every one who passed the exhibit, and was especially attractive receiving many commendations.

The Atha Tool Company's Catalogue.

THE illustrated catalogue and price-list of the Atha Tool Company, Newark, N. J., just issued, is a handsomely printed book of 158 pages, bound in stiff cloth covers. The manufacturers state that tools stamped Atha Tool Company are made from best cast steel and are fully warranted, while tools stamped J. Rose, and Standard are made from cast steel, but are not warranted. The line of goods shown includes Nail, Carpet, Farriers' and Riveting Hammers; Prospecting Picks; Prospecting, Carriage Ironers', Machinists', Engineers', Blacksmiths', Plow, Coopers', Clipping, Tinners', Farriers' Turning, Pavers', Upholsterers', Saddlers' and File Cutters' Hammers; Coopers' Drivers, Hoop Sets, Splitting Chisels; Stone Axes, Stone Hammers, Stone and Quarry Picks, Masons' Hammers, Stone Sledges, Drilling Hammers, Blacksmiths' Sledges, Wood Choppers' Mauls, Wedges, Mill Picks, Railroad Track Wedges, Crowbars, Swages, Hardies, Tongs, Cold Chisels, &c. The completeness of the lines of Hammers, Sledges and blacksmiths' tools is referred to; also to the fact that the book has been arranged with the idea of making it one which buyers in the jobbing trade will find complete in these goods, and at the same time easy of reference. It is remarked that a new extra quality of adze eye Nail Hammers and Machinists' Hammers has been recently added to their line, and that both styles of this grade of Hammers are nickel plated, and that the quality of material and workmanship are the best. Several styles of Hammers are shown which, it is stated, have become popular, and which are manufactured exclusively by this company. Among these, particular attention is called to the patented Nail Holding Hammer and to the adze eye Machinists' Hammer, both ball pein and straight pein.

It Is Reported—

That O. R. Cross & Co. are successors to H. Moffett & Co., Hardware merchants, Visalia, Cal.

That Beenvenne & Boulanger are a new firm at Suncook, N. H. They will deal in Stoves and Tinware.

That Stephen Squier has entered the Hardware and Stove business at Buffalo, N. Y. He will also conduct a plumbing department.

That Gimmell & Irvine, dealers in Stoves, &c., Parkersburg, Pa., have been succeeded by Irvine & Galbraith.

That the Hardware firm of Lane & Ellis, Corning, N. Y., have dissolved partnership, I. C. Lane purchasing his partner's interest.

That C. F. Linthurst has disposed of his Hardware business at Exeter, Neb., to Chain & Williams of Utica, who have taken possession. Mr. Linthurst will return to Iowa after he has closed up his business affairs at Exeter.

That A. O. Nelson, manager of the Stillwater Hardware Company, Stillwater, Minn., has been succeeded by George L. Bancroft, who comes from Chicago, where he was for a number of years connected with Kelly, Maus & Co.

That Manfred Sears has purchased the interest of Mr. Hester in the Hardware firm of Plummer & Hester, Dallas, Ore.

That S. M. Beattie of Quitman, Mo., has sold his Hardware stock and residence in that place to R. A. Wyatt.

That John W. Lincoln, Plattsburg, Mo., has sold his stock of Hardware to Logan Trimble and Thomas Messick.

That J. W. Lattin, Wahoo, Neb., has purchased the John Schram & Co. Hardware stock and engaged in business. F. M. Adell will be Mr. Lattin's assistant in conducting the store.

That E. A. and N. M. Worden have bought the Hardware store of Taylor, Stebbins & Co., Hinsdale, N. H. The business will be hereafter carried on under the style of the Worden Company. The Worden brothers were part owners of the store for five and a half years under the firm name of Worden, Jones & Co., having bought out L. A. Lamson. They sold out three years ago to the late E. S. Taylor and W. O. Stebbins.

That the Hardware firm of Osborn & Alexander, San Francisco, Cal., has been dissolved. George W. Alexander will continue the business.

That Grimmer & Dick are a new Hardware house at Calais, Maine.

That W. G. Stanton, Hardware merchant, Oneonta, N. Y., has sold out his stock to Lewis & Wilson.

That Thomas Pearce, Hardware merchant, Little Falls, Minn., has removed to Staples, Minn.

That on the night of the 21st ult. the Hardware store of G. G. Gaston, Steubenville, Ohio, was robbed of a large amount of Cutlery and Firearms.

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To cover up their tracks the thieves kindled a fire in the rear of the store, but the fire was discovered by passers by and extinguished.

That Bakko & Breidal have succeeded M. O. Bakko & Co. in the Hardware business at Kenyon, Minn.

That Byron D. Wilson has purchased the Hardware store of W. Phillips at Excelsior, Minn.

That McKay & Seymour have succeeded B. F. Fowler, Hardware merchant, at Dickinson, N. D.

That O'Connor & Grandy, Hardware merchants, St. Thomas, N. D., have been succeeded by Joseph O'Connor.

That Coulson & Brundage's Hardware store at La Harpe, Ill., was damaged by fire on the 15th ult. Loss, $1000; fully insured.

That Laughlin & Brown, McComb, Ohio, have purchased from the receivers the Hardware stock of Orwig & Starr, and will continue the business at the former stand.

That Simpson Bros. & Co., Duncombe, Iowa, have purchased the Hard ware stock of Creed & Bailey, and moved it into their new brick building.

That W. G. Oliver, Waupun, Wis., has sold his Hardware business to Lovell & Co. of Hustisford, Wis. Mr. Oliver has been in the Hardware business in Waupun for 41 years and thinks he has earned a rest. He will, however, continue the manufacture of the Oliver Street Lamp.

That John Harphol's Hardware store at Clinton, Ky., was destroyed by fire September 22.

That Fred. Bilsborrow has sold his Hardware business at Paw Paw, Mich., to J. Holmes and E. Bilsborrow, who will conduct it under the firm style of Holmes & Bilsborrow.

That burglars broke into the Hardware store of Everson & Hawkins, Oshawa, Ont., on the 25th ult., and stole some 40 Jackknives.

That the Hardware store of O. A. La Budde, Elkhart, Wis., was robbed on the 21st ult. of $100 worth of Guns, Razors and Pocket Knives.

That the Hardware firm of Stilwell & Allen, who have been in business at Glens Falls, N. Y., for 16 years, have been dissolved. C. R. Whipple has purchased the interest of J. M. Allen, and the new firm will be Stilwell & Whipple.

That in a large fire at King City, Mo., on the 15th ult., the Hardware store of T. J. Hasty & Son was entirely destroyed.

That Cobban Brothers' Hardware store, at Groveland, Mass., was burglarized on the 19th ult. The safe was blown open and a small sum of money and some watches taken. The explosion smashed a large stock of Glass and Crockery Ware.

That E. A. Allen, dealer in Hardware, Huntington, Mass., is contemplating selling out his stock of Hardware, Stoves and Tin.

That Fred. Kuhn of the Simmons Hardware Company, St. Louis, will shortly be married to Miss Ottilie Villinger of Mascoutah, Ill.

That the store of C. H. Mason, Hardware merchant, Salamanca, N. Y., was destroyed by fire on the 13th ult. Loss, $4500; insurance, $3000.

That Mr. Burtress of the Hardware firm of Burtress & Evanson, Ulen, Minn., has disposed of his interest in the business to Herman Dahl.

That the firm of J. H. Burbanks & Co., Hardware dealers, Cohoes, N. Y., was dissolved on the 12th ult. The firm will hereafter be known as Burbanks & Co., the partners being Clara E. Burbanks and Adolphus G. Burbanks. The business will be continued at the old stand.

That the safe in the Hardware store of R. W. Wetherbee, Lincoln, Maine, was blown open on the 15th ult., but the burglars were frightened away.

That Kundert & Fitzgerald's Hardware store, at Madison, S. D. was set on fire on the afternoon of the 11th ult., from a kettle of boiling tar on a gasoline stove in the work room in the rear of the store. The energetic work of the firemen, however, saved the building, although the loss by water and smoke is estimated at $3000.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Between slowness of trade in most lines of goods and rather sharp competition in some, the general market presents an unsettled appearance. Thus the "outside" manufacturers of White Lead are aggressive enough to cause some uneasiness among the combined corroders; the "outsiders" interested in Quicksilver Vermilion manufacture have forced a reduction in association prices, and outside of these lines is a sort of helter skelter competition that gives matters anything but a pleasing appearance. It is remarkable in this connection that lower prices have failed to stimulate business in the slightest degree. Spot purchases have been of very commonplace type, at all events, and orders for future deliveries lose something by comparison with the general run at this season of the year. Just now the prospects do not appear brilliant for radical improvement in any line.

White Lead.—Between private offering of "outside" brands at low prices and the aggressiveness of some manufacturers of "quick process" Lead in both private and Government contracts, the market is at least superficially disturbed. Some jobbers go so far as to intimate that the combined corroders have made special prices in a broader area of territory than is generally understood, and that the official list and terms are more "nominal" than otherwise. That jobbers still sell at prices under the "list" is beyond all question of doubt, and there are some signs that the general market, under weight of various adverse influences, is really a weak one.

Red Lead.—Purchases of foreign stock in bulk have been on a moderate scale, and the demand is rather slow at present. German is offered in round lots, to arrive, at 6⅝¢, and might be secured at a shade less for December or later shipment. The naval contract for domestic was taken at a shade under 5¼¢ by an outside manufacturer and knowledge of the fact has a momentarily unfavorable influence upon the general market, as far as large buyers are concerned.

Litharge.—The demand has fallen off to very moderate proportions and business is at present on a rather small scale. There is no positive change in prices, but the market seems to be a shade easier, particularly for the low grades.

Orange Mineral.—Quite good sales have been made of French and German brands for near future delivery, but the movement has not sufficed to affect prices materially. Domestic is quiet and without change.

Zincs.—Raw material has advanced somewhat in price, and that fact, along with steady deliveries of Oxide on former orders, imparts better tone to the market for the latter. New business, however, is still on a moderate scale. Foreign brands sell slowly and at somewhat irregular prices.

Colors, &c.—In American Quicksilver Vermilion prices a reduction to the basis of 53¢ for bulk and 54¢ for bags has been made by the association. Outside manufacturers are meeting the reduction and the market at present is unsettled. In other lines of Colors no positive changes have been announced, but the general market looks rather soft and is unmistakably slow.

Oils and Turpentine.

Drawing the line at a further advance in pressers' prices for Lard Oil for prompt delivery, there has been no change to speak of in the market for Animal and Vegetable Oils. Speculation has remained dormant and export interest continues very tame in all departments. Home trade buying, except of Cotton Seed product by a few large Western consumers, has been of strictly conservative type. As a whole, the situation remains very much the same as it was a week ago, with little sign of immediate radical movement in values.

Linseed Oil.—City pressers keep their price at 40¢ for Raw Oil, and outside brands are offered at 38¢. There has been no pressure to sell from either source, and the market has gained in tone to that extent. The periodical rumor of an agreement between the conflicting interests has circulation, but it does not appear that buyers have been influenced thereby to the slightest extent. In any event most reports were to the effect that business is merely fair for the season.

Cotton Seed Oils.—Fairly good sales have been made of both crude and refined product. It was an uneven, fitful business, but ultimately operated to stiffen prices, and at the close the market showed quite steady tone. Prime crude brought 36¢ @ 36½¢, prime Summer Yellow 40¢ @ 41¢, and other grades corresponding prices.

Lard Oil.—City pressers have advanced their price for prime Oil to 80¢ upward. Receivers of Western brands are asking quite as much, and the general report is that available supplies are moderate. Sales have been small at the advance, and the demand just now is very sluggish.

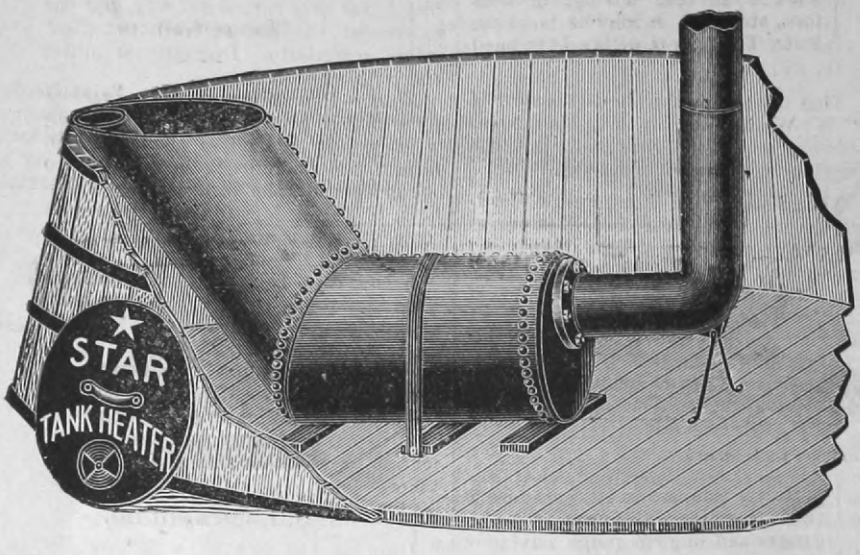
Miscellaneous.—There has been no change in the market for any variety of Fish Oils and former prices prevail throughout. Olive Oil has met with somewhat freer sale at last week's prices. Cocoanut Oil is unchanged and has met with slow sale.

Spirits Turpentine.—Under the influence of quite lively demand prices advanced to 31¢ @ 31½¢, as to style of package. Since then there has been a slight reaction, but the market shows very good tone in the absence of any considerable addition to the supply here.

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The Star Steel Tank Heater.

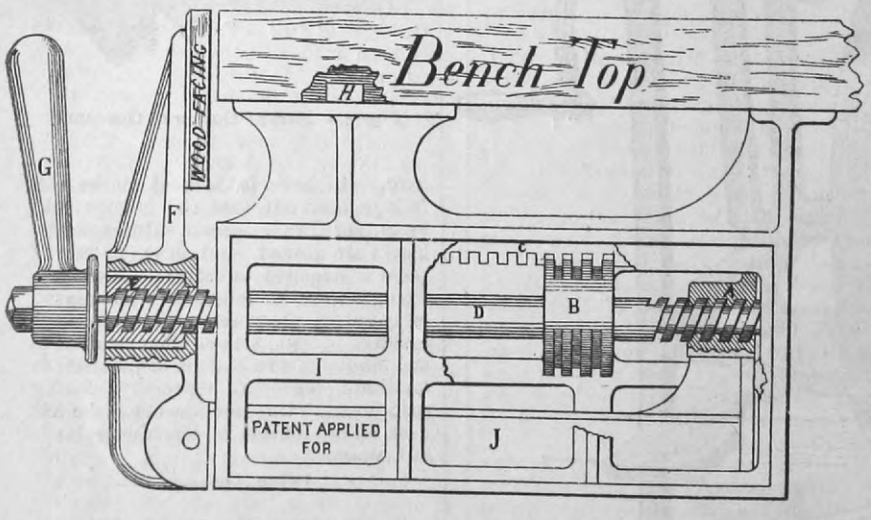
An illustration is presented herewith of a tank heater which has been brought out by Hunt, Helm & Ferris of Harvard, Ill. As will be seen from the cut, it is a stove made of heavy boiler steel which is intended to be placed in the tank to be heated and is almost entirely under the water. It is intended to burn any kind of fuel—hard or soft coal, wood, chips or cobs—can be set in any tank without cutting the tank and the ashes can be taken up at any time without disturbing the fire. Being made of wrought metal exclusively, it is not liable to be broken in shipping, nor to crack or break when in use.



The Star Steel Tank Heater.

The Lightning Quick Acting Bench Vise.

George A. Gumphert & Co., 146 Bread street, Philadelphia, are putting on the market a quick acting bench vise, as illustrated herewith. The device consists of a cast iron casing I having the rack C in its top. The shaft D is made from cold rolled shafting, held in place by the phosphor bronze wheel B. The shaft is connected with the slide J by means of the nut A, and by turning the handle G the slide is made to move backward. The toggle nut E has a thread of coarser pitch than the thread in the nut A, thus the same operation of the handle causes the jaw F to move toward the material held in the vise at a slightly faster pace than the slide J, the object of this being to prevent the springing of the jaw from the top edge of the material. When the handle G is in a vertical position a blank part in the wheel B, from which the thread is cut away, allows the wheel B to run clear of the rack C when the front is pulled out or pushed in. In operation material is held against the edge of the bench, the vise front pushed forward as far as it will go, and the handle turned until the material is held tightly. It is claimed that this is a quick acting vise, combining the screw principle with rapidity of action, in such a way as to secure a tight grip; that it can be attached to a bench in a few moments; that it will take work from zero to 9 inches in thickness, and that it is always ready for instant operation.

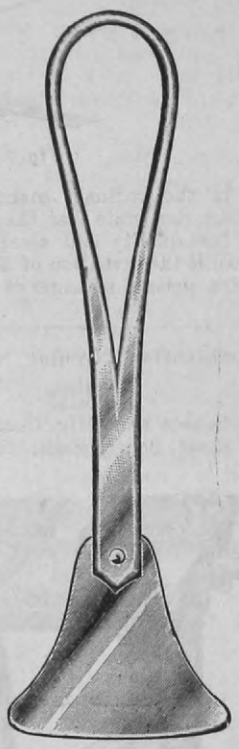


The Lightning Quick Acting Bench Vise.

THE AMERICAN AXE & TOOL COMPANY'S plant, at East Douglas, Mass., was visited by fire on the 21st ult., the reports in regard to which in the daily newspapers have greatly exaggerated the facts. The building destroyed was 200 x 65 feet in dimensions, and the loss, we are advised, is inside of $65,000, which is fairly, if not fully, covered by insurance. Adjusters are now working on the claim. The shop destroyed never employed more than 60 men. The company's stock of Axes at that point, having been stored elsewhere, was not injured, so that by utilizing other factories the company do not expect to be embarrassed in executing orders.

Streeter's Pot Scraper.

The cut herewith shown represents a pot scraper put on the market by N. R. Streeter & Co., Groton, N. Y. It consists of a nickel plated steel blade with a sharpened rounded edge, the blade being attached to a nickel plated metal handle. A combined pot chain and scraper also is made by the same company, in which a pot chain is hung to the blade of a scraper, similar in shape to the one shown in the cut. In operation the scraper blade is put on the pot chain for scouring, or the scraper may be used by itself. This arrangement obviates the necessity of the hand coming in contact with the pot chain when cleaning pots, kettles, &c.



Streeter's Pot Scraper.

McGuire's Edging Shears.

Dille & McGuire Mfg. Company, Richmond, Ind., for whom S. A. Haines is manager of the sales department, are putting on the market edging shears with detachable handles, as herewith shown, a patent on which has been applied for. In Fig. 1 the shears are shown, while their use is illustrated in Fig. 2. They are designed for borders and edges where the ordinary mower cannot be operated. They are also used

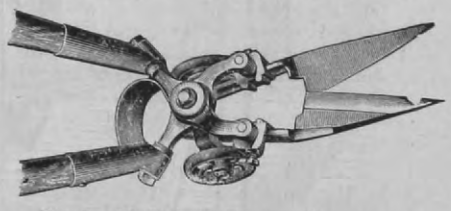


Fig. 1.—McGuire's Edging Shears.

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for trimming shrubbery, both high and low. If desirable the handles may be readily detached and the shears used by hand in the ordinary manner. The manufacturers state that the shears are of the best quality and nicely finished. The tool is the invention of Elwood W. McGuire, general manager of the company.

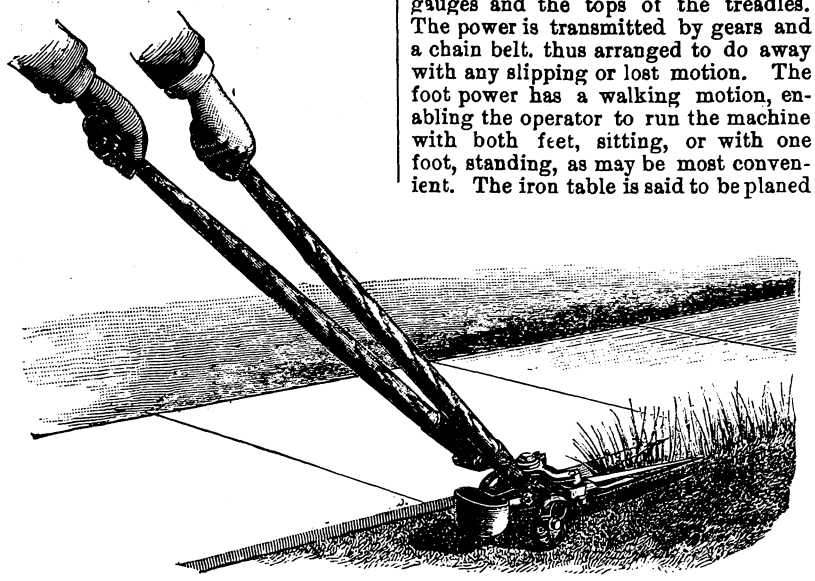
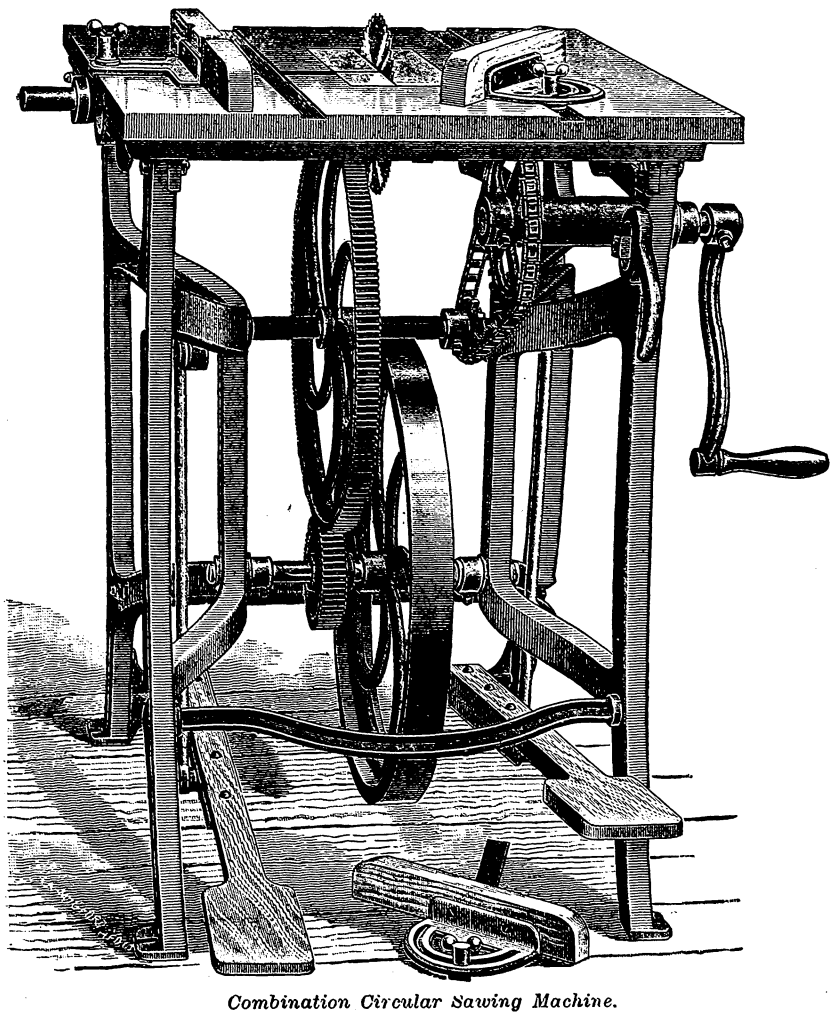


Fig. 2.—Edging Shears in Operation.

Combination Circular Sawing Machine.

The Seneca Falls Mfg. Company, 209 Water street, Seneca Falls, N. Y., are putting on the market the combination circular sawing machine herewith shown. The machine is made of iron and steel, with the exception of the hardwood strips in the center of the table, as well as on the face of the gauges and the tops of the treadles. The power is transmitted by gears and a chain belt. thus arranged to do away with any slipping or lost motion. The foot power has a walking motion, enabling the operator to run the machine with both feet, sitting, or with one foot, standing, as may be most convenient. The iron table is said to be planed perfectly true and in its center are fitted two adjustable sliding cut off or miter gauges and one rip gauge having steel slides fitting the grooves in the table, thus securing, it is claimed, accuracy in their adjustments. The table is hinged at the back and can be adjusted up or down by the hand screw in front for grooving, rabbeting, &c. The machine has been especially designed for the use of carpenters, cabinet, pattern, picture frame and box makers, as well as wood workers generally, and is known as a No. 2 Union combination saw. The manufacturers refer to the machine as being strong, substantial and thoroughly well built, suitable for various kinds of work in light ripping, cutting off, mitering, grooving, gaining, edging up, boring, jointing stuff, &c. Ready for use the machine weighs 305 pounds and when boxed for shipment 410 pounds.



Combination Circular Sawing Machine.

Change Gatherer.

E. Chouanard, 3 Rue Saint-Denis, Paris, France, is offering the change gatherer as herewith shown. It consists of a metallic tray mounted on a base, the tray being held in a horizontal position when not in use, as shown in Fig. 1. Change in coins is placed on the tray by the salesman and slides into the hand of the customer when he tips the tray, by pressing downward with the back of the hand upon the projecting lever at either end. Thus the gatherer may be operated by either hand, whichever is the most convenient. It is pointed out that the change may be gathered in a second, although the hands are gloved, and even if one of them is engaged in carrying packages. The gatherer is designed to be placed on counters, showcases and in front of cashiers' desks, ticket office windows, and similar places and is calculated to facilitate business, especially during rush hours. One of these machines has been on exhibition in Machinery Hall, at Chicago.

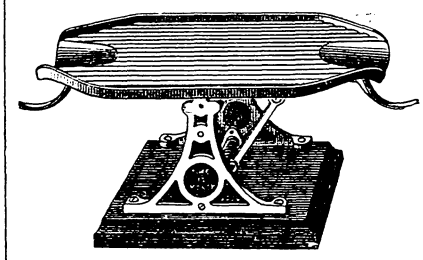


Fig. 1.—Change Gatherer.

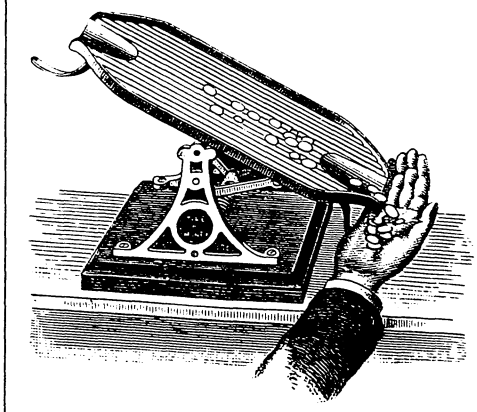


Fig. 2.—Change Gatherer Operated.

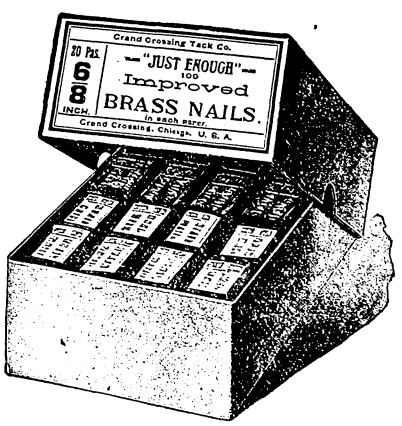
E. Benedict died at his home in Wellington, Ohio, of heart failure on October 25, in the sixty-seventh year of his age. The deceased was born in Sharon, Conn., April 7, 1826, was a miller by trade, but came to Wellington in 1854 and there engaged in the Hardware business, which he carried on to the time of his death. Mr. Benedict is referred to as an exemplary

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citizen, whose loss will be felt by a wide circle of business associates and friends.

"Just Enough" Improved Brass Nails.

Grand Crossing Tack Company, Chicago, Ill., are putting up ⅝ brass nails, as shown in the accompanying cut. The nails are for tapping shoes, and for this purpose each paper contains 100 nails, just enough, it is stated, to tap any pair of boots or shoes. The nails retail at 5 cents a paper, and are packed 20 papers in a carton, 50 cartons in a



"Just Enough" Improved Brass Nails.

case. Swedes iron nails are put up by this company in the same form, but in "double enough" packages, each paper containing 200 nails, or enough nails to tap two pairs of boots or shoes.

New Publications.

CHANCES OF SUCCESS. Episodes and Observations in the Life of a Busy Man. By Erastus Wiman.

Erastus Wiman has been a conspicuous figure in business circles in this country and Canada for a number of years, and has been at different times an eager, if not a very judicious champion of causes coming up. His anxiety to bring together his native and his adopted country has led to scenes bordering on the humorous. He has attempted again and again to drag the Canadians and Americans into one another's arms without conspicuous success thus far. Mr. Wiman has met the majority of the leading men who are making history in this country, and has an exceedingly entertaining and clever way of narrating his experiences. This and a light method of dealing with a serious subject will make his work very attractive to a good many readers.

It is unpardonable, however, when dealing with economic subjects that Mr. Wiman does not better inform himself. In a chapter entitled "Has the National Debt Ever Been Paid?" he takes up the steel rail trade and figures out that since 1865, $17.60, the duty on steel rails, has been paid on the steel put down on 130,000 miles. Figuring at the rate of $1800 a mile Mr. Wiman reaches the brilliant conclusion that there has been expended upon the railroads of the country for duty or royalty to a class a sum of about $235,000,000. Mr. Wiman doubts whether the Government got one-tenth of this sum. It appears that the manufacturers "very kindly and generously distributed to the laboring classes and spent for raw material half the amount realized, but the other half, the royalty of $17.60 per ton, went into the pockets of the patriotic manufacturers." In other words, the steel rail manufacturers have, since 1865, pocketed a little more than $100,000,000. Why did they stop in their extortions at the tonnage required for new roads? An enormous tonnage has been put down for renewals. Did they not exact their $17.60 per ton on that too? Considering the fact that a number of them failed during this process of assimilation of $100,000,000, the remaining few must have absorbed the greater part of this sum. In spite of this, one of the oldest and largest concerns went into the hands of receivers this year. Where did their share of the untold millions go to?

Seriously, it is difficult to conceive how an intelligent business man can do such criminal blundering. There has been no time during the last 20 years when the difference between the price of American rails and of foreign rails was equal to the duty; or in other words, American rail manufacturers have never had a chance, even had they desired it, to make the selling price of their rails as high as the sum of the foreign price and the duty. In the same chapter Mr. Wiman makes the statement that steel rails to-day can be had in England for about $14 per ton. As a matter of fact, the lowest price of which we have heard is £3 10/, equivalent to $17.

It is quite evident that Mr. Wiman depends for his facts upon the reports occasionally printed in the daily press. Thus, in a chapter entitled "Combination Upon Combination," he swallows whole the story that the principal men in the Standard Oil Company have consolidated the iron ore interests of Lake Superior, "a consolidation involving $100,000.000 in value." We need hardly recall to our readers the fact that this much talked of consolidation takes care of only a number of properties in the Mesaba range, while the famous older ranges, the Marquette, Menominee and Gogebic, are still controlled by the same interests which have been the producers for years. We hold that Mr. Wiman has no right to give whatever weight his statements may possess to the perpetration of falsehoods like those referred to. He may be pardoned when he alludes to Andrew Carnegie as "the genial Scot who is playing such a successful 'star engagement' before the American people," because that is a matter between himself and another individual, but he has no right to prejudice great interests by unpardonable slovenliness in the examination of facts.

The Board of Railroad Commissioners of the State of Missouri in their eighth annual report state that they do not think any material increase in the railroad mileage of that State can be reasonably looked for the coming few years. It is true there are large areas in the State totally unprovided with railroad facilities, but these sections are generally but sparsely settled and present physical difficulties in the way of railroad construction which will be hard to overcome within a reasonable limit of cost. The day of speculative railroad construction seems to have passed, and where it cannot clearly be demonstrated that a projected line will be fairly remunerative the capital necessary for its construction cannot be had. It is not probable that railroads in the future will be built in Missouri in advance of actual requirements. There are a few lines in the State for which extensions seem to be necessities, and these extensions may be built, but the commissioners do not think the construction of independent new lines can be expected to any great extent.

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Current Hardware Prices.

NOVEMBER 1, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓@33⅓&10%
Excelsior....₩ doz $10.00.....60&10&2%
North's .....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Eagle Anvils, ₩ ℔ 9¢.....15@15&5%
Peter Wright's.....11@11½%
Armitage's Mouse Hole.....10½@11¢
Am. Wrought, Horse shoe brand..11@11½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise $3.00.....40&10%
Star .....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—

Common Augers and Bits.....70@70&10%
Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....50%
Russell Jennings' Augers and Bits.25&10%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
Snell's Bits.....60&5%
C. E. Jennings' & Co., No. 10, extension lip 40%
C. E. Jenning' & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32⅛ quarters, No. 5, $5; No. 30, $3.50.25%
Lewis' Patent Single twist.....45%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
L'Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....15%
Cincinnati Bell-Hangers' Bits.....30&10

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Swan's 40%
Steer's, No. 1, $26; No. 2, $18.....35@40%
Stearn's No. 2, $48.....20%

Gimlet Bits—

Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25....40&10%
Bee .....25@25&5%
Double Cut:
Shepardson's.....45@45&10%
Ct. Valley Mfg. Co.....30&10%
Hartwell's.....₩ gro., $10.00..40&10%
Douglass'.....40&10%
Ives.....60@60&10%

Hollow Augers—

Ives', French, Swift & Co. (Beecher), Douglass' } 33⅓@33⅓ &10%
Bonney's Adjustable, ₩ doz $48.....50%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's .....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....25@25&10%
Snell's .....25@25&10%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@ 1.40
Awls, Handled Brad....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands.	$7.00	$7.50
First qual., other brands	6.50 / 6.75	7.00
Second quality.....	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1 ..3¼@4¼¢, No. 2, 5¢@6¢ } 3% cash
Nos. 7 to 14.....60&10%
Nos. 15 to 28.....47½%
Nos. 19 to 22 .....70%
Concord Axles, loose collar.....4½¢@6¢
Concord Axles, solid collar.....5½¢@7¢
National Tubular Self Oiling..... 33⅓@33⅓&5

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

Chatillon, ₩ doz.	No. 2000	20	30
	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-in., $1.80; 12-inch, $2.00; 13¾-inch, $2.50; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Dover.....₩ doz $1.00@$1.20
Duplex (Standard Co.).....₩ doz $1.00
Dover (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)..... ₩ doz. $3.50
Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.)..₩ gro $16.50
Spiral.....₩ gro $4.25 @ $4.50
Improved Acme (H. & R. Mfg. Co.)..... ₩ gro. $9.00
Silver & Co.....₩ doz $5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2 .....20%

Bells—

Cow—

Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%

Door—

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. & E. Mfg. Co.'s..50&10&2%
Pull, Brook's.....50&10&2%

Electric—

Wollensak's.....20%
Bigelow & Dowse.....20%

Hand—

Light Brass.....70&10@70&10&5%
Extra Heavy.....70%
White.....70%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Miscellaneous—

Call.....45@50%
Farm Bells.....₩ ℔ 3¢&3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Molders'.....40&10@50%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....75@75&10%
Standard.....70&5@70&10%
Extra.....60&10@60&10&10%
N.Y.B.&P. Co., Carbon.....60@60&5%
N.Y.B.&P.Co., Diamond..... 50@50&5%
N.Y.B.&P.Co., Para.....40@40&5%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron.60@ 60&10%
Moore's Novelty, Mal. Iron..... .....50%
Sure Grip Steel Tackle Blocks 25%
See also *Machines, Hoisting.*

Bolts—

Carriage, Machine, &c.—

Com., list June 10, '84.....80@80&7½%
Genuine Eagle, Norway, list Oct. '84.... 80&5@80&10%
Eagle, Norway, list Oct. '84 80&10@80&15
Phila. pattern, list Oct. 7, '84..... 80%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....80&10%
Bolt Ends, list Jan. 1, 1890.....80&10%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wrought Square.....70&10@75%
Wr't Shutter, all Iron, Stanley's.. 60&10@60&10&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%
Wr't B. K.Flush, Common.....55&10%

Stove and Plow—

Stove.....60&10@60&10&10%
Plow.....60&10&50@60&10&10%
R. B. & W., Plow..... .55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16 '84.....80%
Philadel., list Oct. 16, '84 .....80%
Bay State, list Feb. 28, '83.....65%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Ives' Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20%
Clark's.....33⅓@35%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Boxes, Miter.

Spiker's Excelsior, 3 in. $7.50, 4 in $8 50, 5 in. $13.00, 6 in. $15.00.....20%

Braces—

American Bit Brace and Tool Co..
Nos. 10, 12, 20..... ....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber s.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew s,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Davis Patent.....50&10%

Brackets—

Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting. } Inch..... 9 10 9x11
Per doz...$4.50 5.50 6.50
New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....₩ doz. $12, 50%
Queen City.....33⅓%

Buckets, Well—

Galvanized—

Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers.*

Butts—

Brass—

Wrought Brass.....80@80&10%
Cast Brass, Tiebout's..... 50%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts..... } 75&5@
Mayer's Hinges..... } 75&10
Loose Pin, Acorns..... } &5
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....

Wrought Steel—

Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Indide Blind, Light.....
Loose Pin.....
Bronzed Wrought Butts.....50@50&10

List Jan. 2, 1893, 40@40&10%

Cages, Bird—

Hendryx, Brass or Enameled..... 50&10%
Hendryx, Wood..... .....40&10%

Calipers—See *Compasses.*

Calks, Toe—

Gautier, One Prong, Blunt..... 5½@6¢
Burke's One Prong, Blunt.....5½@6¢
Burke's, Two Prong, Blunt..... 7½@8¢
Burke's, One Prong, Sharp... 6½@7¢

Can Openers—See *Openers, Can.*

Cans, Milk—

S S. & Co.: 5-gal., $3.00; 8-gal., $4 40; 10-gal., $4.75 each ..... 40&10

Cans, Oil—

Galvanized Blue Band, 5 gal., Tip-Top, ₩ doz, $12.00
Galvanized Blue Band, 5 gal , Faucet, ₩ doz., $8.00
Galvanized Blue Band, 1 gal., ₩ doz. $2.25
Glass Oil, Friend.....₩ doz. $2.75

Caps—

Percussion—

Hicks & Goldmark's and Union Metalic Cartridge Co. ₩ 1000
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.... 47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.... 47@50¢
Musket. Waterproof, 1-10's..... 50@53¢
G. D.....27@30¢
S. B. Genuine Imported..... .... 45¢
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire. $1.60

Primers—

Berdan Primers, $1.00..... 2%
B. L. Caps (Sturtevant Shells) $1 00... 2%
All other Primers, $1.20..... 2%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.... 25%

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

Rim Fire Cartridges ....50@5&2%
Rim Fire Military..... ....15&2%
Cent. Fire, Pistol and Rifle.... 25&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed..... } Brass.....55@55&10%
Plate..... } Others....60@60&10%
Shallow Socket...
Deep Socket.....40&10%
Martin's Patent (Phœnix).45&10@50&10%
Tucker's Patent, low list..... 45%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Yale Casters, low list..... 45%
Yale, Gem..... 70%
Giant Truck Casters..... 35%
Stationary Truck Casters..... 50&10%
Socket Truck Casters.....50@50&10%
Gwinner's Common Sense..... 45%
Gwinner's Hercules..... 45%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised May, 1893..... .60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.50	3 40	3.25

Less than cask lots, add½¢@1½¢ ₩ ℔
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12, 1892. 60@60&10%
Covert Halter..... 60&2%
Cover 1Traces..... 35&2%
Cover 1Heel Chain..... 50&2%
Galvanized Pump Chain.
5 ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.75
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔ .....₩ 100 ℔ $7.00
Onelda Halter Chain.....60@60&5%
Jack Chain, Iron and Brass, list July 10, 1893.....60&10%
Barnes' Reinforced Sash ..... 60&10¢
Barnes' Victor Sash.....65¢

Chalk—

See also Crayons.
White, case lots. ₩ gr 50¢; small lots, 52¢
Red, case lots...₩ gr 67¢; small lots, 72¢
Blue, case lots...₩ gr 75¢; mall ots 80¢

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Chalk Lines—See *Lines.*

C ecks, Door—
Unity 50%

Chisels—
Socket Framing and Firmer
P. S. & W ..... }
New Haven ..... }
Witherby ..... } 75&10@75&10&10%
Mix ..... }
Ohio Tool Co. ..... }
Douglass ..... 75@75&5%
Buck Bros 30%
Merrill ..... 60&10@60&10&5%
L. & I. J. White ..... 30@30&5%

Tanged and Miscellaneous.
Tanged Firmers ..... 50@50&10%
Butchers' ..... $4.75@$5.00 to £
Spear & Jacksons' ..... $5 to £
Buck Bros 30%
Cold Chisels, fair quality, ℔ D ... 14@16¢

Chucks—
Beach Pat ..... each, $8.00 ..... 20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury ..... each, $6.00, 30@30&5%
Syracuse, Balz Pat 25%
Graham Patent ..... 33⅓&5
Skinner's Patent Chucks.
Combination Lathe Chucks ..... 33⅓&5
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.
Victor $8.50, 25%
Combination 40%
Universal 40%
Independent 40%

Churns—
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.

Clamps—
R. I. Tool Co.'s Wrought Iron 25%
Adjustable, Cincinnati ..... 15&10%
Adjustable, Hammers ..... 15@15&5%
Adjustable, Stearn's ..... 30@30&10%
Stearn's Adjustable Cabinet and Corner ..... 30@30&10%
Cabinet, Sargent's ..... 70&10%
Carriage Makers', Sargent's ..... 75@75&5%
Carriage Makers', P., S. & W Co. .. 40&10%
Eberhard Mfg. Co. ..... 40&5@40&10%
Warner's ..... 40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenter's, Cincinnati ..... 25&10%
Barnes' Machinists' Clamps ..... 33⅓&5

Cleavers, Butchers'—
Bradley's ..... 25@30%
L. & I. J. White ..... 20&5%
Beatty's ..... 40@40&5%
New Haven Edge Tool Co.'s 40%
P., S. & W ..... 33⅓&5@33⅓&10%
Foster Bros 30%
Schulte, Lohoff & Co ..... 40@40&5%

Clips—
Norway, Axle, ¼ & 5-16 ..... 55&5&5%
2d grade Norway Axle, ¼ & 5-16 .... 65&5%
Superior Axle Clips ..... 66⅔&5@70%
Norway Spring Bar Clips, 5-16 .. 60&5&5%
Wrought Iron Felloe Clips ..... ℔ D, 5½¢
Steel Felloe Clips ..... ℔ D, 5¢
Baker Axle Clips 25%

Cloth and Netting, Wire
—See *Wire, &c.*

Cockeyes 50%

Cocks Brass
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.) .... 60&2@60&10

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Chapman Mfg. Company, new list 40%
Medford Fancy Goods Co. .... 40&10@50%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list 40%
Brass, Pope & Steven's list 40%

Combs, Curry—
Fitch's ..... 50&10@50&10&10%
Rubber, per doz., $10.00 ..... 25%
American Curry Comb Co. .... 33⅓@40%
Kohler's Magic Oscillating. ℔ doz., $2.00
Kohler's Humane ..... ℔ doz., $1.75

Compasses, Dividers &c.
Compasses, Calipers, Dividers. 70&10@75%
Bemis & Call Co.'s
Dividers 65%
Compasses ..... 60&5%
Callipers, Inside or Outside 65%
Callipers, Wing 60%
Callipers, Double 65%
Callipers, Call's Patent Inside 55%
Excelsior 50%
Stevens & Co.'s ..... 25&10%
Starrett's
Spring Calipers and Dividers .... 25&10%
Lock Calipers and Dividers 25%
Combination Dividers 25%

Coolers, Water—
S. S. & Co.: 2-gal., $2.00; 3-gal., $2.50; 4-gal., $2.75; 6-gal., $3.40 each .... 33⅓&5

Coopers' Tools—
See *Tools, Coopers'.*

Cord—

Sash—
Common ..... ℔ D, 8½@9¢
Patent, good quality ..... ℔ D, 10@11¢
White Cotton Braided, fair ... ℔ D, 23@24¢
Common Russia Sash ..... ℔ D, 12½@13¢
Patent Russia Sash ..... ℔ D, 13½@ 14¢
Cable Laid Italian Sash ..... ℔ D, 19@20¢
India Cable Laid Sash ..... ℔ D, 11½@12¢
Silver Lake—
A quality, White, 50¢ 25%
A quality, Drab, 55¢ 25%
B quality, White, 30¢ 10%
B quality, Drab, 35¢ 10%
Sylvan Spring, Extra Braided, White. 34¢
Sylvan Spring, Extra Braided, Drab. .39¢
Semper Idem, Braided, White ..... 26¢
Egyptian, India Hemp, Braided ..... 26¢
Massachusetts, White ..... 25¢
Samson—
Braided, White Cotton ..... ℔ D, 37¢
Braided, Drab Cotton ..... ℔ D, 42¢
Braided, Italian Hemp ..... ℔ D, 40¢
Braided, Linen ..... ℔ D, 56¢
Tate's Solid Braided—
Hercules, White ..... ℔ D, 25¢
Hercules, Drab ..... ℔ D, 30¢
Economy, Drab ..... ℔ D, 27¢
Economy, White ..... ℔ D 22¢
Ossawan Mills—
Braided, Giant, White, ℔ D 30¢ 20%
Braided, Giant, Drab and Fancy, ℔ D 36¢ 10%
Braided, Crown White, ℔ D, 50¢ .. 50%
Braided, Crown Drab and Fancy, ℔ D, 55¢ 30%

Wire Picture—
Braided or Twisted ..... 80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers Nut—
Table (H. & B. Mfg. Co) 40%
Blake's Pattern, ℔ doz., $2.00 ..... 10%
Turner & Seymour Mfg. Co. 50%
Acme.
Japanned, ℔ gro., $30 ..... 50%
Nickel Plated, ℔ gro. $30 ..... 10%

Cradles—
Grain ..... 50&2@50&5&2%

Crayons—
White Crayons, ℔ gross ..... 7@8¢
D. M. Stewart Mfg. Co.:
Metal Workers', ℔ gross, $1.75 ..... 25%
Rolling Mill, ℔ gross, 2.50 ..... 25%
Railroad, ℔ gross, 2.00 ..... 25%
Soapstone Pencils, ℔ gross, 1.00 ..... 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—
See *Combs, Curry.*

Curtain Pins—
See *Pins, Curtain.*

Cutters—

Meat—
Dixon's, ℔ doz. ..... 40@40&5%
Nos. 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Woodruff's, ℔ doz. ..... 40@40&5%
Nos. 100 150 20
$15.00 $18.00
Hale's, ℔ doz. 70%
Nos. 11 12 13
$27.00 $33.00 $45.00
American 35%
Nos. ..... 1 2 3 4 B 5
Each $5 $7 $10 $25 $50 $60
Enterprise 25%
Nos. 10 12 22 32 42
Each $3 $2.50 $4 $6 $15
Little Giant, ℔ doz. ..... 40&10@50%
Nos. 305 310 312 320 322
$35.00 $48.00 $44.00 $72.00 $68.00
Triumph No. 505, ℔ doz., $21.00 .. 25@30%
Miles' Challenge, ℔ doz. ..... 45@45&10%
Nos. 1 2 3
$22.00 $30.00 $40.00
Home No. 1, ℔ doz., $26.00 ..... 55&10%
Draw Cut, each:
Nos. 5 2 6 8
$50 $75 $80 $225 ..... 20@25%
Beef Shavers (Enterprise) 20%
Chadborn's Smoked Beef Cutter, ℔ doz., $66.00

Slaw and Kraut—
Tucker & Dorsey Mfg. Co.:
Slaw Cutters, 1 Knife, ℔ gross ... $21.00
Slaw Cutters, 2 Knife, ℔ gross ... 30.00
Kraut Cutters 40%

Tobacco
Champion ..... 20&10@30%
All Iron ..... ℔ doz., $4.25
Nashua Lock Co.'s .. ℔ doz., $18.00, 50@55%
Wilson's 55%
Sargent's ..... ℔ doz. $24.00, 55&10
Acme ..... ℔ doz., $20.00, 40%

Washer—
Smith's Pat. .... ℔ doz., $12.00, 20&10&10%
Johnson's ..... ℔ doz., $11.00, 33⅓%
Penny's .. ℔ doz.,, Pol. $14; Jap'd, $16, 55%
Appleton's ..... ℔ doz., $18.00, 60&10%
Bonney's ..... 30&10%
Cincinnati ..... 25&10%

Diggers, Post Hole, &c.—
Samson, ℔ doz., $34.00 ..... 25@25&10%
Fletcher Post Hole Augers, ℔ doz., $36.00, 20@20&10%
Eureka Diggers ..... ℔ doz. $12.00@$13.00
Vaughan's Post Hole Auger, ℔ doz., $8.50@$9.50
Kohler's Little Giant ..... ℔ doz., $18.00
Kohler's Hercules ..... ℔ doz., $14.00
Kohler's Invincible ..... ℔ doz., $12.00
Kohler's New Champion .... ℔ doz., $8.00
Scheidler ..... ℔ doz., $18.00
Cronk's Post Bars, ℔ doz., $60.00, 50&5@50&10%
Gibb's Post Hole Digger ..... ℔ doz., $15.00
Gibbs' National ..... ℔ doz., $12.00
Gibbs' Columbia ..... ℔ doz., $13.00
Gibbs' Imperial ..... ℔ doz., $7.50
Shimer's Hollow Handle .. ℔ doz., $24.00, 50%
Gem, Improved ℔ doz... $9.00@$10.00 net

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers.
Money, ℔ doz ..... $18@$20
Waddell's Improved, ℔ doz $15.00

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Blacksmiths' ..... each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Breast, P. S. & W ..... 40&10%
Breast, Wilson's ..... 30&5%
Breast, Millers Falls ..... each $3.00, 25%
Breast, Bartholomew's .... each $2.50 25&10@40%
Ratchet, Merrill's ..... 20@20&5%
Ratchet, Ingersoll's 25%
Ratchet, Parker's ..... 20@20&5%
Ratchet, Whitney's ..... 20&10%
Ratchet, Weston's ..... 20@25%
Ratchet, Moore's Triple Action .... 25@30%
Ratchet, Curtis & Curtis 30%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00 ..... 20&10%
Automatic Boring Tools ..... $1.75@$1.85
Chicopee Automatic Drill ..... 20&10%
Goodell Automatic Drills ..... 40&5%

Twist Drills—
Cleveland ..... 50&10&10%
Diamond, W. & B ..... 50@10&10%
Graham's Pat. Groove Shank. 50&10&10%
Morse ..... 50&10&10%
New Process ..... 50&10&10%
Standard ..... 50&10&10%
Syracuse (Metal list) ..... 50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Douglass Mfg. Co. ..... 20@20&10%
Disston's 50%
Buck Bros 30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles ..... 65&10%
No. 86 ..... 70&10%
Sargent & Co.'s
No. 1, Forged Blade ..... 60&10&10%
Nos. 20, 40 and 60 ..... 66⅔&10&10%
P. S. & W 70%
Knapp & Cowles
No. 1 ..... 60&20@70%
No. 2 ..... 60&10&10@70&5%
No. 3 ..... 60&5@60&10%
Nos. 4 and 00, Acme and Ideal ... 50&5@50&10&5%
Stearns' ..... 25&10&5%
Gay & Parsons 35%
Champion ..... 25&10%
Clark's Pat ..... 30@33⅓&5
Ellrich's Socket and Ratchet .. 25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense .. ℔ doz., $6.00 25&10%
Syracuse Screw-Driver Bits .... 30&30&5%
Screw Driver Bits ..... ℔ doz., 50@75¢
Screw Driver Bits, Parr's .. ℔ gross, $6.25
Fray's Hol. H'dle Sets ... No. 3, $12.00, 45%
Cincinnati ..... 25&10%
Brace Screw Drivers ..... 25&10%
Buck Bros.' Screw Driver Bits .... 27½&5%
Goodell's Automatic 50%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
C. T. Williamson Wire Novelty Co. 50%

Egg Beaters—See *Beaters, Egg.*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF.

	46 gr.	150 gr.	F.FF.
Kegs, ℔ D	4½¢	5 ¢	2½¢
½ kegs, ℔ D ...	4¾¢	5½¢	2¾¢
¼ kegs, ℔ D ...	5 ¢	5½¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6½¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—
Door Lock .... Same dis. as Door Locks.
Brass Thread ..... 60@60&10%
Wood 25%

Expanded Metal—
List No. 5.
Lathing 10%
Fencing, Painted Sheets 20%
Netting, Painted Sheets 20%
Door Mats, Galvanized 25%
Window Guards, Paneled 15%
Tree Guards, Paneled 15%

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Mackrell's, ℔ doz., $1.00 ..... 20@20&10%
Van Sand's Screw Pat, $15 ℔ gr.. 60&10%
Van Sand's Old Pat., $15 ℔ gr. .... 55&10%
Austin & Eddy No. 2008 ..... ℔ gr., $9.00
Security Gravity ..... ℔ gr., $9.00
Zimmerman's ..... 50&10%

Faucets—
Fenn's 40%
Fenn's Cork Stops ..... 33⅓&5
Star 60%
Frary's Pat. Petroleum 60%
B. & L. B. Co.
West's Lock, Open and Shut Key .. 50%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list. 60%
Metallic Key, Leather Lined .... 60&10@60&10&10%
Cork Lined ..... 70&5@70&10%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots .... 50&10%
John Sommers'
Peerless Best Block Tin Key 40%
IXL, 1st quality, Cork Lined 50%
Diamond Lock 40%
Perfection, Fla. Red Cedar (in boxes) 40%
Boss Metallic Key 50%
Reliable Cork Lined 60%
O. K. Western Pattern Cork Lined. 50%
No Brand, Red Cedar (in bbls.). 50&10%
Western Pattern Metal Key 40%
No Brand Metal Key 60%
Self Measuring
Enterprise, ℔ doz., $36.00 ..... 20%
Lane's ℔ doz., $36.00 ..... 25&10%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—
Derby and Cincinnati ..... 45&5%
Brewster ..... 50&5%

Files—

Domestic—
Nicholson Files, Rasps, &c. 60&10&5@60&10&10%
Nicholson (X.F.) Files 25%
Nicholson's Royal Files (Seconds) 75%
(extra prices on certain sizes.)
American ..... 66⅔&10@66⅔&10&5%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Arcade ..... 60&10&5@60&10&10%
Eagle ..... 60&10&10@70%
Other makers, best brands .. 60&10&5@70%
Fair brands ..... 70&10@70&10&10%
Second quality ..... 80@80&5%
Heller's Horse Rasps ..... 50&10@60%
McCaffrey's Horse Rasps ..... 50&10%
Chelsea Horse Rasps, Hand Cut .. 50&10%
Arcade Horse Rasps ..... 60&10@60&10&5%
Trojan Horse Rasps ..... 60&10&5%

Imported—
Butcher ..... Butcher's list, 20%
Stubs ..... Stubb's list 25@30%

Fixtures, Grindstone—
Sargent's Patent ..... 70&10%
Reading Hardware Co. ..... 80&10%
P., S. & W. Co. ..... 50&10%
Moore's 55%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Hay, Manure, &c. Asso. List, 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—

Saw—
White Vermont ..... ℔ gro., $9.00@$10.00
Red, Polished and Varnished ... ℔ doz., $1.50, 25%

Screen, Window and Door—
Porter's Pat. Window and Door Frame, 33⅓&10%
Warner's Screen Corner Irons .. 33⅓&10%
33⅓&10%
Stearns' Frames and Corners. 25@25&10%
Cortland ..... 40@40&5%
Phillips' Window Screen Frames ... 50@50&5%
Bonanza Window Screens .. 50&5@50&10%
Empire Fancy Screen Doors, ℔ doz .. $12

Freezers Ice Cream—
White Mountain ..... 60@60&5%
Granite State ..... 65@65&5%
Arctic ..... 70@70&5%
American 60%
Buffalo Champion ..... 65@65&5%
Shepard's Lightning ..... 65@65&5%
Gem 65%
Blizzard 70%
Double Action Crown 60%
Crown 60%
Star 60%
Peerless ..... 60&10%
Giant 60%
Zero 70%
Boss and Pet ..... 60&10&10&10%
Keystone, P., D. & Co., each, $1.50 .... 20%
Standard ..... 60@60&5%
Standard Double Action ..... 60@60&5%
Good Luck ..... 65@65&5%
Model ..... 60@60&5%
Confectioners' Machine 50%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fruit Pickers—
See *Pickers, Fruit.*

Fry Pans—See *Pans, Fry.*

Funnels—
Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro. 30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz. 25%

Furnaces, Soldering—
Burgess No. 3 Gem tin reservoir ... $7.00
Burgess No. 3 Gem, Copper reservoir. $8.50
Clayton & Lambert No. 1 Fire-Pot, complete $6.00

Fuse—Dis. 12½@15%. ℔ D 1000 ft
Common Hemp Fuse, for dry ground. $2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr.. 4.80
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water. 12.00

Gates Molasses—
Stebbin's Pattern ..... 80&10@80&10&5%
Stebbin's Genuine ..... 60&10&10%
Stebbin's Tinned Ends ..... 40&10%
Lincoln's Pattern ..... 70@70&10%
Weed's ..... 20&10%
Boss, ℔ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 ..... 60&10&10%

Gauges—
Marking, Mortise, &c ..... 60&10%
Starrett's Surface, Center and Scratch, 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 20&10%
Barrett's Comb. Roller Gauge, ℔ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale ..... ℔ doz., $5.00
Without Scale ..... ℔ doz., $4.00
Wire, Wheeler, Madden & Co. 10%
Wire, Morse's 25%
Wire, Brown & Sharpe's ..... 10@20%
Wire, P., S. & W. Co. ..... 10&10%

Gimlets—
Nail and Spike ..... 50&10&5%
Eureka Gimlets ..... 60&10%
Diamond Gimlets ..... ℔ gr $5.00
Double Cut, Shepardson's ..... 45@45&5%
Doub e Cut, Ives' ..... 60@60&5%
Double Cut, Douglass' ..... 40&10%

Glue—
Le Page's Liquid ..... 25@25&5%
Upton's Liquid 35%
Improved Process ..... 25@25&5%
Dodd's Liquid Glue ..... 25@25&5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Fraser's ..... Keg ℔ D 4¢, Pail ℔ D 5¢
Fraser's, in boxes ..... ℔ gr $9.50
Dixon's Everlasting, in bxs. ℔ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting ... 10-℔ pails, ea. 85¢
Lower grades, special brands ℔ gr $5.50@$7 00
Axleine, tin boxes ..... ℔ gross $12.00
English Coach, wooden boxes ..... ℔ gross $8.50
English Coach, 5-℔ tin pails. ℔ doz. $3.50
Tiger, wooden boxes ..... ℔ gross $7.00
Tiger, 5-℔ tin pails ..... ℔ doz $2.85

Grindstones—
Family, regular list 60%
Family, Cleveland Stone Co. 20%

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
Sewing, Brass Fer. ℔ gr. $1.75
Pat. Sewing, Short. ℔ doz. ..... 45@50%
Pat. Sewing, Long ..... ℔ doz $1.20
Pat. Peg, Plain Top. ℔ doz. ..... 40@45%
Pat Peg Leather Top. ℔ doz ..... 45@50.

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Halters—

Covert's Rope, Jute.....60&10&10&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ½-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Saddlery Works Halters..33⅓%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓%
Covert's Saddlery Works Handy Web Halters.....33⅓%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.....
Humason & Beckley.....
Atha Tool Co.....
Verree.....
} 50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting..50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles, new list.....25&10
Peck, Stow & Wilcox.....35@40%
Sargent's.....40@40&10%

Heavy Hammers and Sledges—

3 ℔ and under...℔ D40¢
3 to 5 ℔.....℔ D36¢
Over 5 ℔.....℔ D30¢
} 75&10@75&10 &5%
Wilkinson's Smiths.....10½¢@11¢℔ D

Handcuffs and Leg Irons

—See *Police Goods.*

Handles—

Cross-Cut Saw Handles—

Atkins', new list.....40%
Champion.....15%
Ely's Perfection.....℔ doz., $3.00
Sensible.....40%

Iron, Wrought or Cast—

Door or Thumb.

Nos	0	1	2	3	4
Per doz.	$0.90	1.00	1.08	1.35	1.50

60&10&10%
Roggin's Latches.....℔ doz 30¢@35¢
Bronze Iron Door Latches..℔ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Barn Door, ℔ doz $1.40.....10&10%
Chest and Lifting.....70&70&10%

Wood—

Saw and Plane.....40&10&50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Brad Awl.....℔ gr $2.00
Hickory Firmer Chisel, ass'd. ℔ gr 4.50
Hickory Firmer Chisel, large. ℔ gr 5.00
Apple Firmer Chisel, ass'd...℔ gr 5.00
Apple Firmer Chisel, large...℔ gr 6.00
Socket Firmer Chisel, ass'd..℔ gr 3.00
Socket Framing Chisel, ass'd. ℔ gr 5.00
J. B. Smith & Co.'s Pat File.....50%
File, assorted.....℔ gr 2.75
Auger, assorted.....℔ gr 5.00
Auger, large.....℔ gr 7.00
} 50%
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....℔ set $1.25
Pat. Auger, Swan's.....℔ set $1.00
Hoe, Rake, Shovel, &c.....60@60&5%

Hangers—

Barn Door, old patterns.....70@70&5%
Barn Door, New England.....70@70&5%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Steel Track.....55%
Champion.....60&10%
Climax Anti-Friction.....55%
Zenith for Wood Track.....55%
Sterling.....50&10@60%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Kidder's.....50@50&10%
Boss.....60&10@60&10&5%
Best Anti-Friction.....60&10@60&10&5%
Duplex (Wood Track).....60&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Ideal.....50&10@50&10&5%
Terry's Solid.....50&10@60%
Terry's Shield.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Cronk's Patent, Steel Covered.....50&10%
Carrier Steel Anti-Friction.....50&10%
Richards'.....30@30&10%
Lane's New Standard.....50@50&5%
Lane's Standard.....50&5@50&10%
Lane's Parlor.....40%
Warner's Pat.....20&10&10%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Cincinnati Nos. 1, $2.25; 3, $2.50; 4, $2.50
Paragon Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15. 40&10&50%
Chicago Anti-Friction.....30&10%
Star.....40&10@40&10&5%
Barry.....50%
Interstate.....50&10@60%
Pendulum, Payson's.....40@40&10%
Moody.....45%
Economy, $6.00.....50&10%
Perfection.....50&10@50&10&5%
Lundy, Steel Parlor.....40%
Matchless.....50&10%
Magic.....45&10%
Wild West.....45&10%
Moore's Elevator.....33⅓%
Moore's Baggage Car Door.....33⅓%
Moore's Railroad.....55%

Harness Snaps—See *Snaps.*

Hatchets—

American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's.....
Mann's.....
Peck's.....
Underhill's.....
} 40 & 10 @ 40 & 10 &5%
Fayette R. Plumb.....
C. Hammond & Son.....
Kelly's.....
Buffalo Hammer Co.....
Sargent's & Co.....
P. S. & W. Co.....
} 50 @ 50 &10%
Schulte, Lohoff & Co.....
Ten Eyck Edge Tool Co.....
Collins.....10%

Hay and Straw Knives—

See *Knives.*

Hinges—

Blind Hinges—

Parker.....75@75&10%
Huffer.....50%
Clark's Nos. 1, 3, 5, 40 and 50 80&5@80&10%
Clark's Mortise Gravity.....50%
Sargent's Nos. 1, 3, 5, 11, 12, 13.75@75&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's.
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's, Lull & Porter, Nos. 0, 1, 1¼, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....℔ doz $4.20, 60@60&10%
N. E.....℔ doz $7.80, 60@60&10%
N. E. Reversible ℔ doz..$5.60, 60@60&10%
Clark's, Nos. 1 2, 3.....60&10&5%
N. Y. State.....℔ doz $4.90,60@60&10%
Automatic.....℔ doz $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts....40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's Japanned.....35%
Bommer's All other Kinds.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent Checking.....15%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem and Star.....20%
Oxford.....20%
Royal.....66⅔%
Reliable.....60%
Champion.....60%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ℔ gro., $30.....50&5%
Samson.....60@60&7½%
Wiles', No. 1, ℔ gro., $16; No. 2.....$13
Devore, No. 1.....℔ gro, $13.00
Rex.....℔ gro., $13.00
Freeport.....℔ gro., $12.00
New Idea Nos. 1 and 10....℔ gross $13.00
New Idea Dbl. Acting.....45%
Ideal No. 3.....℔ gross $10.00
Stearns' Noiseless Floor Hinge, ℔ set, $5.00.....20&10@30%

Extra 5@10% often given.

Wrought Iron Hinges—

List February 14, 1891.
Strap and T.....50&10@50&10&10%
Corrugated Strap and T.....50&10&5%
Screw Hook and Strap { 6 to 12 in., ℔ D.. 4¢; 14 to 20 in., ℔ D..3½¢; 22 to 36 in., ℔ D.. 3¢
Screw Hook and Eye.... { ½ in., ℔ D 7½¢; ⅝ in., ℔ D 5½¢; ¾ in., ℔ D 4¾¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 252 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges { 8, 10 & 12 in., ℔ D.....5¢; "Providence" { over 12 in. ℔ D.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat } 60&5
Am. Axe and Tool Co., S. & O. Pat } @60&10%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70@70&5&2%
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%
Magic.....℔ doz $4.00

Hog Rings and Ringers—

See *Rings and Ringers—*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow-Ware—

See *Ware, Hollow.*

Holders—

Bag—

Sprengle's Pat.....℔ doz $18....60%

Bit—

Extension.
Barber's, ℔ doz $15.00.....40@40&10%
Ives, ℔ doz $20.00.....60&5@60&10%
Diagonal.....℔ doz $24.00, 40%
Angular.....℔ doz $24.00, 40&5%

File and Tool—

Balz Pat.....℔ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—

Motley's Adj. Sash, Medium Size..... ℔ doz $1.20, 40%

Hooks—

Cast Iron—

Bird Cage, Sargent's List ...
Bird Cage, Reading .....
Clothes Line, Sargent's list
} 60&10&10%
Clothes Line Moore's.....70%
Clothes Line, Reading list, 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading, 50&10@50&10&10%
Coat and Hat, Moore's.....70%

Wrought Iron—

Cotton.....℔ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg. Co....50%
Wrought Staples Hooks, &c. See Wrought Goods

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....80&15@80&20%
Atlas, Coat and Hat.....65%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Bright Wire Goods—See Wire.

Miscellaneous—

Grass, No. 2, $2.00; No. 3, $2.10; No. 4, $2.25
Nolin's Grass.....℔ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—

See *Shoes, Horse.*

Hose, Rubber—

Competition, Fair quality.....75@75&10%
Competition, Low Grade.....80@80&10
Standard.....70&10@70&10&5%
Extra.....60&10@60&10&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40&5@50%
N. Y. B. & P. Co., Dundee.....60@60&5%
Cotton Garden, ¾ in., coupled:
Fair Quality, ℔ ℔.....7¢
Good Quality, ℔ ℔.....8½¢

Huskers—

Blair's Adjustable.....℔ gr $8.00
Blair's Adjustable Clipper.....℔ gr 7.00
Hubbard's Solid Steel.....℔ gr 4.50

Indurated Fiber Ware—

See *Ware, Indurated Fiber.*

Irons.

Sad—

From 4 to 10, at factory....℔ 100 ℔, $2.30@$2.40
Self-Heating.....℔ doz $8.00
Self-Heating Tailors'.....℔ doz $18.00
Mrs. Potts' Sad Irons, per set:

No.	50	55	60	65
Small lots	.90	.85	1.05	.95

Crown Improved.....60&10%
Ideal Irons, new list...50&10@50&10&10%
Salamander Irons.....25%
B. B. Sad Irons, ℔ ℔.....3@3½¢
Chinese Laundry (N.E.Butt Co.).8½¢, 15%
New England.....5¢, 20@20&5%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%
National Self-Heating.....30%

Soldering—

Soldering Coppers.....℔ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%
Tinker's Dread..℔ doz $1.75; ℔ gro. $18

Pinking—

Pinking Irons, ℔ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—

Daisy.....33⅓%
Victor.....33⅓%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Stamped Brass Kettles.....℔ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—

Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.

Wilson's Butcher Knives, List Dec 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AA A1 Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....25@30%
Ames' Bread Knives, ℔ doz $1.50, 15@20%
Moran's Shoe and Bread.....20@20&10%
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—

Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—

Witherby.....
P. S. & W.....
Mix.....
New Haven.....
} ...75@75&10&5%
Merrill.....60&10@60&10&5%
Douglass.....75&75@75¢
Watrous.....15&10@25%
L & I. J. White.....20&5
Bradley's.....35¢
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, from jobbers....$7.50@$8.50
Wadsworth's.....40&7½@40&10%
Carter's Needle...℔ doz. $11.00@$11.50
Heath's.....℔ doz. $13.00@$13.50
Nolin's Hay.....℔ doz. $7.00@$8.00

Mincing

Am. (2d quality), ℔ gr., 1 blade, $7 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ℔ doz., Single, $2; Double $3 45@50%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable....℔ doz. $3.00, 33⅓%

Knobs—

Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nicke..l....$2.00@$2.25
Drawer, Porcelain....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885..40%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....℔ gro 80¢. 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladders.

Davies Extension and Single.....20&5%

Ladies—

Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Regular, with Guard.....℔ doz $3.50
O. K., with Guard.....℔ doz $3.75
Side Lift, with Guard.....℔ doz $4.00
Square Lift, with Guard.....℔ doz $4.25
Anti-Friction, with Guard....℔ doz $4.5
Brass Plated, Sq. Lift, Guard.℔ doz $5.5
Cop. Plated, Sq. Lift, Guard..℔ doz $ 5.

Bull's Eye Police—

2¾-inch regular.....℔ doz $3.60
3-inch regular.....℔ doz $3.90
2¾-inch flash light.....℔ doz $4.00
3-inch flash light.....℔ doz $4.50

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Wollensak's:
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Class 3 and 4, Brass.....50%
Skylight Lifters.....35%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....60@60&10%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—

Cotton and Linen Fish.....50%
Chalk.....60%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ℔ gro.....25%
Mason's Linen, No. 3½, $1.50; No 4, $2.00; No 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes..Nos. 18 19 20
100 ft.....$3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..℔ doz $7.50..20%
Ossawan Mills, Chalk, Twisted, 60%; Chalk, Soft Braided, 50% Chalk, Braided, 25%.

Links, Open—

Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List, March '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Champion Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&10%
Champion Cab. and Combin.....33⅓%
Yale.....net prices
Romer's.....25%

Door, Locks, Latches, &c

R. & E. Mfg. Co., list Mar. 20, 1889..... } 60&10@70% Much lower net prices often made
Mallory, Wheeler & Co., list July, '88..... }
Sargent & Co., List Aug. 1, '88

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Britain, Graham & Mathes, list Jan. 1890.....60&10&10%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Warner's Burglar Proof, ℔ doz. $8.00, 50%

Elevator—

Moore's.....33⅓%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list....50&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505.....15%
A. E. Deitz.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....℔ doz $9, 50@50&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Scandinavian.....90&40%
E. T. Fraim's Keystone Scandinavian,
1010 line.....90&40%
120 line.....90&25%
109 line.....65%
510 line.....70&10%
225, 610 and 209 lines.....70%
All other numbers.....50&5%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker, Barry & Co.
No. 1010 line.....90&5%
No. 41 line.....50%
No. 61 line.....60%
No. 21 line.....80%

Sash, &c.—

Clark's No. 1, $10; No. 2, $8 ℔ gr.....33⅓&%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....℔ gr $4.00
Common Sense, Nickel Plated.....℔ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Ives' Patent.....60&10&5@60&10&10%
Fish (Liesche's pat.), No. 100, ℔ gr., $8; No. 105, ℔ gr., $10.....50%
Davis Bronze, Barnes Mfg. Co.....60%
Champion Safety list January, 1893.70&5%
Security.....70%
Giant, list Jan., 1892.....70&5%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—

See *Tools, Lumber.*

Lustro—

Four-ounce bottles.....℔ doz, $1.75; ℔ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas		$5.50	$6.75	50%
Snell's, Rice's Pat...	5.50	6.75	40&10&10%	
Jennings'	5.50	6.75..	50@50&5%	
Other Machines..	2.25	2.50		
Phillip's Patent with Augur	7.00	7.50		
Millers Falls		7.50		25%

Boss, Carpenters' 3.60
Boss, Ship Bldrs'. 3.85

Fluting—

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3½-inch Rolls, $2.15.....35%
Eagle, 5½-inch Rolls, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal, ℔ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25.....30%
Shepard Hand Fluter, No. 85, per doz $15.50.....40%
Shepard Hand Fluter No. 110, ℔ doz $11.40.....40%
Shepard Hand Fluter No. 95, ℔ doz $3.00.....40%
Combined Fluter and Sad Iron, ℔ doz $15.00.....30%

Hoisting—

Moore's Hand Hoist, with Lock Brake.20%
Moore's Anti-Friction Differential Pulley Block.....20%
Moore's Rope Differential Pulley Block.....60%
Energy Mfg. Co.'s.....25%
See also *Blocks.*

Washing—

Anthony Wayne, ℔ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American.....℔ doz $36.00
Western Star ℔ doz, No. 2, $36; No. 3 $39
Weisell.....℔ doz $54.00
Fair and Square.....℔ doz $42.00

Mallets—

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks—Regular list.

60&10@60&10&5%

Measures -

Standard Fibreware, No. 1, peck ℔ dozen, $3.50; ½-peck, $3.00

Meat Cutters—

See *Cutters, Meat.*

Menders, Harness—

Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—

Box and Side, List, Jan. 1, 1888..60@60&5%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%
Waddel's New Box Mills, Ideal Brand, New List.....60%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Best Machines: 10-in., $4; 12-in., $4.50; 14-in., $5; 16-in., $5.50; 18-in., $6.
Low-Grade Machines:
10-in. $3; 12-in., $3.25 14-in., $3.50 each

Muzzles—

Safety.....℔ doz, $3.00, 25%

Nails.—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92.....85&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

	Nos. 6	7	8	9	10	
American	9½	9½	9½	9½	9½	net
Ausable	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	30&5%
Essex	28¢	2C	25¢	24¢	23¢	40&10@50%
Lyra	9¼	1	9¼	9½		net
Snowden	9½	¼	9¼	9½	9½	net
Standard	23	21¢	20¢	19¢	18¢	35%
Vulcan	23¢	21¢	20¢	19¢	18¢	25%
Western.	23¢	21¢	20¢	19¢	18¢	50%
Empire Bronzed						13@14 ℔ ℔

Picture—

Brass Head, Sargent's list.....60@60&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list.40&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.80¢	6.50¢ off list
Cold Punched	5.00¢	5.10¢ off list

In packages of 100 ℔, add 1-10¢ ℔ ℔, net; in packages less than 100 ℔, add ½¢ ℔ ℔, net.

Oakum—

Best or Government.....℔ ℔ 6¾@7¼¢
U. S. Navy.....℔ ℔ 5¾@6¢
Navy.....℔ ℔ 5¢@5¼¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ℔ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Steel, Draper & Williams.....50%
Wilmot & Hobbs Mfg. Co., Steel Anti-Rust.....60%

Openers, Can—

Messenger's Comet.....℔ doz $3.00, 25%
American.....℔ gross $2.75@$3.00
Duplex.....℔ doz 25¢, 15@20%
Lyman's.....℔ doz $3.75, 20%
No. 4, French.....℔ doz $2.25, 55@60%
No. 5, Iron Handle.....℔ gr $6.00, 45@50%
Eureka.....℔ doz $2.50, 10%
Sardine Scissors.....℔ doz $2.75@3.00
Star.....℔ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 66¾@70%
Excelsior, No. 1 $2.50; No. 2, $1.50.....40%
World's Best ℔ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ℔ doz $3.00.....55&5%
Domestic, ℔ doz $2.00.....45%
Champion, ℔ doz $2.00.....50%
Moore's.....70%

Packing, Steam—

Rubber—

Standard, fair quality.....70@70&10%
Inferior quality.....75@80%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ℔ ℔ 80¢....25@25&5%

Miscellaneous—

American Packing.....10@11¢ ℔ ℔
Russia Packing.....14¢ ℔ ℔
Italian Packing.....13@14¢ ℔ ℔
Cotton Packing.....15@17¢ ℔ ℔
Jute.....7@8¢ ℔ ℔

Pails—

Creamery—

S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 ℔ doz.....5%

Galvanized—

	Quarts	10	12	14
Hill's Light Weight, ℔ doz.	$2.75	3.00	3.25	
Hill's Heavy Weight, ℔ dz.	3.00	3.25	3.75	
Sidney Shepard & Co.	2.50	2.75	3.00	
Central Stamping Co.	2.50	2.75	3.00	
Iron Clad	2.50	2.75	3.00	
Fire Buckets	2.75	3.25	3.50	

Buckets—See Well Buckets.

Indurated Fiber Ware

Star Pails, 12 qt.....℔ doz $4.20
Milk, 14 qt.....℔ doz $5.40
Stable, 14 qu.....℔ doz $6.00 } 25%
Fire Pails, deep.....℔ doz $4.80
Fire Pails, round bottom. ℔ doz $5.40

Standard Fiber Ware—

	Plain.	Deco'd
Water Pails, 12 qt., ℔ doz.	$3.15	$3.75
Dairy Pails, 14 qt., ℔ doz.	3.75	4.25
Fire Pails, No. 1, 12 qt., ℔ doz	3.75	
Fire Pails, No. 2, 14 qt., ℔ doz	4.25	
Sugar Pails	5.50	6.00
Horse Pails	4.50	
Buggy Pails	3.50	
Slop Jars (bal. trap)	7.50	8.50
Chamber Pails, 14 qt.	6.00	7.00

Pans—

Dripping—

Small sizes.....℔ ℔ 5½¢
Large sizes.....℔ ℔ 6¢
Silver & Co. (Covered).....40%

Fry—

Standard List:

No.	0	1	2	3	4
℔ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
℔ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....66⅔%

Dust—

Steel Edge, No. 1.....℔ doz $1.75

Roasting and Baking—

Columbian, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each.....60&10%

Paper and Cloth—

Sand and Emery—

List April 19, 1886.... 50&10@50&10&10%
Sibley's Emery and Crocus Cloth.....30%

Parers—

Apple—

Advance.....℔ doz $4.75
Baldwin.....℔ doz 5.25
Bonanza.....each 5.00
Daisy.....℔ doz 4.00
Dandy.....each 7.50
Eclipse.....℔ doz 4.00
Eureka, 1888.....each 16.00
Family Bay State.....℔ doz 12.00
Favorite.....℔ doz 5.00
Gold Medal.....℔ doz 4.00
Ideal.....℔ doz 4.00
Improved Bay State....℔ doz 27.00@30.00
Little Star.....℔ doz 4.50
Monarch.....℔ doz 13.50
New Lightning.....℔ doz 5.50
Oriole.....℔ doz 4.00
Penn.....℔ doz 3.00
Perfection.....℔ doz 4.00
Pomona.....℔ doz 4.00
Rocking Table.....℔ doz 6.00
Turn Table.....℔ doz 4.50
Victor.....℔ doz 13.50
Waverly.....℔ doz 4.00
White Mountain.....℔ doz 4.00
Reading 72.....℔ doz 4.25
Reading 78.....℔ doz 7.00

Potato—

White Mountain.....℔ doz $4.50
Antrim Combination.....℔ doz $5.50
Hoosier.....℔ doz $13.50
Saratoga.....℔ doz $5.50

Pencils, Soapstone—

See *Crayons.*

Pickers, Fruit—

Prize Fruit Pickers.....50%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10&5@60&10&10&5%

Picture Nails—

See *Nails, Picture.*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co.'s, $17 and $18.....60&10%
Peck, Stow & W. Co....50&10@50&10&5%

Escutcheon—

Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List April 13, 1893.

1¼ and under, Plain.....57½&10%
1¼ and under, Galv.....50&10%
1½ and over, Plain.....67½&10%
1½ and over, Galv.....57½&10%
Boiler Tubes, list Oct. 24, 1892...65&10%
Casing, list Nov. 16, 1892.....52½&10%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%
Cold Drawn Seamless Steel Tubing...50%

Planes and Plane Irons—

Wood Planes—

Molding.....40&10%
Bench, First quality.....45&10%
Bench, Second quality.....50&10%
Bailey's (Stanley R. & L. Co.) ..50&10%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steers' Iron Planes.....50@50&5%
Meriden Mal. Iron Co.'s.....50@50&5%
Davis' Iron Planes.....50@50&5%
Birmingham Plane Co.....60@60&5%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....50@50&5%
Sargent's.....60@60&10%
Standard Tool Co.....50@50&5%

Plane Irons—

Butcher's.....$5.00@$5.25 to a
Buck Bros.....80;

Auburn Thistle.....
Ohio.....
Sandusky.....
} .30&10@30&10&10%
L. & I. J. White.....25%
Stanley R. & L. Co.....50&10%

Plates—

Felloe.....℔ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent.....60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ℔ doz.....40%
Humason & Beckley Mfg. Co. 50@50&10%
Lindsay's Giant.....33⅓%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P., S. & W. Cast Steel.....50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ℔ doz., $12.00....30&5%
Cronk's 5 in., $15.00; 10 in.....$20
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels—

Regular List.....75&10@75&10&10%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Cook's.....40&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis Inclinometers.....10&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ℔ doz. No. 1, $6.00; No. 2, $9.00.....33⅓%
Silver & Co., 6-Ring, ℔ doz, $4.00; 3-Ring.....$2.00

Pokes, Animal—

Bishop s I. X. L.....℔ doz $6.00
Bishop's Monarch.....℔ doz $4.50
Bishop's Pioneer.....℔ doz $4.00
Bishop's American.....℔ doz $3.00
Eagle, Double Stale.....℔ doz $5.75
Eagle, Single Stale.....℔ doz $3.75
Buckeye, Single Stale.....℔ doz $2.75
Bolding.....℔ doz $6.00
Metallic Horse Poke.....℔ doz $6.00

Police Goods—

R. I. Tool Co., Handcuffs, $15.00 ℔ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ℔ doz 10%
Tower's.....25%
Daley's Improved Handcuffs; 2 Hands, Polished, ℔ doz, $48.00; Nickeled, $57.00: 3 hands, Polished, ℔ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish—

Metal—

Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Stove—

Joseph Dixon's.....℔ gro, $6.00, 10%
Gem.....℔ gro, $4.50, 10%
Gold Medal.....℔ gro, $6.00, 25%
Lustro.....℔ gro, $4.75
Ruby.....℔ gro, $3.75
Rising Sun, 5 gro lots.....℔ gro, $5.50
Dixon's Plumbago.....℔ ℔ 8¢
Boynton's Noon Day.....℔ gro, $13.00
Parlor Pride Stove Enamel, ℔ gro,
Yates' Liquid, 2 3 5 10 gal
℔ gal...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ℔ ℔ 12½¢
Jet Black.....℔ gro $3.50
Japanese.....℔ gro $3.50
Fireside.....℔ gro $2.50
Diamond O. K. Enamel.....℔ gro $19.00
Bonnell's Liquid Stove Polish, ℔ gro $9.00
Bonnell's Paste Stove Polish. ℔ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....℔ gro $6.00
Crown Paste.....℔ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ℔ ℔ 12¢
Black Flag.....℔ gro $7.20
Black Flag, 5 and 10 ℔ pails. ℔ ℔ 12¢
Black Flag, liquid, in bottles, ℔ gro $8.00
Diamond Rock Nickel Cleaner ℔ gro $10 20
Raven Liquid, 6 oz. bottles.....℔ gro $8.00
Raven Liquid, 8 oz. bottles..℔ gro $9.00
Raven Water Polish, large boxes.....℔ gro $7.20
Raven Paste in 5 lb. pails (cases of 6 pails), ℔ ℔ 10¢

Poppers, Corn—

Round or Square,
1 qt..℔ doz $1.00; ℔ gr $8.00
1½ qt.....℔ doz $1.00; ℔ gr $9 00
2 qt.....℔ doz $1.50; ℔ gr $14.00

Post Hole and Tree Augers and Diggers—

See *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Powder—

In Canisters—

Fine Sporting, 1 ℔ each.....$0.90
Duck, 1 ℔ each.....60
Rifle, 1 ℔ each.....30
Rifle, ½ ℔ each.....18

In Kegs—

Rifle, 25-℔ kegs.....$3.50
Rifle, 12½-℔ kegs.....2.00
Rifle, 6¼-℔ kegs.....1.15
Duck, 25-℔ kegs.....11.00
Duck, 12½-℔ kegs.....5.75
Duck, 6¼ ℔ kegs.....3.00

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....25%
Henis.....℔ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....℔ doz $2.75

Pruning Hooks and Shears—See *Shears.*

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Pullers Nail—
Scranton.. .....₩ doz., $18.00, 33⅓%
Giant, No. 1.....₩ doz., $18.00, 10%
Giant, No. 2.....₩ doz., $15.00, 10%
Pelican.....₩ doz., $9.00, 25%
Eclipse.....₩ doz., $24.00, 40%
Economy ....₩ doz., $6.00

Pulleys—
Hot House, Awning, &c.....66⅔@70%
Japanned Screw.....60&10&10%
Brass Screw.....70%
Japanned Side.....60&10&10%
Moore's Side, Anti Friction.....50%
Moore's Ceiling or End, Anti-Friction.40%
Moore's Dumb Waiter, Anti-Friction.50%
Moore's Electric Light ... .33⅓%
Japanned Clothes Line.....60&10%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5.70.....50%
Hay Fork, "F" Common and Patent Bushed 20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating....60%
Hay Fork, Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00.....40%
Shade Rack.....45%
Tackle Blocks—See Blocks.
Shepard's Niagara, No. 25..₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense.....60%
Empire.....60%
Ideal, Nos. 2, 4, 10 & 15 } 60% less 1₩ Acme..... } doz net. Star..... }
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. ..₩ doz. 22¢ net.

Pumps—
Cistern, Best Makers..... .60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddler's or Drive, good..₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Springfield Socket..65%
Spring, good quality..₩ doz., $2.50@$2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Check.....55%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44.....55%
Tinners' Hollow Punches, P., S. & W. Co .....20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches.....20&2%
Niagara Solid Punches.....55%

Rail—
Sliding Door, Wr't Brass....₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron..₩ ft., 7¢
Sliding Door, Iron, Painted..₩ ft., 4¢, 40%
Barn Door, Light..In. ½ ⅝ ¾
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet.....$3.15 2.70 3.25 Net
Terry's Steel Rail.....₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot.....50&2%
Carrier, double braced, Steel Rail, ₩ foot .....3½@4¢
Lundy Parlor Door, Planed Edge, ₩ ft.7¢
Moore's Steel Rail.....25&10%
Moody Steel Rail ₩ ft., 5¢.....45%

Rakes—
Cast Steel, Association g'ds..70@70&5&2%
Cast Steel, outside g'ds,.....70@70&5&2%
Malleable.....70@70&5%
Gibbs' Lawn Rake.....₩ doz., $4.90
Gibbs' Canton Lawn Rake..₩ doz., $3.75
Gibbs' Acme Lawn Rake...₩ doz., $4.75
Gibbs' Favorite Lawn Rake.₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1..... ₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake.....₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless.....65%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—
J. R. Torrey Razor Co.....20%
Wostenholm and Butcher, $10 to £....10%
Jordan's AAAI, new list.....Net
Jordan's Old Faithful, new list.....Net
Galvanic.....₩ doz., $15.00
Electric Cutlery Co.....Net
Campbell Cutlery Co.....50%

Razor Strops—
See *Strops, Razor.*

Registers —
Moore's Japanned.....75%
Moore's Electroplated.....75%
Moore's Bronze Finishes.....70%
Moore's Solid Bronze.....65%
Moore's Stove Pipe... .....33⅓

Rings and Ringers—
Bull Rings—
Union Nut Co.....55%
Sargent's.....75&10%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers.....₩ doz $2.00
Top of the Hill Rings.....₩ doz $1.25
Hill's Improved Ringers.....₩ doz $1.25
Hill's Old Style Ringers...₩ doz $1.12½
Hill's Tongs.....₩ doz $3.00
Hill's Rings.....₩ doz bxs $1.00
Perfect Rings.....₩ doz bxs $1.50
Perfect Ringers.....₩ doz $2.15@$2.25
Blair's Hog Ringers.....₩ doz $2.00
Blair's Hog Rings.....₩ doz 90¢@$1.00
Champion Ringers.....₩ doz $2.00
Champion Rings, Double.....₩ doz $2.25
Brown's Ringers.....₩ doz $2.00
Brown's Rings.....₩ doz $1.15@$1.25
Electric Hog Rings.....₩ doz boxes $1.50
Electric Hog Ringers.....₩ doz $2.00
Major Rings.....₩ doz $1.25
Major Ringers.....₩ doz $2.00

Rivets and Burrs—
Norway Iron, list Nov. 17, '87....60&10%
Second quality.....70%
Copper .....60@60&10%
Coppered Iron, Betina Brand.. .. 50&5%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—
Stair, Brass.....25@30%
Stair, Black Walnut..... ₩ doz 40¢

Rollers—
Barn Door, Sargent's list. ....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.... .....70%
Moore's Barn Door Stay.....50%
Thompson Mfg. Co.'s Lawn Rollers ..30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ¼¢@½¢ on large lots; terms, 1½% for cash.
Manila, 7-16 in. diam. and larger₩ ℔ 8½¢
Manila.....⅜ in. ₩ ℔ 9 ¢
Manila.....¼ and 5-16 in. ₩ ℔ 9½¢
Manila, Tarred Rope..... ₩ ℔ 8 ¢
Manila, Hay Rope, Medium.... ₩ ℔ 8½¢
Sisal.....7-16 inch and larger ₩ ℔ 6¾¢
Sisal.....⅜ in. ₩ ℔ 7¼¢
Sisal.....¼ and 5-16 in. ₩ ℔ 7¾¢
Sisal, Hay Rope..... ₩ ℔ 6¾¢
Sisal, Tarred Rope..... ₩ ℔ 6¼¢
Sisal, Medium Lath Yarn..... ₩ ℔ 6½¢
New Zealand..7-16 in. & larger ₩ ℔ 6½¢
New Zealand.....⅜ inch, ₩ ℔ 6¾¢
New Zealand..¼ and 5-16 inch, ₩ ℔ 7¼¢
New Zealand, Hay Rope..... ₩ ℔ 6½¢
New Zealand, Tarred Rope.... ₩ ℔ 6 ¢
Cotton Rope.....₩ ℔ 13½@16¢
Jute Rope..... ....₩ ℔ 6¾@7¢

Wire—
List February, 1892. All kinds.....45%

Rules—
Boxwood.....80&10&10@80&10&10&10%
Ivory.....50&10%
Starrett's Steel Rules and Straight Edges.....25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—
See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—*See Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—
Note.—Extra 5@10% often given.
Disston's Circular.....45@45&5%
Disston's Cross Cut, list Jan. 1,'93.40&10%
Disston's Hand.....25%
Woodrough & McParlin.
Hand, Panel and Rip.....25&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....30&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Atkins' Circular..... .....50&10%
Atkins' Cross Cuts, new list. 40%
Atkins' Mulay, Mill and Drag.....50&10%
Atkins' One-Man Saw.....40%
Atkins' Wood Saws.....40%
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip.....25@25&5%
Peace Cross Cuts, list Jan. 1,'93...45&10%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts, list Jan. 1, '93.45&10%
Richardson's Hand, &c .....25@25&5%
C E. Jennings & Co.'s 25%

Hack Saws—
Griffin's, complete.....40&10@50
Griffin's Hack Saw Blades.....40&10@50
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—
Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab Makers'$15,25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—
Hatch, Counter, No. 171, good quality, ₩ doz $18.00@$19.00
Hatch, Tea, No. 161....₩ doz $6.50@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales.....50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....80@30&10
Riehle Bros.' Platform.....40%

Scale Beams—
See *Beams, Scale.*

Scissors, Fluting.....45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%
Box, 1 Handle.....₩ doz $2.00
Box, 2 Handle.....₩ doz $3.00@$4.00
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common.....₩ doz $3.50
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—
See *Drivers, Screw.*

Screws—
Bench and Hand—
Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....35%

Coach, Lag and Hand-Rail—
Lag, Blunt Point, list Jan. 1, 1890..... 80@80&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890..... .....80@80&5%
Hand Rail, Sargent's... .....70&10%
Hand Rail, H. & B. Mfg. Co....70&10@75%
Hand Rail, Am. Screw Co.....75%

Jack Screws—
Jack Screws, Millers Falls list.50@50&10%
Jack Screws, P., S. & W.....35%
Jack Screws, Sargent.....70%
Jack Screws. Stearns'.....40@40&10%

Cork—
Humason & Beckley Mfg. Co..40&10@50%
Williamson's..... .....33⅓@33⅓&5%
Williamson's Forged Worm, Apple-wood Handle, ₩ doz., $5.00; Rose-wood, $5.50 .....40%
Detroit Cork Screw Co.....33⅓%

Machine—
Flat Head Iron.....65%
Round Head Iron.....60%

Wood—
List January 1, 1891.

Flat Head Iron	70%	Extra 10& 10% often given.
Round Head Iron	65%	
Flat Head Brass	70%	
Round Head Brass	65%	
Flat Head Bronze	70%	
Round Head, Bronze	65%	

Rogers' Drive Screws.....82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—
Grain.....40&5@40&10%
Grass.....40&10&50%

Scythe Snaths—
See *Snaths, Scythe.*

Sets—
Awl and Tool—
Aiken's Sets, Awls and Tools, No. 20, ₩ doz$10.00.....60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....45%
Millers Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50...70&10&5%

Nail—
Square.....₩ gr. $4.00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr. $12, 20%

Rivet—
Regular list.....70%

Saw—
Stillman's Genuine....₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $6.50.....55@55&10%
Common Lever.....₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00.....40@20%
No. 11, $16.00.....40@20%
Nos. 3 and 4, Cross Cut, $23.00..40@20%
No. 5, Mill, $31.00.....40@20%
No. 10, $15.50.....40@20%
Leach's..No. 0, $8.00; No. 1, $15...15@20%
Nash's.....20&10@40%
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat.45%
Bemis & Call Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Co.'s Cross Cut.....30&5%
Aiken's Genuine.....$13.00, 60@60&10%
Aiken's Imitation.....₩ doz $3.00@$3.25
Hart's Pat. Lever.....20%
Disston's Star.....25%
Leopold.....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10@50%
Avery's Saw Set and Punch.....50%
Kohler's Royal.....₩ doz $7.00
Kohler's Giant Royal.....₩ doz $12.00
Crescent.....₩ doz $3.00
Lloyd's Acme.....₩ doz $15, 40&10%
Taintor Positive.....₩ doz $18, 50%

Sharpeners, Knife—
Larkins'.
Applewood Handles...₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz.$9.00 40%

Shaves, Spoke—
Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's ₩ doz. $9.00.....25%

Shears—
American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers..₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears.....33⅓&5
Cast Steel Trimmers:
First quality.....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Hatch Cutlery Co., Solid Steel Forged.60%
Davenport Cutlery Co.....60@60&10%
Clauss brand, Japanned.....70%
Clauss brand, Nickeled, same list.....60%
Galvanic 3½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co .....Net
Campbell Cutlery Co., Jap'd.....75%
Nickel Plated.....65%

Tinners' Snips—
Wrt. Handles, Steel Blades. ..20@20&10%
Niagara Snips and Shears. ...20&10%
Cast Handles, Laid with Steel 40%

Pruning Shears and Hoe
Disston's Combined Pruning, Hook and Saw..... ....₩ doz. $18.00, 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 20&10%
E.S.Lee & Co.'s Pruning Tools.50&10@70%
Pruning Shears, Henry's Pat. ₩ doz. $3.50@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination ₩ doz $12.00
Dunlap's Saw and Chisel, ₩ doz $8.50,30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co.....60%
Levin Pruner No. 1, $15.00 ₩ doz 40&3%
Levin Pruner No. 2, $21.00 ₩ doz...40&3%

Tinners', &c.—
Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—
Sliding Door—
M. W. Co., list July, 1888....50&10@60&5%
R. & E., list Dec. 18, 1885..... 55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec 18, 1885.....60&2%
Moore's Anti-Friction..... 50%

Sliding Shutter—
R. & E., list Dec. 18, 1885.....60&10&2%
Sargent's list.....70%
Reading list.....60&10&10%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list).....20&10&2%
Prize.....40&2%
Star, Club, Rival and Climax Brands... 33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge..33⅓&10&2%
Selbold's Comb. Shot Shells..... 15&2%
Brass Shot Shells, 1st quality.... 60&2%
Brass Shot Shells, Club, Rival, Climax 65&2%

Shells, Loaded—
Standard List, July 19, 1890..... 40&10&10@40&10&10&5% 7% cash, 10 days.

Ship Tools—
L. & I. J. White..... 20&5%

Shoes, Horse, Mule, &c
Horse—
Burden's, Perkins', Phœnix, Standard, Diamond State, Bryden's Boss and Crescent, at factory..... $4.00
Bryden's Frog Pressure, at factory .$5.00

Mule—
Add $1 ₩ keg to above prices.

Ox Wrought—
Ton lots..... ₩ ℔ 9¢
1000 ℔ lots..... ₩ ℔ 9½¢
500 ℔ lots..... ₩ ℔ 10¢

Shot—
Small lots.
Drop, up to B, 25-℔ bag....$1.45
Drop, up to B, 5-℔ bag..... .35
Drop, B and larger, 25-℔ bag..... 1.70
Drop, B and larger, 5-℔ bag..... .40
Buck and Chilled, 25-℔ bag..... 1.70
Buck and Chilled, 5-℔ bag .40
Dust Shot, 25-℔ bag..... 2.00
Dust Shot 5-℔ bag..... .45
In ton lots a discount of 6¢ ₩ bag, (25 ℔.) is made, and 2½% for cash.

Shovels and Spades
Ames' Shovels, Spades, &c., list Nov. 1, 1885..... 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron..... 50&10%
Griffith's C. S..... 60@60&5%
Griffith's Solid C. S. R. R. Goods. 20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co..... 15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co..... 50&10%
H. M. Myers Co..... 30%
Payne Pettebone & Son..... 33⅓&5%
Remington's (Lowman's Pat.)40&10@50%
Rowland's Black Iron.. 50&10@50&10&5%
Rowland's Steel..... .....60&5@60&10%
Terra Haute Shovel & 25%

Shovels and Tongs—
Iron Head.....60&10@60&10&5%
Brass Head..... ....60&10&10%

Sieves and Sifters—
Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co...50&25&20%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $21 00
Electric Light..₩ doz $1.50; ₩ gro $15.00
A. & W. Sifters..... .....₩ gr $15 00
Hunter's Genuine..₩ doz $1.75, ₩ gr $16.50
Hunter's Imitation..... ₩ doz $1.75; ₩ gr $15.00

Sieves, Wooden Rim—

	Iron	Plated
Mesh 18, Nested, ₩ doz....	$0.80	$1.00
Mesh 20, Nested, ₩ doz....	.95	1.10
Mesh 24, Nested, ₩ doz..	1.15	1.25

Sinks, Wrought Steel—
Columbus, Painted or Unpainted.. 30@30&10%
Columbus, Galvanized and Enameled. 50@50 &10%
New Era, Painted..... 40&10@50&5%
New Era Galvanized and Enameled.. 60&10&10@70&5%

Skeins, Thimble—
Western list.....75&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co..... 60%
Seneca Falls Pattern..... 60%
Utica P. S. T. Skeins..... 60%
Utica Turned and Fitted..... .....35%

Slates—
School, by case.....40@40&10%
Large lots.....40&10&5@50%

Slaw Cutters—See *Cutters.*

Sleds Hand—
Tubular Steel.....₩ doz. $24&50%.00, 40 (Lots of 6 doz. 50%)

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Snaps, Harness, &c.—
Anchor (T. & S. Mfg. Co.)....60%
Fitch's (Bristol)....50&10%
Hotchkiss....10%
Andrews....50%
Sargent's Patent Guarded....70&10&10%
German, new list....40&10%
Covert....50&10&5&2%
Covert, New Patent....50&10&5&2%
Covert, New R. E....60&10&5&2%
Covered Spring....60&10&10%
Covert's Saddlery Works' Triumph....33⅓&5%
John Frost Snaps....75@75&5%
Kelley & Woolworth's Steel Harness....50&10@60%

Snaths—
Scythe....50&2@50&5&2%

Soldering Irons—
See *Irons, Soldering.*

Spittoons, Cuspidors, &c.
Standard Fiberware—
Cuspidors, 8½-inch, ₱ doz., No. 5, $8; No. 5X, $9
Spittoons, Daisy, 8-inch, No. 1, 1; 10 and 11 inch, $6.

Spoke Shaves—
See *Shaves, Spoke*

Spoke Trimmers—
See *Trimmers, Spoke.*

Spoons and Forks—
Tinned Iron—
Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list....70&10%
Buffalo, S. S. & Co....33⅓&2%
Silver Plated—
4 months or 5% cash 30 days:
Meriden Brit. Co., Rogers....40&15%
Rogers & Hamilton....40&15%
C. Rogers & Bros....40&15%
Rogers & Bros....40&15%
Reed & Barton....40@40&5%
Wm. Rogers Mfg. Co....40, 15&5%
Simpson, Hall, Miller & Co....40, 15&5%
Holmes & Edwards Silver Co....40, 15&5%
L. Boardman & Son....50&12½%
Miscellaneous—
Holmes & Edwards Silver Co.:
No. 67 Mexican Silver....50&10&5%
No. 30 Silver Metal....50&10&5%
No. 24 German Silver....50&10&5%
No. 50 Nickel Silver....50&5%
No. 40 Nickel Silver....50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal....50&10&5%
18% Rogers' German Silver....60&5%
22½ Rogers' Nickel Silver....50&5%
Rogers & Hamilton:
Steel Goods....40&10%
Cimetar, Flatware....40&15&5%
Cimetar, Steel Goods....40&10%
Crown Hamilton, Flatware and Cutlery....30%
German Silver....60@50&5%
Nickel Silver....50&5@50&10&5% cash
Brittannia....60@60&5%
Boardman's Nickel Silver, list July 1, 1891....60&7½&5%
Boardman's Brittannia Spoons, case lots....60&5% cash

Springs—
Door—
Torrey's Rod, 39 in....₱ doz $1.20@1.2
Warner's No. 1, ₱ doz $1.50; No. 2, $3.40....55@55&10%
Gem (Coil), list April 19, 1886....20%
Star (Coil), list April 19, 1886....20&10%
Victor (Coil)....60&10@60&10&5%
Champion (Coil)....60&10@60&10&10%
Cowell's, No. 1, ₱ doz $18.00; No. 2, $15.00....50@50&10%
Rubber, complete, ₱ doz $4.50....55&10%
Hercules....50@50&10%
Phœnix....33⅓&5%

Carriage, Wagon, &c.—
Elliptic, Concord, Platform and Half Scroll....60&10@60&10&10&10 or net prices
Cliff's Bolster Springs....25%

Squares—
Steel and Iron, Nickel-Plated....80&10&10@80&25%
Try Square and T Bevels....60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares....25%
Avery's Flush Bevel Squares....40%
Avery's Bevel Protractor....50%

Squeezers—
Fodder—
Blair's....₱ doz $2.00
Blair's "Climax"....₱ doz $1.25
Lemon—
Porcelain Lined, No. 1....₱ doz $6.00....25&30%
Wood, No. 2....₱ doz $3.00, 35%
Wood, Common....₱ doz $1.70@1.75
Duniap's Improved....₱ doz $3.75, 20%
Sammis No. 1, $5,00; No. 2, $9; 12, $18 ₱ doz....25&10%
Jennings' Star....₱ doz $2.50
The Boss....₱ doz $2.50
Dean's..No. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant....50@50&5%
King....40&5%
Hotchkiss Straight Flash....₱ doz $12.00
Silver & Co..Glass....₱ gro. $9.00

Standard Fiber Ware—
See *Ware, Standard Fiber.*

Staples—
Barbed Blind, ½ in. and larger. ₱ ℔ 7@7½¢
Barbed Blind, ¾ in....₱ ℔ 8@8½¢
Fence Staples, Galvanized. } Same price as B'rb Wire
Fence Staples, Plain. } See Trd. Rep
Grand Crossing Tack Co.'s list....75&10%

Steelyards....40&10@50%

Stocks and Dies—
Blacksmith's:
Waterford Goods....35%
Butterfield's Goods....35%
Lightning Screw Plate....25@30%
Reece's New Screw Plates....25@30%
Reversible Ratchet....30%
Gardner....25%
Green River....35@30%

Stops, Bench—
Morrill's, ₱ doz, No. 1, $10.00; No. 2, $11.00....40&20%
Hotchkiss'....₱ doz, $5, 10@10&10%
Weston's. No. 1, $10, No. 2, $9....25&10&5%
McGill's, ₱ doz $3....10%
Cincinnati....25&10%
Terrell's Nos. 1 and 2, ₱ doz., $3; No. 3, $3.60....30%
Millers Falls....25%
Stearns'....20&10%

Stone—
Stones, Grind—See *Grindstones.*
Scythe Stones—
Pike Mfg. Co., list April, 1892....33⅓%
Cleveland Stone Co., list Nov. 1892..33⅓%
Oil Stones, &c.—
Pike Mfg. Co:
Hindostan No. 1, ₱ ℔....8¢
Sand Stone....6¢
Turkey Oil Stone, 4 to 8 in....80¢
Turkey Slips....$2.00
} 40@40&10%
Lily White Washita....60¢
Rosy Red Washita....60¢
Washita Stone, Extra....50¢
Washita Stone, No. 1....40¢
Washita Stone, No. 2....30¢
Lily White Slips....90¢
Rosy Red Slips....90¢
Washita Slips, Extra....80¢
Washita Slips, No. 1....70¢
Arkansas Stone, No. 1, 3 to 5¼ in., $2.80
Arkansas Stone, No. 1 5¼ to 8 in., $3.50
} 33⅓@33⅓&10%
Lake Superior....₱ ℔ 13¢
Lake Superior Slips....₱ ℔ 20¢

Stove Polish—
See *Polish, Stove.*

Stretchers Carpet—
Cast Steel, Polished....₱ doz $2.2
Cast Iron, Steel Points....₱ doz 75@80¢
Socket....₱ doz $1.75
Bullard's....25@25&10%

Strops, Razor—
Genuine Emerson....60@60&5%
Imitation " ..₱ doz $2.00, 20&10&5%
Torrey's....20%
Badger's Belt and Com....₱ doz $2.00
Lamont Combination....₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50%
Electric Cutlery Co....Net
Campbell Cutlery Co....Net

Stuffer, Sausage—
Miles' Challenge, ₱ doz $20....50@50&5%
Perry....₱ doz, No. 1, $15.00; No. 0, $21.00....50&5@50&10%
Draw Cut No. 4, each $30.00....20%
Enterprise Mfg. Co., list Jan 17, '93..25%
Silver's....40&10%

Sweepers, Carpet and Lawn—
Carpet—
Bissell No. 5....₱ doz $17.00
Bissell No. 8....₱ doz $20.00
Bissell, Grand....₱ doz $36.00
Standard....₱ doz $24.00
Domestic....₱ doz $21.00
Domestic, No. 2....₱ doz $22.00
Grand Rapids....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic....₱ doz $15.00
Improved Parlor Queen,
Nickeled....₱ doz $27.00
Japanned....₱ doz $24.00
Excelsior....₱ doz $22.00
Garland....₱ doz $18.00
Parlor Queen....₱ doz $24.00
Housewife's Delight....₱ doz $15.00
Ladies' Friend....₱ doz $15.00
Ladies' Friend No. 2....₱ doz $16.00
Advance....₱ doz $18.00
Our Leader....₱ doz $19.00
Triumph....₱ doz $20.00
Supreme....₱ doz $22.00
Easy..Jap'd, ₱ doz $22.00; Nickel, $24.00
Gilt Edge....₱ doz $24.00
Acme....₱ doz $26.00
Imperial....₱ doz $26.00
Grand Republic....
Jap'd, ₱ doz $30.00; Nickel, $33.00
Banner....
Jap'd, ₱ doz, $22.00; Nickel, $24.00
The Star....₱ doz $21.00
Reliable....₱ doz $22.00
Rapid..Jap'd, ₱ doz, $22.00; Nickel, $24.00
Our Own....₱ doz $27.00
Model....₱ doz $27.00
Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months....₱ doz $1.00
10 dozen in 6 months....₱ doz $2.00
Except on L.F., when 10 dozen price is $13.50, and 25 dozen $13.00.
Lawn—
Thompson Mfg. Co....30%

Swings—
Davies Lawn....25%

Tacks, Brads &c.—
List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.
Carpet Tacks—
American, Blued....66⅔%
American, Tin'd and Cop'd....70%
Steel, Bright and Blued....66⅔%
Steel, Tinned and Coppered....70%
Swedes Iron, Blued....72½%
Swedes Iron, Tinned....75%
American Iron Tacks, Domestic....66⅔%
Swedes Iron Tacks—
S. S., Blued....66⅔%
S. S., Tinned....70%
Lanc., Blued....55%
Lanc., Tinned....60%
Gimp and Lace Tacks—
S. S., Blued....62½%
S. S., Tinned....66⅔%
Lanc., Blued....55%
Lanc., Tinned....60%
Basket and Trimmers' Tacks—
Lanc....52½%
S. S....55%
Hungarian Nails....60%
Common and Patent Brads....55%
Leathered Tacks....10%
Brush Tacks, S. S....60%
Looking Glass Tacks, S. S....35%
Picture-Frame Points, S. S....35%
Finishing Nails....60%
Trunk and Clout Nails—
Black....65%
Tinned or Coppered....67½%
Basket Nails....60%
Chair Nails....52½%
Cigar Box Nails....45%
Tin Capped Nails....50%
} Extra discount 25&2%
Miscellaneous—
Double Point....90&10@90&10&10¢
Wire Carpet Nails....50&10%
Claw Handle Carpet....₱ gross $4.00
Bonnie Blue....₱ box $1.50
Bill Nye Brad Box....4 00
Parisian Gilt Nails, cartoon....50
Home Tacks, No. 50 ₱ case (12 cartons), $36.00; No. 100, ₱ case (12 cartons), $72.00.
Home Nails, No. 200, ₱ case (12 cartons), $30.00; No. 400, ₱ case (12 cartons), $60 00.
} 50&2%
Upholsterers' Nails....50&10%

Wire Brads and Nails
Steel-Wire Brads, R. & E. Mfg. Co.'s list 50&10%
See also *Nails, Wire.*

Tanks, Oil—
Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each....50&10&5%

Tapes, Measuring—
American....40@40&10%
Spring....40%
Chesterman's, Regular list....25@30%

Thermometers—
Tin Case....80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.
Standard Wire, list....50&10&5%

Tinners' Shears, &c.—
See *Shears, Tinners' &c.*

Tinware—
Stamped, Japanned and Pieced, list Jan 20, 1887....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters Tire.*

Tobacco Cutters—
See *Cutters, Tobacco.*

Tools—
Coopers'—
Bradley's....20%
Barton's....20@20&5%
L. & I. J. White....20&5%
Albertson Mfg. Co....25%
Beatty's....30%
Sandusky Tool Co....30@30&5%
Shaves Cincinnati Tool Co....20%

Lumber—
Ring Peavies, "Blue Line"..₱ doz $20.00
Ring Peavies, Common....₱ doz $18.00
Steel Socket Peavies....₱ doz $21.00
Mall. Iron Socket Peavies...₱ doz $19.00
Cant Hooks, "blue Line"....₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 26 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks....₱ doz $18.00

Saw—
Atkins', new list....40%

Transom Lifters—
See *Lifters, Transom.*

Traps—
Game—
Newhouse....40@40&5%
Oneida Pattern....75@75&10%
Game, Blake's Patent....40&10&5%
Mouse and Rat—
Mouse Wood, Choker, ₱ doz holes, 9@10¢
Mouse, Round Wire....₱ doz $1.50 10%
Mouse, Cage, Wire....₱ doz $2.50 10%
Mouse, Catch-'em-alive..₱ doz $2.50 15%
Mouse, Bonanza....₱ doz 0.90@$1.00
Rat, Decoy....₱ gr $10.00, 10%
Ideal....₱ gr $10.00
Cyclone....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 75¢; in full cases, ₱ doz. 60@65¢
Hotchkiss Imp. Rat Killer...₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer....₱ gro $15.00
Dandy....₱ doz., $1.75
Waddell's Go Bang, ₱ gro....$12.50
Fly—
Harper, Champion or Paragon....₱ doz. $1.75, ₱ gro. $16.50
Balloon, Globe or Acme....₱ doz. $1.50, ₱ gro. $13.50

Triers—
Butter and Cheese....25%

Trimmers, Spoke—
Bonney's....₱ doz $10.00, 50%
Stearns'....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'....₱ doz $9.00, 20%
Cincinnati....25%

Trowels—
Lothrop's Brick and Plastering, ...20&10&5@35%
Reed's Brick and Plastering....15%
Disston's Br'k and Plastering..25@25&10%
Peace's Plastering....25@25&5%
Clement & Maynard's....20@20&5%
Rose's Brick....15@20%
Brade's Brick....25%
Worrall's Brick and Plastering....20%
Garden....70%
Cleves' Angle Trowel, ₱ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list....40%
Thompson Mfg. Co....40%
Barnes' Barrel Trucks....40%
Daisy Stove Trucks, Improved pattern, ₱ doz. $18.00

Tubes. Boiler—
See Pipe.

Twine—
Flax Twine—

	BC.	B.
No. 9, ¼ and ½ ℔ Balls....	25¢	31¢
No. 12, ¼ and ½ ℔ Balls....	22¢	30¢
No. 18, ¼ and ½ ℔ Balls....	20¢	29¢
No. 24, ¼ and ½ ℔ Balls....	20¢	29¢
No. 36, ¼ and ½ ℔ Balls....	18¢	28¢

No. 264 Mattrass, ¼ and ½ ℔ Balls, 52@64¢
Chalk Line, Cotton, ½ ℔ Balls ..25¢
Mason Line, Linen, ½ ℔ Balls..55¢
2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine)....15½¢
3-Ply Hemp, 1 ℔ Balls....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔..15¢@16¢
2, 3, 4 and 5 Ply Jute, ½ ℔ Balls 10¢
Wool....6½¢@6¾¢
Paper....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz. 18¢

Vises—
Solid Box....50&10@60%
Parallel—
Fisher & Norris Double Screw....15&10%
Stephens'....25@30%
Parker's....20@25%
Wilson's....55%
Howard's....40%
Bonney's....50%
Millers' Falls....40@40&10%
Trenton....40&5@40&10%
Merrill's....15@20%
Hollands'....35@40%
Sargent's....70&10%
Backus and Union....40%
Double Screw Leg....15&10%
Prentiss....20@25%
Simpson's Adjustable....40%
Moore's....20%
Massey Quick Action....20@25%

Saw Filers—
Bonney's, Nos. 2 & 3, $15.00....40&10@50%
Stearn's....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises....35@35%
Hopkins'....₱ doz $17.50, 10%
Reading....40&10%
Wentworth....20&10%
Economy, ₱ dos., Nos. 110, $10.00; 120, $15.00....50&10&10&5%

Miscellaneous—
Phœnix Vises....33⅓%
Phœnix Hand Vises....₱ doz $3.60, 33⅓%
Cowell Hand Vises....20%
Bauer's Pipe Vises....10%
Cincinnati....25&10%
Enterprise Pipe Vises....each $3.00, 40%
Massey Combination Pipe Vise....40%

Wads—Price Per M.
U.M.C.&W.R.A.—B. E., 11 up..68¢
U.M.C.&W.R.A.—B. E., 9&10..82¢
U.M.C.&W.R.A.—B. E., 8....96¢
U.M.C.&W.R.A.—P. E.,....$1.10
U.M.C.&W.R.A.—P. E., 11 up 1.15
U.M.C.&W.R.A.—P. E., 9&10.. 1.50
U.M.C.&W.R.A.—P. E., 8.... 1.70
U.M.C.&W.R.A.—P. E., 7.... 1.80
Eley's B. E., 11 and larger... $1.70@$1.75
Eley's P. E., 12 to 20.... ....$3.00@$3.25
} Dis 20&2%

Wagon Boxes—
See *Boxes, Wagon.*

Wagon Jacks—
See *Jacks, Wagon.*

Ware, Hollow—
Cast Iron, Hollow
Stove Hollow-Ware—
Ground....60&10@60&10&10%
Unground....65&10@70&5
White Enameled Ware—
Maslin Kettles....70&10@75%
Boilers and Saucepans....60@60&5%
Tinned Boilers and S'pans....60@60&5%
Rustless Hollow Ware....50@50&5%
Gray Enameled Ware—
Stove....50%
Maslin Kettles....60@60&10%
Boilers and Saucepans....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889....33⅓&5%
Ironclad Enameled Ware....dis 33⅓&10%
} Extra 10% on many leading articles.
Kettles—
Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber

	Per Doz. Plain.	Decorated
Wash-Basins, 10¼ in....	$1.80	$2.00
Wash-Basins, 12 in....	2.00	2-50
Keelers, 11¼ in....		3.50
Cuspidors....		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure....	3.50	
Half-peck Measure....	3.00	

See also Pails.
Indurated Fiber.—

Spittoons No. 2, ₱ doz....	$6.00
Basins, Ringed, ₱ doz., No. 2..	2.80
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), ₱ nest....	$5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest....	$2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest....	$1.50
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), ₱ set....	$1.20

} 25%
See also Pails.
Silver Plated, Hollow
4 mo. or 5% cash in 30 days
Reed & Barton....
Meriden Britannia Co....
Simpson, Hall, Miller & Co....
Rogers & Brother....
Hartford Silver Plate Co....
William Rogers Mfg. Co....
} 40&5%
} 40&5&5%

Washers—
Size hole....5-16 ⅜ ½ ⅝ to 1¾
Washers....5½ 4½ 3½ 2¾
In lots less than 200 ℔, ₱ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Washer Cutters—
See *Cutters, Washers.*

Water Coolers—
See *Coolers, Water.*

Wedges—
Iron....₱ ℔ 3½¢@3½¢
Steel....₱ ℔ 3¾¢

Weights, Sash
Solid Eyes....₱ ton, $18.00@19.0

Well Buckets Galvanized—See *Buckets, Well Galvanized.*

Wheels, Well—
8 in., $2.00; 10 in. $2,50 12 in., $2.75.

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Whips

American Whip Co.: Length.	4½	5	5½	6	6½	7	7½	8 ft.
"X. L. Whalebone Driving	$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone	....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whale bone	....	....	11.00	12.00	13.00	15.00	....	....
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors	....	....	....	6.00	....	....	....	....
Americus, 93 Pen Whip	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106	....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No. 103	....	....	3.75	4.00	....	....	....	....

Per dozen.

A large variety of cheaper grades.....50@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....₩ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Wire and Wire Goods—

Iron—

Market,

Br. & Ann., Nos. 0 to 18. 75&10@75&10&5%
Cop'd, Nos. 0 to 18. 75&5%
Galv., Nos. 0 to 18. 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18. 70@70&10%

Extra 5@10% often given and net prices often made on large lots.

Stone,
Br. and Ann'd,
Nos. 16 to 18. ....80%
Nos. 19 to 26. ..80&5%
Nos. 27 to 36. ..82½&5%
Extra 10% often given.

Tinned Broom Wire, 18 to 21, ₩ ℔....4½¢
Galvanized Fence .....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Ossawan Mills, An'ld and Tinned on Spools.....60&10%
Ossawan Mills, Brass and Copper on Spools.....50&10%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported....60@70¢ ₩ ℔
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list .....85&10@85&10&10%

Wire Cloth and Netting—

Painted Screen Cloth ₩ 100 ft.....$1.75
Galvanized Wire Netting.....
7c&10@75&10&5%

Wire Barb—

See Trade Report.

Wire Rope—

See *Rope, Wire.*

Wrenches—

American Adjustable 40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50@50&10%
Coes' "Mechanics'".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
W. & B. Diamond.....
75&10@80%

Bemis & Call's:
Pat. Combination Bright .....40&5%
Pat. Combination Black.....40&10%
Merrick's Pattern.....45%
Brigg s Pattern.....30&10%
Cylinder or Gas Pipe.....45&5%
No. 3 Pipe.....55%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz., $4.00, 40%
Webster's Pat. Combination 25%
Boardman's.....30%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Eagle.....50&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70@70&5%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

Am. Wringer Co.'s list, July 1, '93..2% cash
Colby Wringer Co., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list July 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	40
Linseed, City, boiled	..	@	43
Linseed, Western, raw	38	@	40
Lard, City, Extra Winter	80	@	82
Lard, City Prime	78	@	80
Lard, City, Extra No. 1	..	@	50
Lard, City, No. 1	..	@	45
Lard, Western, prime	..	@	75
Cotton-seed, Crude, prime	34	@	36
Cotton-seed, Crude, off grades	32	@	34
Cotton-seed, Summer Yellow, prime	39	@	40
Cotton-seed, Summer Yellow, off grades	36	@	37
Sperm, Crude	70	@	..
Sperm, Natural Spring	75	@	77
Sperm, Bleached Spring	80	@	82
Sperm, Natural Winter	81	@	82
Sperm, Bleached Winter	86	@	88
Whale, Crude	..	@	..
Whale, Natural Winter	48	@	..
Whale, Bleached Winter	..	@	51
Whale, Extra Bleached	..	@	52
Sea Elephant, Bleached Winter	..	@	..
Menhaden, Crude, Sound	35	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed	39	@	40
Menhaden, Bleached W'ter	..	@	43
Menhaden, Extra Bleached	..	@	46
Tallow, City, prime	..	@	60
Tallow, Western, prime	..	@	55
Cocoanut, Ceylon	5½	@	5¾
Cocoanut, Cochin	6½	@	6¾
Cod, Domestic	38	@	40
Cod, Foreign	42	@	45
Red Elaine	44	@	46
Red Saponified ₩ ℔	4¼	@	4¾
Bank.....per gal	38	@	..
Straits	39	@	..
Olive, Italian, bbls	58	@	60
Neatsfoot, prime	75	@	80
Palm, prime, Lagos ₩ ℔	7¾	@	8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....per gal	7	@	7½
Black, 29 gravity, 15 cold test	7½	@	8
Black, 29 gravity, summer	6	@	6½
Cylinder light, filtered	14	@	16
Cylinder, dark, filtered	10	@	13
Paraffine, 23½ @ 24 gravity	11	@	12
Paraffine, 25 gravity	10	@	11
Paraffine, 28 gravity	7½	@	8
Paraffine, red	9½	@	10½

Paints and Colors—

Barytes, Foreign, ℔ ton	$22.00	@	24.00
Barytes, Amer. floated	29.00	@	32.00
Barytes, Amer. No. 1	16.00	@	18.00
Barytes, Amer. No. 2	13.00	@	15.00
Barytes, Amer. No. 3	11.00	@	12.00
Blue, Celestial ₩ ℔	6	@	8
Blue, Chinese	40	@	50
Blue, Prussian	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½	@	1
Brown, Vandyke, Amer	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk	2.75	@	..
Carmine, No. 40, in boxes or barrels	2.85	@	..
Carmine, No. 40, in ounce bottles	3.75	@	..
Chalk, in bulk ₩ ton	1.75	@	2.00
Chalk, in bbls. ₩ 100 ℔	33	@	40
China Clay, English ₩ ton	13.00	@	18.00
Cobalt Oxide, prep'd	9.00	@	11.00
Cobalt Oxide, black lots 100 ℔	1.90	@	....
Cobalt Oxide, black less 100 ℔	1.96	@	....
Green, Paris, in bulk	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs	10½	@	11
Green, Paris, small pack	12	@	17
Green, Chrome, ordinary	6	@	12
Green, Chrome, pure	22	@	25
Lead, Eng., B.B. white	8½	@	10
Lead, Amn. White, dry or in oil:			
Kegs, lots less than 500 ℔	7	@	7¼
Kegs, lots 500 ℔ to 5 tons	6½	@	6¾
Kegs, lots 5 tons to 12 tons	6⅝	@	6⅝
Kegs, lots 12 tons and over	6¼	@	6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price	..	@	½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	..	@	2½
Lead, Red, bbls. and ½ bbls	6	@	7
Lead, Red, kegs	6¼	@	7¼
Litharge, kegs	6¼	@	7¼
Litharge, bbls. and ½ bbls	6	@	7

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35	@	1½
Ocher, French Washed	1½	@	2½
Ocher, German Washed	1½	@	3
Ocher, American	½	@	1½
Orange Mineral, English	8½	@	9
Orange Mineral, French	10	@	10½
Orange Mineral, German	8½	@	9
Orange Mineral, American	8½	@	8¾
Paris White, English Cliff-stone	1.00	@	1.15
Paris White, American	65	@	75
Red, Indian, English	5½	@	7
Red, Indian, American	2	@	6½
Red, Turkey	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American ₩ 100 ℔	1.00	@	1.10
Red, Venetian, English	1.20	@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔	4	@	5
Sienna, Ital., Burnt Lumps	1½	@	3½
Sienna, Ital., Raw, Powd	4½	@	5½
Sienna, Ital., Raw, Lumps	1⅝	@	3½
Sienna, American, Raw	1½	@	1¾
Sienna, American, Burnt and Powdered ₩ ℔	1½	@	1⅝
Talc, French	..	@	1½
Talc, American	1¼	@	1⅜
Terra Alba, Fr'ch. ₩ 100 ℔	95	@	1.25
Terra Alba, English	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered ₩ ℔	3½	@	4
Umber, Turkey Bnt. Ln	2¾	@	3
Umber, Turkey, Raw and Powdered	3½	@	....
Umber, Turkey, R'w Lumps	2¾	@	2⅞
Umber, Turkey, Bnt. Amer	1½	@	1⅝
Umber, Turkey, R'w Amer	1¼	@	1⅜
Yellow, Chrome	10	@	25
Vermilion, American Lead	11¼	@	12
Vermilion, Quicks'er, bulk	53	@	..
Vermilion, Quicks'er, bags	54	@	..
Vermilion, Quicksilver sm'r pkgs	62	@	..
Vermilion, English Import	85	@	90
Vermilion, Imitation, Eng	8	@	35
Vermilion, Trieste	90	@	92½
Vermilion, Chinese	92½	@	95
Whiting Common, ₩ 100 ℔	37½	@	42½
Whiting Gilders'	45	@	55
Zinc, American, dry ₩ ℔	4	@	4¼
Zinc, French, Red Seal	7½	@	..
Zinc, Frech, Green Seal	9	@	..
Zinc, Frech, V. M. X	..	@	7
Zinc, Antwerp, Red Seal	7¼	@	..
Zinc, Antwerp, Green Seal	7¾	@	..
Zinc, German, L. Z. O	6¾	@	7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over	10¾	@	11½
lots less than one ton	11	@	11⅝
Zinc, V. M. in Poppy Oil, Red Seal	..	@	..
lots of 1 ton and over	10	@	10½
lots of less than 1 ton	10¼	@	10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2 %; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort	25	@	30
Black, Drop, English	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory	8	@	15
Blue, Chinese	35	@	40
Blue, Prussian	20	@	45
Blue, Ultramarine	12	@	18
Brown, Vandyke	7	@	12
Green, Chrome	8	@	13
Green, Paris	16	@	18½
Sienna, Raw	7	@	14
Sienna, Burnt	7	@	14
Umber, Raw	7	@	10
Umber, Burnt	7	@	10

Putty—

In barrels and ½ bbls	.01¾	@	.01¾
In tubs	.01⅝	@	.01¾
In tin cans	.01½	@	.02½
In bladders	.01⅞	@	.02½

Spirits Turpentine—

In regular bbls	..	@	29½
In machine bbls	..	@	30

Glue—

Low Grade ₩ ℔	8	@	10
Cabinet	12	@	14
Medium White	13	@	15
Extra White	17	@	20
French	10	@	22
English	10	@	15
Irish	12	@	..

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

NOVEMBER 1, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:	
¾ to 2 in. round and square.. 1 to 6 in. x ⅝ to 1 in....	₩ lb 1.80 @ 1.90¢
Refined Iron:	
¾ to 2 in. round and square. 1 to 4 in. x ⅝ to 1½ in.... 4½ to 6 in. x ⅝ to 1 in.	₩ lb 1.90 @ 2.00¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.10 @ 2.20¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.00 @ 2.10¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price	₩ lb 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.80¢
"Ulster"	₩ lb 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store—

	Per lb
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2½¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

Black—
Best Refined Iron.

Nos. 14 to 20	3 @ 3⅛¢
21 to 24	3¼ @ 3⅜¢
25 to 26	3⅜ @ 3½¢
27	3½ @ 3⅝¢
28	3⅝ @ 3¾¢

Common ¼¢ less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 16	2½ @ 2⅝¢
" " " 18 to 20	2⅞ @ 3¢
" " " 21 to 24	3⅛ @ 3¼¢
" " " 25 to 26	3⅜ @ 3⅝¢
" " " 27 to 28	3⅝ @ 3⅞¢

Best Bloom Sheets, ¼¢ extra over above prices.
Best Bloom, Galvanized, jobbing dis. 70 @ 70&5%
Ordinary Bessemer, ⅛¢ @ ¼¢ lower than above prices.

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 12¢ @ 13¢
Patent Planished	₩ lb A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel	₩ lb, 8½¢

English Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 20 ¢

METALS—

Tin—

	Per lb
Banca, Pigs	22¢
Straits, Pigs	21¢ @ 21½¢
Straits in Bars	22½¢

Tin Plates—

Duty: 2.2¢ ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade.	IC, 10	x14..	@ $6.50
" " "	IC, 12	x12..	@ 6.75
" " "	IC, 14	x20..	@ 6.50
" " "	IC, 20	x28..	@ 13.00
" " "	IX, 10	x14..	@ 8.50
" " "	IX, 12	x12..	@ 8.75
" " "	IX, 14	x20..	@ 8.50
" " "	IX, 20	x28..	@ 17.00
" " "	DC, 12½	x17..	@ 6.00
" " "	DX 12½	x17..	@ 8.00
Allaway Grade	IC, 10	x14..	@ 6.00
" "	IC, 12	x12..	@ 6.25
" "	IC, 14	x20..	@ 6.00
" "	IC, 20	x28..	@ 12.00
" "	IX, 10	x14..	@ 7.50
" "	IX, 12	x12..	@ 7.75
" "	IX, 14	x20..	@ 7.50
" "	IX, 20	x28..	@ 15.00
" "	DC, 12½	x17..	@ 5.50
" "	DX, 12½	x17..	@ 7.00

Coke Plates—Bright—

Steel Coke.	IC, 10 x 14, 14 x 20..	$5.40	@ $5.50
	10 x 20..		@ 8.50
	20 x 28..	11.50	@ 12.00
	IX, 10 x 14, 14 x 20..		@ 7.00
BV Grade—	IC, 10 x 14, 14 x 20..		@ 5.50

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—	IC, 14 x 20		@ $5.65
	20 x 28		@ 11.00
	IX, 14 x 20		@ 6.40
	20 x 28		@ 12.80
Abecarne Grade.—	IC, 14 x 20		@ 5.55
	20 x 28		@ 10 75
	IX 14 x 20		@ 6 40
	20 x 28		@ 12.80

Tin Boiler Plates—

IXX, 14x 26	112 sheets	@ $13.35
IXX, 14 x 28	112 sheets	@ 14.50
IXX, 14 x 31	112 sheets	@ 16.00

American Terne Plates.—Apollo.

IC, 14 x 20	$6.25
IC, 20 x 28	12.50
IX, 14 x 20	7.25
IX 2 x 28	14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35% ad valorem.

Ingot—

Lake	@ 11 ¢
Ansonia grade Arizona	@ 10½¢
Ansonia grade Casting	@ 10 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 25 %, according to size of order. Stubs' gauge standard.

Not wider than	Not longer than	And longer than	Weights per sq. foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	...
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅝ inch diameter and over, ₩ lb 22¢
Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per lb.
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter, 2¢ ₩ lb additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned	₩ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz.	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

July 6, 1892. Net.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional
Brazed Brass Tubing. (To No. 20 inclusive.)
Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	$1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list	30 @ ..%

Roll and Sheet Brass—
(Brown & Sharpe Standard Gauge.)

Common High Brass:	in.	in.	in.	in.	in.	in.	in.	in.
Wider than	2	10	12	14	16	18	20	22
and including	10	12	14	16	18	20	22	24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.2	.28	.30	.32	.34	.36

Common High Brass:	in.	in.	in.	in.	in.	in.	in	in.
Wider than	24	26	28	30	32	34	36	38
and including	26	28	30	32	34	36	38	40
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0.30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.62
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2 00
No 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

— % discount.
Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

	Per lb.		Per lb.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No. 10	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive	17¢ ₩ lb
Over 3½ to 5 inches inclusive	18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive	18¢ ₩ lb
Over 3½ to 5 inches inclusive	19¢ ₩ lb

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.	
Western Spelter	4½¢@4¾¢
Bertha (pure)	8¢@8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.	
600 lb casks	5½¢@5¾¢
Per lb	6½¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.	
American Pig	4¢@4.10
Bar	4½¢
Pipe, subject to discount 20%	6¼¢
Tin-Lined Pipe, subject to discount 20%	15¢
Block Tin Pipe, subject to discount 20%	37½¢
Sheet, subject to discount 20%	7¢
Old Lead in exchange, 3¼¢ ₩ lb.	

Solder—

½ @ ½	13½¢ @ 14½¢
No. 1	11¾¢ @ 12½¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson	₩ lb 11 ¢
Hallett's	10½¢

Aluminum—

Duty: 15¢ ₩ lb.

No. 2 grade metal, in to a lots	₩ lb .75
No. 1 (guaranteed to be 98 % pure and over), in ton lots	₩ lb .90
Lots less than 1 ton	10¢ ₩ lb additional

Old Metals—

Prices Paid in New York.

Heavy Copper	₩ lb 7½¢
Light and Tinned Copper	₩ lb 6½¢
Heavy Brass	₩ lb 5½¢
Light Brass	₩ lb 4½¢
Lead	₩ lb 3 ¢
Tea Lead	₩ lb 2 ¢
Zinc	₩ lb 2¾¢
No. 1 Pewter	₩ lb 1¼ ¢
No. 2 Pewter	₩ lb — ¢
Wrought Scrap Iron	₩ gross ton $9.00
Heavy Cast Scrap	₩ gross ton 7.00
Stove Plate Scrap	₩ gross ton 4.50
Burnt Iron	₩ gross ton 3.00

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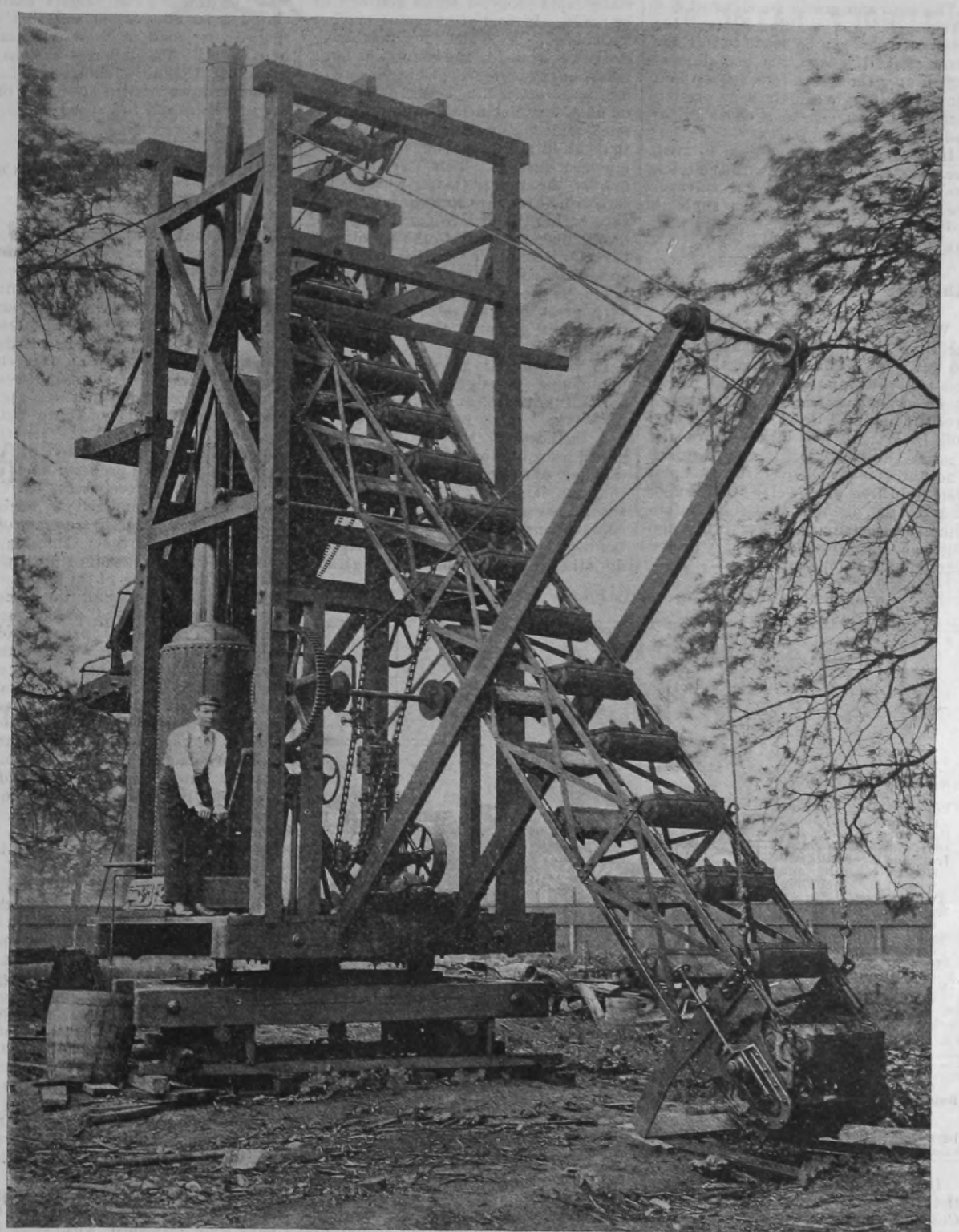
THE IRON AGE

THURSDAY, NOVEMBER 9, 1893.

The Jeffrey Portable Elevator, Screen and Conveyor.

The engraving here presented shows a machine designed by the Jeffrey Mfg. Company of Columbus, Ohio, which is designed for handling sand and gravel. It is arranged to dig the sand and gravel from the bank and then separate it and deposit it in separate cars. The capacity of this machine is about 40 cars per day of 10 hours, making it possible to load 30 cars of sand to 10 cars of gravel, this depending largely upon the per cent. of sand in the bank.

The lower timber work is mounted on truck wheels to suit standard railroad gauge. On this track is placed a circular gear rack engaging with the gear pinion, which is fastened to an upright shaft on the upper frame work. Caster wheels and center plates are placed between the upper and lower frame work for the purpose of revolving the entire upper part of the machine on the lower frame work in a complete circular movement, thus enabling the operator to reach the bank from either side of track.



THE JEFFREY PORTABLE ELEVATOR, SCREEN AND CONVEYOR.

The elevator is provided with the Jeffrey double strand steel chain, to which suitable buckets are attached. The buckets are made of heavy sheet steel, banded on the top edge with teeth riveted to the front lip for the purpose

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of digging the material from the bank. This elevator is mounted on a wrought iron angle ladder frame, which is allowed to swing from the upper or delivery end of the elevator by means of two wire cables fastened to the lower end of the ladder and passing over the sheave wheels at the end of the jib timbers and down on to two spools on the frame work.

By means of crank and gearing the elevator is raised up to the bank, and then is allowed to work its way down to a line even with the track.

The sand and gravel are elevated and discharged on a shaking screen, the mesh of which can be made to suit the grade of sand desired, the gravel passing off over the screen to a rubber belt conveyor into the car, the sand passing through the screen to a chute below and into the car.

If it is desired at any time to work the elevator at an angle with the track the shaking screen, chute and conveyor are arranged to swing at an angle in order to keep them about square with the car.

Chicago's Iron and Steel Interests.

While the census figures for 1890 are for a period so long past that they have no practical business value, they possess historical interest. For this reason alone a statement concerning Chicago recently obtained from the Hon. Carroll D. Wright, now in charge of the Census Office, is worthy of attention. The statistics given cover the iron and steel industries of the city of Chicago, and do not include important establishments usually classed with Chicago but located outside of the city limits. The table is as follows:

Iron and Steel Industries for the City of Chicago, Illinois.

	No. of establishments.	Capital (*b*).	Average No. of employees (*c*).	Total wages paid.	Cost of materials used.	Value of products.
Iron and steel (*a*)	14	$22,803,264	4,326	$3,081,598	$11,217,414	$24,317,831
Minor iron and steel industries:						
Foundry and machine shop products.....	213	22,410,275	13,130	7,797,613	13,874,810	30,227,816
Hardware.	27	2,183,595	1,704	946,958	1,649,904	2,724,968
Iron and steel forgings.	6	688,000	259	194,712	364,523	687,400
Iron and steel nails and spikes, cut and wrought, including wire nails.....	4	723,104	376	193,008	289,830	635,084
Iron work, architectural and ornamental..	90	3,252,798	2,427	1,643,507	2,345,209	5,018,159
Springs, steel car and carriage..... .	5	501,876	240	165,680	213,265	565,000
Steam fittings and heating apparatus.....	16	2,626,623	2,224	1,269,260	1,552,224	3,921,738
Wire work, including wire rope and cable .	24	431,980	366	217,511	377,241	893,299
Total.....	399	$55,621,715	25,052	$15,509,877	$39,284,420	$68,991,295

(*a*) The weight of the products of these 14 establishments is 1,147,744 tons of pig iron and finished iron and steel.
(*b*) Does not include the value of hired property.
(*c*) Is a general average for all classes of wage earners, including officers and firm members engaged in the business or in supervision, also clerks.

It will be seen from this table that the foundries and machine shops of Chicago constitute the most important part of the city's iron and steel interests. The establishments engaged in architectural and ornamental iron work really belong to the same class. The aggregate thus formed comprised over 300 establishments, with a capital of over $25,600,000, employing 15,500 hands. These foundries and shops are engaged in turning out practically the whole range of products covered by such works anywhere. They have advanced from the mere jobbing establishments which spring up in growing towns, or the more pretentious works of the same class based on railroad patronage, until in creative and constructive capabilities they are found in line with the establishments in older sections whose fame rests on a reputation earned in past generations. While the production of the cruder forms of iron and steel is a very important part of Chicago's industrial prominence, yet it is in foundry and machine work that specially rapid progress seems destined to be made. Instead of becoming another Pittsburgh, in which manufacturing steel and iron for the country at large takes preponderance, Chicago seems destined to be a Manchester or a Philadelphia, manufacturing crude iron and steel into highly finished forms, and thus building up a congeries of the minor industries. This view is borne out by the rapidity with which such establishments have sprung into existence within the past two or three years, or else have removed to the vicinity of Chicago from other localities, both East and West. If a census could now be taken, it would undoubtedly disclose very great growth as compared with the figures given in the above statement.

In this connection it would be an unpardonable oversight not to refer to agricultural implement factories and car works. Such establishments were not included in the statistics above given, probably for the reason that they turn out a composite product. They consume large quantities of iron and steel, however, and their foundries, machine shops and forges employ thousands of skilled workmen. Perhaps in no other line has there been greater growth in Chicago in the past three years, either in the extension of the facilities of old works or the erection of new ones in manufacturing agricultural implements. In 1890 they employed an aggregate of 3945 hands, while last year one establishment alone employed as many, if not more.

The minutes of the British Admiralty in the "Victoria"-"Camperdown" court martial, which have just been promulgated, confirm the findings of the court. The report closes thus: "The 'Victoria' capsized owing to her water tight doors not being closed. Otherwise she would have remained afloat and reached port under her own steam. The general structure did not by any fault of principle contribute to her loss. Regulations will be issued to the fleet which, while maintaining the responsibility and discretionary powers of the commanders, will insure under certain circumstances, and especially when a collision is possible, that the water tight doors and hatches shall be closed as far as possible and that men shall be stationed at those necessarily kept open." The minutes express regret that Captain Johnstone of the "Camperdown" failed at once to order extreme helm and full speed astern.

The Columbia Iron & Steel Company.

Before the Circuit Court of Appeals at Pittsburgh last week an argument was made on the motion for the appointment of a receiver for the Columbia Iron & Steel Company of Pittsburgh, whose works are located at Uniontown, Pa. The attorneys who argued against the appointment of a receiver stated that the petitioning creditors are second mortgage bondholders and that the real estate is intact, and nothing has occurred to interfere with the securities. Any transactions complained of affect only the personal property and there is no need of a receiver as yet. The court has not rendered a decision. F. A. Yeager, formerly secretary of the Columbia Iron & Steel Company, has furnished the following statement regarding the troubles of the concern:

When in March, 1891, the company went into the hands of a receiver the Uniontown people and papers said the sole cause of the failure was mismanagement. Now they say hard times caused the second failure. At the first failure E. M. Butz started to work to have the receiver discharged, and got a lot of Uniontown men to advance money in return for enough stock to control the board. The stock was in trust and was to be returned when Mr. Butz got the company in a solvent condition. Mr. Butz got a five years' extension from the creditors and later got them to accept second mortgage bonds.

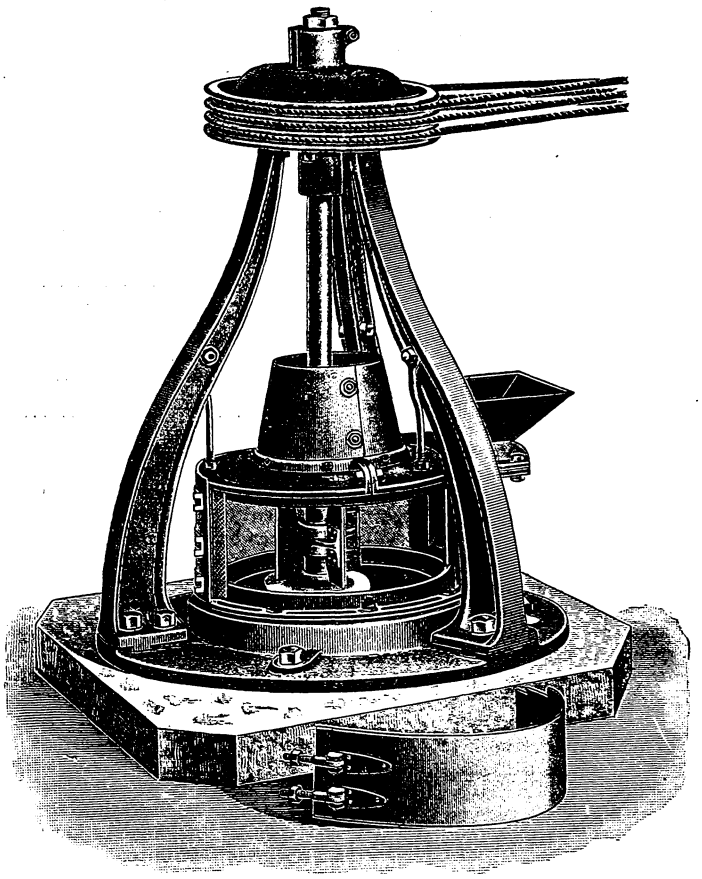
With the plant practically free from debt the Uniontown people took charge of it. Strikes closed Carnegie's beam mills and business boomed for the Columbia Company. The Uniontown people thought they had struck a gold mine. They elected Robert Hogsett as president. He had no experience in running a steel mill. The mill manager was forced to resign, and then Mr. Butz, vice-president, general manager and only practical man about the mill, was voted out. The president was voted a salary of $10,000 per year and the secretary $3600, where before the president got nothing and the secretary $1500.

The company entered into a unique deal. The Reading Rolling Mill Company were furnished with steel beam blanks on credit, which they manufactured into finished material, and then outsold the Columbia Company in the Eastern and Western markets. The Reading Company failed to meet their paper, and the Columbia directors got frightened and closed their works and began selling off the stock on hand. They then confessed judgment to themselves.

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The Griffin Mill Arranged for Rope Drive.

The Griffin mill, for the reduction of rock and ores of all kinds to a fine powder, employs in its construction the principle of a rigid roll on a suspended shaft running against a ring or die. The roll on the revolving shaft is free to swing outward against the die by the use of a universal joint, the centrifugal force holding the roll in contact with the ring or die against which it runs. The shaft is suspended from a pulley above by means of a universal joint rotating with the pulley. The roll is revolved within the die in the same direction that the shaft is driven, but when coming in contact with the die it travels around the die in the opposite direction from that in which the roll is revolving with the shaft, thus giving the mill two direct actions on the material being ground.



THE GRIFFIN MILL ARRANGED FOR ROPE DRIVE.

The material to be ground is put into the automatic feeder, which delivers it into the pulverizing chamber, where the rapidly revolving roll with plows attached to the under side keeps the material in constant motion between the roll and die, and, as the whole mass of material is being stirred, the fine portion rises to the top and passes out through the screens.

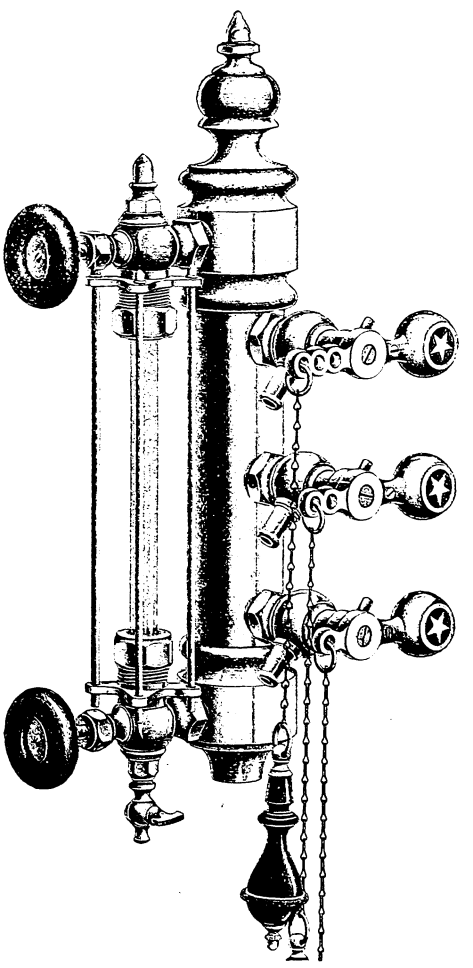
On the shaft above the roll are fans, which draw in air through the conical housing and assist in forcing out the finished product. By this method no dust can escape except through the screens. After going through the screens the pulverized material passes through an opening into the receptacle underneath, from whence it can be conveyed wherever desired.

The mills will work either wet or dry. The engraving represents a Griffin mill of small size, arranged for rope drive. This mill is intended for the same work as the larger ones, but is of less capacity. It will grind 12 to 15 tons of ore per day, with 10 to 12 horse-power. These mills are made by the Bradley Fertilizer Company of 92 State street, Boston.

After 18 years of active business at 85 to 91 Elm street, New York, the well-known firm of Ogden & Wallace, iron and steel merchants, are preparing to remove their business to more commodious quarters and a location more advantageously situated as regards transportation facilities and accessibilty to tidewater. The firm are now having built for them a warehouse at the corner of Greenwich and Houston streets, the structure being after their own designs and being arranged with a view to the easy and expeditious handling of stock. The warehouse will be 100 x 100 feet in size, having doors on Houston and on Greenwich streets, with a driveway extending through from street to street. It will be one story in hight, and the offices will be located in a structure built above, thus consolidating the entire business practically under one roof and providing for greater efficiency in carrying on the business. It is hardly necessary to state that the warehouse, as well as the office annex, will be equipped with modern conveniences for the economical and speedy conduct of business and delivery of stock. The original firm was established early in the nineteenth century by George W. Shields at the corner of Broad and Beaver streets. The business is therefore one of the oldest in the iron and steel trades. Afterward the firm of Geo. W. Shields & Co. was established, the Co. being Messrs. Smith and Hegeman, who afterward succeeded Mr. Shields. About 1868 the firm moved to the corner of Pearl and Dover streets, where the Brooklyn Bridge anchorage now is. Mr. Hegeman died soon after this, and the firm of Smith, Sturges & Co. was then formed, Messrs. Ogden and Wallace, who constitute the present firm, being the unnamed partners. In 1874 G. G. Smith retired, when the present partners succeeded to the business. A year later the warehouse and office of the firm were removed to the present location in Elm street, where, with greater facilities, the business has largely increased. It is expected with the larger and more modern warehouse now building and more advantageous location, that it will be still further increased.

The Star Gauge Cock.

The Star Brass Mfg. Company of 33 Lancaster street, Boston, Mass., are introducing an improved gauge cock especially adapted for high pressure boilers. It is provided with Jenkins' adjustable vulcanized packing, which is so arranged that by removing the adjustable screw it can easily be taken out and another substituted. The arrangement of the cock is clearly brought out in the engraving. These cocks are made with length of bodies from center of water gauge connections of 12, 15 and 18 inches.



The Star Gauge Cock.

One day last week New Orleans broke the cotton record with the largest receipts of the staple ever known at that or any other port, namely 54,433 bales.

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Sheet Mill Progress.—I.

BY A. BEARD, CAMBRIDGE, OHIO.

Unlike other branches of the iron and steel industry, there has been no record of radical or noticeable changes in the method of rolling iron and steel sheets until recent years. In the manufacture of bars, structural shapes, plates, &c., the three high, universal or Belgian and reversible mills have almost entirely taken the place of old style two high rolls, but no one has to this date been intrepid enough to spend any very large amount of time or money in an attempt to revolutionize the old established process of making light sheets. Many improvements have been made in the manner of producing a high finish, and in a marked degree the quantity produced has been materially increased in mills devoted to the manufacture of sheets of ordinary finish, but so far as the initial process is concerned the sheet rolling industry occupies nearly the same position which it did 50 years ago. The inventions of Bessemer, Siemens and others have assisted progress in sheet mill practice and have provided means in the shape of steel billets and sheet bars for the production of sheets of first-class quality at about the same cost for which common sheets were formerly produced. Sheet mill managers have, however, combined their ideas with those of machinists and foundrymen, and as a result remarkable changes have been made in the construction of machinery.

English Practice.

Before referring to these changes in detail it is necessary to review briefly the causes leading to them. For this purpose a drawing is presented herewith to illustrate the method so long employed in English sheet mills. In English mills, Fig. 1, a stand of bar rolls is attached to each sheet mill on the outer end, and all pile rolling is done on these rolls. Muck bar piles, made sufficiently heavy to make two sheet bars of the required weight to produce sheets of a specified thickness, are charged into the pile furnace, averaging 15 to the heat. They are then passed through the bar rolls, and when drawn to the proper length are cut into two pieces at bar shears, which are operated by means of a small pair of pinions attached to the wabblers on outer end of bar rolls. On the lower pinion a lug is cast, upon which the long arm of the shear works. When cut to length, with the usual allowance for trimming after the sheets are finished, these bars are given two passes through the sand rolls, after which they are taken to the chilled rolls and are reduced to about No. 18. To accomplish this two sheets are rolled together. This completes the first part of the process, all being done without reheating. At this stage sheets are termed "singles." To still further reduce the thickness three sheets are placed together, and, after being reheated, are passed through the chilled rolls for the second time. This product is called "doubles." When sheets No. 26 to 30 gauge are required, the pack of three sheets is opened, the sides meeting each other are reversed and doubled, afterward placed in the reheating furnace for the third time, and again passed through the chilled rolls. When this work is completed sheets of No. 26 or 27 gauge are called "lattens," and lighter than this "extra lattens." Prices paid for labor are regulated on this basis. After the rolling is finished the packs are taken to jaw shears and the edges trimmed. When sheets are made of iron there is a cut of 1 inch or more taken from the edges, as the sides of the pack crack when rolled; but steel sheets preserve a more even edge, and the amount required for trimming does not exceed ½ to ⅝ inch on each side of the pack. When the trimming is completed the sheets are annealed in the reheating furnace, and when cold are ready for shipment. Box annealing, or "close annealing," as the process is termed in England, is not a common practice. Fully three fourths of the sheets produced are annealed in an open furnace where the flame is allowed to come into direct contact with the surface of the sheets, the result being scale raising, red edges, burnt corners and a generally uneven appearance.*

American Practice.

In American practice all light sheets are box annealed, being placed on cast iron carriers upon which the sheets are piled, then covered with a cast or wrought iron lid, made air tight by piling sand around the bottom. This carrier and box are then drawn into the annealing furnace and heat applied. By using this method scale is not raised on the sheets—they are smooth, flat and of even color. It appears strange, from an American point of view, that the young English ironmasters do not avail themselves of this method, as it gives so much superior appearance to the sheets, but they are content to do as their predecessors did before them, a commendable trait except when competition is brisk and modern advantages necessary to success. In the matter of utilization of waste heat and the employment of power the English are very careful. Fuel is expensive It will be noticed that a vertical boiler is attached to the sheet mill, Fig. 1. This boiler has one large central flue and two cross flues near the top. It is auxiliary to the steam plant of the establishment. The power of the engine is always used to its greatest capacity. To illustrate this, note that the jaw shear is operated by a long connecting rod attached to an eccentric on the main shaft.

It is a noteworthy fact that while importations of English sheets of iron and steel have decreased with the erection of American mills, English manufacturers make frequent purchases of American highly finished sheets for use as locomotive jackets, for lagging purposes, gas stoves and other uses where a fine appearance is required.

Labor in English and American Mills.

Comparisons of wages earned by English and American workmen have been made so often and prostituted to such base political purposes that the writer has not the assurance to present figures on this matter, but this article would not be complete without a comparison of the amount of labor performed in English and American sheet mills respectively. In English mills the crews work 12 hours each and do all the work they can in that time, taking only short intervals for meals. They commence with muck bar piles and do their own annealing. During 24 hours about 16,000 pounds of finished sheets are produced by two crews consisting of the following men:

Rollers	2
Roughers	2
Catchers	2
Furnacemen	2
Helpers	2
Prilers	2
Shearmen (using jaw shears)	2
Markers	2
Scrap Boys	2
Total	18

Compared with this, American crews only work eight hours. They commence with sheet bars already prepared for them on an independent bar mill and have no annealing to do. There are three shifts during 24 hours, which produce about 19,000 pounds of finished sheets sheared ready for the annealer. To accomplish this work the following men are employed:

Rollers	3
Roughers	3
Catchers	3
Heaters	3
Pair heaters	3
Matchers	3
Doublers	3
Shearman (using squaring shears)	1
Hold up	1
Opener	1
Scrap boy	1
Total	25

The shearman and his helpers are allowed to shear for three shifts. They work about eight hours. From this statement it will be seen that the Englishmen have much the hardest time of it for about two-thirds as much money for their work. An English mill only turns out 16,000 pounds of product to 19,000 pounds in an American mill, but it takes seven more men to do the work in America. Having discussed the method of making sheets and the result obtained in England, it is in order to notice the means used for the purpose and compare with those now employed to produce the increased product and at the same time reduce the risk of breakage and consequent stoppage to a minimum. English and American sheet mills were similar 20 years ago excepting that Americans never aspired to the luxury of a stand of bar rolls for each mill. This being the case the old "housing," "housen" or holster as it is variously called in different localities will serve to illustrate old time machinery of both countries.

The piece of machinery represented in Fig. 2 is not as antiquated as a sheet mill man might imagine upon just looking at it. It is only 20 years old, being designed in 1873 for a sheet mill now in operation. It was reinforced at its weak points in 1885 and since that time has been reordered no less than seven times to replace broken ones. All orders being from the same mill. This housing weighs about 11,000 pounds. It is what is commonly known as flat-footed. In the evolution of sheet-mill machinery this old style housing and its dovetailed bed plate are dying hard. It is not until the executor or sheriff offers this kind of machinery for sale that the massive modern housing with its V-shaped bed plate and solid masonry takes its place. The pattern of the old style housing is still in possession of a prominent firm of iron founders at Pittsburgh. It was used as late as last year and is almost a counterpart of a piece of machinery manufactured by a well-known Staffordshire, England, concern for 50 years past. The rolls used in housings of this design are 20 inches in diameter, necks 15 inches in diameter and the wabbler 11¾ inches at

* Box annealing is a common method in English and Welsh tin mills. This article refers only to mills making light sheets for galvanizing, roofing and general manufacturing purposes.

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its largest part. To illustrate the difference in the strength of these rolls a sketch showing the relative sizes of the wabblers on the old style rolls and the modern 24-inch rolls is shown in Figs. 3*a* and 3*b*.

Chilled rolls, 20 inches diameter, for light sheet mills have long been considered all that was required in the way of strength in English mills, and some manufacturers in this country use rolls of that size to this day, but it is probably because they have their old housings and want to make the last penny out of the old machinery and not because they do not acknowledge the benefits derived from using heavier machinery.

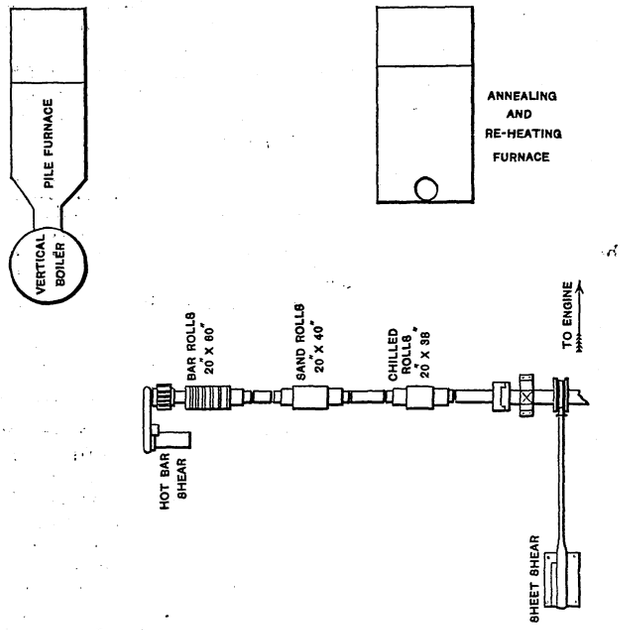


Fig. 1.—Plan of English Sheet Mill, 20-Inch Rolls. —Weight of Housings, 11,000 Pounds.

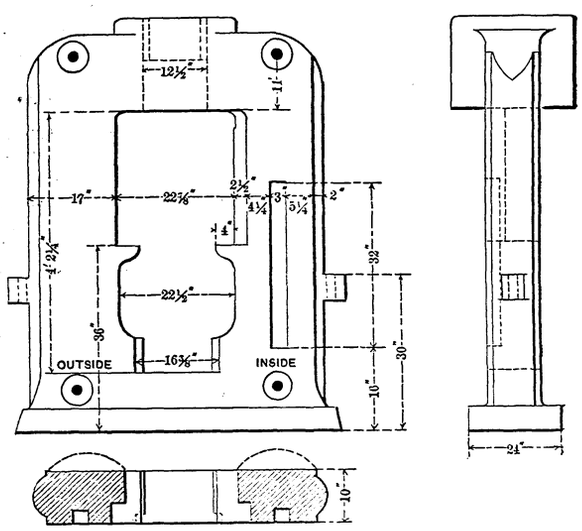


Fig. 2.—Old Style Housings, Designed 1873.—Weight, 11,000 Pounds.

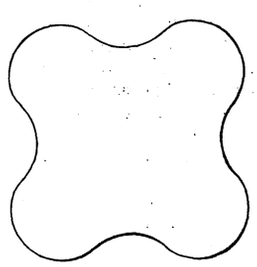


Fig. 3a.—Wabbler, English Standard 20-Inch Sheet Mill.

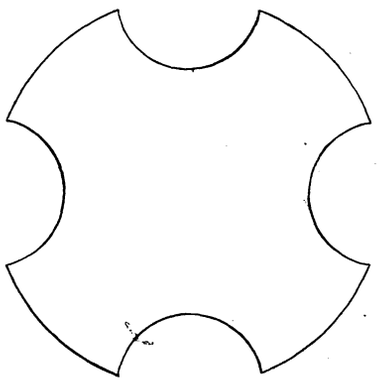


Fig. 3b.—Wabbler, American Standard 24-Inch Sheet Mill.

SHEET MILL PROGRESS.

Heavier Machinery.

The main object of American sheet-mill men appears to have been to produce the largest quantity possible and so construct the machinery that breakages become exceptions instead of a rule. A great deal has been accomplished in this direction and the means employed are worthy of notice. The illustration, Fig. 4, of an American sheet mill plant shows many points of economy. Furnaces are all set near to the railroad coal track, so that coal is unloaded directly to the bins at the sides of the furnaces. Under the coal bin shutes a narrow gauge track is laid, to convey sheet bars from the bar shears to the pair furnaces. The large and small engines are placed near together, so that only one man is needed to attend them. The small engine operates two pairs of shears, runs the machinery to raise annealing boxes and also runs the roll lathe. The annealing furnaces are near to the shears, and no material has to be handled twice. The process is progressive, from the billet furnace to the warehouse. All that has to be brought back is scrap from the sheet shears to the scrap furnace. A plant of this description would turn out 35 to 40 tons per day of sheets, from No. 18 to 30 gauge, various widths, from 20 to 36 inches.

When the agreement made between rolling mill proprietors and the Amalgamated Association of Iron and Steel Workers, increasing 8 hours' work from 105 to 135 pairs of double sheet, came into force many mill managers found that their machinery would not stand the strain. Rollers "rushed their mills," breakages came fast, and managers grew furious. As a result the output was in many instances limited to the old standard, but in many mills the diameter of sheet rolls was changed from 22 to 24 inches and the mills were then equal to the work. As a result of increased output all rolling mill builders had to make patterns for heavier machinery. The housings have been increased in size, also the rolls. A mill recently built in the Mahoning Valley was constructed in such a heavy manner that the roll trains weighed fully one half more than a roll train constructed for a similar purpose 20 years ago—viz.: rolling light sheets from No. 18 to No. 30. The housings in this mill, illustrated herewith, Fig. 5, weighed 23,000 pounds and the bed plate 1000 pounds to the foot of roll train. The mill is running successfully and if a breakage occurs it will be a matter of much surprise. Of course, chilled rolls will break as they always have done, for no one has yet found a preventive. There is fame and fortune for the man who fathoms this unexplained mystery and devises means to keep chilled sheet rolls from breaking at an unexpected moment.

If translated reports are correct, Bohemia is ahead of the United States in the uses to which steel rolls are put. In American practice cast steel rolls have long been used in bar mills, and for rolling rails, channels, I-beams and other structural shapes, but the Bohemians are credited with having used steel rolls successfully in the manufacture of sheets. An order was placed with a Chicago concern some time ago for a pair of sheet rolls to be made of steel, but for some reason or other it was never filled. Can it be that herein lies a substitute for cast iron chilled rolls of every day use, that treacherous piece of machinery, the constant and unexplained breakage of which is the bane of sheet mill managers' lives? Is there no way of hardening the surface of a steel roll so as to make it impervious to scale marks, so that it will retain a smooth surface when in use, equal, if not superior to the surface of a chilled iron roll? It has been stated that steel rolls become pitted when used, that scale adheres to them, and that they are not suitable for obtaining a fine finish on a large area. If this purpose can be accomplished, and the

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common theory regarding steel rolls be proved incorrect, then chilled roll makers will lose a profitable business which only years of successful practice makes profitable, and the steel sheet roll will furnish managers with a serviceable and unbreakable piece of rolling mill machinery, and it is quite probable that one-third of the sheet rolls now made will supply the demand. Strange things have happened in the mechanical world. Why not this?

The Breaking of Rolls.

To explain more fully the trouble which sheet manufacturers who use the hot finish process have to contend with, and the exigencies which have to be allowed for in their cost accounts, a drawing is presented herewith to illustrate the degree of expansion and contraction to which sheet rolls are subjected during ordinary treatment.

The dark lines in the drawing show the shape of the rolls when heated, and dotted lines indicate the shape of rolls after they are dressed in a roll lathe ready for work, and while the roll is cold before work is commenced. The concave in these two rolls amounts to about $\frac{1}{64}$ and $\frac{1}{128}$ inch = 0.0234375. It varies according to the class of work to be performed. If wide sheets are to be rolled—*i. e.*, nearly the width of the body of the roll—the concave is made in a lesser degree than if sheets of narrow widths are to be rolled, as narrow widths will "puff up" or expand the rolls near their center quicker than wide sheets, which distribute the heat more generally throughout the body of the rolls. In the manner of turning or dressing sheet rolls custom varies; some roll turners turn one roll straight and put all the concave in the other, while others divide it between the two rolls. This seems to be a matter of opinion the correct view of which has never, if properly demonstrated, been made public.

In ordinary sheet mill practice the rolls expand after the third or fourth heat until they are nearly straight. Good rollers exercise the utmost care in starting up their mills, and endeavor to avoid breakage through warming up too rapidly, particularly in cold or frosty weather, and they will continue at all times during their work to exercise care, avoiding extremes in the rise and fall of the temperature of their rolls and giving the screw pressure in accordance with conditions, but in spite of all this care the best of rollers meet with mishaps, a report like that of a carbine is heard, the pack buckles in the rolls and the roller realizes that he has "cracked one," to use a rolling mill expression.

Probably there is not a sheet roller living to-day who has ever told how he broke a roll, and if there is common cause for it the secret is well kept. Theory has, however, provided many causes, and reasons are given which

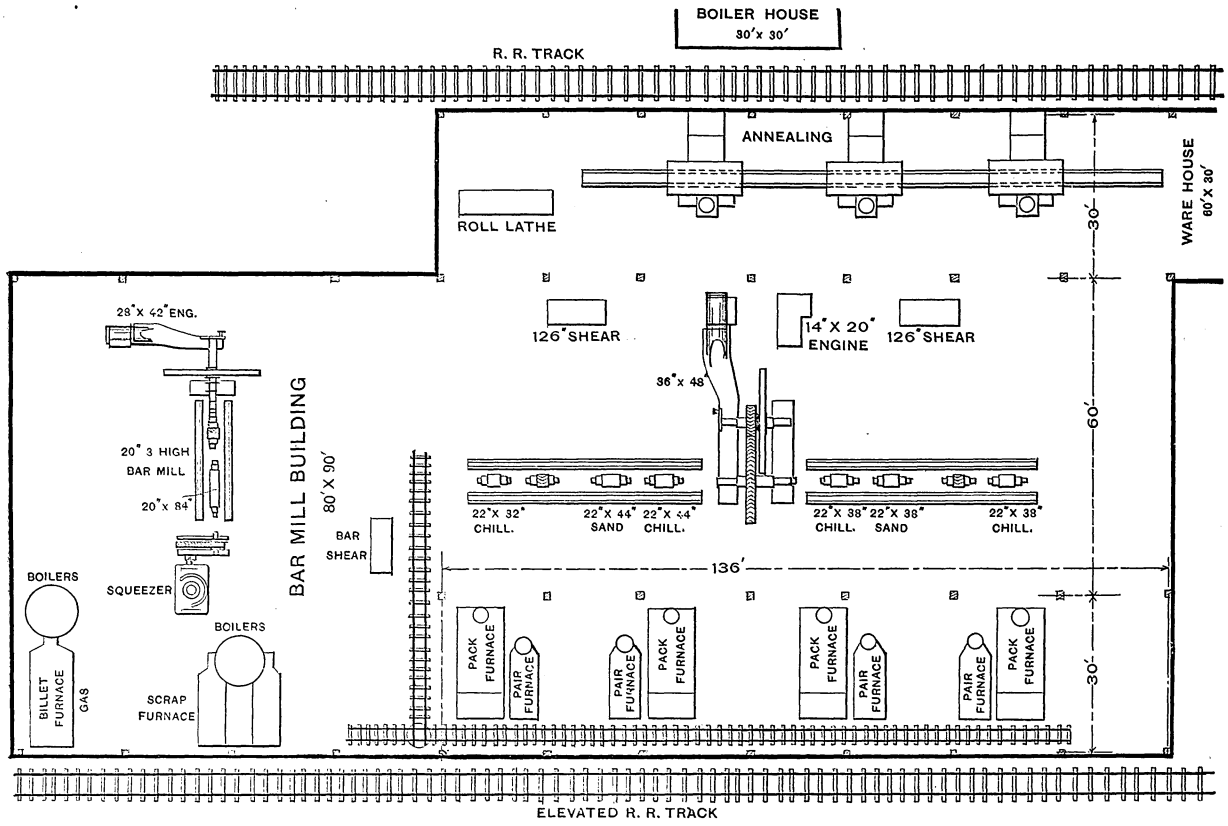


Fig. 4.—Plan of Modern American Sheet Mill.—Beard Design.—Capacity, 35 to 40 Tons per Day, No. 18 to 30 Gauge, 20 Inches to 36 Inches Width.

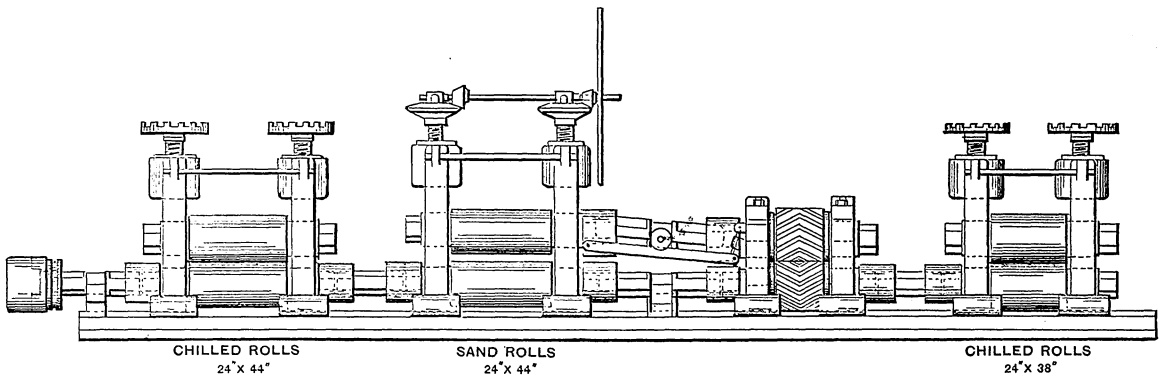


Fig. 4a.—Elevation of Modern American Light Sheet Mill, 24-Inch Rolls.—Weight of Housings, 23,000 Pounds.—Booth Design.

SHEET MILL PROGRESS.

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are worth consideration. Rapid expansion and excessive screw pressure are undoubtedly the two principal causes of sheet roll breaking. Upon those two causes all others rest except those attributable to machinery which is out of line, or culpable negligence, such as rolling bars not properly heated, &c. A modern sheet roll 24 inches diameter, of solid cast iron, is a massive looking affair to an outsider, and it seems incredible that they will break through their center without a moment's warning, nevertheless it is a fact. It is a trouble with which sheet mills the world over have to contend, and the proprietors are looking for a man who can find a remedy or a substitute. A cooling tube through the center has been tried without effect, and brasses having a current of water running through them were supposed to be a step toward greater safety, but rolls

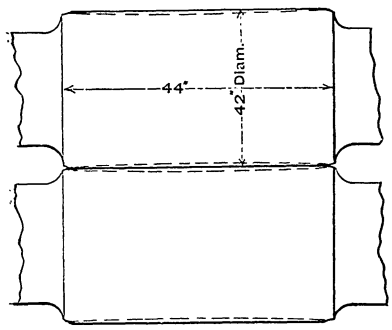


Fig. 5a.—Black Lines Show Shaping of Rolls when Hot and Expanded.—Dotted Lines Give Exaggerated View of Shape of Rolls when Cold and Contracted.

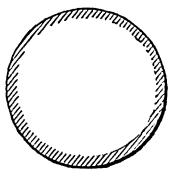


Fig. 5b.—Center of Roll, Open Grain.—Lines Show Chill, Varying from 5/8 Inch to 3/4 Inch.

SHEET MILL PROGRESS.

keep on breaking, and managers seem to have become somewhat reconciled to the no-cure theory and they devote their energy to preventing such misfortunes by training their men to exercise great care, keeping the rolls free from cold drafts of air, keeping the roll train in line, and such precautions. If a substitute is to be found it looks as though some outsider must furnish it. Can steel foundrymen do it? The writer does not say they cannot; the question is asked, not for curiosity, but for information.

The natural life of a sheet roll under ordinary wear and tear, average depth of chill, is about eight months. It is liable to be broken at any time during that period. A guaranteed life of that length would be well worth the price at which chilled rolls are now sold and a big premium attached.

By the recently issued report of the Minister of Mines of Tasmania, for 1892-93, it is shown that the quantities of the various minerals produced in that colony during the year were: Gold, 37,303 ounces; silver, 10,339 tons ore, and 23 tons bullion; tin, 5009 tons; and coal, 39,000 tons. The total value of the island's mineral output was $3,257,385, exceeding that of the previous year by $200,000.

WORLD'S FAIR NOTES.

The Standard Oil Exhibit.

Dr. David T. Day, in charge of the Standard Oil Company's great technical exhibit in the north gallery of the Mines Building, announced last week that the entire exhibit had been given to the Chicago University, to be held in trust for the Columbian Museum. The exhibit cost $50,000 in collection and installation. It is the most complete and best arranged illustration of petroleum deposits, working and distribution ever made. All details are covered in this exhibit, and there is scarcely a question to be asked with regard to petroleum that has not been anticipated and a graphic illustration made to answer it. It is given to the Chicago University in trust so it may be held intact until the university trustees are satisfied that the museum is on a sound basis of organization and is prepared to install the display in accordance with the wishes of the donors.

The Columbian Museum.

The Columbian Museum, to which a slight allusion has been made above, is a contemplated outgrowth of the fair. Its projectors have secured a charter of incorporation and hope to retain the Fine Arts Building in Jackson Park as the home of the museum and a memorial of the great exposition. This building is strictly fire proof, being constructed of brick and steel, the only perishable feature being an outer coating of staff, which can be renewed from time to time as it needs repairs or else can be replaced by something more durable. Valuable collections of a greatly varied kind have already been secured for it. Many of the exhibits are of such a character that their owners would prefer to give them away, although costing large sums of money, if they knew that they would be cared for or would serve a useful purpose. For some time there was doubt about the project succeeding, as it was seen that it would be expensive, and the city authorities had no power to assume such a burden. But last week Marshall Field, the merchant prince, whose fame has grown with Chicago's growth, made a gift of $1,000,000, on condition that the incorporators raise $500,000 more in cash and secure the donation of $2,000,000 in exposition stock. This stock has a prospective value now of 15 to 20 cents on the $1, owing to the very favorable turn in the affairs of the Exposition within the last two months. So many holders of stock have already given it to the museum, and so many citizens of Chicago have subscribed cash in addition, that Mr. Field's contribution is almost as good as clinched. Now that the museum project is in such excellent working order, the work of soliciting gifts for collections of various kinds by technical schools and other institutions have been in great measure abandoned, on the ground that it is better for the general good to have one great collection in such a museum than a number of fragmentary ones.

Other Collections.

Some institutions are and have been hard at work securing exhibits which they have paid for handsomely. The technical schools are prominent among these. Here again is the lavish generosity of a Chicagoan made conspicuous. Philip D. Armour, the packer, some time since gave his personal check for $50,000 to the Armour Institute, to be expended among the fair exhibitors for scientific and technical or educational apparatus. The agents of the Institute have consequently been active in inspecting exhibits and taking what they considered desirable. They are said to have secured the best of the instruments of precision and other scientific apparatus in the Electricity Building, while in the Mines Building very fine mineral collections have been obtained which would otherwise have been brought together slowly and at very much greater cost. This has been a grand opportunity for the Armour Institute, which has been appreciated at its full value. But other technical schools have not been idle. Their agents have also been at work. Their alumni have further been keen to see something that would be appreciated by the *alma mater* and have given much assistance in securing apparatus of great value or specimens of exceeding interest.

A Woman's Memorial Building.

So much was accomplished by women in showing the special aptitude of the sex in connection with World's Fair matters that efforts are being made to continue the work thus begun. Potter Palmer of Chicago, whose wife was the brilliant president of the Board of Lady Managers, has donated $200,000 toward the erection of a building in some suitable location in that city. This is another of the many permanent influences growing out of the great forces exerted in the building up of the fair, and is made possible through the munificent endowment of one of Chicago's public spirited citizens.

The Passing of the Fair.

Those who counted on being able to supplement in November the partial sight-seeing previously done have been grievously disappointed. Exhibitors are too eager to get away, and, of course, exposition officials are anxious to accommodate them. Tracks now disfigure the grounds, while the interior of the buildings has been a scene of confusion since November 1, which has only been intensified every succeeding day. Some buildings are already half deserted, the work of removal being more quickly accomplished than had been deemed possible. Very shortly the deserted buildings will be all that is left of the glories of the fair and then the work of destruction will begin on them.

Summing Up the Attendance.

The World's Fair period extended over 183 days, of which 179 were open days, the exceptions being the four Sundays, May 7, 14, 21 and July 23, when the gates were closed to the public and open only to those whose passes denoted they had business in the grounds. Of the 183 days 27 fell on Monday, for Monday opened and closed the fair, while each of the other days showed up 26 times on the World's Fair calendar. Thursday was the popular day, although Monday and Saturday pressed it hard. But Monday's popularity, as shown by the attendance, was not fairly won, for Chicago day, with its 716,881 paid admissions, came on Monday, and it brought Monday's average up.

The daily attendance reports show that 3,621,358 people paid to get into the fair on 27 Mondays, or an average of 134,124; the 26 Tuesdays were chosen by 3,395,308 people, or an average of 130,588; the 26 Wednesdays by 3,208,310, or an average of 123,396; the 26 Thursdays by 3,581,047, or an average

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of 137,732; the 26 Fridays by 2,875,379, or an average of 110,591; the 26 Saturdays by 3,576,975, or an average of 137,575, and the 22 open Sundays by 1,216,865, or an average of 55,312. The total Sunday attendance did not equal any of the last three weeks' attendance, and the average Sunday attendance was slightly more than one-half Friday's average, the poorest show day of the week. The smallest attendance came Friday, May 5, when 10,791 people paid to pass through the gates. The ten best days were as follows:

October 9—Chicago day	716,881
October 10—North Dakota day	309,294
October 11—Connecticut day	209,277
October 19—Ordinary day	305,961
October 21—Manhattan day	298,928
October 18—Ordinary day	292,458
July 4—Independence day	283,273
October 12—Italian day	275,217
October 17—Ordinary day	267,483
October 27—Coal, grain and lumber	254,763

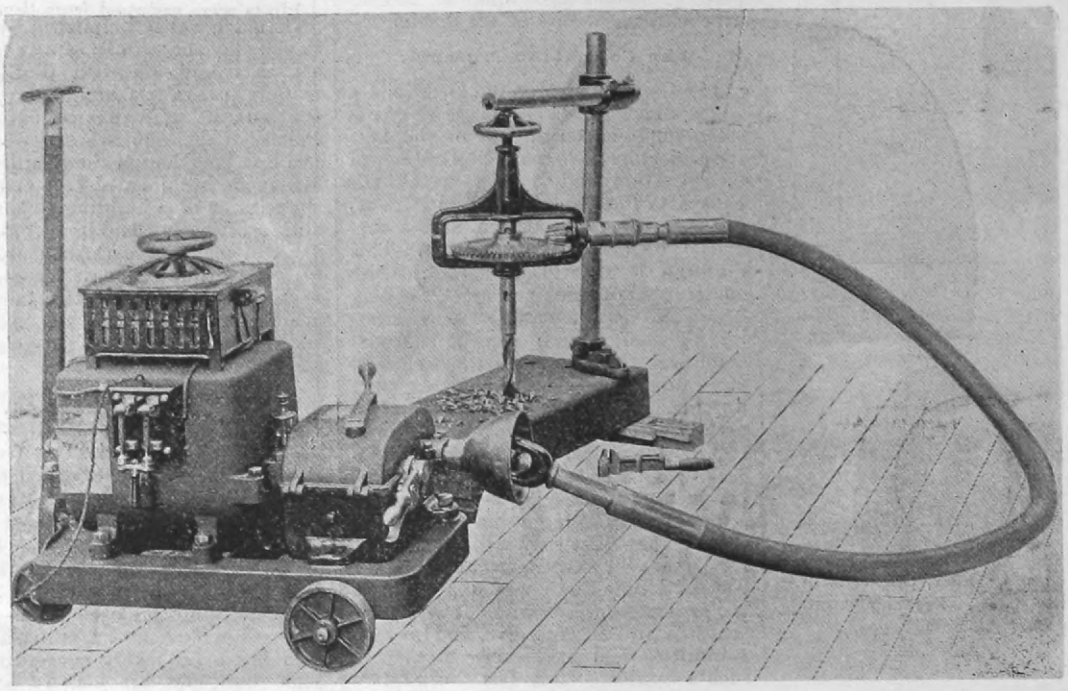
There were 92 days when the attendance rose above 100,000; 53 days when it passed 150,000; 25 days when it went ahead of 200,000; 11 days when it passed 250,000; four days when it was over 300,000, and one day when it was above 700,000.

The attendance by months does not vary except by moving forward and upward in an accelerated degree. May's attendance was 1,050,037; June, 2,675,113; July, 2,760,263; August, 3,515,493; September, 4,659,871; October, 6,816,435. Total, 21,477,212, of whom 1,253,938 were children.

The total attendance, including passes, was 27,529,400. During the Fair 40,000 monthly and 39,840 full term photographic passes were issued. These, with the complimentary cards, workmen's tickets, trip passes and return checks, were used to the number of 6,052,188. Of this total 1,703,428 represents the return checks, giving a net total of passes of 4,348,760.

The Ferris Wheel.

The Ferris wheel paid $120,000 into the treasury of the exposition since September 9. The Ferris wheel is to the Columbian Exposition what the Eiffel tower was to the Paris exhibition. It typifies the ascendency of American genius on the Plaisance. From June 21 to October 26 the total number of passengers carried was 1,560,000. By a contract with the Exposition Company the Ferris wheel concessionnaires were not required to pay any percentage of their earnings to the exposition until they had taken in $300,000, if the wheel should cost that much, or whatever the actual cost was, if less. The wheel cost about $382,000. From June 21 to September 9 was required to reach the $300,000 mark, and since that date 50 per cent. of the gate receipts have gone into the coffers of the Exposition Company. The greatest number of passengers carried on any one day was 38,750, the number of tickets sold on October 10. Chicago Day is next in line with 35,000 passengers. The number of people who rode on the wheel July 4 was 14,000. The average daily number of tickets sold during July and August was about 9000. About the middle of September the number of passengers increased, and since then the daily average has been considerably over 20,000. No announcement has as yet been made by the management of the removal of the wheel. By the contract the removal of the wheel is not required before May 1, 1894.



ELECTRIC PORTABLE DRILL WITH FLEXIBLE SHAFT.

Electric Portable Drill with Flexible Shaft.

In that part of the General Electric Company's exhibit in the Electricity Building, World's Fair, devoted to motors and their different applications was shown a portable drill with a flexible shaft. This has been brought into existence to avoid the inconvenience experienced whenever it becomes necessary to drill a piece of metal too large and cumbersome for manipulation under an ordinary upright drill, and to do work usually done with a hand ratchet drill more rapidly.

The machine consists of a motor and a gear box mounted together on a truck, a flexible shaft, a drill press and drill rest. In addition, the motor carries on its side a double pole switch, and on top a starting rheostat. The motor is shunt wound and has two poles, with one spool on the top of the field. The armature is of the Gramme ring type, and its shaft carries a pinion serving to drive the flexible shaft through change and reduction gears, inclosed in a gear box, and running in oil or grease. A universal joint coupling connects the change gear shaft to the flexible shaft, which carries on the drill press end a clutch coupling which may be used for starting and stopping the drill. A second reduction in speed is obtained by the bevel gears driving the drill spindle. The drill press is held by a stand and arm which may be clamped in any position. Increase or decrease of speed is readily obtained by a movement of the side handle; and by another movement the intermediate gears are thrown in or out of mesh when the upper lever slides the change gears into position.

This motor is rated at 4 horsepower and runs at 1000 revolutions, reduced at the drill spindle, according to the three positions of the change gears, to 167, 83 and 12 revolutions. The machine is built for use with drills up to 2 inches in diameter.

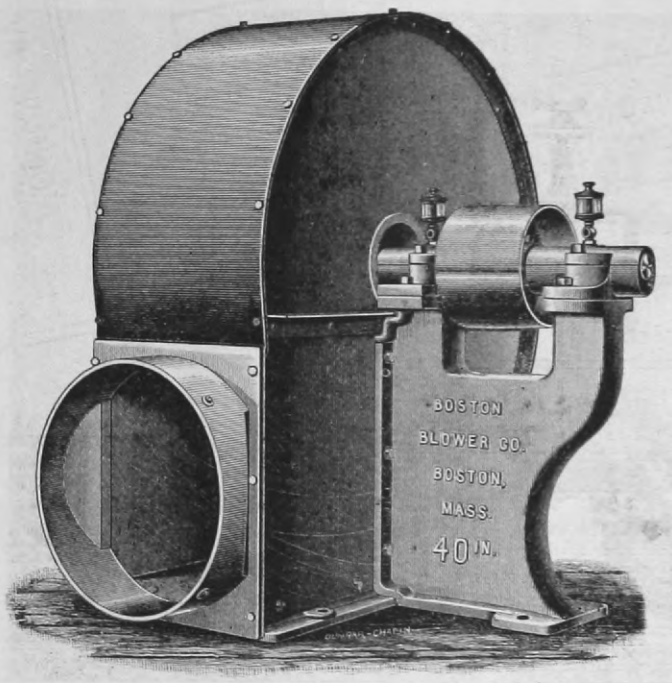
The new ferrule brought out by Randolph Clowes of Waterbury, Conn., is the result of considerable experimenting on their part to make some improvement over the old style cast ferrule commonly used by plumbers in making connections. The patent was granted on March 28, 1893, and at once the ferrule was put on the market and has sold in considerable quantities since. By their new process they are enabled to furnish these ferrules to the plumber smooth and made exact to size, which is not the case with the ordinary cast ferrule, which has to be smoothed down by the plumber, and oftentimes the pipes have to be made larger or smaller, as the case may be, in order to fit the cast ferrule. Therefore these ferrules save the plumbers time and labor. As these ferrules are made from seamless drawn brass tubing and then formed up,

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there can be no blow holes or sand holes. Each ferrule is tested before leaving the works. Since the ferrules are made of seamless drawn brass tubing it is not necessary to have the metal of which they are made so heavy and thick as in the cast ferrule. For a very slight additional cost these ferrules can be furnished with end tinned ready for instant use.

The Boston Steel Plate Exhauster.

The exhausters made by the Boston (Mass.) Blower Company are intended for removing shavings and sawdust from wood working machinery; dust from tumbling barrels or emery wheels, and for use in connection with hot-blast apparatus for conveying and distributing heat to hot rooms or dryers. They are made either single or double, and have heavy steel plate cases and



THE BOSTON STEEL PLATE EXHAUSTER.

jackets secured to angle irons. The angle iron to which the jacket is fastened is on the outside of the case, making it easy to remove if necessary, and at the same time giving a smooth and unobstructed surface on the inside of the machine. The fan wheels are made on heavy T-iron arms, which are cast into a solid cast iron hub, the floats and side plates being securely riveted to the same. These wheels are carefully balanced, as are also the pulleys. The shafts are of steel and the bearings, which are long, are provided with adjustable sight feed oilers.

The hanger, which is bolted to one side of case and extending to the floor, is a heavy iron casting of the box pattern cored out inside, thus securing a very rigid bearing and true alignment.

A free class in architectural and mechanical drawing, under the charge of two instructors, has been started at the Senior Evening School, 58 Fifty-second street, New York. Students of architecture, machinists, stone cutters, carpenters, and persons working at trades in general who would desire to avail themselves of this opportunity can apply on any school evening between 7 and 9 o'clock.

The World's Fair Awards.

There seems to be a good deal of misapprehension concerning the World's Fair awards, which is encouraged for selfish purposes by some. A Chicago newspaper explains the system as follows:

"At most former international expositions the prize medal system has obtained. Advocates of the system followed here in Chicago say the prize medal system is faulty in that it disregards elements of excellence. Under that system an exhibit may receive a medal, yet be an inferior article. A maker of poor chocolate might receive the highest award because other chocolate makers had not made exhibits. In such a case the medal would be no guaranty of the high quality of the chocolate—merely an evidence that it was the best brand of chocolate shown; and it might be the only one shown. Under the system governing the award of medals and diplomas at the World's Fair, the several elements of excellence are all noted. For instance, a judge of furniture examines a chair. He considers that chair, not in comparison with other chairs on exhibition, but as a single chair apart from all other chairs. He notes its form, the quality of material used in its construction, the workmanship, and the character of the finish. If it be up to the standard, it receives a medal and a diploma. In the diploma the several points of excellence are set down minutely. That chair may not be the best chair in the world, but it must be a good chair, else it would not receive a medal. Its good points are all enumerated in the diploma. A medal or a diploma from the World's Columbian Exposition is, therefore, a guaranty that the exhibit which receives a medal has high merit. Only one medal goes to any exhibit, but the number of diplomas under that one medal may be indefinitely large. For instance, a watchmaker would receive only one medal for his exhibit, but he might receive a diploma for his gold watches, his silver watches, his ladies' watches, his gentlemen's watches, his hunting-cased watches and his open-faced watches.

"Under this system of awards the examination of the exhibits to determine those entitled to medals and diplomas was done by individual judges. This point also caused some friction early in the summer. The foreign exhibitors wanted to follow the European plan of having awards determined by jurors. Under the European plan, the jury on agriculture would determine all the awards for wheat, oats, tobacco, beer, condensed milk, coffee, Peruvian bark and linseed oil. At the World's Fair an expert judged each class of exhibits. A disinterested expert on wheat judged wheat, and so on through the list."

As we understand it a number of exhibits were assigned from time to time to each juror of a certain section. He made his report, which was submitted to the whole jury, of that section, and was accepted or rejected by it. There have been no "highest awards," or "first prizes," in the sense that it is usually understood. The medals are all of equal value, but the diplomas, which are based on the report of the jury, are worded in a widely different manner. They may make mention of specially meritorious points on which other diplomas given to competing goods are silent. It is the matter contained in the diploma which ranks the award.

The Queen & Crescent Route has issued a new Eastern tariff, effective November 1, giving the rates of freight on cast iron pipe in carloads of 30,000 pounds minimum. The rates to some of the more important points are given below:

To	From—Anniston, Bessemer, Birmingham, Pell City and Piedmont, Alabama.	Chattanooga, Tenn.
Albany, N. Y.	6.25	6.00
Allentown, Pa.	6 25	6.00
Ansonia, Conn.	6.85	6.60
Baltimore, Md. (all rail)	4 25	4.00
Baltimore, " (rail & water)	3.85	3.60
Bethlehem, Pa.	6.25	6.00
Boston, Mass. (all rail)	6.85	6.60
Boston, Mass. (rail & water)	6.45	6.20
Catasauqua, Pa	4.65	4.40
Jersey City, N. J. (all rail)	6.05	5 80
Lancaster, Pa.	5.25	5.00
Newark, N. J.	6.05	5 80
New Haven, Conn.	6.85	6.60
New York (all rail)	6.05	5.80
New York (rail and water)	5.65	5.40
Philadelphia, Pa. (all rail)	5.25	5.00
Philadelphia, Pa. (rail and water)	4.85	4.60
Portsmouth, N. H.	6.85	6.60
Pottsville, Pa	5.25	5.00
Rochester, N. Y.	5.50	5.00
South Bethlehem, Pa	6.78	6.28
Sparrow's Point, Md.	6.52	6.02
Springfield, Mass.	6.85	6 60
Steelton, Pa.	5.25	5.00
Syracuse, N. Y.	5.80	5.30
Troy, N. Y.	6.25	6.00
Watertown, N. Y	7.20	6.70
Windsor Locks, Ct.	6.85	6.60

By official statistics it is found that there were last year 1,109,014 *bona fide* members of trade unions in England. The number of unions was 431, with an aggregate capital of $8,617,500 on hand. The sum of $970,665 was paid during the year as unemployed benefits.

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Works of the Bucyrus Steam Shovel & Dredge Company.

This company was originally established at Bucyrus, Ohio, about ten years ago. From small beginnings it grew and increased, and the original ground on which it stood became so crowded that a new establishment became necessary for the carrying on and development of the business.

The work executed by this company is divided into specialties, as follows: Steam shovels, light dredging machinery, heavy dredging machinery, railroad and locomotive cranes and wrecking cars, placer mining machinery, Bucyrus amalgamator system. Under these headings are included a great variety of auxiliary appliances and machines connected with similar work, such as centrifugal pumps, ballast unloaders, pile driving machinery and machinery for public works.

The recently completed plant is located at South Milwaukee, Wis., on the line of the Chicago & Northwestern Railway 10 miles south of the city of Milwaukee. The ground occupied comprises 15 acres, divided into the main establishment, and shipyard located on the harbor on the lake shore, ¼ mile distant. Here a private and commodious harbor is secured with ample dock facilities, and connected with the main works by a belt line railroad.

The general plan of the buildings and a cross section of the machine and erecting shops are shown in the accompanying cuts, Figs. 1 and 2. The buildings are of steel, brick and glass, and comprise the following: Offices, 40 x 60 feet, three stories; main building, 120 x 240 feet, with overhead traveling electric crane the entire length; smith shop; plate and structural iron shop; foundry, with overhead traveling electric crane; pattern shop, carpenter and wood shop; pattern store house; general store house, power house. Referring to the map, it will be seen that the works are planned with a view of systematic extension so that the capacity can be more than doubled as future requirements demand, and the works when thus added to will be a complete and systematic whole. The defects which are so manifest in nearly all great establishments which are the result of growth will thus be obviated.

The buildings are heated by the hot blast ventilating system. A complete system of standard gauge tracks connects all the buildings with each other, and likewise a narrow gauge track for hand trucks, as indicated on the plan, and a transfer table provides access to the construction tracks in the end of the main building.

The distinguishing features of the plant are that all the buildings, with the exception of the offices, are ground floor only, and that electricity furnishes the sole means of distributing power throughout the entire works.

The reasons for adopting electric distribution of power are as follows:

1. It permits of complete isolation of the boiler and power plant from all of the buildings.

2. It permits the ready and convenient distribution of any desired amount of power to any desired place and at any desired speed.

3. It avoids the wear and tear and loss of power on machines that are used occasionally or intermittently.

4. The electric system lends itself to a variety of subsidiary uses, such as electric light, electric welding, electric traveling cranes, electric portable drills, &c

The power is distributed from a central power house to the various localities where power is required, as follows:

Two motors, 15 horse-power, machine shop; two motors, 5 horse-power, boiler shop; two motors, 5 horse-power, pattern shop; one motor, 15 horse-power, smith shop blower; one motor, 15 horse-power, cupola blower; one motor, 5 horse-power, casting shop; three motors, 4 to 12 horse-power, foundry crane; three motors, 5 to 15 horse-power, erecting shop crane; total, 15 motors and 166 horse-power. Two multipolar generators each of 150 horse-power (one of which is a reserve), driven by a Corliss engine, are employed.

The largest motors and generators are of the slow speed type so that connection can be made from the motor direct to the line shaft with one belt.

Referring to the illustration, it will be seen that the roof of the main building is 120 feet span, divided into one central span of 60 feet and two side spans of 30 feet. One of the side spans is used as a machine shop for the lightest tools, and the heavy tools are placed out along the edge of the central floor so as to be under the field of the overhead traveling crane. The smaller machine tools in which the work to be lifted is beyond hand power are served by compressed air hoists suspended from light jib cranes attached to the wall or to the pillars of the building.

Compressed air is used for the foundry hoist to the cupola platform, and an air cylinder having a tubular plunger is sunk in the ground and operates the elevator platform by direct lifting. Compressed air is used for blowing out cylinder castings and for testing small engines in the erecting shop.

The compressed air is furnished by a duplex air pump of the American air brake type, as used on locomotives. This is placed in the engine room, and a receiver kept charged at all times to the requisite pressure. There is no accumulator, and the apparatus is entirely automatic in its action.

The offices of the company are located in a separate building. On the ground floor are the business offices, with the general manager, superintendent and secretary. The whole of the

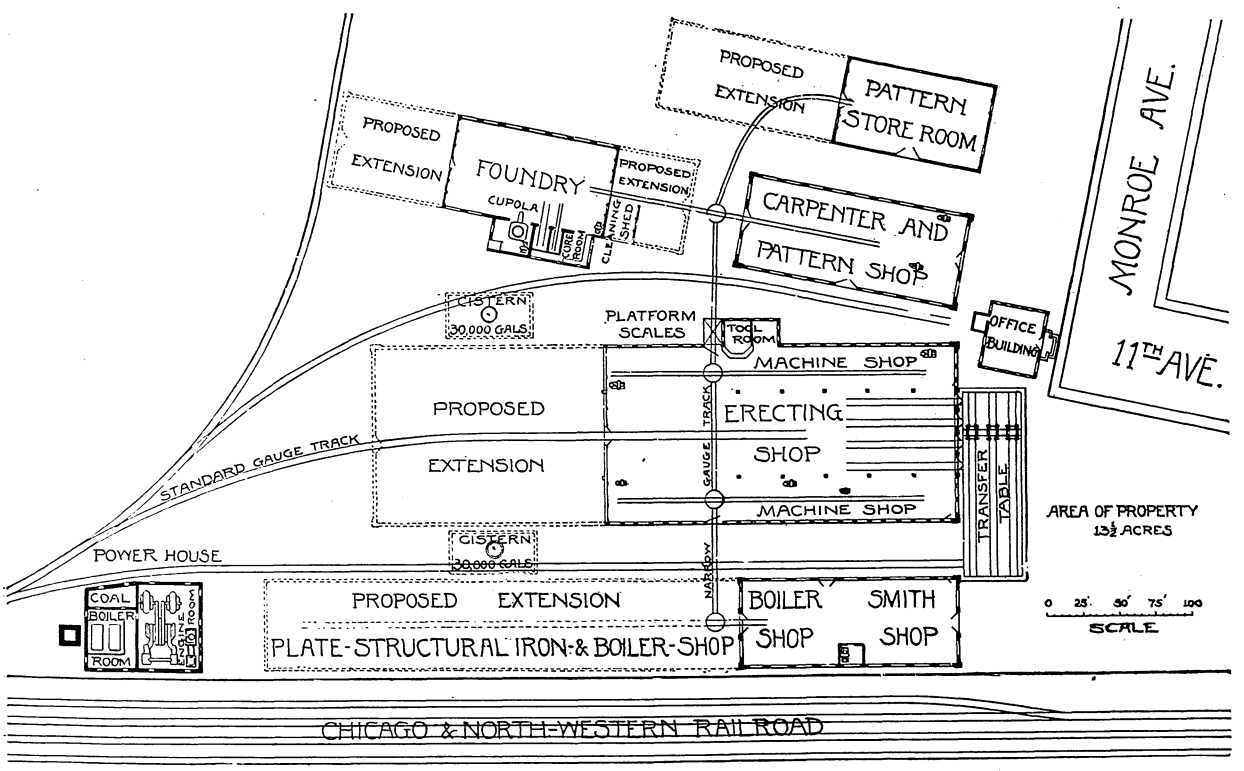


Fig. 1.

WORKS OF THE BUCYRUS STEAM SHOVEL & DREDGE COMPANY.

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second floor is devoted to the drawing office, with the chief engineer's office, which has accommodation for 14 draftsmen.

The work turned out by this company is of a very high order and of a varied description, necessitating a very complete system of records. The range of work runs from the lightest sectional steam shovel, capable of being transported on a mule's back, to the largest sea going dredge of 10,000 cubic yards capacity, and the dredges that have been already built number over 20 sizes, running up to the most powerful dredges in the world. The officers of the company are as follows: Wm. Hamilton Harris, president; H. P. Bolls, vice-president and treasurer; A. B. Stetson, superintendent; W. B. Crittenden, general manager; A. W. Robinson, chief engineer; J. M. Millman, secretary.

English Steel Production.

The production of Bessemer steel in Great Britain during the first six months of the current year is given in the report of the British Iron Trade Association, just issued. It shows that the total production of Bessemer steel ingots was 784,712 tons, of which 656,774 tons were acid and 127,938 tons were basic material. By districts the production was as follows:

Districts.	Acid.	Basic.
	Tons	Tons.
South Wales	209,909	.....
Northeast Coast	95,136	77,673
Sheffield	77,177	22,949
West Cumberland	156,174	.....
Lancashire and Cheshire	118,378	.....
Staffordshire, Scotland, &c.	.....	27,311
Totals	656,774	127,938
Total production, 1892	544,399	105,417

During the same period of 1892 the Cleveland district produced 39,878 tons of basic material, and Staffordshire and Scotland 47,659 tons, representing an increase in the first instance of 37,809 tons, and a falling off in the second case of 20,348 tons.

The production of Bessemer steel rails for the first six months of 1893, 1892 and 1891 is shown in the following table:

Districts.	1893.	1892.	1891.
	Tons.	Tons.	Tons.
South Wales	59,078	60,634	70,763
Northeast Coast	83,839	36 346	104,293
Sheffield, &c	11,262	12,995	29,89
West Cumberland	92,678	60,000	141,204
Lancashire and Cheshire	70,528	41,909	75,868
Totals	317,395	211,884	422,623

It is stated that the decline of 210,739 tons as between 1891 and 1892 appears to have been recovered during 1893 to the extent of 105,511 tons. The Northeast Coast and West Cumberland districts have recovered more largely than any of the others, but in the latter district one of the largest works, that of West Cumberland, is still entirely laid off.

The total number of converters in operation in Great Britain on the last day of June, 1893, was 62, as compared with 65 in operation at the same time last year.

Railway Building in 1893.

In spite of the financial stringency and general business depression of the past few months, the work of railway construction has gone on uninterruptedly in 42 of the 48 States and Territories of the Union. The *Railway Age* calculates that 2040 miles of track were laid in the first nine months of this year on a total of 182 lines, over 1000 miles having been constructed since July 1, when the panic was at its hight. There is in sight, besides, sufficient unfinished work to make the total length of new track for 1893 at least 3000 miles, but it is hardly likely, considering the number of enterprises that have been temporarily posponed by the monetary stringency, that the total for the year will much exceed 2500 miles. Yet under the extraordinarily unfavorable conditions that have prevailed of late months, this showing will be anything but a bad one. The only wonder is that construction did not altogether cease, and the fact of this substantial addition having been made to the railway facilities of the country under such adverse circumstances shows the urgency of the existing demand for additional steam transportation facilities. The only States which have not secured new tracks during the year are Vermont, Connecticut, Delaware, Maryland, Nevada and the Indian Territory.

Brown Segmental Wire Gun.

The Brown Segmental wire gun, during the Government test at Sandy Hook on Thursday last, gave the highest velocity ever known. The following is the official report of Capt. Frank Heath of the result obtained on that occasion: With 30 pounds of the Leonard smokeless powder and a 60½-pound shot, a muzzle velocity of 3130 feet per second was obtained, with a breech pressure of 53,800 pounds per square inch. This exceeds any record ever obtained with any gun of similar length, with equivalent weight of shot, and is ahead of the previous world's record obtained with the same gun and powder on August 18, 1893. Thursday's record gives a muzzle energy of 4216 foot tons, which is equal to 1016 foot tons for each ton of weight of gun, and to 140 foot tons for each pound of powder burned. The pressure of 53,500 pounds per square inch is the ordinary battering pressure of the Brown wire gun. It will be noticed that the powder charge used was one-half of the weight of the shot. So far as known the Brown gun is the only gun in existence which admits of the use of such a charge of smokeless powder, and the velocity far exceeds anything ever obtained proportional to the pressure, with any powder in the world for the same weight of shot and length of gun. With an armor piercing projectile the velocity obtained would have been sufficient to penetrate about 19 inches of wrought iron or 13 inches of steel armor.

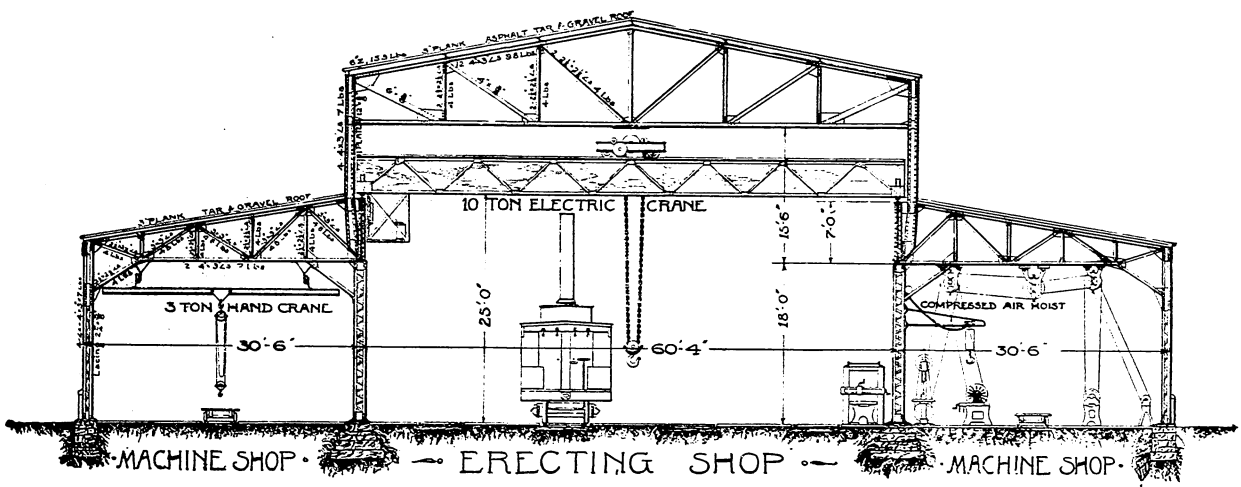


Fig. 2.

WORKS OF BUCYRUS STEAM SHOVEL & DREDGE COMPANY.

The coinage of gold in the United States mint in Philadelphia during October was the heaviest in the history of that institution. Over half of the $15,000,000 ordered by the Treasury to be coined by December 1 was turned out.

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Modern Fixed Ammunition*

BY HAROLD THOMAS ASHTON.

Continuous improvements in the loading and firing arrangements of firearms of all calibers and in their ammunition have been made, the end in view throughout having been to obtain the maximum efficient speed of firing by rendering the operations of loading and discharge as simple as possible, and so allowing the principal attention to be directed to aiming the shot. This final simplicity in action, in which the ammunition plays the principal part, has only been arrived at by the most elaborate preparation of the implements and materials used, with the result that the manufacture of a modern small arm or quick firing cartridge is not often excelled, either in the care exercised in the selection of the material and the multiplicity of the operations performed upon it or in accuracy of workmanship.

A complete cartridge is made up of: 1, Case; 2, explosive charge; 3, means of ignition; 4, projectile.

While the bullet, charge and means of ignition are essential for the use of firearms, the case is a comparatively modern addition, and merely a means of uniting the other components in a convenient manner, although at the same time it is the most important element in the safety of and ease of handling the cartridge. The functions of the case before firing are to form a tightly sealed receptacle for the explosive charge and the means of ignition and a holder for the bullet. In the act of firing its duty is to form an elastic gas check, preventing all escape of explosive gases past it; and after firing to free itself readily from the firing chamber.

The qualifications of a good cartridge case are therefore: 1, That it should be as strong and rigid as may be required for transport; 2, that it should fit easily but accurately into the firing chamber; 3, that it should retain sufficient elasticity to return approximately to its original dimensions after the pressure of the explosive gases expanding it tightly in the chamber has been released; 4, that it should be as light as is consistent with the strength required in it to resist rough usage and exposure in all climates and under all conditions; 5, that—since in all but the larger sizes of cases, to which this condition does not therefore apply, it has been found rarely possible to use a case more than once—the first cost should be as small as possible.

Attempts to fulfill these conditions have caused the paper case, which was consumed in the explosion and used in rifles carrying a permanent gas check in their breech action, to be replaced successively by a stronger paper case with a metallic base; by the rolled case still used for the Martini-Henry rifle, in which the thin sheet brass forming the body is used in much the same manner as the paper that preceded it; and finally by the solid drawn brass case, which has been adopted universally without material variation.

The body of the case contains the explosive, and when charged is closed at the front by the projectile. The thin walls form the gas check, which is completed by the strong base, in which is formed a central chamber for the primer. Round the base is a projecting rim or head, or an annular groove, serving as a means of extracting the empty case from the firing chamber. The groove is more convenient for the purpose of packing, but it does not give so certain a hold for the extractor as the projecting head, which has accordingly been adopted in the British service.

Some of the larger cartridge cases for use in quick firing guns have been made with the base attached to the solid drawn body by riveting or screwing, chiefly as a measure of economy in the appliances used in manufacture; and smaller cases have been similarly designed, various advantages being claimed for them; but cases of this description do not supplant to any noticeable extent the solid drawn case above described. Until recently only small arms were supplied with fixed ammunition, but its use now extends to a variety of quick firing guns, the largest of which are of about "6" caliber. Its usefulness as a means of increasing the speed of firing is, however, diminished, and finally disappears, as the weight of a cartridge increases and becomes inconveniently heavy for dealing with by manual labor; and on this account the heaviest complete fixed ammunition in the British service is that made for the 6-pound quick firing gun, the cartridges used for the 4.7 and 6 inch guns having only the charge and means of ignition contained in the case, which is carried and loaded separately from the projectile. In contrast with these, the smallest varieties of fixed ammunition are those made for revolver pistols and practice with the Morris aiming tube.

As the manufacture of all kinds of solid drawn cases is conducted on the same lines, it will be sufficient to follow in detail the construction of the cases used in the Lee-Metford rifle, which may be taken as a type of the small arm cartridge cases adopted for the armies of the civilized world, and are made in the greatest numbers, with the greatest accuracy, and present on the whole greater difficulties in manufacture than any other variety.

Preparation of Material.

The material found to be most suitable for these and all other solid drawn cases (other than some of the smallest, which are of copper, and might be made of almost any ductile metal)—combining the strength and ductility necessary to withstand the heavy stresses to which it is subject during manufacture and in use, while being comparatively cheap—is an alloy of copper and zinc in the proportion of copper, 65 per cent. to 70 per cent., and zinc, 35 per cent. to 30 per cent. Small quantities of lead and iron are found in the best cartridge metals, but their presence is not particularly desirable. The total amount of metals in the alloy, other than copper and zinc, should not exceed 1 per cent. Only the purest brands of copper and spelter can be used with success for this alloy, and in casting it into ingots every care has to be taken to obtain them absolutely sound and free from all impurities such as scale or other foreign matter, which, together with blow holes, are the greatest enemies to success in its subsequent manipulation.

The ingots are cast in iron molds, already hot from the effects of previous use, and prepared by a rub down of seal oil and resin, or some similar varnish, to give a good surface to the casting. With a view of obtaining sounder metal, small quantities of phosphorus and aluminum have been introduced into the alloy, but experiments have failed to show that the results are beneficial or the reverse. Entirely new metal does not work as well as that cast from a mixture, of which scrap cuttings, made in various processes in the manufacture of the case, form a large portion. Also, curiously enough, better results have followed where charges have been made from copper and spelter of certain brands and a scrap cast from different brands, than from charges in which the same brands of copper and spelter, used as a new metal also, solely compose the scrap metal of the charges; although no difference sufficient to account for the result was to be found by chemical analysis. It is also advantageous to have ample heat at command, that the charges may be melted quickly and with the smallest possible loss of zinc.

The exact dimensions of the ingots are to some extent a matter of convenience, provided that the thickness is such as to insure sufficient work being put on the metal in rolling to thoroughly solidify it. The possible importance of this may be indicated by the fact that an alloy has actually been made entirely by incorporating by pressure the two constituent metals in a fine state of division. The width of the ingot is dependent on the design of the machines used in the operations immediately subsequent to the rolling, and the length is limited by the facility in handling when the ingot is elongated in the rolls. The ingots for the manufacture of the Lee-Metford cartridge case are cast about 0.75 inch thick, and 2.25 to 4.5 inches wide, and about 2 feet 6 inches long. After they have been trimmed they are rolled down into long narrow strips 0.14 inch thick. By the earlier or breaking down rolls they are reduced much more in thickness than by the later, and they are annealed at intervals.

Formation of Cups.

The metal silp thus produced is passed, after having been trimmed and examined, through machines which punch out from it circular blanks 0.875 inch diameter, and at once form them into cups in the same die, Figs. 1 and

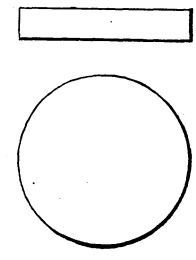


Fig. 1.—Blank.

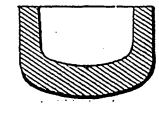


Fig. 2.—Cup.

2. This die has a hole passing completely through it, made in two diameters; the first and larger of these, served with an annular punch, cuts the blank, which momentarily rests on the shoulder half way through the die, and is then, by a central punch working inside the annular cutting punch, thrust through the hole of smaller diameter and formed

* From the proceedings of the Institution of Civil Engineers.

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into the cup. This operation, by straining the fibers of the metal over the dome and corners of the cup, serves to show any surface defects in the metal which have previously passed unnoticed, and at each subsequent stage in the manufacture of the case further torture of a similar nature reveals any defects existing in the metal as cast in ingots. The amount of metal at the end of the cup forming the embryo case cannot be augmented in the course of manufacture, and is even somewhat reduced. The quantity of the metal required in the head of the finished case therefore determines the mimimum thickness of the strip from which the cup is formed, and consequently the amount of work which has to be done to extend and reduce the walls to the thickness required in the finished case, in the drawing operations to which the cups are subjected after they have been annealed.

Drawing Operations.

There are five drawing machines used in the manufacture of the case under consideration, and by them the principal work of manufacture is done, and from their nature the "solid drawn" case derives its name. These machines are all similar, and are only distinguished by each being fitted with the particular tools required for its share in the work. The cups, having been fed by hand into holes in a revolving table, are carried under a reciprocating punch, driven by an ordinary crank, connecting rod and slide, which, advancing in due course, forces them one at a time through the drawing die, which reduces their diameter and thins and extends their walls. Each case, adhering closely to the punch, upon which it is tightly compressed during its passage through the die, expands slightly when the passage is complete; while at the same time the die, relieved from strain, contracts; so that the sharp edges of the die catch on the edges of the case on the return of the punch, which is thus cleared in readiness for the next stroke. The punches and dies are copiously lubricated with soap and water to reduce friction and to prevent the work from being scored. In each drawing operation as much work is done upon the metal as is possible without permanently injuring it, hardening it considerably and causing it to require thorough annealing before the next operation. All the annealings, five in number, are conducted in the same manner. The cases are heated in covered pots or muffles to a dull red heat corresponding with about 650° C., and then allowed to cool slowly. Great acccuracy in temperature is not necessary

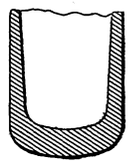


Fig. 3.—First Draw.

to insure a satisfactory result, but care must be taken not to overheat the work, especially in the later stages, when the walls have been thinned. After annealing, the surface of the metal is cleaned by dipping it into dilute sulphuric acid. The drawing or extending operations do not succeed one another immediately in the development of the case, but are interrupted by the first indenting operation, in which the cap chamber and head take rudimentary shape.

Indenting and Trimming.

There are two indenting operations in all, and the first is effected preferably after the first draw, and the second after the fifth draw. They are similar in manner, and, like the several draws, only differ in degree. After being indented the first time, the case appears as at Fig. 4, and after the second indenting as at Fig. 9. The results of the successive drawing operations are shown in Figs. 3, 5, 6, 7 and 8. For indenting, the case is supported internally by a bolster fitting it accurately and externally by a die. A suitably shaped punch is then driven into the base of the case, displacing the metal from before it and forcing it to flow backward along the annular space between the punch and the supporting die. For this purpose the cases are fed by hand into the feeding slide of automatic machines, and are delivered by carriers in front of the operating tools, which act in the order given by means of cranks, cams, or a combination of the two, and are freed from the work by a stripper. When the cases leave the drawing machines their mouths are left with somewhat ragged edges. This is due partly to irregularity in the flow of the metal and partly to the impossibility of keeping the punch and die absolutely in truth. As the mouth of the completed case must be of uniform substance and strength to prevent it from splitting when the cartridge of which it forms a part is finished, enough metal is provided in cutting the blank to make it, as it leaves the last drawing machine, considerably longer than is ultimately required. The surplus length is cut off in a machine

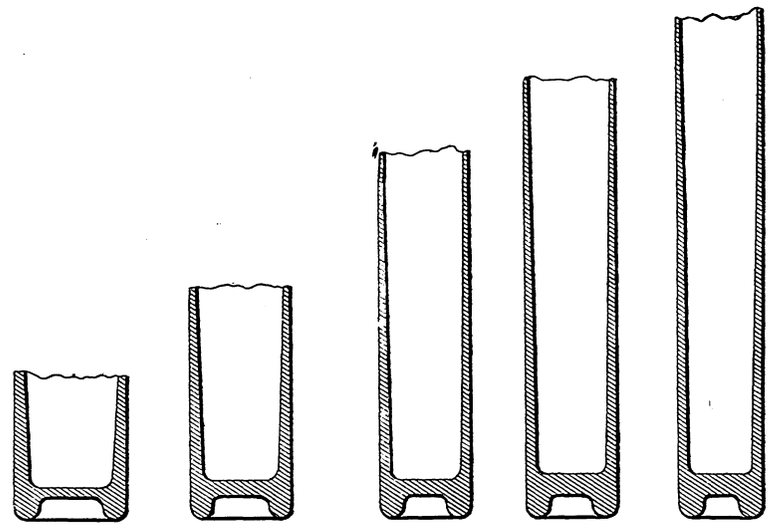


Fig. 4. 1st *Indent.* *Fig 5.* 2d *Draw.* *Fig. 6.* 3d *Draw.* *Fig. 7.* 4th *Draw.* *Fig. 8.* 5th *Draw.*

in which the cases are either fed by hand or by automatic feeding gear on a mandrel, or into a revolving spring chuck. A rapidly revolving circular cutter is then moved up against the case automatically, or by hand, and shears off the metal.

Heading.

Heading the case after it has thus arrived at its full length, Fig. 9, is a most important operation, for on it depends the perfect freedom from escape of gas about the cap or primer, as well as the ready extraction from the chamber of the rifle after firing—two of the most important points determining the efficiency of a cartridge case. Heading consists in upsetting the base of the case, in which there has already been formed a deep indent, so as to form the projecting rim on its circum-

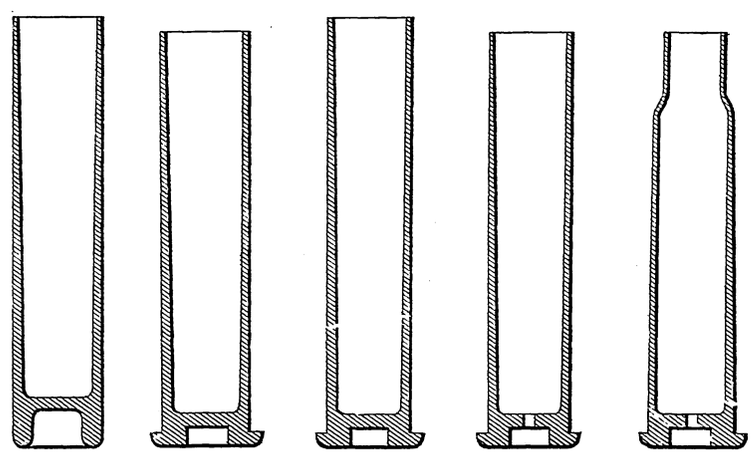


Fig. 9. *Trimmed and Indented.* *Fig. 10.* *Headed.* *Fig. 11.* *Coned.* *Fig. 12.* *Pierced, &c.* *Fig. 13.* *Necked.*

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ference and the cap chamber at its center, and at the same time to solidify the surrounding metal. The case after heading is shown in Fig. 10. The case is supported in the heading machine internally by a bolster and externally by a cylindrical die. The die does not, however, inclose the whole length of the case as in the indenting operation, but leaves a short portion projecting, sufficient to form the rim when upset. The heading tool, which is then impressed upon the case, consists of a dished die with a central projecting nipple of the exact size of the finished cap chamber. Just enough taper is given to the nipple to allow it to free itself after operating and leave the case on the bolster. Great care has to be exercised in making the indent in the base of the case before heading. If made too large the metal closes on the nipple in folds in the heading operation instead of homogeneously, and if made too small unnecessary work is thrown upon the nipple, which it is important to avoid, as only 0.001 inch latitude is allowed in the diameter of the finished cap chamber, so that the life of the tools is of necessity very short. The heading machines are of various kinds. In some of the earliest the cases are placed by hand on the bolsters, which, together with the supporting dies, are carried by a revolving table under a reciprocating heading tool driven by an ordinary crank, connecting rod and slide. Later machines have only one die and bolster, and in them the cases are fed by hand into the slide, from which they are taken mechanically and placed opposite the operating tools, which are brought to their work in the requisite order by cams or cranks.

Tapering.

The cases are next passed slowly over rows of gas burners, the flames from which play only on their mouths, thus softening them for a short distance up the body while leaving the base and body hard. This is done in order that the walls of the cases may easily adapt themselves to the tapering operation, which follows immediately, and to the necking or reduction in diameter of the mouth of the case, which takes place after the charge is inserted. The case is tapered or coned by two machines, in each of which it is forced into a die having a suitably shaped central cavity. In the first machine most of the reduction in the diameter of the case near the mouth is effected, and in the second the die gives to the body of the case the straight taper shown in Fig. 11, which is required to render insertion into and extraction from the firing chamber easy. After the head has been turned, the distinguishing marks stamped on its base, and the fire hole at the base of the cap chamber pierced, the case is cleaned. The cap chamber is then rectified, the mouth of the case rehammered, and it is passed on to be examined and loaded, after which the final operation of necking takes place.

Work is being pushed on the defenses of Boston harbor. The undertaking will include an armament of 12 12-inch guns, 15 10-inch and 5 8-inch guns, 128 12-inch mortars, and submarine mines to be operated from four mining casemates.

A steamer built recently in England, to run between London and Paris direct, has mast, funnels, boats' davits, flying bridge and other deck erections all made to lower, in order to enable the vessel to pass under the low bridges of the river Seine.

English Pig Iron Production.

The British Iron Trade Association has published its usual report showing the production of pig iron in the United Kingdom in the first half of 1893. The amount produced during the first six months was 3,665,537 tons, against 2,790,918 tons for the corresponding period of 1892, or an increase of 874,619 tons. It is pointed out, however, that the decrease in production of the first six months of 1892 over the same period of 1891 was 921,000 tons, due in a large measure to the Durham strike of 1892, and that consequently the increase noted above is more apparent than real.

The production by districts is given in the following table:

District.	First half of the year.	
	1893.	1892.
Cleveland	1,364,285	600,819
Scotland	443 000	466,000
Cumberland	315 822	222,747
Lancashire	333,336	236,505
South Wales	368,341	332,087
Lincolnshire	105,692	109,847
Northamptonshire	88,833	88,098
Derbyshire	102,291	138,548
Notts and Leicestershire	132,321	137,624
North Staffordshire	106,900	98,573
South Staffordshire, &c.	152,215	170,135
South and West Yorkshire	102,967	124,789
Shropshire	20,080	25.335
North Wales	22,964	22,312
Other districts	6,540	17,499
Totals	3,665,537	2,790,918

Since the end of June 96 furnaces have been blown out in Great Britain, while only six have been started, leaving a net decrease in the number of furnaces in blast of 90, or representing a falling off in production of 1,530,000 tons annually.

The stocks on June 30, 1893, in producers' hands and in warrant stores amounted to 786,057 tons, or an increase of 85,607 tons over the first six months of 1892. The principal holders were Scotland, 336,383 tons, and Cleveland, 192,786 tons. It is stated that the present stocks of pig iron, taken as a whole, would not be equal to more than a month's capacity of the furnaces generally, and this fact is alluded to as one of the few satisfactory features of the present situation.

Brazil's domestic troubles are seriously crippling her foreign trade. Baltimore journals mention that shippers and importers at that point are feeling the interruption of commercial relations acutely. The coffee imports from Rio largely center at that port, which is also the seat of an important export trade in flour, provisions and manufactured goods to Brazil. This trade has been of late at a standstill.

Supervising Inspector-General Dumont, in his annual report as to steam vessels and steam boilers, recommends a change in the law which limits the thickness of the shells of externally fired boilers to 0.26 inch, so as to allow such boilers to be built of material of 0.31 inch thick.

Washington News.

(From our Special Correspondent.)

WASHINGTON, D. C., November 6, 1893.

The parliamentary attempt to secure the sanction of the House to a report of the projected Tariff Revision bill of the Committee on Ways and Means to the clerk of the House during the adjournment and the practical exclusion of the minority from participation in the measure, either by consideration in committee or in submitting a minority report, caused such a breeze that the scheme was compromised to the satisfaction of the minority end of the committee.

The work will now go on and when ready the minority members will be furnished with a copy of the bill and ten days will be given them for the preparation of a minority report. Chairman Wilson said immediately after the adjournment: "We will now work on long hours and make substantial progress on the bill and may expect to report it in about two weeks.

"There may be some radical departures from the details of former measures of a similar character, but this will be more in certain lines than in rates. The free raw material idea has long been advocated in sections where previously the tariff on protective lines was strongly advocated. We believe that certain raw materials free will be an actual benefit to manufactures in general. Certainly free coal, now 75 cents a ton, would be popular in New England or California, or wool in the textile sections, or iron ore, now 75 cents a ton, in the iron manufacturing districts.

"The customs law of 1883 was a very carefully prepared measure, based upon most extensive hearings and investigations by an expert commission. The act of 1890 was based upon no such range of inquiry. Public sentiment on that measure was expressed several years ago. It has also most seriously crippled the Government by its prohibitory rates, which have made severe reductions in the revenues. A revenue tariff will afford ample protection and at the same time produce revenue. The losses in that direction by placing certain articles on the free list can be made up from other sources, although lower rates commensurate with the benefits of free raw materials may be fixed."

The metal schedule will be very thoroughly overhauled and the rates reduced, but to what extent has not been definitely settled.

It is proposed to make a cut on pig iron, round iron, beams and other structural shapes, plate, hoop, railway bars and rails, sheet, wire rods and wire.

Pig iron at $\frac{3}{10}$ and railway bars and rails at $\frac{6}{10}$ cent a pound are the target of a lower rate, but the majority are not fully agreed to any reduction there, although it may be anticipated. The question of retention at the committee's rate will then have to be fought out in the House.

It will not be long before the new bill will be completed and printed, but it will be some time thereafter before it will receive concurrent action of the two Houses, and when it does reach that stage it will be somewhat modified and changed.

Arrangements are being made for holding a great Scandinavian Industrial Exposition at Malmö, Sweden, in 1896.

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The Iron Age

New York, Thursday, November 9, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

An Export Trade in Heavy Iron and Steel.

The low prices at which American iron and steel are selling in our markets have suggested to some not familiar with the situation outside of our country that we may become exporters on a scale of some magnitude. Some journalistic wiseacres are encouraging this impression, and in that way are doing harm. While we are convinced that this country will ultimately take its place as an important contributor to the world's markets, it is sure that the present range of values keeps us out of the race. Possibly when the next depression comes, and American manufacturers have learned to further reduce costs, then it may be wise to look about for means of developing an export trade in heavy iron and steel.

A few figures will suffice to put an end to all this talk of an export trade. Bessemer pig is selling at $11.25 in Pittsburgh. Add $2.80 for freight, and a tidewater price of $14.05 is reached. The ocean freight, insurance, &c., would carry this up to $15 at the very lowest as the cost delivered to an English port. This is at least $3 per ton above the price there, and cuts off any possible chance in neutral markets.

Possibly American steel billets might be sold at $20 per ton at tidewater, although the market is really closer to $20.50. Now foreign billets are quoted, delivered New York, at $28.50. The duty is $8.96, so that foreign billets are selling, c.i.f. New York, lower than the American material. The only effect the lowering of the American price has had is to stop importations of common foreign billets for the export wire trade, under the drawback arrangement, because it has ceased to pay. In any case the Germans have done what business there has been, because they undersell the English makers. English quotations have no value, therefore, when comparing foreign and domestic billet prices.

Of course these are lines in which the only foreign markets are the home markets of our competitors. But in all rolling mill products which might go to common markets in other parts of the world we would be invariably beaten, except where reciprocity treaties give us the advantage. American bridge builders have in the past taken work in Central and South America, but that was because they built light pin connected structures, which foreign engineers have since then learned to imitate. Lately bids for 550 tons of girder work for a Japanese railway have been submitted here, but aside from unfavorable financial arrangements, our bridge shops acknowledge that they cannot figure down low enough.

An occasional job in architectural iron work does come up for some public building, as was the case of a theater in a Venezuela town recently. But that comes to us because we are the pioneers in some classes of steel construction, and not because our material is low enough to allow us to compete on a tonnage basis.

A little export business is being done in bars made from scrap iron, but that is merely local and does not cut any figure. We have, however, done quite a respectable trade for many years in cut nails, since that has been an American specialty. We are doing a growing business in wire nails and barb wire, basing it all, until lately, upon foreign raw material. There is not much relief to our markets in that.

In the whole lines of crude materials and rolling mill products we have no right whatever to expect an export trade of any consequence, except possibly with some parts of Canada. There is an animus in the assertions to the contrary which one need not go far to see.

The Lesson of the Fair.

It is interesting and to some extent amusing to read what various writers have to say regarding the results of the Chicago Exposition. The magnitude of that enterprise in its every aspect has been an incentive to grandiloquent speech whenever the topic has come up for discussion. It has inspired lofty utterances from those gifted in that way, and a whole tribe of followers has sprung up who vie with each other in attributing to the fair almost revolutionary influences in the arts and sciences. A curious feature about this whole performance is that the most fervid prophecies regarding the influences of certain classes of exhibits are made by people who have no practical knowledge on the subject which they assume to discuss and about which they philosophize in airy abstractions. There is no doubt that in the matter of architecture American taste has been greatly cultivated by the beauty and originality displayed in the exposition buildings and many of the State and foreign buildings. The effect of this may be seen in the future, although it is questionable whether the severe plainness of the large structures now becoming such a conspicuous feature of our leading cities is not much better suited to this utilitarian era than the florid creations of ages long past.

In the matter of exhibits, however, conclusions are not so easily drawn. Never before was such a magnificent array of productions of every character brought together. While in some lines the very best was shown, this was not the case in every line. Many famous manufacturers, whose reputation is world wide, were wholly unrepresented, while their competitors shone in their absence with inferior goods. How, then, in these lines, some of which have been singled out for special praise, could the progress of the art be specifically noted and a pace set for the world to follow hereafter?

It was a great show, and Chicago has won imperishable glory for the grand scale on which it was projected and the triumphant success with which the details were worked out. A great many people were given an opportunity to see more than they could have hoped to see if they were to live to the age of Methuselah with every facility for travel in their power. Perhaps invention has been stimulated and imaginative faculties have thus been quickened in a way that will be felt potently by this nation and the world in the years to come. But the fair nevertheless was a commercial enterprise, expected to be of practical benefit to the locality in which it was held, and all other considerations and influences, charming as they may be, are but secondary and subsidiary. In the light of the heroic struggle forced on the business men of Chicago to make their great enterprise a success, and in view of the narrow escape from serious dangers which might have financially wrecked them, the real lesson of the fair is that other projectors of World's Fairs must not base them on such a prodigious scale. There is but one Chicago.

Destruction of Capital.

An illustration recently presented itself to the writer of the rapid changes possible in the iron trade and the risks unconsciously taken by manufacturers. Four years since there was a mill making a staple article of consumption which was in such strong demand that the supply was by no means equal to the demand. The mill had been running for a year or more and was apparently in one of the best locations, as it was also one of the best equipped and most skillfully managed in the country. Within easy reach were three or four customers whose wants were at times in excess of the output of the mill, so that they were obliged to purchase part of their supplies from distant manufacturers. Other customers in the same line were in prospect, as new enterprises of considerable extent had been undertaken, presumably by men of means. So roseate was the outlook that plans were made for the erection of a duplicate mill and some of the contracts for machinery were placed when a change suddenly came over the scene. One good customer failed and his works were shut down, probably not to resume again. Then another and a larger customer failed, whose works may not be started until there is a decided revival in general business. A third customer dropped out of the race for business

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to wait for better times. A fourth customer transferred his patronage to another establishment under a more favorable arrangement. The new enterprises were nipped in the bud by the frost which preceded the late cold wave of financial distress and therefore the prospective customers have not developed into actualities. The consequence is that the mill stands and has stood idle for a long time. It is well located, well equipped and ought to be making money for its owners, or at least affording them and their workmen employment. But for the time being it is dead and the capital invested in it is practically lost because it cannot be used when it is most needed. In this case the change was brought about so suddenly that it is hard to realize the cold facts in the case. There are perhaps numerous similar cases that can be cited. The good times all are looking for cannot come too soon.

OBITUARY.

DANIEL L. DAWSON.

A well-known figure in Philadelphia club and literary life passed away on Wednesday, November 1, in the person of Daniel L. Dawson, president of the Gray's Ferry Foundry & Boiler Company, of that city, who died suddenly of hemorrhage of the stomach, age 38 years. Mr. Dawson was born at Lewistown, Pa., and moved to Philadelphia with his father at an early age, the latter becoming engaged in the scrap iron business in the southern part of the city. Young Dawson was educated at La Salle College, and on graduating from that institution assisted his father in business. Later he became associated with his brother in the iron foundry business, under the firm name of John I. Dawson & Bro. After the death of his brother the name was changed to that of the Gray's Ferry Foundry & Boiler Company, Mr. Dawson filling the office of president. He was spoken of as an exceedingly clever business man, but latterly he devoted his time more specially to social and literary pursuits, leaving the management of the company largely to his assistant, Owen I. Roberts. Mr. Dawson was an unconventional man of much force and originality. An accomplished athlete, he was also a poet of no mean reputation, possessing a strange and fervent imagination, which was strongly reflected in his poetry. He was a member of the Manufacturers', Pen and Pencil and Art clubs of Philadelphia, as well as of the Athletic Association of the Schuylkill Navy.

JAMES W. SCOVILLE.

James W. Scoville, a prominent and wealthy citizen of Chicago, died at Pasadena, Cal., on the 2d inst. In his early career he was connected with the Chicago iron trade. He was born in Pompey, Onondaga County, N. Y., October 14, 1825. For a time he worked on the Erie Canal. In 1856 he went to Chicago. He secured the position of cashier for the Eagle Iron Works and subsequently became the assignee of that company. He helped to organize the Eagle Iron Works Company, of which he was treasurer and secretary for a number of years. In 1862 he severed his connection with that company and engaged in the real estate business with J. D. Harvey. In 1869 in connection with T. M. Avery he organized the Prairie State Loan & Trust Company, now the Prarie State National Bank, of which he was president at the time of his death. He was also a director of the Elgin National Watch Company, president of the Chicago Screw Company and of the Cicero Water, Gas & Electric Light Company. As a man he was generous, exceptionally conscientious and scrupulously honest. Six years ago he gave Oak Park, which was then his home, the Scoville Institute, which cost $75,000. He was a lifelong and consistent member of the Congregational Church and had given much money for missions and church improvements.

BENJAMIN S. BROWN.

Announcement is made of the sudden death, October 26, of Benjamin S. Brown, president of the Brown, Hinman & Huntington Company, Columbus, Ohio, and also of Withington & Cooley Mfg. Company, Jackson, Mich.

JULIEN P. CORDIER.

Julien P. Cordier, manager of the Lalance & Grosjean Mfg. Company's Chicago house, died November 2, at his residence, 5943 Wabash avenue, Chicago, in the fifty-first year of his age.

CORRESPONDENCE.

Boiler Awards.

To the Editor: Below we give copy of a special notice in relation to boilers at the World's Fair, Chicago, which we placed on the front of our boilers during the last few weeks of the fair. We would be very much obliged if you would give this notice a place in your reading columns, with such comments as you see fit to make:

SPECIAL NOTICE.

These boilers have received no Award.
Why? Read! Learn!

We were informed that it was the purpose of the Jury to make awards on boilers based entirely upon the written statements of the exhibitors of boilers, without tests or any personal knowledge in the possession of said Jury concerning the comparative construction, operation, economy, or durability of said boilers.

We were asked to make such a statement, and were informed that all other exhibitors of boilers had been requested to make a like statement of their claims for the consideration of the Jury of Awards.

Believing that an award, based on such insufficient knowledge on the part of said Jury, could be of no practical value, and notwithstanding the expense incurred by this company in making an exhibit, we respectfully declined to make any such written statement for the purpose of receiving an award upon our boilers.

While we do not in the least envy those who have, upon such knowledge of the Jury, been awarded premiums, we are equally content to stand upon the record without an award based on such a knowledge of our goods.

Yours very truly,
THE BABCOCK & WILCOX COMPANY,
NAT. W. PRATT.
NEW YORK CITY, November 3, 1893.

The Effect of Cheap Beams.

To the Editor: Referring to Trenton "X.'s" comment on your late article, "The Effect of Cheap Steel Beams," and suggestion "that it would be well to have added that a number of firms were in bankruptcy as a consequence of such cheapness," &c., let us say no tears need be shed while the full, round price per ton of $34.75 is being gotten by the beam maker. This is relatively a "fat" figure to that gotten by the maker of staple lines of iron, wire, nuts, nails, pipe and other kindred productions these many months, and no lamentations were dropped on the public by "X." Where has he been all this time?

Until this nation uses the pounds of iron per capita that the less opulent ones of Europe do, the natural law of humanity will demand widening use. That beams are now offered at less than the ridiculously abnormal price they have been held at for years will contribute to our rapidly assuming a proper place in the iron consumption of the world. It is needless to say this widened use will stimulate demand for all other structural product of the mills. Your article was sound in tenor and exactly in the right direction. XX.

PERSONAL.

John Fritz has resigned his post of consulting engineer of the Bethlehem Iron Company, South Bethlehem, Pa., with which he has been connected for so many years.

F. A. Winchell, for a number of years prominently connected with the Crane Company of Chicago, as auditor, has associated himself with the New York Belting & Packing Company, Limited, 13 Park Row, New York City, as manager of sales department.

A. J. Forbes-Leith of the Illinois Steel Company arrived from Europe last week.

Professor Lunge of Zurich, Switzerland, the authority on chemical manufacture, has sailed for home.

John A. Potter, for some years superintendent of the Homestead Steel Works, Homestead, Pa., but for the past year or so chief mechanical engineer of the Carnegie Steel Company, Limited, Pittsburgh, has resigned his position with that firm, taking effect November 1, and has assumed the position of vice-president and superintendent of the Britton Iron & Steel Company, Cleveland, Ohio.

A dinner to the officers of the Chicago Shipbuilding Company was given at Kinsley's, in that city, on the 2d inst., by the directors of the Lake Michigan & Lake Superior Transportation Company. W. I. Babcock, general manager of the Shipbuilding Company, was presented a silver dinner set by the steamboat people as a token of his "skill and efficiency in the construction of the steamship 'Manitou.'" Among those present at the dinner were: W. L. Brown, Major H. S. Pickands, Walter F. Cobb, C. F. A. Spencer, A. T. Spencer, Joseph Austrian, Capt. Allen McIntyre, S. F. Leopold, Nathan F. Leopold, Alfred F. Leopold, W. I. Babcock, Joseph Berolzheim and Capt. F. D. Herriman.

Electricity as a motive power is being tried on the Erie Canal this week, the Pittsford level, near Rochester, N. Y., being selected for the experiment. The work is being done by the Westinghouse Company of Pittsburgh.

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Pig Iron Production Increases.

The tide has turned, there being a tendency to increase the production of pig iron from the lowest notch which it has touched for a good many years. The principal increase has taken place in the Central West, where the resumption of so many steel works and rolling mills has induced their owners to resume work at the blast furnaces which form a part of the plant. Since November 1, on which our report is dated, there have been further additions, and it is known that others will follow before the end of the month. Thus far this movement is practically confined to the Pittsburgh and its tributary districts, the Mahoning and Shenango valleys and the Wheeling section. In the East and South there has also been a movement, less pronounced, toward a heavier production, but the Northwest still lags.

Illinois, Missouri, Wisconsin, Minnesota and Indiana still fail to record a single coke furnace running. The starting of the steel works may, however, soon bring a change.

On November 1 the active furnace plant, grouped according to fuel used, possessed the following weekly capacity:

Fuel.		
Anthracite	34	16,166
Coke	57	58,820
Charcoal	26	5,084
Total, November 1	117	80,070
Total October 1	114	73,895
Increase	+ 3	+ 6,175

The weekly product of all the furnaces on November 1 compared as follows with that of preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
November 1, 1893	117	80,070
October 1	114	73,895
September 1	125	83,434
August 1	169	107,042
July 1	220	153,742
June 1	244	174,029
May 1	251	181,551
April 1	255	178,858
March 1	255	176,978
February 1	251	171,201
January 1	246	173,068
December 1, 1892	246	176,271
November 1	244	171,082
October 1	236	158,027
September 1	236	151,648
August 1	238	155,136
July 1	254	169,151
June 1	269	173,674
May 1	268	177,886
April 1	280	185,462
March 1	305	193,902
February 1	308	187,383
January 1	305	188,082
December 1, 1891	298	188,135

The status of the anthracite furnaces was as follows:

Anthracite Furnaces, November 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	18	2	1,134	16	5,519
New Jersey	11	3	1,656	8	3,150
Spiegel	3	2	149	1	118
Pennsylvania:					
Lehigh Valley	44	11	3,986	33	12,536
Spiegel	1	0	0	1	61
Schuylkill Valley	27	9	4,832	18	7,910
U. Susquehanna Valley	14	2	915	12	4,275
L. Susquehanna Valley	17	2	1,668	15	5,490
Lebanon Valley	15	3	1,826	12	5,470
Totals	150	34	16,166	116	44,529

For a number of months past our records of active anthracite furnaces show the following:

	Furnaces in blast.	Capacity per week.
November 1, 1893	34	16,166
October 1	34	15,338
September 1	43	20,758
August 1	51	23,572
July 1	63	29,268
June 1	70	33,916
May 1	67	33,168
April 1	72	34,641
March 1	74	34,773
February 1	74	32,871
January 1	70	32,772
December 1, 1892	69	33,602
November 1	69	30,869
October 1	69	29,958
September 1	66	27,453
August 1	66	28,821
July 1	72	31,754
June 1	76	33,209
May 1	81	35,473
April 1	84	36,487
March 1	89	38,678
February 1	93	38,124
January 1	94	38,307
December 1, 1891	85	34,905

Burden blew in on the 26th ult. and Andover in New Jersey also started one stack. One Swede in the Schuylkill Valley stopped.

The status of the coke furnaces was as follows on the 1st inst.:

Coke Furnaces, November 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	7	0	0	7	5,247
Pennsylvania:					
Pittsburgh district	25	16	28,784	9	13,375
Spiegel	1	1	1,000	0	0
Shenango Val.	16	2	1,052	14	13,350
Juniata and Conemaugh Valley	16	3	2,195	13	7,074
Spiegel	1	0	0	1	575
Youghiogheny Valley	3	0	0	3	2,215
Miscellaneous	4	0	0	4	2,500
Maryland	5	2	3,059	3	3,350
West Virginia	1	0	0	1	250
Wheeling District	8	1	1,400	7	6,655
Ohio:					
Mahoning Val.	14	3	3,286	11	8,761
Central and Northern	11	1	682	10	7,673
Hocking Val.	14	1	700	13	3,041
Hanging Rock	14	3	849	11	2,333
Indiana	2	0	0	2	412
Illinois	19	0	0	19	26,875
Minnesota	1	0	0	1	629
Wisconsin	5	0	0	5	4,010
Missouri	6	0	0	6	3,572
Colorado	3	0	0	3	1,800
The South:					
Virginia	22	8	4,450	14	7,355
Kentucky	7	0	0	7	3,243
Alabama	38	12	9,150	26	13,690
Tennessee	14	3	1,568	11	4,912
Georgia	2	1	645	1	600
N. Carolina	1	0	0	1	97
Totals	260	57	58,820	203	142,394

As compared with previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
November 1, 1893	57	58,820
October 1	52	53,061
September 1	54	56,976
August 1	84	77,907
July 1	122	117,072
June 1	140	132,079
May 1	146	139,788
April 1	145	135,488
March 1	145	133,579
February 1	140	129,396
January 1	138	131,731
December 1, 1892	136	133,160
November 1	133	130,673
October 1	128	118,895
September 1	128	114,538
August 1	131	117,984
July 1	140	127,433
June 1	145	128,852
May 1	147	132,313
April 1	152	138,116
March 1	163	143,490
February 1	167	138,268
January 1	163	138,611
December 1, 1891	162	142,747

During October, Clinton in the Pittsburgh district was banked, but two Edgar Thomson and one Monongahela furnaces were started. In the Mahoning Valley Grace and Hazelton were no producing on the 1st inst., but Hubbard and Mary are active.

In the South, the Woodward in Alabama, Citico in Tennessee and Ivanhoe in Virginia blew in during October. Big Stone Gap, however, stopped work.

The condition of the charcoal furnaces was as follows:

Charcoal Furnaces, November 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England	13	5	390	8	570
New York	5	0	0	5	585
Pennsylvania	13	2	154	11	761
Maryland	6	2	125	4	300
Virginia	13	0	0	13	827
Ohio	9	4	317	5	263
Kentucky	3	1	81	2	200
Tennessee	8	2	660	6	396
Georgia	3	1	254	2	230
Alabama	13	3	651	10	2,540
Michigan	20	3	1,140	17	5,111
Missouri	2	1	340	1	293
Wisconsin	4	1	747	3	1,127
Texas	4	0	0	4	603
Washington	1	0	0	1	100
Oregon	1	1	225	0	0
Totals	118	26	5,084	92	13,906

As compared with previous months, the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week.
November 1, 1893	26	5,084
October 1	28	5,496
September 1	28	5,700
August 1	34	5,563
July 1	35	7,224
June 1	34	8,034
May 1	38	8,595
April 1	38	8,729
March 1	36	8,623
February 1	37	8,934
January 1	38	8,865
December 1, 1892	41	9,509
November 1	42	9,540
October 1	39	9,174
September 1	42	9,657
August 1	41	8,331
July 1	42	9,964
June 1	48	11,613
May 1	44	10,100
April 1	44	10,859
March 1	50	11,734
February 1	49	10,991
January 1	48	11,164
December 1, 1891	52	11,033

During October Shelby in Alabama and Olive in Ohio went out. Muirkirk in Maryland stopped on the 2d inst., while Union in Michigan blew in on the 3d inst. to work up the existing stock of ore and charcoal.

Stocks.

The position of stocks, sold and unsold, as reported to us November 1, was as follows, the same furnaces being represented as in former months:

Stocks:	Aug. 1. Tons.	Sept. 1. Tons.	Oct. 1. Tons.	Nov 1. Tons.
Anthracite pig	111,468	115,930	121,597	134,157
Coke pig	420,390	513,260	532,157	503,806
Charcoal pig	191,838	197,881	199,008	200,450
Totals	723,696	827,071	852,762	838,413

The prolonged suspension of operations on the part of a large number of coke producers is beginning to have its effect upon the stocks of coke pig iron carried, but returns show that during October a decrease of 28,351 tons took place, bringing the figure down to 503,806 tons, as compared with 532,157 tons on October 1. Mahoning Valley reports a decrease of 9500 tons and New York State and the Shenango Valley 5000 tons each. Alabama, Virginia and Kentucky also report a falling off. The anthracite furnaces have increased their holdings by 12,560 tons, while the charcoal producers have added 1442 tons to their stocks.

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The Foundrymen's Association.

The annual meeting of the Foundrymen's Association was held at the Manufacturers' Club, Philadelphia, on Wednesday, November 1, with a large attendance of members. The president, Francis Schumann, occupied the chair. The secretary, Howard Evans, announced the death of Daniel L. Dawson of the Gray's Ferry Foundry & Boiler Company, Limited, Philadelphia, a member of the association well known among the iron trade and in literary circles. The treasurer, Josiah Thompson, presented his report for the past six months, showing that his total receipts had been $848.89 and his payments $609.98, leaving a balance in hand of $238.91. On motion the report was filed and ordered to be spread upon the minutes.

Geo. P. Smyser of E. G. Smyser's Sons, York, Pa., representing the structural iron work section of the Price Committee, reported that his section had had one meeting and another had been called, but fell through, owing to nonattendance of members. It was arranged to hold another meeting next week, and he could say for his section that it was getting along very nicely. R. A. Register of Register & Sons, Baltimore, Md., representing the cast iron soil pipe section of the committee, reported progress.

P. D. Wanner of the Mellert Foundry & Machine Company, Reading, Pa., for the cast iron pipe section of the committee, reported that there had been no regular price for cast iron pipe during the last month or so. He said they were now reaching the end of the season and cast iron pipe was, as a rule, lower at this time than during the summer or fall. It had lately been sold and offered for delivery in the interior of the State of Pennsylvania at prices less than 1 cent per pound, prices at which it could not at the present time be made. In other words, he said, it was being sold at prices very considerably below cost. In his opinion this proceeding was wrong. He believed he knew something about pipe making and was in a position to know that it was being sold below cost. Whether it was done to keep shops going or to relieve financial difficulties, he could not say, but believed it to be a wrong course in either case. When manufacturers turned out goods for sale at prices below cost and failed, they had been drawing on the people to whom they were indebted, which in his opinion was wrong and simply constituted robbery. If the association was to do good to its members and good for the community, it appeared to him advisable in matters of this kind to talk plainly.

The president then delivered the following address:

"To-day is the third anniversary of our association. I avail myself of this occasion to briefly address you upon our condition, and to state my views as to our future conduct and policy.

"During the past year we have continued to grow steadily, both in membership and stability. We are gradually uniting the foundrymen throughout the country for their common interests. We have set the example for the creation of similar associations in other and distant sections of the country, and our members are experiencing the beneficial effects of the unity of action due to organization, and thus the first and most important result has been attained.

"We have, during the year, informally discussed the desirability of combining all similar associations that may exist or be formed throughout the country under one parent head, to and from which all matters affecting our welfare radiate. That such an organization, national in character, would be of vital importance none of us will deny, and it remains but to determine the details and methods to effect this.

"I would suggest that, after we have passed through the present depressed state of business, a call be issued by this association for a congress of the different organizations, as well as to foundrymen in general, to meet at some central point for the purpose of forming a national organization, of which the local associations shall form chapters or subordinate branches. The local associations to be independent of each other, but acting in unity with and through the parent association, from which all principal matters shall emanate. The parent body to be composed of representatives from the various chapters, to be elected by the respective chapters annually. Each chapter to be entitled to one representative for any fraction of each one hundred *bona fide* members. These representatives to elect a president, vice-president, secretary and treasurer at an annual convention held at different points from year to year. These officers, beside five members elected at these meetings, to constitute an Executive Committee, who shall meet monthly and act upon all matters affecting the interests of the association. The expenses of the parent body to be borne by the chapter, *pro rata*, according to the number of representatives. I advance the foregoing as mere suggestions, with the hope that the importance of the subject will be appreciated and fully discussed.

"It has occurred to me that, possibly, among the causes for the excessive competition in our business is the variable judgment applied in classifying work and the liberty so often permitted unscrupulous parties to vary from the specifications, always to the disadvantage of *bona fide* bidders and tending to inferior work. Especially is this the case with municipal work, the quality and rates paid being really deplorable. We as an association should insist on a rigid inspection, which, if properly applied, would soon correct the evil.

"The benefits to us from such inspection are readily understood when we turn to Government work, as an example, which is now carefully inspected and commands much better prices, no one now being so bold as to cut prices on the assumption that he could cut the quality of the work accordingly.

"Proportionately with the growth of the country less castings are used to-day than formerly. Especially is this so with structural work. Hardly any castings are now used in bridges; wrought iron columns are gradually superseding cast; rolled beams have almost entirely taken the place of cast iron girders and lintels, and even stairs are now largely made of wrought iron and slate or marble. Even cast pipe is meeting with competition from wrought or rolled pipe. These gradual changes are felt and must be met.

"The present severe business depression is keenly felt in our and kindred industries, and unfortunately intensifies the evil of unhealthy competition in the anxiety to obtain work at any price, thus seriously interfering with the plans of our association and tending to nullify our acts.

"If the values in our country are undergoing a readjustment, which I much fear, we will be compelled to adjust the prices paid and received by us to suit the new order of things. Even now, taking our industry as a whole, it is not profitable, taking into consideration the close application, special knowledge required and risks connected therewith as compared to other industries. The question of what we pay and what we receive for our product is one that must receive the consideration of foundrymen in the near future, and one that should be discussed in a convention as I have suggested.

"I would also repeat my suggestion of the importance of the organization under each association of the different branches of our industry, such as pipe makers, structural work, machine castings, malleable castings, &c. While this division has been discussed no decisive action has been taken.

"We must employ all means possible to make our monthly meetings interesting, and I desire to impress upon the Executive Committee the importance of proceeding as they so well began in this direction — the discussion of subjects of general interest, which, besides papers obtained from qualified persons upon subjects bearing on our industry, either directly or indirectly, could be published annually for our use.

"The beneficial effects resulting from this association have been felt by many of us, and not one will deny its value, but, on the contrary, will help to maintain it in the future, especially through these trying times, which will pass away as sure as sunshine follows storm; so will we emerge from the difficulties now before us, and do our share toward the development of our great country, bearing in mind that the healthy growth of our industry, as well as that of our country, depends on united and comprehensive action based on patriotism, good will and good faith between us."

Election of officers for the ensuing year being next in order, and the by-laws of the asssociation requiring nomination at one meeting and election at a subsequent meeting, it was on motion resolved that the by-laws be suspended on this occasion, and that the nomination and election of officers be proceeded with.

Justice Cox, Jr., nominated for re-election the present officers and Board of Directors of the association. These gentlemen, he said, had filled their positions with such credit, not only to the association but to themselves, that it would be hardly fair at this time to think of putting others in their places. He considered that the work they had done had been done so well and so cheerfully that it would not be courteous to think of electing others in their places. He felt sure that the members would share his views in the matter. This nomination being seconded and nominations closed, the following gentlemen were re-elected: President, Francis Schumann of the Tacony Iron & Metal Company, Philadelphia; vice-president, Thos. Devlin of Thos. Devlin & Co., Philadelphia; treasurer, Josiah Thompson of I. S. Cassin & Co., Philadelphia; secretary, Howard Evans of J. W. Paxson & Co., Philadelphia.

Executive Committee: Walter Wood of R. D. Wood & Co., Philadelphia; Thos. Glover of Glover Bros., Frankford, Philadelphia; L. B. Whitney of A. Whitney & Sons, Philadelphia; H. C. Vansant of Morris Tasker & Co., Incorporated, Philadelphia, and Stanley G. Flagg, Jr., of Stanley G. Flagg & Co., Philadelphia.

Under the head of unfinished business the subject of obtaining chemical determinations at low rates was again

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taken up. The secretary stated that he would like to know from foundrymen individually the number, as nearly as possible, of determinations they would be likely to require in the course of a year, with the idea of getting a basis for a price. He said that there were one or two institutions willing to equip for the purpose of making determinations for the association. An arrangement of this kind, he thought, would serve to make a membership in the association valuable, and present opportunities for procuring determinations at very much lower prices than those generally ruling. Of course, he said, such an arrangement would not be acceptable to those having chemists in their employ, but to an ordinary foundryman who might wish to know the character of the iron he was using or the castings he was making a few determinations would be valuable, and it was for members of this class that facilities for determinations were sought. In the regular invitations to this meeting the question "How many determinations would you require?" was asked, but only a few had responded. He read a few of the replies he had received. One from a firm in Cleveland, Ohio, expressed doubt as to the proposed arrangement proving to the advantage of members at a distance. In regard to this the secretary explained that the only delay to members at a distance would be the time occupied in the transmission of samples and instructions by mail, and that as far as Cleveland was concerned, any matter mailed in that city before 6 p.m. would reach Philadelphia the next day. Very little delay, therefore, would result in the case of determinations required by distant members.

A lengthy discussion then took place on the practicability and advisability of making arrangements for chemical determinations. The president suggested that furnacemen send out with their iron a statement or schedule of the elements contained in such iron, free carbon, combined carbon, sulphur, phosphorus, manganese, &c., and in a column set apart for the purpose state which of such elements would induce hardness, softness, fluidity, strength, chilling, density, shrinkage and so on. A foundryman would in this way get to know what to look for in his irons. When, in purchasing iron, a furnaceman claimed that his iron contained certain percentages of silicon or manganese, the foundryman could say at once that it would not do, as he was making tough castings and wanted a very fluid iron. In this way the foundryman would get an idea as to the elements he should have in his iron.

Justice Cox, Jr., thought a statement such as suggested could be given by furnacemen and it would naturally educate the foundryman in chemistry. It would tell him what elements would be required to get fluid iron, shrinkage and other effects. The furnaceman, he said, had got to that at the present day through his chemist, and could say that he made iron by rule and knew that if he used certain kinds of ore, limestone and fuel a certain iron would result. If furnacemen, he said, would get up a card or statement it would be a good thing.

J. Birkinbine remarked at length upon the subject. In his opinion the foundryman should establ sh a standard in order that the pig iron men might produce the iron he required. In regard to chemical anyalyses he thought the association was pursuing a wrong course in seeking to get their determinations through educational institutions. He explained the necessity of having analyses of an exact character, and pointed out that the professional chemist could make determinations quicker and at much less expense than could students, owing to his familiarity with his work and his knowledge of short cuts, only known to experts, for quickly determining the existence and quantities of certain elements. He did not wish to be understood as disparaging the capabilities of the University of Pennsylvania and the Drexel Institute for making determinations, but was sure that men who made such work a specialty would make analyses the cheapest. He had occasion, he said, some time ago to have some 400 analyses made, but when he started he thought 100 would answer his purpose. He made an arrangement with a Philadelphia testing laboratory practically on the basis of quantity reductions; for instance, if given a certain amount of work, a certain reduction was to be made, and if further work, a further reduction. He believed it would be practicable for this association to make an arrangement with a reliable man in Philadelphia. They could propose to him that he be appointed the chemist of the association, to do their work, and that he give them his regular terms, so that he would not be doing an injustice to other patrons. He could then be asked what discount he would allow for a certain amount of work per month, and thus get terms based on the amount of work per month given to him. In this way, he thought, a satisfactory arrangement could be made if all in the association would agree to use that chemist. Mr. Cox thought Mr. Birkinbine's suggestion a good one. He believed such an arrangement could be effected, and it would not be necessary to guarantee any amount of work to the chemist. It was simply necessary, he said, to make an arrangement for one chemist to do the work of the association, and if he made one analysis it would be so much, if two so much less, and so on from month to month. In some months the number of analyses would be greater than in others.

Mr. Riehlé then made a motion that the secretary put himself in communication with some of the best known chemists in the city, with the view of getting their rates for analyses in quantities, the quantity made in one year to determine the price.

Mr. Flagg seconded the motion, which, on being put to the meeting, was carried unanimously.

The meeting then adjourned to the roof garden of the club, where a supper was served and an hour or two pleasantly passed.

Secretary Herbert has selected a special board to inquire into the best and most economical method of correcting the defects reported to be existing in some of the vessels of the new navy. The duty of the board will be to determine which should be adopted of the several plans submitted to the Navy Department for the redistribution or reduction of weights, &c., so as to correct the top heaviness discovered in the vessels. The ships included in the list to be investigated are the "Detroit," "Montgomery," "Machias," "Marblehead," "Castine," "Cincinnati," and "Raleigh," but it is possible that the work of the board may be extended so as to include all the vessels now under construction.

MANUFACTURING.

Iron and Steel.

The executive officers of the Carnegie Steel Company, Limited, at Pittsburgh, have been at work for some time preparing a wage scale to govern wages to be paid at the Homestead Steel Works, Homestead, Pa., after January 1, 1894. An official of the concern is on record as saying that the terms of the new wage scale will be kept secret, as the firm do not propose to furnish information to other manufacturers regarding wages paid at any of their plants.

It is stated that at a recent meeting of the directors of the Cambria Iron Company, Johnstown, Pa., held in Philadelphia, steps were taken looking to a large increase in the capital stock of the concern. It is also stated that improvements are contemplated which will result in the expenditure of a large amount of money.

The Reading Rolling Mill Company, Reading, Pa., have notified their employees that, in order to keep the plant running, it will be necessary to make a reduction of 10 per cent. in wages, and also to reduce the puddlers to $3 a ton.

Recently suit was entered by the Pittsburgh Iron & Steel Engineering Company, engineers and contractors, Pittsburgh, against the West Superior Iron & Steel Company, West Superior, Wis., to recover $61,615, which is the balance claimed to be due on an account amounting originally to $349,600. It will be remembered that the first named concern erected the Bessemer steel plant of the West Superior Iron & Steel Company, and the contract price has been paid with the exception of the amount for the recovery of which suit has been entered. The concern made an assignment several months ago and their plant has since been closed down. It is expected that the trial of this suit will bring up some very interesting legal points, as the New York Central Trust Company, who negotiated bonds for the West Superior Iron & Steel Company, will contest the suit. It is stated that the firm were organized in Minnesota and the bondholders are responsible for their debts even after the assignment had been made.

It is stated that the Indiana Iron Company, Muncie, Ind., have made a proposition to their employees to pay wages based upon the Amalgamated Association scale, but have refused to sign the scale. As yet the men have not accepted this proposition, and the plant is still idle.

Douglass Furnace, at Sharpsville, Pa., formerly operated by the Douglass Furnace Company, has been lighted up under the management of Corrigan, Ives & Co., Cleveland, Ohio.

Stewart Furnace of the Stewart Iron Company, Limited, at Sharon, Pa., has been started up after being banked ten weeks. The rolling mill of this firm continues idle, with no prospects of immediate resumption.

R. C. Neal has been appointed receiver of the Harrisburg Rolling Mill Company, Harrisburg, Pa., which corporation was affected by the embarrassment of the Tube & Iron Company at Middletown. It is understood that this is a move toward resumption. About half the employees were ordered to report for work. The mills have been shut down three months.

A dispatch from Steubenville, Ohio, says that the Mingo Steel Works, after a two weeks' shut down, have resumed.

One of the pipe foundries of the Mellert Foundry Company of Reading, Pa., has shut down indefinitely.

Furnaces Nos. 2 and 3 of the open hearth mill and the Krupp washer department, at the Cambria Iron Works, Johnstown, Pa., have resumed work.

As showing the falling off in the product of some mills during the past two or three months, compared with the same periods of last year, we cite the case of the Akron Iron Company of Akron, Ohio. In October of last year this firm turned out 2000 tons of finished product, while in the same month of this year their output amounted to only 178 tons. This concern signed the Amalgamated Association scale in July, so that it could run without interruption. However, the falling off in orders was so great that

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their plant has not been operated to anything like its full capacity for the past three or four months.

At the request of the bondholders, the sale of the property of the Brady's Bend Iron Company, at Kittanning, Pa., which was to have taken place last week, has been postponed to December 1.

The new corporation formed to take over the rolling mill of the Chicago Steel Works, at Chicago Heights, Ill., will be named the Inland Steel Company and incorporated under the laws of Illinois, with a capital stock of $130,000. Steps are now being taken to complete the organization and get the affairs of the concern in proper shape.

It has been stated by the Girard Iron Company, Girard, Ohio, that the Biwabik ore, which has been used in the blast furnace of that concern for some time, required for its reduction 15 per cent. less coke than the mixture previously used.

Furnace No. 2 of the Carrie Furnace Company of Pittsburgh, which has been idle for some months, will probably resume blast during this month.

Advices from Columbus, Ohio, state that the Farmers' Loan & Trust Company of New York City have asked that a receiver be appointed for the Consolidated Wellston Coal & Iron Company of Ohio, who, as alleged, have defaulted in the interest on $5,000,000 worth of bonds since April 1, 1888. The property was transferred by the company to Francis Hinckley of Chicago, who promised to pay the interest on the bonds and take care of the principal, but it is claimed has not done so.

Sharon Furnace of the Sharon Iron Company, Limited, at Sharon, Pa., which has been idle for some months, resumed blast on Wednesday, the 1st inst.

The plant of the Johnson Company, Johnstown, Pa., manufacturers of street railway supplies, which has been in only partial operation for some months past, has resumed operation to nearly full capacity in all departments.

We are advised that the statement that the Penn Nail Company, Limited, Lancaster, Pa., had decided to close down their entire plant on account of lack of orders is without foundation. This concern are operating their plant entirely upon orders, and while these are not sufficient to warrant full operations in all departments the concern have no intention whatever of closing down, as they expect to be able to operate their plant right along, though not to full capacity.

The Irondale Rolling Mills, at Anderson, Ind., have been destroyed by fire at a loss of $40,000.

The Brilliant Iron & Steel Company, Brilliant, Ohio, have signed the Amalgamated Association sheet iron scale, and notified their employees, about 600 in number, to report for work at once. The plant has been idle for over four months.

The Syracuse Steel Wire Company have been incorporated under the laws of New York State, to manufacture steel wire in Syracuse. The company have a capital of $20,000.

The Fort Payne, Ala., furnace has been sold at public auction to N. W. Trimble for $30,000. It is understood that the purchaser represented the bondholders.

The plant of the Hollidaysburg Iron & Nail Company, at Hollidaysburg, Pa., has resumed operations.

A Toronto, Ont., newspaper states that James Worthington, president of the Ontario Bolt Works Company, is reported to be negotiating for the purchase of the Ontario Rolling Mills, at Swansea. It is understood that $100,000 is the price asked.

The Hercules Iron Works, at Aurora, Ill., have resumed work with a small force. A number of orders are on hand, and employment will be given to a large number of additional hands at once.

The puddling mill of the Pennsylvania Bolt & Nut Works, at Lebanon, Pa., has closed down for an idefinite period. When operations are resumed it is stated that a lower scale of wages will go into effect.

It is stated that the Parkesburg Iron Company, at Parkesburg, Pa., have announced a general reduction of 20 per cent. in wages.

A number of additional departments of the plant of the Cambria Iron Company, at Johnstown, Pa., which have been idle for several months past, were put in operation on Monday morning, the 6th inst. The starting up of these departments will give employment to some 200 additional men.

Announcement is made that the entire plant of the Pennsylvania Steel Company, at Steelton, Pa., will be put in full operation during this week, with good prospects of full capacity being employed right along.

The puddling department of the plant of the Brilliant Steel & Iron Company, at Brilliant, Ohio, was put in operation on Monday, the 6th inst., on a contract for 1000 tons of muck bar. As yet it is uncertain when the finishing department of this plant will be started up.

Machinery.

A paragraph printed in the first column of *The Iron Age*, page 744, issue for October 26, 1893, erroneously stated that the patterns for deep well pumps formerly manufactured by the Bradford Well & Pump Company of Cincinnati, Ohio, had been purchased by other parties, together with sundry other apparatus, &c. The patterns in question are still in the possession of the Bradford Well Supply Company, who made the purchase from the late firm of Bradford Well & Pump Company at a recent sale.

The P. H. & F. M. Roots Company of Connersville, Ind., who have been makers of rotary blowers for 33 years, have recently established a branch office in Chicago at 501 Manhattan Building.

The plant of the Westinghouse Air Brake Company of Wilmerding, Pa., which has been entirely closed down for about a month, resumed operations on Monday, the 6th inst. The works will be operated four days per week of seven hours each.

The Rice & Whitacre Mfg. Company's stock, machinery, tools, fixtures, patents, &c., are offered for sale by the receiver, F. B. Dyche, at 43 to 47 South Canal street, Chicago. Bids will be received up to 12 o'clock, noon, on the 20th inst.

Kenneth Torrance, M. E., has established an office in Room 1437 Monadnock Block, Chicago, for the sale of the Cochrane heater and separator, made by the Harrison Safety Boiler Works of Philadelphia, and also the Duval metallic packing and the specialties manufactured by the Hendrick Mfg. Company of Carbondale, Pa. Mr. Torrance was formerly connected with the Chicago office of Henry R. Worthington, has had experience of a practical character in varied technical work and offers his services as consulting mechanical engineer.

The Buckeye Engine Company, Salem, Ohio, recently made a sale through their agents, Bagnell & Hillis, Yokohama, Japan, to the Electric Light Company of Manila, Philippine Islands, of six compound engines, each having a rated 200 horse-power capacity, the cylinders being 13 and 22½ inches diameter by 18-inch stroke. Four of these engines have already been shipped to the above place and the final shipment of the other two will be made during this month. The plant is quite a large one, and on account of its size and location competition among engine makers for this order was very severe. It is understood that the Brush electrical machinery will be used in connection with the engines, and the lighes are to be both arc and incandescent, the intention of the firm being to furnish street as well as commercial lighting. The Buckeye Engine Company have already supplied quite a number of electrical plants in Western Asia with power, and naturally view with considerable satisfaction their growing trade in that direction.

Wm. Tod & Co., founders and machinists, Youngstown, Ohio, are operating their several departments, though not to full capacity. The firm have quite a number of small orders on hand and expect to be able to maintain their present active capacity throughout the winter.

At the plant of the Erie City Iron Works, Erie, Pa., manufacturers of boiler and other machinery, additional departments have recently been started up, and the outlook for future operations is considerably brighter than for some time past. This concern are now giving employment to about 450 men, their plant being in operation six days per week of eight hours each.

The Leechburg Foundry & Machine Company of Pittsburgh recently shipped a Mesta patent automatic pickling machine to the Whitaker Iron Works, Wheeling, W. Va., and a 36-inch trimming shear to Marshall Brothers & Co., Philadelphia.

In January last the Atlantic Works and the Robinson Boiler Works of Boston, Mass., were consolidated, and work begun on a new building for the manufacture of boilers. This building has just been completed. It is constructed of brick and iron, and is 100 feet wide by 225 feet long, with a riveting tower 28 x 38 feet, making the total floor area 25,500 square feet. The additions and changes made to the plant represent an outlay, it is stated, of about $200,000.

The creditors of the Carthage, Mo., Foundry, have decided to ask for the appointment of a receiver to wind up their affairs.

The New York Engineers' Supply Company have been incorporoted at Albany, N. Y., for the purpose of manufacturing and selling boilers, engines, pumps and machines.

The foundry and machine shops of E. C. Wehrifritz, at Little Rock, Ark., have been destroyed by fire, supposed to have been of incendiary origin. Loss, $40,000; insurance, $6200.

The molders and polishers of the National Brass & Iron Works, at Reading, Pa., have been placed on piece work on a scale equal to a 10 per cent. reduction.

Wells & Coutan Company, Limited, 29-31 Gold street, New York, are directing the attention of the trade to the fact that their business is of a threefold character—viz., manufacturing high grade steam gauges, which is done on the premises; exclusive importation of the Thistle gauge glass and the representation of J. E. Lonergan & Co. for the sale of their pot safety, water relief and snifter valves.

Hardware.

Cowles Mfg. Company, Kansas City, Mo., a concern recently organized, are building a factory for the manufacture of a mechanical device for feeding threshing machines. This machine is designed to cut the bands and separate the grain in the bundle, giving a regular feed to the thresher. About 15 men will be employed when the factory is completed.

The works of the Birmingham Hardware Specialty Company, East Birmingham, Ala., have resumed operations, giving employment to about 30 men.

The Glade Axe & Tool Works, Warren, Pa., which have been in operation since June, are about to be reorganized into a stock company for the purpose of enlarging the plant. The works have employed 25 skilled workmen, and the extension of plant will increase the force to 50.

The W. D. Gibson Company, Chicago, Ill., manufacturers of crucible spiral springs, advise us that their business is rapidly picking up. The company have received World's Fair award for their exhibit of springs for all purposes.

The factory of Newhall & Stebbins, Hinsdale, N. H., has started up with somewhat less than their usual force.

A. D. Goodell of Worcester, Mass., contemplates engaging in the manufacture of mechanics' tools and several specialties at Shelburne Falls.

The Automatic Clothes Line Company, Austin, Texas, have been incorporated. The capital stock is $30,000. The incorporators are Fred. Sterzing, John W. Kelly and Ed. G. Lane, all of Austin.

The Dunham Nut Company, Unionville, Conn., have commenced to fit up their new factory and expect soon to move in machinery.

The National Wheel Company, Jackson, Mich, have resumed operations.

The Burton Magazine Gun Company have been incorporated to manufacture magazine guns in New York City. The capital is $10,000, and the directors of the company are Eugene Durnin, Peter A. Hendrick and Benjamin Yates, all of New York.

The Consolidated Lamp & Glass Company is the title of a corporation which has just been chartered under the laws of West Virginia, and which will have headquarters in Pittsburgh. The paid up capital stock is given as $200,000, with the privilege of increasing it to $250,000. The following officers have been elected: F. G. Wallace, president; J. B. Graham, secretary; Jos. G. Walter, treasurer, and N. Kopp, manager. The new concern expect to have their goods on the market not later than January 1 next. Negotiations are now in progress looking to the purchase of a large plant, to which additions and alterations will be made. The principal warehouse will be located in Pittsburgh, and the general offices will also be in that city. It is the intention of the new concern to not only manufacture the glass and porcelain

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portions of lamps, but also all the other parts, including the brasses.

Humason & Beckley Mfg. Company's cutlery factory at New Britain, Conn., is now running three days a week with a full force.

The bolt works of Clark Bros. & Co., Milldale, near Southington, Conn., were burned on Friday last. The office and packing room, which were in a separate building, were saved. The fire started in the forging room, and as the works were beyond the water works' line, the firemen could do nothing but save adjoining buildings.

Miscellaneous.

Randolph & Clowes of Waterbury, Conn., are making considerable improvements in their plant in many directions. They have recently established a department for the manufacture of plumbers' materials and supplies. They are using for this purpose a portion of the buildings which have remained unused heretofore since the time of Brown & Bros. This department has only been started this year. They have facilities for the turning out of new patterns and designs for such things as lavatory legs and brackets. Their operations in this direction are facilitated by their having in their mill departments which furnish brazed tubing of the newest designs and moldings. They have recently taken out a patent in connection with this department for a plumbers' ferrule, of which, although on the market for a very short space of time, they are already making large sales.

The Scovill Mfg. Company of Waterbury, Conn., manufacturers of brass, German silver and aluminum, have issued a short catalogue referring to their aluminum fancy goods, including watch safes, vases, paper knives, smokers' sets, cigar cases, shaving cups, mirrors, easels, puff boxes, trays, picture frames and napkin rings.

The Pittsburgh Reduction Company of Pittsburgh, manufacturers of pure aluminum, have awarded a contract for the buildings for the new plant which this concern propose to erect at Niagara Falls. Jas. Stewart & Co. of Niagara Falls were awarded the masonry contract, while the structural iron work will be done by Debbie & Stewart of the same place.

Among recently authorized corporations in Illinois are the following: United States Vise & Pipe Wrench Company, Chicago; capital stock, $25,000; incorporators, Charles A. Petterson, Andrew Hallner, Class Roberg and Adolf F. Bergborn. Fowler Foundry Company, Chicago; capital stock, $50,000; incorporators, H. R. Pebbles, Colin C. H. Fyffe and Howard D. Headley. A. Boyce Foundry & Machine Works, Bunker Hill; capital stock, $25,000; incorporators, Arthur Boyce, John R. Richards and George T. Dright.

The Mount Clare repair shops of the Baltimore & Ohio Railroad, at Mount Clare, Md., have closed down. It is understood that this action precedes a general reorganization and concentration of the road's extensive repair system.

It is announced that the Lebanon Chain Works, at Lebanon, Pa., have received the contract from the United States Government to manufacture chains for light vessels, the amount of the contract being $10,000.

The citizens of Memphis, Tenn., are displaying great enthusiasm and holding mass meetings because a local land syndicate has persuaded the Litchfield Car & Machine Company of Litchfield, Ill., to remove their plant to Memphis. The "persuasion" used was in the form of a liberal donation of land and a bonus of $125,000 cash, and other minor considerations. Whether the enterprise will prove "the dawn of a new era" for Memphis or only the usual land boom scheme remains to be seen.

The New York bonded warehouses, which have been for months full to overflowing with foreign goods, whose owners were either unable to pay the duty or were awaiting the Senate's action on the Repeal bill, are beginning to feel a relief from their congestion.

The rush of foreigners to visit the World's Fair did not assume anything like the proportions expected. Steamship agents in New York estimate that not more than 25,000 World's Fair visitors passed through this port during the time the exposition was open.

TRADE REPORT

The event of the week has been the confirmation through actual sales of reports current for some time past that a heavy cut in prices has been made in Steel Rails. The war of the giants is now begun, the initiative having been taken by the Pittsburgh concern, which has been trying to capture trade in Eastern territory. It is fair to quote $24 @ $25 at tidewater now, a clean cut of $5 ℔ ton under the price which has nominally ruled so long. It has been an open secret that by a variety of devices the $29 rate had been shaded for a long time.

It should be stated that the price was never at any time during the life of the association a part of the signed agreement under which it was working, although an informal understanding did exist at times. It is true also that the association is intact to-day, and will remain so until the expiration of the present contract. Whether the latter will be renewed is doubtful, since the Pittsburgh interest has declined advances in that direction. Those interested in the market should consider that there is always the contingency of a renewal of it, as the result of an exhausting fight.

It may be frankly acknowledged that in the Iron trade generally the Rail Association has always been a pretty unpopular organization. Its existence has been embarrassing in more ways than one. The Soft Steel makers have suffered from the competition of some of the Rail mills who have taken Billet business at low prices to keep going during times of idleness in the Rail trade.

The effect of the break in Rails is expected to be favorable to other branches. It is sure to lead to the placing of a far more liberal volume of orders for Rails which will first clean up the accumulated supplies of Pig Iron at the Rail mills, and then will create a larger demand for Ore and Coke. It seems probable that the outcome will therefore be a strengthening of the markets of raw material as the first step toward a return to living rates for Iron and Steel.

The production of Pig Iron is on the increase again, the additions to the capacity at work in the Pittsburgh, Shenango, Wheeling and Mahoning districts being in response to a larger volume of business of the rolling mills and Steel works.

In the West, and to a limited extent in the East, the volume of orders is larger, but as yet the lowest prices reached are still the basis of business. Whether the Western mills will ease their pressure upon the Eastern markets soon remains to be seen. Until now they have not done so.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street. CHICAGO, November 8, 1893.

The volume of business continues to increase and orders are getting larger. There is no question that confidence has been restored to a great extent and buyers have no hesitation in anticipating their wants to a moderate degree. A much better feeling prevails in all circles, unless it is in Shelf Hardware, which is affected by the restriction in building operations.

Pig Iron.—A perceptible improvement is seen in the demand. It is especially noticeable in local Coke. Several contracts for round lots have been placed, indicating some revival in activity. The week has developed more inquiry, and business is particularly good in small orders for quick delivery, showing that consumers' stocks are light. It is believed that such stocks are smaller than ever before. The foundries that have been running for some time on their own Scrap or rejected Castings have about run out of that material, and are now obliged to come into the market for fresh supplies of Pig. The Southern furnace companies report a decided improvement in inquiries from the different localities in which they sell, although in this market the demand for Southern Iron has been somewhat quiet for the past week. A better movement is also observed in Lake Superior Charcoal Iron. The low sales made some time back are not being duplicated, but the furnace companies are getting better prices, and seem to have been able, at least, to get control of the value of their product. Sales of several round lots have been made at prices but a shade under $16. Quotations are now as follows for cash:

Lake Superior Charcoal	$16.00	@	$16.50
Local Coke Foundry, No. 1	13.50	@	14.00
Local Coke Foundry, No. 2	12.75	@	13.00
Local Coke Foundry, No. 3	12.25	@	12.75
Local Scotch	14.00	@	14.50
Ohio Strong Softeners No. 1	15.50	@	16.00
Southern Silvery, No. 1		@	14.50
Southern Silvery, No. 2		@	14.00
Southern Coke, No. 2	12.10	@	12.35
Southern Coke, No. 3	11.35	@	11.60
Southern, No. 1, Soft	12.10	@	12.35
Southern, No. 2, Soft	11.35	@	11.60
Southern Gray Forge	10.85	@	11.10
Tennessee Charcoal, No. 1	16.00	@	16.50
Alabama Car Wheel	18.50	@	18.75
Jackson County Silvery	16.50	@	17.00
Other Ohio Silvery	15.00	@	15.50

Bars.—Better reports are received not only from the local companies, but also from representatives of outside mills; good orders have been placed within the past week, and the demand for small lots is steadily growing. The price of Soft Steel Bars, however, seems to be approaching the price of Iron again, and this is causing consumers to exhibit a preference for Steel when the difference is so slight. Among the sales made last week was one of 200 tons o Refined Iron at the equivalent of 1.55¢ Chicago. Quotations on Common Bar Iron now range from 1.45¢, half extras, Chicago delivery, and manufacturers claim that a good specification is required to secure the inside rate. Soft Steel Bars are selling at 1.47½¢ @ 1.55¢, Chicago. Jobbers continue to be in receipt of good orders from implement manufacturers and also from the smaller class of wagon builders outside of the city. The local wagon makers are buying but little at present, and the prospects in that direction for much business in the near future are not bright. Quotations from stock continue at 1.60¢ @ 1.70¢ on Bar Iron and 1.65¢ @ 1.70¢ for Soft Steel.

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Structural Material.—More business is in sight in this line than for some time. The Honore Building is a large office building which will shortly be under construction, and will require a great deal of material in the shape of Beams and Columns. It will go to Pittsburgh, however, if the contract has not already been closed. Other business comprises an addition to the Minneapolis City Hall and new viaduct for Milwaukee. The latter will require some 3000 tons of Plates, Angles and other Shapes. A contract for 1000 tons of small Steel Nails was secured last week by a local mill. Quotations are maintained at the following prices on mill shipments, Chicago delivery: Beams, 1.75¢ @ 1.90¢; Tees, 1.95¢ @ 2.05¢; Angles and Universal Plates, 1.75¢ @ 1.80¢.

Plates.—More inquiry is reported in this line, and the prospects for business are much better than they have been. The Bridge works are doing more and are asking prices on good sized lots. The railroads at last are taking more material; also an inquiry in the market for at least 500 tons of Plates for the Pacific Coast. Store trade is not active, as the Boiler shops in this vicinity are doing but little. Prices are lower, as manufacturers are competing vigorously for the orders in sight. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.62½¢ @ 1 70; Shell Steel, 1.82½¢ @ 1.90¢; Flange Steel, 2.2½¢ @ 2.10¢; Fire Box, 2 75¢ @ 5¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2.25¢ @ 2.40¢; Tank Steel, 2 10¢ @ 2.20¢; Shell Steel, 2.20¢ @ 2.40¢; Flange Steel, 2.50¢ @ 2.65¢; Boiler Tubes, 70 and 5 % off.

Sheets.—The inquiry for Black Sheets is lighter and some makers are evidently more hungry for business and quote lower prices. The general quotation on mill shipments is 2.75¢, Chicago, for No. 27 Common, but this is shaded by one or two sellers. Small lots from stock are quoted at 3¢. Galvanized Iron is in fair demand and some agents are obliged to buy stock from other houses in order to meet the demand from their consumers. Prices on mill shipments appear to be a little firmer, but quotations on Juniata are continued at 75 % off. Copper Sheets are quoted at 35 % off.

Merchant Steel.—Scattering orders from manufacturing consumers are still being received by mill agents here, which have run to a good aggregate for the week. Consumers are specifying a little better. One large concern reports shipments for October greatly in excess of those for September, showing that business with that house has picked up considerably. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel at 1.90¢ @ 2¢; Ordinary Bessemer Machinery, 1.60¢ @ 1 65¢; Ordinary Bessemer Tire, 1.55¢ @ 1.60¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Steel Billets.—Sales of round lots of 4 x 4 inch Steel Billets are reported at $19.50 @ $20, Joliet. More inquiries are coming up and it looks as if the Joliet mill would be able to make a fair run, although it will not be pressed to its full capacity.

Rails and Track Supplies.—The only demand for Steel Rails at present seems to come from the Frog and Switch manufacturers. Railroads are buying no Rails to speak of. Some Light Rails are being sold to mills and logging roads. Standard sizes continue to be quoted at $30 @ $32; Light Rails to 30 lb, $31.50 @ $32; 12 lb and upward, $34.50; Iron and Steel Splice Bars, 1.50¢ @ 1.55¢; Track Bolts with Hexagon Nuts, 2.55¢ @ 2.60¢; Spikes, 1.85¢ @ 1.90¢

Old Rails and Car Wheels.—Sales have been made of Old Iron Rails at a shade under the equivalent of $14, Chicago. The railroads have in several instances receded from their former asking price, which was above the market, and are now more willing to meet the views of consumers. A sale of Old Steel Rails, mixed lengths, is reported at $3.35. Long lengths are quoted at $10 @ $10.50. Old Car Wheels are moving to some extent, but the demand seems to be purely speculative, and consumers are buying very little. The speculative lots are taken in when the price made is in the vicinity of $11. Carload lots command anywhere from $13 to $14.

Scrap.—Old Material is in better demand from all classes of consumers. The cheapest kind of material, such as Borings, Turnings, &c., is probably moving most freely, Some low sales have been made by holders desirous of realizing. No. 1 Forge has been sold in this way down to $9, while Fish Plates have been sold at a shade under $12. Dealers' selling prices, net ton, are as follows: No. 1 Forge, $10; No. 1 Mill, $8; Sheet Iron, $4.50; Pipes and Flues, $8; Axles, $16; Horseshoes, $11; Fish Plates, $12; Spikes and Bolts, $10; Cast Borings, $4 50; Wrought Turnings, $6.50; Axle Turnings, $8; Heavy Cast, $9 50; Stove Plate, $7.75; Malleable Cast, $8; Mixed Steel, $7, gross ton; Leaf Steel, $14 50.

Metals.—Carload lots of Lake Copper continue to be quoted at 10⅜¢ and casting brands 9¼¢. Quite a sale of Old Copper was made during the past week for export to Germany. An improvement is noted in the demand for Spelter, which is now quoted at 3 50¢. Lead is a shade weaker and prices are not firm at the nominal quotation of 3.30¢ for large lots and 3.35¢ for carloads.

The statement that 2000 tons of Southern Gray Forge had been sold at $10 ℔ ton, delivered at Cleveland, which was embodied in this report two weeks since, was made on excellent authority. The company reputed to have made the sale, however, deny it emphatically. In a telegram to their agents here, dated the 1st inst., they say: "Deny authoritatively reported Cleveland sales. No foundation whatever in fact." On the 2d they telegraphed again, in reply to an inquiry, "Are short Gray Forge. Do not wish to sell."

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts.,
CINCINNATI, November 8, 1893.

There has been little if any improvement in any feature of the Pig Iron trade during the week. There is, it is true, more confidence in the financial situation, but as yet this has not enlarged the demand for Pig Iron in this district to any large extent. There is rather more inquiry for Gray Forge, but the extent of it is greatly exaggerated, while for Foundry Iron the demand is very light and for Car Wheel Iron there is no demand at all. All demands have so far been freely met at previous prices and there are offerings at the same rates to the end of this year, which is as far as the furnaces are disposed to name prices, but it is not improbable that they would accept orders running two months into next year for foundry grades There have been some sales of No. 1 Soft at other points, and it is hoped that the more hopeful financial situation will lead to more trade in the future. The Iron Pipe works here are working on old orders, but are not receiving any important new orders. One hopeful feature in the trade is that shipments of Pig Iron have in many instances been resumed on old contracts. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$12.75 @ $13.00
Southern Coke No. 2	10.75 @ 11.00
Southern Coke No. 3	10.25 @ 10.50
Ohio Soft Stone Coal, No. 1	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2	14.50 @ 14.75
Lake Superior Coke No. 1	15.00 @ 15.25
Lake Superior Coke No. 2	14.00 @ 14.25
Hanging Rock Charcoal, No. 1	18.50 @ 19.00
Hanging Rock Charcoal, No. 2	17.50 @ 18.00
Tennessee Charcoal, No. 1	14.00 @ 14.25
Tennessee Charcoal, No. 2	13.00 @ 13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @ 18.00
Lake Superior Car Wheel and Malleable	17.00 @ 17.25

Forge.

Gray Forge	9.75 @ 10.00
Mottled Coke	9.50 @ 9.75

St. Louis.

(By Telegraph.)

Office of *The Iron Age*,
Bank of Commerce Building,
ST. LOUIS, November 8, 1893.

Pig Iron.—The conditions prevailing in our last report are unchanged. Sales are limited to carload quantities and prices are unchanged, although shaded in some extreme cases. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	$13.00 @ $13.25
Southern Coke, No. 2 Foundry	11.25 @ 11.50
Southern Coke, No. 3 Foundry	10.50 @ 10.75
Southern Gray Forge	10.25 @ 11.50
Southern Car Wheel	17.25 @ 18.25
Lake Superior Car Wheel	16.50 @ 17.00
Ohio Softeners	16.00 @ 16.50

Bar Iron—Jobbers report a steady trade at 1.75¢ for small lots from store. Mills quote 1.45¢, half extras, f.o.b. cars East St. Louis.

Barb Wire.—The demand continues to improve, and the cut in freight rates to Texas points has increased business from this point very materially. Mills quote Painted at $2 and Galvanized at $2 35. Jobbers ask $2.10 for Painted with the usual advance for Galvanized.

Wire Nails.—The weakening tendency noted in our last report continues to be the feature of this department. Mills quote $1.35 for carload lots to jobbers, and in some cases $1.30 is named. Jobbers ask $1.45 @ $1.55, according to quantity.

Rails and Track Supplies.—The improvement noted in the demand for Track Supplies in our last report continues, with prices practically unchanged. We quote as follows: Splice Bars, 1.65¢ @ 1.70¢; Spikes, 2¢ @ 2.05¢; Bolts, Square Nuts, 2.50¢; with Hexagon Nuts, 2.60¢. Steel Rails are inactive at $30 @ $31. Old Rails are nominally quoted at $14 @ $14 50.

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Pig Lead.—The movement in Pig Lead is restricted to small lots, which are generally quoted at $3.15 @ $3.20.

Spelter.—This metal is unchanged at $3.30.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., November 7, 1893.

There is little or no change to report, the demand for Iron and Steel being of the same languid character as for several weeks past. Some people claim to see an improvement in the number and character of the inquiries, but, judging from actual sales, there is no confirmation of anything of that kind. Wear and tear is beginning to tell, however, and small orders are somewhat numerous, but the aggregate increase—if there is any—is hardly perceptible. Prices remain at the lowest, and notwithstanding the talk of firm and somewhat higher figures in the West, there is no difficulty in placing orders at as low rates as have been named at any time since the summer months.

Pig Iron.—The demand is a trifle better for some grades and larger lots have been taken, but prices are as low as ever and give no promise of early improvement. It is not the large supply that affects prices, but the extremely light demand, which is probably not more than 35 % to 40 % of what is usually expected at this season. The cutting down in production must eventually bring about an adjustment; but, compared with the demand, the current supply appears to be as large as at any time within the past two or three years. The advance in freights will probably affect prices at some points, and in fact may involve a readjustment all the way through; but at the moment there is plenty of Iron at the lowest of all the low prices heretofore quoted, which for Philadelphia and equivalent points are about as follows:

No. 1 Foundry	$13 75	@	$14.25
No. 2 Foundry	13.00	@	13.25
Standard Gray Forge	12.00	@	12.50
Ordinary Gray Forge	11.50	@	11.75

At interior points, such as York, Harrisburg, &c., about 25¢ less is quoted on Virginia Irons.

Steel Rails.—The market is very dull, with prices weak and drooping. Sales are said to have been made at $25.

Steel Billets.—There is no great demand, but sellers in this market are quoting pretty firm prices—say $20 @ $20.50, delivered. A few small lots have been taken, but there is no demand for anything large, although it is supposed that $19.80, or pretty close to it, could be done on 1000 ton lots for good deliveries and quick settlements. Consumption is comparatively very small, hence the indisposition to bid on large lots.

Finished Material. — The demand shows no improvement, and the most that mills are able to do is to make one week keep up with another. Small orders are fairly numerous, but in the absence of a demand for large lots it is pretty close work to keep more than a few days' work on the books. Some deliveries are still being made on last spring's engagements, and a few good sized orders are in prospect, but after making the best show possible it is quite clear that as yet there is nothing that can be construed as an improvement either in price or demand. Nominal quotations are about as follows, but on large lots considerable reductions are made, varying according to circumstances:

Grooved Skelp, delivered	1.47½¢	@	1.50¢
Best Refined Bars	1.52½¢	@	1.55¢
At interior points	1.40¢	@	1.50¢
Tank Steel	1.60¢	@	1.65¢
Heavy Plates	1.65¢	@	1.70¢
Shell	1.75¢	@	1.85¢
Flange	2.00¢	@	2.20¢

Old Material.—The demand is extremely light, and low as prices are, they seem to have very little attraction to consumers. Nominal prices are about as follows, but it is impossible to give exact figures, as a great deal depends on quantity, terms of settlement, &c.:

No. 1 Wrought Scrap, delivered	$12.00	@	$13.00
Machinery Cast, delivered	10.00	@	11.00
Heavy Steel Scrap, delivered	12.00	@	13.00
Old Iron Rails, delivered	14.00	@	14.50
Old Street Rails, delivered	15.50	@	16.00
Wrought Turnings, delivered	10.00	@	11.00
Cast Borings, delivered	6.00	@	7.00
No. 2 Light Scrap	6.00	@	7.00

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, November 7, 1893.

The general situation in the Iron and Steel trades shows continued improvement as far as demand is concerned, and the prospects of most of the mills getting enough work to run to nearly full capacity the balance of the year are very encouraging. Since our report of last week a number of concerns have started up to half capacity or more, some of them having done practically nothing for some months. This is particularly true of the Mahoning Valley, several of the mills there having put their finishing departments on this week after an idleness of more than four months. In the Pittsburgh district all the mills are doing something with one or two exceptions. Some of them are employed to full capacity, while the others are running to only one-half or less. At one plant in this city that finishes about 800 tons of material every 24 hours, all departments are on double turn, and have been since September, with good prospects of this being continued right along. Of course, the demand for Iron and Steel must increase to considerable extent yet before we can expect prices to be favorably affected. However, it would seem that on some lines bottom has about been reached, and any change to come must be in the nature of an advance. Bessemer Pig and Billets have held their own for the past week or ten days, and $11.25 for the former and $17.50 for the latter are being maintained.

Rumors of offers to sell Rails at prices equal to about $22, Pittsburgh, have been current here for the past few days, but have been denied in certain quarters.

Pig Iron.—The increased activity among mills that have been in operation right along, together with the demand for Iron that will come from those that have started up within the past week or ten days, has resulted in more inquiries for Iron, and more sales were closed during the past week than in any one week for some time past. The expected increase in demand has resulted in the starting up of a number of furnaces that have been closed for extended periods. In the Shenango Valley, Sharon of the Sharon Iron Company, Limited, Douglass, under the management of Corrigan, Ives & Co., and Stewart of the Stewart Iron Company, Limited, have all gone in since November 1. Rosena of the Oliver Iron & Steel Company will start in a few days. In the Ohio Valley, Bellaire of the Bellaire Nail Works and one stack of the Riverside Iron Works have also started. In the Pittsburgh district two more Edgar Thomson stacks have gone in, and the last idle stack will be blowing in a few days. While it is somewhat doubtful as to whether it is the best policy to increase production to such an extent just now, at the same time it shows that there is considerable confidence in the future. Inquiries are more plentiful for Gray Forge now, and the market is firm on the basis of $10 50, Pittsburgh. We quote as follows:

Neutral Gray Forge	$10.50	@	$10.75	cash
All-Ore Mill	10.75	@	11.00	"
Bessemer Pig	11.25	@	11.50	"
No. 1 Foundry	12.50	@	13.00	"
No. 2 Foundry	11.50	@	12.00	"

We note three sales of Bessemer, one of 1500 tons and two of 1000 tons each, all for November and December delivery, on the basis of $11.25, Pittsburgh. Also a sale of 1000 tons of Gray Forge for November and December delivery at $10.50, Pittsburgh.

Billets.—The improvement in inquiries for Steel as noted in our report of last week continues, and considerable tonnage has changed hands in the last week. While prices have shown no actual advance the tone of the market is better, and makers are refusing to accept orders that are offered them at prices which, perhaps, two weeks ago, would have been accepted. The increased activity among the mills in the Pittsburgh and the Mahoning Valley districts is, of course, responsible for the better demand for Steel, and in addition to this, the feeling is becoming more general that Billets are as cheap as they will get. All of the Pittsburgh mills are fairly well supplied with orders and the same is true of the Wheeling mills. The market is fairly represented by the quotation of $17.50 @ $17.75 at maker's mill. We note a sale of 1000 tons for November and December delivery at $17 70 at maker's mill and one of 1500 tons at $17.60 at maker's mill for same delivery.

Ferromanganese.—We are advised of a sale of 100 tons for November and December at $53, delivered, equal to $52.50 at maker's mill. This is the lowest price ever touched in this market.

Muck Bars.—The withdrawal from this market of two outside makes of Muck Bars has given a firmer tendency to prices for best grades of city made Bars and we quote them at $21 @ $21.25, delivered at buyer's mill. We note a sale of 1000 tons equal deliveries November and December at $21, delivered, and one of 750 tons at $21.25, same deliveries. An Ohio Valley concern have just closed a contract for 1000 tons of Muck Bars and started up their puddling department on Monday, November 6.

Rails.—It now is openly admitted that the combination price of $29 is being cut right along. It is said that offers have been made to sell at prices equal to about $22 at maker's mill.

Plates. — Business continues very light, with prices ruling about as follows: Tank, 1.40¢ @ 1.45¢; Shell, 1.60¢ @ 1.75¢; Flange, 1.65¢ @ 1.75¢; Fire Box, medium quality, 2.50¢ @ 3¢, best quality, 3 50¢ @ 4¢.

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Structural Material.—There is a moderate demand confined altogether to small lots. No large orders are looked for now, as the close of the building season is at hand. Prices continue to depend nearly altogether on character of order and terms of payment. For ordinary business the following prices rule: Beams up to 15 inches, 1.50¢ @ 1.60¢; Angles and Universal Plates, 1.60¢ @ 1.65¢; Tees, 1.75¢.

Bars.—There is increased activity among the mills, the volume of business showing steady gains. As announced elsewhere, the Valley mills have arranged a wage scale with the National Union of Finishers, and the finishing departments of several plants were started this week. Prices continue very low, with no prospects of improvement until the demand gets heavier. We quote Steel Bars at 1.30¢ @ 1.35¢, with Bar Iron extras. In the Valley Iron Bars are held at 1.30¢ @ 1.35¢, half extras.

Wire Rods.—There is a fair demand, some of the mills having about enough business to keep them in full operation the balance of this year. The output of Rods during the month of October at the plant of the Pittsburgh Wire Company was the heaviest of any one month in the history of the concern. Prices depend largely upon the size of the order and terms of delivery. We quote at $25.50 @ $25 75 for early delivery. For a good sized order, with favorable terms of payment, our lower quotation would probably be slightly shaded.

Wire Nails.—The demand is fairly active, but prices show no improvement—in fact, have shown a weaker tendency during the past week. The bulk of the orders for trade in the Northwest have been filled, in the expectation that navigation would close about November 1, and for this reason the mills are in much better shape to take care of business being offered by the regular trade. We quote $1.25 in carload lots at mill. For large orders this price has been slightly shaded. There is a moderate volume of business in Cut Nails, but, in sympathy with Wire Nails, prices have shown a weaker tendency. The market is represented by the quotation of $1 at mill with the usual averages. For desirable orders this price has been shaded.

Barb Wire.—The demand is very light, there being practically nothing doing. Prices are weak and irregular, and we quote Four-Point Galvanized at $2.20 in carload lots at mill, with the usual advances for less quantities. The above price would be shaded for a good order placed at this time. Painted is ruling at $1.80 in carload lots. There is a fair demand for Plain Wire and we quote at $1.55 @ $1.60 for Nos. 6 to 9 in carload lots.

Pipes and Tubes.—A meeting of the Wrought Iron Pipe and Tube Manufacturers' Association was held in this city last week. No action of importance was taken, the unsatisfactory condition of the market being the principal topic under discussion. The demand for Pipes and Tubes is extremely light, and prices are low, with no prospect of improvement until the demand has materially increased. None of the mills are being operated full time, while a few plants are entirely closed.

Connellsville Coke.—For the week ending Saturday, October 28, there were 5752 ovens in the Connellsville region in blast, and 11,758 idle, with a total estimated production for the week of 52,585 tons. There was a net gain of active ovens during the above week of 398. The increased activity among blast furnaces is expected to lead to an improved demand for Furnace Coke before long, and it is not believed that Coke makers will agree to make contracts for delivery for the first six months of next year at prices ruling now. We continue to quote Furnace Coke at $1.10 in tons of 2000 lb, f.o.b. cars in Connellsville region. The price of Foundry Coke is being firmly maintained on the basis of $1.50 to dealers and $1 65 to consumers.

On November 1 George Eaton Collins was admitted to partnership in the metal brokerage business heretofore conducted under the name of H. E. Collins & Co, which has been changed to H. E. Collins & Son. The offices of the new concern are located on the third floor of the Bank of Commerce Building, Pittsburgh.

Louisville.

LOUISVILLE, KY., November 6, 1893.

Sales of No. 2 Foundry for delivery during three months have been made at basis of $7.90 at furnace; the transaction was for cash without privilege of giving paper. All sales made recently for delivery running into next year have been on a basis of $8 at furnace for No. 2 Foundry, though furnaces had insisted upon getting 25¢ a ton more, but the competition was such that when the transactions came to be closed almost all were willing to sell at this price. No. 1 Foundry for delivery during six months was sold on a basis of $9, furnace, or a shade less, this being the lowest transaction for this grade made. Buyers in general feel that the market has reached bottom and that it is safe to purchase, and that the experience of finding later on that they could buy for less money than in the past is certainly at an end. We expect to see some confidence in buying from now on. The trade consider that present prices will rule for some time, with 25¢ advance being asked and paid for deliveries running for six months of next year. Car shops are shut down, with no immediate prospect of running. We quote for cash, f.o.b. cars Louisville:

Southern Coke, No. 1 Foundry.	$12.50 @ $13.00
Southern Coke, No. 2 Foundry.	11.25 @ 11.75
Southern Coke, No. 3 Foundry.	10.75 @ 11.00
Southern Charcoal, No. 1 Foundry	15.00 @ 16.00
Southern Car Wheel	17.50 @ 17.75
Spathite	12.00 @ 12.50

New York.

Office of *The Iron Age*, 96-102 Reade street,
NEW YORK, November 8, 1893.

Pig Iron.—There has been no increase in the demand for Pig Iron in this and tributary markets. We quote: Northern brands $14 @ $15 for No. 1; $13 @ $14.25 for No. 2; $12.25 @ $12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, $13 @ $14 for No. 1; $12 @ $13 for No. 2; $11.50 @ $12.25 for No. 3; $11.75 @ $12.25 for No. 2 Soft, and $12.25 @ $12.50 for No. 1 Soft. Gray Forge is $11.25 @ $12.

Spiegeleisen and Ferromanganese.—Western reports indicate such low prices for domestic Ferromanganese that it must now be able to penetrate far Eastward. We quote: Foreign Spiegeleisen, nominally, for 10 % @ 12 %, $21.50 @ $22, and 20 %, $25.50 @ $26, on cars, Jersey City, and Ferromanganese, $55 50 @ $56.

Billets and Rods.—No new business of any consequence is reported. We quote nominally: Domestic Billets, $20.25 @ $22.50, and foreign Billets, $28 @ $28.50, tidewater; domestic Wire Rods, $28.25 @ $29, and foreign Rods, $39.50 @ $40, tidewater.

Steel Rails.—Prices on Steel Rails are now openly cut by the Rail mills and an eager canvass for orders is being made. The Pittsburgh mill is making great efforts to capture trade in the territory of the Eastern mills, but is being met by them. Some business has been done and more is pending. It is fair to quote $24 @ $25 at tidewater. There is a good deal of excitement and much uncertainty in the Rail trade. The sharp drop in the price is expected to bring out buyers as soon as they realize that values have gone down to the lowest point attainable. The fact that conservative and cautious buyers have already taken hold is proof of the fact that the heavy reduction has tempted them. It may be questioned whether even at the prices now openly quoted all the mills will continue to meet the market, and even those who do will probably be chary about taking too many orders.

Track Material.—Some business has been done at low prices: Small lots are selling at the following prices: Spikes, 1.80¢ @ 1.90¢; Fish Plates, 1.40¢ @ 1.60¢; Track Bolts, Square Nuts, 2.25¢ @ 2.40¢, and Hexagon Nuts, 2.40¢ @ 2.50¢, delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—There have been closed and there are pending for early settlement contracts for three large buildings in this city which will call for close upon 4000 tons of Structural Material. There are indications that work delayed earlier in the season is now being taken up. We quote nominally: Beams up to 15 inch, 1.70¢ @ 2¢; 20-inch, 2¢ @ 2.25¢, for round lots; Angles, 1.75¢ @ 1.90¢; Universal Mill Plates, 1.65¢ @ 1.90¢; Tees, 2¢ @ 2.15¢; Channels, 1.70¢ @ 2¢, on dock. Steel Plates are 1.60¢ @ 1.70¢ for Tank; 1.75¢ @ 1.90¢ for Shell; 2¢ @ 2.15¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.50¢ @ 1.9¢, on dock, and Common, 1.40¢ @ 1.50¢; Soft Steel Bars are 1.50¢ @ 1.70¢; Scrap Axles are quotable at 1.70¢ @ 2¢, delivered; Steel Axles, 1.70¢ @ 1.90¢, and Links and Pins, 1.70¢ @ 1.80¢; Steel Hoops, 1.75¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ ₩ 45 lb bundle, at mill.

Old Material.—Old Iron Rails are nominally at $13 @ $14; Old Steel Rails, $8 @ $9, and Wrought Scrap $9 @ $11.

Stock Warrants.—The American Pig Iron Storage Warrant Company report as follows:

	Tons.
Stock in yard September 30, 1893	77,700
Put in yard for 31 days ending October 31, 1893	1,700
Total	79,400
Withdrawn 31 days ending October 31, 1893	2,300
Net stock in yard October 31, 1893	77,100

The firm of Cudlipp & Hollister, Pig Iron merchants, 15 Cortlandt street, have been dissolved by mutual consent. The obligations of the firm are being discharged as rapidly as possible. J. R. Cudlipp will continue a commission business in Pig Iron, Coke and Metals at the same address.

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Markt & Co., Limited, agents for Eicken & Co.'s Tool Steel, have received a stock of that Steel, which, for want of room, is stored in the warehouse of Chas. E. Ring, near Roosevelt Ferry, Brooklyn. They quote No. 8 Steel, which is used for turning and finishing the hardest stock, at 30¢.

Financial.

No specially notable features have developed in the financial situation during the past week. The status of things in the money and stock markets has changed but little from that presented in our last report, and the general business condition of the country, although showing a distinctly better feeling in most quarters, has displayed as yet no remarkable revival of activity. The general interest felt in the elections in many parts of the country—and particularly in New York—may partially account for the tameness in speculation and industrial enterprise. This, however, is probably but the natural reactive effect after the strain of suspense and uncertainty had been removed by the passage of the Silver Purchase Repeal bill last week. To those optimists who looked for a marked and immediate revival of business and enterprise, the comparative dullness following on the heels of repeal must be a disappointment. But to those who took a more farsighted view of the effects of the Senate's action, the present condition is only a natural one. That action had been discounted by Wall street ten days before the event, and the extraordinary upward rush of values in the stock market which then took place was followed by a perfectly natural reflux of prices to a more reasonable level, the ebb tide having continued down to the present. Confidence, too, is a quality that is far slower in returning than people generally understand, and until its fuller restoration is effected no remarkable revival of activity can be expected.

The gradual restoration of monetary affairs to a normal condition is, however, surely taking place as an effect of the recent currency legislation. Business men see this, and unless the dread of another upset by radical tariff changes serves to repress enterprise and check trade to any serious extent this winter, a gradual, and therefore more permanent, revival of business on a sound basis is among the things confidently looked for. The bank reserves are larger than for years past, and these institutions, as well as trust and insurance corporations, are anxious to place their surplus funds at low rates of interest. This favorable condition is not likely to be long neglected by those requiring such accommodation. In any case it is conceded that the settlement of the much-vexed silver question, while it has not prevented a decline in prices, is destined to exert a favorable influence on the business interests of the country in the near future.

The final cancellation of the New York Clearing House loan certificates was followed on Saturday by the resumption of the weekly bank statement in detail for the first time for five months. It shows that a considerable number of the banks are carrying extraordinarily large reserves, some as high as 50 % and 60 %. The gain in surplus reserves during the week was $3,225,975. The banks now hold $52,000,000 above the legal requirement, as against $2,700,000 at the same time a year ago and $7,000,000 in 1891. The most striking feature disclosed by the statement is, however, that the great accumulation of money is not, as was supposed, held by the banks that have been doing most of the country business, but by those that have the deposits of trust companies and similar institutions. The obvious inference from this fact is that hoarders have at last been constrained to bring out their funds and put them in deposit. The following table shows the bank changes as compared with last week:

	October 28.	November 4.	Differences.
Loans...	$397,324,800	$402,383,300	Inc..$5,058,500
Specie...	96,564,500	97,116,500	Dec. 552,000
Legal tend..	60,538,400	66,750,100	Inc.. 6,211,700
Net deposits.	433,261,700	447,412,600	Inc. 14,150,900
Circulation...	14,610,800	14,409,900	Dec. 200,900

No further orders for gold for import have been reported during the week, but exchange has been hovering around the importing point, and it is the general impression, both here and in Europe, that a resumption of gold imports to this country is imminent. In regard to this the London *Economist*, in a recent article, expressed itself as follows: "It is practically certain that considerable shipments of gold will have to be made to the United States, and it is the Bank of England's stock of the metal that will first be drawn upon. That is now fairly large, amounting to close upon £26,600,000, which is about £1,600,000 more than was held at this time last year, while the reserve is £1,900,000 greater than it then was."

The present situation of this country in respect of the gold movement is shown by the following figures:

Exports of gold from January 1, 1893, to date...	$70,159,547
Imports for the same period.....	59,074,3»5
Net exports.....	$11,085,152

On the Stock Exchange the market has been almost wholly a "traders'," one; the "bears" being usually in the ascendant, and succeeding in forcing down a number of the active stocks—particularly certain industrials—materially below the prices of last week. Friday and Saturday showed dull trading with a declining tendency in prices; although the more favorable returns of St. Paul, Rock Island and other railroads promulgated at the end of the week strengthened the position of those issues, and at the close of the week they were firm and higher. Monday's dealings on the exchange were small, and the fluctuations relatively insignificant; except in the case of Sugar and Chicago Gas stocks, which yielded to determined bear attacks, closing at a decline of several points. The main business was, however, in clearing up prior to Tuesday, on which day the exchanges and other business institutions were closed. Altogether the week's market has been confined within purely professional limits, with very little public interest in evidence. The extreme fluctuations of some of the more active stocks during the week are shown in the following list, together with the closing prices on November 8:

	Highest.	Lowest.	Closing, Nov. 8.
Am. Sugar Ref.....	102⅓	94⅞	100¼
Atchison, T. & S. Fé....	21¾	19⅝	20
Balt. & Ohio.....	75⅝	72	72
Chicago Gas.....	68	58¼	61⅜
Chic., B. & Q.....	83¾	81⅛	82⅜
Chic., Mil. & St. Paul...	66⅛	63⅝	65¾
Chic., Rock Isl. & Pac..	69¾	66⅛	68
Del. & Hudson.....	132¼	129½	132¼
Del., Lack & Western...	175	171	173
Gen. Electric.....	48	43⅝	45¾
Lake Shore.....	129¾	126⅛	129
Louisville & Nashville...	50¼	47⅛	49⅛
Manhattan.....	133¾	130⅓	133¼
Missouri Pacific.....	27½	24¼	25
Minnesota Iron, asked...	....	....	50
National Lead, Common.	28¼	26½	28
New Jersey Central.....	119	116½	119
New York Central.....	103⅝	102¾	103½
N. Y., L. E. & Western.	14⅜	14¼	14⅜
Northern Pacific, Pfd. .	23¼	21⅞	22
Philadelphia & Reading..	21⅞	19⅝	20⅞
Richmond & West Pt., Terml.....	3¾	3¼	3¼
St. Paul & Omaha.....	39⅛	37	38
Union Pacific.....	18¾	17¼	18
Western Union.....	90⅜	86½	88¾

Government bonds have been strong and steady. The last sales on call were $5000 4s, registered, at 112½; $11,000 do., at 112⅛, and $1000 4s, coupon, at 112½. The closing quotations were as follows:

	Bid.	Asked.
2s, 1891, registered.....	96	.....
4s, registered.....	112	113
4s, coupon.....	112	113

Railway and miscellaneous bonds, while fairly active, have been irregular and weaker, there being a considerable contraction in the issues in which trading was done. Prices have also declined in most lines.

Money on call is offered in abundance at 1½ % @ 2 %, the offerings by private bankers being ample to meet the demand. The demand for time loans continues light, and the supply abundant, the market being free from discrimination as to the character of collateral accepted. The usual quotations for time loans are 3 % @ 3½ % for 60 and 90 days; 4 % for four months, and 4 % @ 5 % for longer terms. Mercantile paper of good quality is being readily bought by both city and country banks, the rates being generally 5 % for double name and 5½ % @ 6 % for single name.

The market for sterling exchange rules firmer, a rise of a fraction having taken place at the close of last week on a sudden demand for bills from importers. The advance was maintained early in this week, owing to a light supply of commercial bills and more demand against sales of securities for foreign account. Actual business was done at the close at $4 81½ @ $4.81¾ for 60 days; $4.84 @ $4.84¼ for demand; $4.84¼ for cables, and $4.80⅛ for commercial. Domestic exchange on New York is quoted as follows: New Orleans, commercial 200 discount, bank 31; Charleston, buying ⅛ discount, selling par; San Francisco, sight 12½, telegraph 17½ premium; Savannah, buying ¼ discount, selling ⅛ discount @ par; Chicago, 75 @ 80 premium; St. Louis, 75 premium.

Silver is higher, the price for refined bars having advanced to 32⅜ pence ℔ ounce in London, and 70¾¢ ℔ ounce in New York. Some considerable shipments of silver have been made during the week, and the outlook promises a revival of trade in the metal instead of the reverse, as a sequel to the passing of repeal bill.

Metal Market.

Copper.—There have been additional purchases of fair sized lots of Lake Superior Ingot for prompt and near future delivery, chiefly by home consumers. At least 500,000 ℔ were involved. The prices ranged from 9¾¢ up to 10¢, according to delivery and other contract specifications. Some improvement has been noted also in sales of other varieties that led stiff holding at 9⅜¢ @ 9½¢ for Electrolytic and 9½¢ @ 9⅝¢ for casting stock. Meanwhile export movement on old contracts has continued liberal, while the output from the mines is still under more or less restraint, making in all a condition of affairs that

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serves to give the market greater tone of firmness for the time being at least. There is hardly any speculative interest, and legitimate trade movement seems to be the foundation of the turn for the better that has taken place since the beginning of the month.

Pig Tin.—The market has recovered slightly from the depression more or less conspicuous during the period covered by last week's review. Prompt and current month deliveries now command about 20.60¢ and the offering is somewhat reserved. Comparatively few speculative transactions have been reported and purchases by jobbers and consumers have not exceeded the average volume. Still the amount of stock in first hands continues to steadily diminish and the statistical position here is stronger to that extent. A partial offset exists in the fact that European stocks are being largely increased and that prices in the foreign markets are gradually receding to the parity of local market quotations. The visible supply in Europe and America is estimated at about 15,000 tons, or nearly the same as the quantity recorded for the corresponding period last year, including 3700 tons in America, exclusive of Pacific Coast, and 700 tons afloat.

Pig Lead.—Speculative interest in this metal has been on the wane, and consumers have purchased in a very indifferent manner. Sellers have not offered in a manner indicative of unusual pressure to secure orders, but the supply on offer seems to be in excess of the outlet and prices are correspondingly easier. Common domestic was freely offered at 3.35¢ in round lots toward the close of the week, while bids of over 3.30¢ for deliveries this month or next were exceedingly few. In fact, there were some sellers at the latter price.

Spelter.—Little if any change has taken place. The popular quotations are 3.60¢ @ 3.65¢ for ordinary Western brands, with about the usual premium for special or fancy brands. Business has been slow here, individual transactions involving more than single carloads being the exception. The demand is exceedingly tame at this writing.

Tin Plates.—Fairly large orders have been placed for 100-lb. Bessemer Steel Cokes, March and April delivery, at about $4.90, landed here. Otherwise the interest in futures continues tame. Spot business continues uneven, but importations are fairly well absorbed, and dealers secure about former prices for most varieties. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $5.35; J. B. grade, do., $5.40; Bessemer full weight, $5.35 @ $5.40; light weights, $4.95 @ $5 for 100 lb, $4.85 for 95 lb, $4.70 @ $4.75 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60; Siemens Steel, IC basis, $5.65; IX basis, $6.75 @ $7. Charcoals—Melyn grade, IC, $6.37½ @ $6.50; Crosses, $8; Allaway grade, IC, $5.60; Crosses, $6.75; Grange grade, IC, $5.75; Crosses, $6.85. Charcoal Ternes—Worcester, 14 x 20, scarce; do., 20 x 28, $11.35; M. F., 14 x 20, $7.75; do., 20 x 28, $15; Dean grade, 14 x 20, $5.30 @ $5.37½; do., 20 x 28, $10.50 @ $10.60; D. R. D. grade, 14 x 20, $5.15; do., 20 x 28, $10.10; Alyn, 14 x 20, $5.32½ @ $5.35; do., 20 x 28, $10.40; Wasters—S. T. P. grade, 14 x 20, $4.75; do., 20 x 28, $9; Abercarne grade, 14 x 20, $4.60; do., 20 x 28, $8.87½.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, November 8, 1893.

The market for Pig Tin has been dull, and prices have moved somewhat irregular, in sympathy with the fluctuations in silver. At a slight advance established there was free selling, under which prices dropped, since buying orders were on a very limited scale. Prompt delivery was sold at as low as £76. 10/, and futures at proportionate figures. At the close the market was soft, with £77. 10/ @ £77. 12/6 quoted for prompts, and £77. 5/ @ £77. 7/6 for futures.

Copper improved somewhat from the lowest point reached last week, with £42. 10/ reached for Merchant Bars for prompt delivery. Subsequently there was a reaction to £42. 3/9, despite the repeal of the Sherman Silver bill and more favorable reports from the American market. Realization of profits by speculators has held in check a better turn in prices. Purchases by consumers have been good. European stocks increased 286 tons last month and the visible supply shows a gain of 136 tons. Chili charters the last fortnight were about 1000 tons. Sales of furnace material latterly have been moderate. Among others were 200 tons Montana Matte at 9/.

The Tin Plate market is without decided change. Prices are steady. There is a very fair home trade demand, also some export inquiry for futures. The latter was chiefly for oil sizes at 11/, f o.b. Swansea, but some sales were made of ordinary Cokes at relatively better price. Exports last month amounted to 27,000 tons, against 31,000 tons in October, 1892. Shipments to the United States were 13,000 and 19,000 tons respectively. Liverpool quotations were as follows:

IC Charcoal, Alloway grade	12/6 @ 13/
IC Bessemer Steel, Coke finish	11/6 @ 11/9
IC Siemens " " "	11/9 @ 12/
IC Coke, B. V. grade, 14 x 20	11/6 @ 11/9
Charcoal Terne, Dean grade	11/3 @ 11/6

Pig Lead has met with slow sale, but the market is firmer at £9. 15/ for Soft Spanish.

Spelter has been in only moderate request, but sellers are firmer and now asking £17 for ordinary Silesian.

All branches of the Iron and Steel market is dull and prices lean more or less in buyers' favor. Exports of Pig Iron last month were 89,000 tons, against 92,000 tons in October, 1892. Last dealings in warrants were at 42/4 for Scotch, 34/4½ for Cleveland, and 44/4½ for Hematite.

The Valley Scale Settlement.

Last week several conferences were held in Youngstown between a committee representing the National Union of Finishers and a number of the Valley mill owners, with the result that a wage scale governing the finishing departments of the Valley and other Western Ohio mills was agreed upon, and has been signed by the Mahoning Valley Iron Company, the Andrews Brothers Company and the Union Iron & Steel Company. The terms of this scale have not been made public, but it is announced that its provisions are mutually satisfactory to both employer and employee. Enough is known concerning it, however, to warrant the statement that it differs essentially from the scales heretofore made by the Amalgamated Association, and shows conclusively that the new labor organization referred to above has started out with the determination to accord fair treatment to the manufacturers who will agree to recognize it. In the first place the scale is based on a 1½-cent card rate, while the Amalgamated Association scale is based on a 2-cent rate, having recently been changed back from a 1½ cent basis to a 2-cent basis. The wisdom and necessity of this change is at once apparent to those who have watched the steady decline in the selling price of iron and steel bars, until 1.35 cent at mill is the outside figure now attainable. While it is possible that the price of bars, owing to heavy demand or other unusual conditions, may advance to 1.50 cent, it is not thought that 2 cents will ever again be reached. The scale also calls for material reductions in wages, which were also necessary before the Valley mills could see their way clear to start up and compete with the non-union mills in the Pittsburgh district. But perhaps the most important change of all lies in the fact that the scale is a perpetual one, and is in force so long as notice is not given by either side of a desire to change it, and its provisions require that three months' notice must be given before the terms of the scale can be changed. This is a point that manufacturers in Pittsburgh and elsewhere have been striving for years to have the Amalgamated Association concede to them, but which has persistently been refused. It was the real cause of the disastrous Homestead strike in July, 1892, as the Amalgamated Association conceded everything asked by the Carnegie Steel Company, Limited, but refused to allow the scale to be a perpetual one, insisting that it must expire in June to conform with the time of expiration of other Amalgamated Association scales. Another important feature of the scale lies in the fact that every employee whose wages are fixed by it must attach his signature to it if desired by his employers. This virtually makes it a personal contract between the firm and each of its employees, and will reduce to a minimum the chances of a strike taking place should disagreements arise at any time. Other changes of a minor character have been made in the scale, some of which were suggested by the mill owners and others by the employees. The fact that the Valley mill owners accept and sign a scale largely prepared by representatives of the National Union of Finishers certainly speaks well for the business methods employed by that organization, and will aid it considerably in obtaining recognition from other manufacturers. As no puddlers belong to this organization the price to be paid for boiling is yet unsettled, but it is understood that the Valley mill owners have fixed $4 50 per ton as the price they are willing to pay for this class of labor. If the puddlers belonging to the Amalgamated Association do not agree to accept this price, it is likely the puddling departments will remain idle, or else muck bars will be bought in the open market. By reason of the low cost of billets some concerns will use largely of these, and as a consequence the amount of puddling done in the Valley from now on will be somewhat less than in the past. The completion of the Bessemer plant of the Ohio Steel Company, in which some of the Valley mill owners are interested, will also result in an increased use of billets and a corresponding displacement of puddling. The acceptance of the scale of the National Union of Finishers will further weaken the Amalgamated Association and will undoubtedly hasten the final disruption of that once powerful labor organization.

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HARDWARE.

Condition of Trade.

NOVEMBER opens with some indications of improvement, although the volume of business is not, on the whole, materially increased. A goodly number of small orders have been coming in to merchants' and manufacturers' representatives in this market, indicating something of a quickening in the demand and a disposition on the part of the trade, especially of the retail trade, to purchase a little more freely. The advance of the season, however, has its effect in restraining trade. As usual at this time of the year, there is more or less falling off in the volume of business. It is evident that stocks in the hands of retailers are unusually limited, the character of the orders showing that assortments are pretty well depleted. The policy which has been pursued for the past few months of limiting purchases to such goods as are absolutely required is still adhered to, and a very conservative spirit dominates the whole conduct of business. While the effect of this is to curtail trade for the present, it is unquestionable that this is the safest and wisest course, and tends to put business on a solid basis, averting serious disaster and laying the foundation for future prosperity.

Chicago.

(*By Telegraph.*)

No improvement is perceptible in the Shelf Hardware trade. Perhaps in a few departments there may be some little increase in the volume of business, but the aggregate shows a decline rather than an increase. If trade continues in this way during the month of November the volume of business will be considerably under that of October. The decline is not attributed so much to lack of demand, however, as to hesitation in extending credits. Jobbers state that opportunities are offered them to sell considerable quantities of goods to new customers or to parties whose financial standing is not of the best. The better class of merchants, whose credit is high, buy quite sparingly and are very conservative. The demand for Tin Plate and tinners' stock is much better than it has been, but the improvement is not enough to make merchants feel elated over the change. It is simply a movement in the right direction, which they welcome. Jobbers of Heavy Hardware are still in receipt of good business from consumers of Iron and Steel, like the Implement manufacturers, and also report a little better demand from out of town wagon builders. City trade is quiet.

St. Louis.

(*By Telegraph.*)

The backward weather has had a depressing effect on the demand for Hardware, especially so far as cold weather goods are concerned. The demand for shelf goods continues to keep improving, but yet fails to reach the corresponding period of last year. Retail dealers continue to buy sparingly and as a result their stocks are lower than ever before, and any improvement in the demand would compel them to enter the market as buyers. Firearms and Ammunition continue in good demand. Credits are still closely scrutinized, but there is a disposition to be more liberal in this direction. It is generally conceded that November and December will be quiet months, but a heavy increase is anticipated after the turn of the year.

Notes on Prices.

Wire Nails.—The Wire Nail market continues in substantially the same condition as last week. It is represented by the quotation of $1.20 to $1.25 for carload lots at mill, the former figure being obtainable on good orders. There has been a fair demand and most of the mills are well occupied.

Chicago, by Telegraph.—Manufacturers of Wire Nails report business as keeping up about the same as it has been for the past week or two. They are quoting $1.32½ here for factory lots, but this is now the price for ordinary lots to which the general market has settled. Small lots from stock have receded to $1.45 on account of the lower prices from factory.

Cut Nails.—There is only a moderate inquiry for Cut Nails and the market does not show an increase of strength in price, quotations being on a basis of 95 cents to $1 for carload lots at mill. Concessions are made in special cases. The New York price for small lots from store is $1.20 to $1.25.

Chicago by Telegraph.—A better inquiry and more sales than the previous week is the report received from manufacturers of Cut Steel Nails. Low freights to the Southwest are having an important influence on their business at present. Some quite large lots are under negotiation. Prices are still quoted at $1.20 to $1.25, Chicago, for factory lots, while small lots from stock are unchanged at $1.30.

Barb Wire.—There are indications of a slight increase in the volume of business in Barb Wire, but trade is on the whole sluggish and unsatisfactory. Quotations continue on the basis of $2.15 for carload lots of Four-Point Galvanized at mill, but this price has been shaded. Manufacturers are solicitous to obtain orders and as a result quotations are somewhat uneven.

Chicago, by Telegraph.—The Barb Wire trade has picked up to some extent, although the demand is considerably less than manufacturers would like to experience at this time of the year. A better outlook is now offered for trade with the Southwest, owing to the low freight rates. This is having its effect on trade, as it comes in addition to the better impulse in the West and Northwest. Prices continue as before on a basis of $2.40, Chicago, for Galvanized in carload lots, and $2.55 for small lots from stock. The demand for Plain Wire has increased rapidly within the past two weeks. Manufacturing establishments consuming Wire have started up quite generally, and some of them are running to their usual capacity in ordinary times. The manufacturers of Mattresses are particularly prominent in this better condition of business, but the implement makers and others who consume Wire to considerable extent are also more inclined to buy than for several months, and are placing good contracts with the manufacturers.

Powder.—LAFLIN & RAND POWDER COMPANY, 29 Murray street, New York, issue under date November 1 revised prices for Gunpowder, which are subject to a discount of 2 per cent. for cash in ten days:

Keg Powder.

	In Kegs. Pounds.	
Orange Rifle, extra	25	$3.25
" " "	12½	1.90
" " "	6¼	1.10
Orange Special	25	4.25
" "	12½	2.40
" "	6¼	1.35
Creedmoor	6¼	1.10
Orange Ducking (Gold Band)	6¼	2.25
Blasting and Mining (B)	25	1.50
" " " (A)	25	2.00

Canister Powder.

	In Canisters. Pounds.	
Orange Lighting	1	$0.75
Orange Ducking	1	.45
Orange Rifle, extra	1	.25
" " "	½	.15
" " "	¼	.12

It will be observed that the above list shows a reduction in price of Rifle Powder in canisters and of Lightning and Ducking Powder. On Rifle and all Sporting Powder in lots of 1000

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pounds or over, one sale, one shipment and to one consignee, a discount of 10 per cent. will be allowed. In less quantity there is no discount. The prices of Blasting and Mining Powder as quoted are net.

THE HAZARD POWDER COMPANY, 63 Pine street, New York, under date November 1, in issuing their revised price-list refer to the fact that it shows a large reduction in all the Sporting Powders, especially in the finer grades —namely, Electric and Duck Shooting —and also in canisters of Kentucky and Indian Rifle, to which they direct particular attention, and express the hope that this reduction will lead to increased consumption of the higher class of Powders. Their revised list is as follows, which on Rifle and Sporting Powder in lots of 1000 pounds and over, one sale, one shipment and to one consignee, is subject to a discount of 10 per cent., and on all bills paid within ten days a discount of 2 per cent. will be allowed:

Canister Powder.

	Pounds.	Each.
Electric, Nos. 1, 2, 3, 4, 5, 6 and 7 grain, square canisters of	1	$0.75
Duck Shooting, Nos. 1, 2, 3, 4, 5 and 6 grain, in oval canisters of	1	.45
Duck Shooting, Nos. 1, 2, 3, 4, 5 and 6 grain, in oval canisters of	½	.30
Kentucky Rifle, FFFg, FFg and Sea Shooting Fg, in oval canisters of	1	.25
Kentucky Rifle, FFFg, FFg and Sea Shooting Fg, in oval canisters of	½	.15
Kentucky Rifle, FFFg, FFg and Sea Shooting Fg, in oval canisters of	¼	.12

Keg Powder.

	In kegs. Pounds.	
Duck Shooting, Nos. 1, 2, 3, 4, 5 and 6 grain	25	$8.00
Duck Shooting, Nos. 1, 2, 3, 4, 5 and 6 grain	12½	4.25
Duck Shooting, Nos. 1, 2, 3, 4, 5 and 6 grain	6¼	2.25
Kentucky Rifle, FFFG, FFG and Sea Shooting Fg	25	3.25
Kentucky Rifle, coarser grains FG Duck Size and FG Duck Size No 1	25	3.25
Kentucky Rifle, coarser grains FG Duck Size and FG Duck Size No. 1	12½	1.90
Kentucky Rifle, coarser grains FG Duck Size and FG Duck Size No. 1	6¼	1.10
Trap Powder, Nos. 1, 2 and 3, for club shooting	25	4.25
Trap Powder, Nos. 1, 2 and 3, for club shooting	12½	2.40
Trap Powder, Nos. 1, 2 and 3, for club shooting	6¼	1.35
Meal Powder	25	4.00
Shipping Powder, FFF, FF, F, C, CC and CCC	25	2.00
Mining and Blasting Powder, FFF, FF, F, C, CC and CCC	25	1.50

The company state that for any quantity less than 1,000 pounds of Rifle and Sporting Powder no discount is allowed, and that Blasting and Shipping Powder are net.

E. I. DU PONT DE NEMOURS & Co., Wilmington, Del., and 32 Pine street, New York, issue November 1 the following revised quotations, which show a general reduction in prices. Rifle and Sporting Powder in lots of 1000 pounds and over, one sale, one delivery and to one consignee, are subject to a discount of 10 per cent., any less quantity being net, terms f.o.b. New York, subject to a discount of 2 per cent. for cash in ten days:

Canister Powder.

	Pounds.	Each.
Crystal Grain, Nos. 1, 2, 3 and 4, in canisters of	1	$0.75
Eagle Duck Shooting, Nos. 1, 2 and 3, in canisters of	1	.45
Eagle Duck Shooting, Nos. 1, 2 and 3, in canisters of	½	.30
Eagle Rifle and Superfine Sporting, in canisters of	1	.45
Du Pont Rifle, Fg, FFg and FFFg, in canisters of	1	.25
Du Pont Rifle, Fg, FFg and FFFg, in canisters of	½	.15
Du Pont Rifle, Fg, FFg and FFFg, in canisters of	¼	.12

Keg Powder.

	Pounds.	Each.
Eagle Duck Shooting, Nos. 1, 2 and 3, in kegs	25	$8.00
Eagle Duck Shooting, Nos. 1, 2 and 3, in kegs	12½	4.25
Eagle Duck Shooting, Nos 1, 2 and 3, in kegs	6¼	2.25
Du Pont Rifle, FFFg and FFg and Sea Shooting Fg, in kegs	25	3.25
Du Pont Rifle, FFFg and FFg and Sea Shooting Fg, in kegs	12½	1.90
Du Pont Rifle, FFFg and FFg and Sea Shooting Fg, in kegs	6¼	1.10
V. G. P. for Trap Shooting, in kegs	25	3.25
V. G. P. for Trap Shooting, in kegs	12½	1.90
V. G. P. for Trap Shooting, in kegs	6¼	1.10
Choke Bore, Nos. 5 and 7, in kegs	25	4.25
Choke Bore, Nos. 5 and 7, in kegs	12½	2.40
Choke Bore, Nos. 5 and 7, in kegs	6¼	1.35
Mealed Powder, in kegs	25	4.00
Shipping Powder, F, FF, FFF, FFFF and FFFFF, in kegs	25	2.00
Mining and Blasting Powder (A,) C, F, FF, FFF, FFFF, in kegs	25	2.00
Mining and Blasting Powder (B,) C, F, FF, FFF, FFFF, in kegs	25	1.50

Sheet Zinc.—Under date November 3, Matthiessen & Hegeler Zinc Company, La Salle, Ill., issue a revised price-list and discount sheet of Sheet Zinc, quoting the advanced price of $4.50 per 100 pounds in 600-pound casks of the thicknesses between Nos. 9 and 15, inclusive, and of the widths between 32 and 46 inches and of the lengths between 84 and 90 inches. They also announce the following revised extras in cents per 100 pounds:

Extras in Cents per 100 Pounds.

Nos.	5	6	7	8	9	10	11	12	13	14	15
32 to 40 x 84	75	45	30	10	.....	.....	.....	.....	.....	.....	.....
32 to 46 x 84 to 90	....	....	....	....	none	none	none	none	none	none	none
52 x 84	....	....	225	95	80	65	45	45	45	45	50
50 x 84	...	....	150	75	50	30	20	20	20	25	25
48 x 108	...	....	120	85	75	50	20	20	20	25	25
48 x 96	....	....	100	45	40	20	15	15	15	20	20
48 x 84	255	135	85	25	20	10	10	10	10	10	10
36 x 108	160	140	75	40	35	25	20	20	20	25	25
36 x 96	135	65	40	25	20	10	10	10	10	10	10
30 x 84	110	70	50	25	15	15	10	10	10	10	10
28 x 84	120	80	60	35	25	25	25	25	25	25	25
26 x 84	140	90	70	40	35	25	25	25	25	25	25
24 x 84	150	110	85	20	15	05	05	05	05	05	05

The extra on No. 4 36 x 84 is $1.35 per hundred pounds.

The following are the charges for small lots:

In casks of 100 pounds (all Nos. up to and including No. 12), 30 cents extra per 100 pounds.

In boxes of 100 pounds (not larger than 30 x 40 inches), 30 cents extra per 100 pounds.

In 200 and 300 pound casks (all Nos. up to and including No. 14), 20 cents extra per 100 pounds.

In 200 and 300 pound boxes (not larger than 36 x 50 inches), 20 cents extra per 100 pounds.

The discounts announced are as follows:

Discounts.	First class. 15 600-pound casks and upward.	Second class. 10 to 14 600-pound casks.	Third class. 5 to 9 600-pound casks.	Fourth class. Under 5 600-pound casks.
	Per cent.	Per cent.	Per cent.	Per cent.
Special	0	0	0	0
Cash with order	3	3	3	3
Quantity	3	2	1	0
Total	6	5	4	3

It is stated that all discounts are computed straight when money accompanies the order and the quantity discount is added to the special discount in all cases. The prices thus announced are subject to change without notice.

Brace Bit Gauge.—The Wilks & Whitus Brace Bit Gauge, for which T. G. Ellsworth, 85 Chambers street, New York, is agent, is sold to the trade at $9 per dozen net. An illustrated description of the Gauge appeared in *The Iron Age* September 28, 1893.

Glass.—There has been quite an increase in the number of Window Glass factories that have gone into operation since our last report, although the prices at which Glass is offered would not appear to offer much inducement for commencing work. While no official acceptance of the proposed wage scale has taken place, individual factories are making arrangements with their workmen. Single and Double Strength are offered at the same discounts, a Western jobbing house quoting 80 and 20 per cent. discount for either, in lots of ten boxes, f.o.b. cars. A quotation was made to a Southern point, from another source, at 85 per cent. discount on Single or Double, freight prepaid to destination. Imported Glass is still quoted at 75 and 10 and 5 to 80 and 5 per cent. discount. Plate Glass factories are running just enough to supply the demand, which is light.

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John Rothery.

JOHN ROTHERY, senior member of the File manufacturing firm of J. & W. Rothery, Matteawan, N. Y., died after a somewhat extended illness on Monday, October 16. A portrait of Mr. Rothery is given herewith.

John Rothery was of English parentage, but was born in Calais, France, on March 9, 1821. His father was a prominent File maker of Calais. Mr. Rothery's ancestors were a family of File makers, and for over 100 years the family have manufactured Files. Mr. Rothery's father came to America in 1827, and located at Paterson, N. J., where he was employed by Rogers, Grosvenor & Ketchum in recutting Files. In 1828 he removed to Matteawan, N. Y., where he took charge of a File factory. The first shops were erected on the banks of Fishkill Creek in 1835. In 1846 a third shop was built. In these shops Mr. Rothery founded the well-known reputation and character of American made Files, and introduced them to favorable notice in England. A short time after the third shop was built he erected a frame building, in which he prosecuted the manufacture of Files under his own name. This building was abandoned in 1852, and he then located upon the property on which the Rothery File Works now stand. He also ran a shop at Wiccopee in 1851, which was in operation until 1870. He is said to have been the first man to use an emery wheel in this country for polishing machinery and Sad Irons. He is also said to have been the first to use flanges on the mammoth grindstones used in File making. He also gave much attention to astronomy, polished his own lenses and constructed a number of powerful telescopes. He was a man of intelligence and ability and possessed of unusual force of character.

Mr. Rothery's sons were all brought up as File makers, and when he died at Matteawan April 1, 1858, they continued the business. John, the subject of this sketch, who succeeded to the management of the business, inherited the positive traits of his English progenitors. His opinion once formed was very difficult to sway, and his convictions were expressed in a plain, outspoken manner. Of strict integrity and much intrinsic worth, his pledge once given was certain of redemption. Socially he was of a domestic and retiring disposition, and aside from the demands of his business his time was spent at his home. He confined himself almost absolutely to the supervision of File making at the works, the successful marketing of the goods devolving entirely on his agents, Walsh & Coulter, later Walsh, Coulter & Flagler. Mr. Rothery was a man of extreme conservatism, and averse to the adoption of new methods in the manufacture or marketing of his goods, as illustrating which it is narrated that on one occasion when he was urged by his agents to make a trip in the West for the purpose of visiting the leading jobbing houses he peremptorily declined, intimating that if it was necessary for him to cross the Hudson River to sell his goods he preferred that they should remain unsold.



JOHN ROTHERY.

Thoroughly painstaking and honest. Mr. Rothery's ambition was to produce the best File possible. It is said of him by competent veteran Hardwaremen that he made and sustained a reputation for American made Files when they were utterly without standing, producing goods which for quality and workmanship stood the severest tests, and said to be fully equal to the best English makes. In later years he was unwilling even to test the quality of American as against English steel for the purpose of meeting domestic competition, in one case refusing to make up 5000 dozens of Files under a special brand at the expense and risk of those who marketed his entire production.

In 1863 Mr. Rothery was elected supervisor of the town of Fishkill, but resigned before his term expired. He was also a member of the Board of Education of Matteawan eight or ten years ago. Mr. Rothery leaves a widow and five children, two sons and three daughters, William A., Frederick, Mrs. J. E. Selden, Mrs. William Whitham and Mrs. Charles Sperring, all of whom reside in Matteawan with the exception of Mrs. Sperring, who resides in Philadelphia. Two brothers and two sisters also survive him. Mr. Rothery owned a beautiful residence, which he had named "Robin Nest." The grounds are large and spacious and his home afforded him great delight and comfort.

Mr. Rothery's funeral was held on the 18th ult. During the passage of the funeral cortege the stores of Matteawan were closed as a tribute of respect to the memory of the deceased, whose death, as a man of high character and exceptional qualities, was lamented by all who knew him.

Mr. Rothery's place as a maker of Files was unique, inasmuch as he was a pioneer in their manufacture in this country, having done in connection with the house with which he was identified probably more than any one else to give American Files character and standing. His ambition was to make as good a File as possible, estimating quality of far greater importance than quantity, or even the profit derived from the business, and preferring to have a comparatively limited trade on old lines rather than incur the risks of experiment involved in the adoption of new methods. In this ambition he was successful, and took much well-deserved satisfaction in the high reputation in which the Files of his firm have always been held. In the painstaking care in the production of goods which is shown throughout his career there is a lesson for manufacturers in other branches of the trade. A more enterprising and less conservative spirit might have resulted in the doing of a larger business, but it is pleasant to record the success achieved by him on the lines which he so consistently followed, the esteem in which he was held by all who knew him, and the unique and very honorable position which he held as a manufacturer of Files.

JOSEPH A. BOGARDUS, Hardware merchant, 167 Chambers street, New York, was the nominee of the Prohibition party for the office of Secretary of State for New York.

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How to Extend One's Business.

BY FERDINAND TUSCH.

TO ADVERTISE, according to Webster, is to "inform or apprise," and among the many and best direct means under the immediate control of the dealer is to secure and preserve the reputation of a cleanly kept and well assorted stock in all salable lines. "All out; can't say just when I'll have more," suggests indifference or intended suspension and invites it. "One of a kind" always in sight, tastefully arranged, attracts and rivets attention, and is frequently alluring to the observer. Goods should be kept in such order that nothing need be looked for; it should always be there. When they are in fair demand, and are bulky or cumbersome, assorted samples should be kept in facile position for daylight inspection, and that all may be preserved in a cleanly condition the sample should be sold whenever possible, replacing such from the main stock. The value of racks for Farm and Garden Tools, Guns, &c., cannot be too strongly recommended, while plush or velvet lined showcases for Table Ware are indispensable for the exhibition of such to the best advantage.

WINDOWS AND STORE FRONTS.

Many Hardwaremen do not fully appreciate the value of their windows and store fronts as indexes of the store contents. "What's the use? every one knows me (or us) and what is kept in Hardware," is a common excuse for ill kept windows. This is a mistake. Windows tastefully arranged and frequently varied diffuse intelligence of many articles of shop or household applicability and may create demand. If there are several or more Hardware stores in town, the one which attracts the most attention, other things being equal, secures the most trade. If there be but one, the display of mechanics' tools, excepting novelties, need not be so prominent, as the purchasers of such have but one resort. The front should then be devoted to household novelties and articles of popular use.

SPECIAL LINES.

All dealers recognize seasons for special lines, and, as such approach, the exhibition of the articles should be slightly in advance of the actual needs, thus serving as a reminder to the consumer of renewals or replacements. When possible, the appliance ready for practical operation should be exhibited. In this class might be mentioned gas and oil Cooking Stoves, Clothes and Mop Wringers, Carpet Sweepers, filled Fruit Jars, &c. Such a method invites confidence and dissipates the uneasiness attending the purchase of "a pig in a bag." To explain the use of an article is a cold method in comparison with the demonstration of its merits, which frequently warms the languid inquirer into actual purchase.

NOVELTIES.

Because an article has never been sold in a town or never asked for is no reason why it should not be. To the drummer's solicitation in this direction should be added unprejudiced judgment, and the results may swell the general profits. Nor need a dealer await demand. He should seek to create it. Each issue of *The Iron Age* contains over 100 pages of advertising matter, and is a veritable compendium of reference, inasmuch as thousands of articles have their uses therein set forth.

IMPRINT OF THE BUSINESS.

If the town is so situated as to be visited by many from adjacent sections, some permanent signs can be erected at its rail and vehicle approaches, and made conspicuous by some symbol of trade, a few words, and prominence of name and locality. Such are impressed upon the minds of periodical visitors by the unvarying recurrence. Unaddressed circulars promiscuously distributed are of little benefit, though cards bearing a simple inscription with a bold and preferably an original design are preserved or circulated. All goods should be wrapped in strong paper bearing the imprint of the business, for such covering frequently circulates among many hands before its usefulness expires.

SIGNS, BULLETINS, ETC.

Signs from curb to store front, bulletins of Skates, Refrigerators, Sleighs, Freezers, Mowers, &c., all in their seasons should be displayed, and if the dealer uses a wagon modesty should not forbid him to paint his name and business in the largest letters. He may be known, but this is not sufficient; he should seek prominence, and employ all methods which do not violate his self respect.

AGREEABLENESS.

As a member of one of the many secret and benevolent organizations, besides deriving the benefit of their intended purposes, he can enlarge his circle of friendships and receive many favors through the peculiar clannishness of the membership. When such organizations, or those of churches, hold fairs, there is an opportunity for both benevolence and profit. Bread thus cast on the water may return in "pudding" later on. One of the best advertisements is agreeableness, if not carried to the extent of long credits on questionable premises. It is cheap, durable and broadening in its effects. The world is discoursive and argumentative, but patience is a good investment, and when there is no moral or financial principle involved, assent to or tolerance of a customer's views strengthens his own favorable impressions of himself and invites the consideration of the good sense of his auditor. Such a man who is "always right," and his name is legion, is of course invariably wrong, and since it does not occupy much time for him to tell all he knows, the dealer can combine amusement with business as the other becomes involved in labyrinthian verbal contortions.

MATTERS OF PRUDENCE.

To win a wager from a customer is often to lose his trade, and is a poor speculation to engage in. To forget the name of a frequent buyer is worse than forgetfulness — it is a crime against one's self.

It is by all means a matter of prudence to cultivate the good graces of the neighboring storekeepers. Aside from the mutual aid of recommendation, the sociability of the intercourse establishes an informal advisory committee against the fraudulent purchaser.

THE LOCAL PRESS.

The observance of some of the foregoing methods are distinctively within the legitimate province of advertising, but the local press should by no means be ignored as an important factor in extending and maintaining trade. The day of dreary announcements of 14 blurred "nonpareil" lines to the inch is past. Study something striking or ingenious in effect, and change the matter frequently. Better use but 2 inches of letterpress in half a column than fill it with commonplace statement. Cuts talk, but not those selected from the stock of a provincial paper, as they are too aged. Clever men prepare original ones, and such should be employed. Cultivate the editor. He is interesting and entertaining. It is his business to be so. Give him cause to remember you. Upon receipt of something new for stock let him see it, or delicately convey one to him, and the occasional reading column mention or recommendation may return its cost manifold.

Lectures on the World's Fair.

ARTHUR B. CLARKE, president of the Old Dominion Iron & Nail Works Company, Richmond, Va., visited the World's Fair some weeks ago, and on his return secured a large hall and delivered to the employees of the company, their families and other invited guests, a lecture on the great fair, which was richly illustrated with large stereopticon views. The instruction and entertainment was so popular that Mr. Clarke has been induced to repeat it several times with admittance charges, the proceeds being devoted to charitable objects of that city. Wherever delivered the houses are crowded, and many who could not visit the fair have had an enjoyable and instructive substitute. The interest thus shown in the pleasure and instruction of employees is worthy of a special commendation and might with advantage be imitated by other manufacturers.

MANY in the trade will be glad to know that Webster R. Walkley of the Peck, Stow & Wilcox Company, 29 Chambers street, New York, was elected on Tuesday alderman of the city of Brooklyn, which is to be congratulated on having a man of his character and caliber in this responsible position.

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Trade Items.

NELSON R. WILLIAMS, well known to the Hardware trade of the West and Northwest, through his past extensive operations at Chicago, has permanently retired from business and is now residing temporarily at Colorado Springs, Col., to benefit the health of his wife. Mr. Williams for several years represented a number of large manufacturing establishments and built up for them a heavy trade in the district tributary to Chicago. His retirement will be regretted by his numerous friends and business acquaintances, but they are nevertheless pleased to know that he is so fortunate as to be able to retire from the harassing cares while yet in the prime of life.

THE H. & D. FOLSOM ARMS COMPANY, 15 Murray street, New York, have recently added to their line the Columbian automatic ejecting Revolver. Reference is made to the lightness, strength and accuracy of the arm, which, it is stated, possesses all the desirable features of those which preceded it, as well as some valuable improvements just added. It is made in 32 caliber for central fire cartridges, and has rebounding hammer. It has a steel cylinder, steel frame and rubber stocks. The metal parts are full plated or blued.

THE PARTNERSHIP heretofore existing between Frank F. Osborn and Geo. W. Alexander, under the firm name of Osborn & Alexander, doing a general Hardware business at 401 Market street, San Francisco, has been dissolved by mutual consent. Mr. Alexander will continue the business and collect all debts owing to and settle all indebtedness of the late firm. By the terms of agreement of dissolution Mr. Osborn is free to engage in the same line of business and deal with the customers of the old firm. As yet he has not perfected any plans, but he advises us that he will undoubtedly, in the near future, resume business in the old lines, namely, Hardware, Mechanics' Tools and Bicycles. Mr. Osborn has had 28 years' experience in the Hardware business at San Francisco, seven years as clerk and 21 years as an active partner in the firm of Osborn & Alexander.

HENRY B. ROBINSON, late with the Dana Hardware Company, Boston, and Walter H. Fox, late of Topping & Fox, New York, have formed a copartnership under the firm name of Robinson & Fox, and have opened offices at 35 Warren street, New York, and 186 Franklin street, Boston, where they will conduct the export commission business, making a specialty of supplying goods to the Newfoundland market. They state that they have closely allied themselves with a number of leading manufacturers of the United States, and confidently assure their patrons of the lowest manufacturers' prices. Mr. Robinson's long acquaintance and knowledge of the requirements of the trade is referred to as placing the firm in a position to meet every want. Mr. Fox is also widely and favorably known, and the firm will have the best wishes for their success.

A COPARTNERSHIP has been formed between Joseph P. Reed, for many years connected with the Arnold Print Works, and J. Mortimer Darby, for eight years traveling salesman for Burlingame & Darbys, and they have opened a new Hardware store in North Adams, Mass. The store has been constructed with a special reference to the needs of a modern Hardware establishment, and the new firm have put in a complete stock of Shelf Hardware and builders' and manufacturers' supplies. The firm opened for business November 1. Mr. Reed is referred to as a gentleman of excellent business qualifications, and while the Hardware business itself is entirely new to him, his partner, Mr. Darby, possesses a large experience in that line, and is regarded as well qualified to conduct it successfully.

E. BISSELL, SON & Co., 12 Murray street and 15 Park place, New York, will on November 14 and 15 conduct a large trade sale of Table and Pocket Cutlery, Carvers, Butcher Knives, Shears, &c. By order of the Emery-Waterhouse Company, in liquidation, they will also dispose of 1500 dozen Cast Steel Axes, assorted weights and brands. A large line of Skates and Silverware will also be offered, as appears by the auctioneers' Special Notice on another page. This is referred to as the last Cutlery sale of the season.

THE CLARK MFG. COMPANY, Buffalo, N. Y., have recently added several styles of surface and mortise Hinges for shutters to their line, including Cottage No. 1, Diamond No. 1, Clark's No. 65, Clark's Dixie L and P, and Clark's Buffalo reversible. A circular under date November 1, 1893, illustrates these and other patterns of Blind Hinges. The company also manufacture cast loose pin Butts, Sash Pulleys, Refrigerator trimmings—brass and bronze, all finishes—also special Hardware for insane asylums.

THE TRADE will note with interest the advertisement of the Capewell Horse Nail Company, Hartford, Conn., in which they illustrate their Capewell Horse Nail, emphasizing especially its tensile strength. Their patent Corrugated Horse Nail, which is also shown, will be regarded with interest.

J. W. VOORHIS & Co. is the style of a firm who, at 23 Warren street, New York, are now carrying on a business similar to that until recently conducted by the Butler Hardware Company at the same point, Mr. Voorhis having been connected with the latter firm. They have secured a portion of the stock held by the other concern and with additions will wholesale and retail Builders' Fine Hardware, Hand Elevators and Dumb Waiters, Hoisting Appliances, Contractors', Railroad and Factory Supplies, Mechanics' fine Tools, Refrigerators, Lawn Mowers, Stable Fittings, &c.

Price-Lists, Circulars, &c.

HENRY B. NEWHALL COMPANY, 105 Chambers street, New York: Supplement No. 1 to catalogue of 1892, covering Coburn's Track and Hangers. The supplement illustrates and describes, with prices, Parlor Door, Barn Door, Car Door, Fire Door and Elevator Door Hangers; Store Ladder Service, Overhead Carrying Track and Automatic Fire Shutter system. Store Ladder Service is given special attention, two styles of Ladders being shown. Coburn's patent Ladders or Steps have rollers at top and bottom, with a track at the top only, and stand across the aisle. Ladders facing shelves are shown for use where there is lack of space between the counter and ledge.

WITHINGTON & COOLEY MFG. COMPANY, Jackson, Mich.: Farm and Garden Tools. Their 1894 catalogue is bound in handsomely embossed paper covers, and contains illustrations, descriptions and prices of their line of goods. The company remark that it is their aim to improve the grades of their goods where possible, and that they exercise a constant vigilance over material, workmanship and design, that there may be no deterioration in the quality of their products.

STEWARD & ROMAINE MFG. COMPANY, 123 North Sixth street, Philadelphia, Pa.: Single and double patent parallel Expansion Bolts. Their 1894 illustrated catalogue and price-list show these goods in a variety of forms for different purposes; also Stirrups or Timber Hangers. Expansion Bolts are designed for use by engineers, builders, machinists, plumbers, railing manufacturers, and for all whose business requires the use of fastenings of great strength, security and easy application.

THE COLUMBIA GRAY IRON COMPANY, Columbia, Pa., with New York office 35 Warren street: Hardware, Iron novelties, House Furnishing Specialties and Toys. An illustrated catalogue and price-list calls attention to the increased line of goods the company are now making, also to the fact that in some instances the price-lists of their former line have been lessened. List prices and illustrations are given of Toy, Tack, Riveting and Upholstering Hammers, Toy Garden Tools, Banks, Hatchets, Hammers, Brackets, Can Openers, Clothes Line Hooks, Harness, Coat and Hat and Pivot Hooks, Drawer Pulls, Barrel Bolts, Latches, Match Safes, Flower Pot Brackets, Shutter Hinges, &c.

STRANSKY & Co., 27 Murray street, New York: Stransky Steel Ware. Illustrations show Cameo Ware; Royal Tea Pots finished in Cameo, inlaid and garnet, also All White Ware. Stransky Steel Ware is referred to as durable, pure, quick cooking and easily cleaned, and is made in all American shapes. A large line of the Cameo Ware is shown, including such goods as are usually found in Enameled Ware. Import orders are taken for Blue and White Ware.

THE B. F. CUMMINS COMPANY, 232-234 South Clinton street, Chicago, for whom E. W. McClellan, 83 Nassau street, New York, is agent: Perforating Machines. Illustrations are shown of Check Perforators, Canceling Machines, Mutilating Perforators, Dating and Receipting Perforators, Consecutive Numbering Perforators, &c.

MORGAN & WRIGHT, 331-339 West Lake street, Chicago, Ill.: Pneumatic Tires. Illustrated pamphlets are devoted to descriptions of the valve, inner tube and the various shapes and sizes of Tires required to accommodate the Tires to all ordinary shapes of rims. Repair Outfit, Pumps and methods of repairing Tires are also illustrated, accompanied by directions.

A. TREDWAY & SONS HARDWARE COMPANY, Dubuque, Iowa: Fall circular for 1893. This is a nicely printed, broad paged pamphlet of 40 pages, calling attention to a large line of goods, such as Axes, Saws, Scoops, Measures, Baskets, Corn Huskers, Metals, Stove Boards, Stove Shovels, Coal Hods, Stove Pipe Registers, Elbows, Lanterns, Washing Machines, Wringers, Coffee Mills, Meat Choppers, Revolvers, Shot, Skates, Mechanics' Tools, &c. The company have special brands of hand Tools made for them which are all branded "Wizard," comprising Axes, Buck Saws, Hand Saws, Hatchets, Nail Hammers, Scythes, Razors, Pocket Knives, Shovels, &c. An order blank and an addressed envelope are inclosed with each circular sent out.

THE NEVERSLIP HORSESHOE COMPANY, Boston, Mass.: Neverslip Horseshoes. In an illustrated catalogue Neverslip Shoes are shown in the various sizes, front and back, also worm calks for the shoes. It is remarked that the Neverslip removable, steel centered and self sharpening calks are made with a core of hardened steel within an outside covering of soft metal; and that whenever the calks

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penetrate the ice or ground, the soft metal tends to wear away faster than the hard core and to leave the center projecting. These Shoes are made for both horses and mules.

It Is Reported—

That D. G. Warfield's Hardware store, at Oakdale, Cal., was destroyed by fire on the 20th ult.

That Wm. H. Lamb recently purchased the Hardware store of E. H. Robinson, at Santa Cruz, Cal. Mr. Lamb originally hailed from Syracuse, N. Y., but for ten years he was engaged in business in South Dakota.

That there is an opening for a Hardware store at Avoca, Mich.

That J. N. Smith has sold out his stock of Hardware at Denmark, Maine, and will retire to his farm.

That H. B. Dowse, West Concord, Vt., has sold out his Tin business to R. S. Brigham.

That O. Bennion of Strykersville, N. Y., has sold his Hardware business to a new firm, under the style of Griggs, Dellinger & Ellis.

That on the 27th ult. the Hardware store and tin shop of W. G. Keith, at Brookfield, Mass., was destroyed by fire. Loss, $12,000; insurance, $6500.

That the Mead Hardware Company's store, at Swanton, Vt., was burglarized on the 21st ult., and $25 worth of goods taken.

That the Elkins Furniture & Hardware Company have been incorporated. The concern are located at Elkins, W. Va., and their stockholders are J. S. Posten, N. G. Keim, W. M. Petingale, W. B. Vana and W. G. Wilson, all of Elkins.

That the Hardware store of M. J. Wilson, Penn Yan, N. Y., was entered by burglars on the 30th ult., and a large amount of Cutlery stolen,

That the new Hardware store of John Nuessle, Hamburg, N. Y., is nearly completed.

That the Hardware store of A. P. Boswell & Co., Coffeyville, Kan., was entered by burglars on the 31st ult., and $163 in cash, negotiable notes to the value of $5000 and certificates of deposit amounting to over $13,000 were secured. Several Revolvers and Razors were added to the booty. Mr. Boswell is the Mayor of Coffeyville.

That F. C. Buell of Earlville, N. Y., and L. W. Farr of Massena, N. Y., have bought out the Hardware business of Tillotson Bros. of Earlville.

That John J. Cardwell, a Hardware merchant of Nebraska City, Neb., was married on the 24th ult. to Miss Bertha McNamar of Hiawatha. The ceremony took place at the latter point.

That the Hardware stores of Charles Halbach & Son and Foxwell & Moyle, Waterford, Wis., were robbed on the 26th ult.

That J. H. Strong has purchased at mortgage sale the Hardware stock of Mr. Woodworth, Onondaga, Mich.

That the W. H. Bartel Hardware business, at South Bend, Wash., has been disposed of to T. R. Brayton of Omaha, Neb., who took possession on October 16.

That E. H. Holmes & Co., Willimantic, Conn., will close out their stock of Stoves, Glassware, Crockery, &c. They will, however, continue the business of plumbing and house heating.

That S. S. Surdam of Oyster Bay, L. I., has removed to Hunt's Corners, Cortland County, N. Y., where he has purchased and will conduct a Hardware store. Mr. Surdam is well known on Long Island, having served two years as school commissioner of the first district, and as such fulfilled his duties to the satisfaction of all.

That Samuel and Edward Junk have bought a two-thirds interest in the Graham Hardware Company, Rio, Ill.

That Robert and Joseph McNutt and William Moore have purchased the Hardware stock of Cooper & Bittle, Maryville, Tenn., and will continue the business at the old stand under the firm name of McNutt Bros. & Moore.

That W. G. Oliver has disposed of his Hardware business at Waupun, Wis., to Lovell & Co.

That the Hardware store of Jones Bros., Little Rock, Ark., was damaged by fire on the 5th inst. to the extent of $48,000.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

There has been very little change in the character of business or in the general condition of the market for leading lines of Paints and Colors. As judged from the reports of distribution by jobbers, the consumption is nearly if not quite up to the average for this season of the year, and grinders have continued to take a very good amount of material used in their line. It is plain, however, that sellers are more anxious than buyers, and prices suffer more or less from this condition of affairs. That is to say, buyers who take round lots of stock on cash terms are shown remarkable favors in the form of special prices or liberal discounts from regular lists. Compared with that of the preceding week, there was room for improvement in the volume of business, although late distribution was generally represented as having been in excess of the movement a month ago.

White Lead.—A somewhat aggresive attitude is continued by corroders not identified with the combine, and, in a few instances, as low as 5¢ net was quoted for Dry White Lead in round lots for future delivery. Manufacturers of "quick process" and Mixed Leads have named prices relatively as low. The "combine" list remains unchanged, but does not appear to be closely adhered to in all quarters. In short, the market is somewhat ragged, with indications that the cheapness of raw material is gradually becoming a more potent factor, tending to bring about lower prices for the pigment. Business has been fair for the season, but spiritless.

Red Lead.—Dealings have been on a moderate scale and the demand at present is slow. Importers name previous prices for round lots, and the old list for domestic brands prevails. Still the market has a rather soft appearance, and small lots may be purchased, from second hands if not elsewhere, at prices somewhat below popular quotations.

Litharge.—Purchases of the low grade article by large consumers have been fairly liberal, chiefly for delivery a month or two ahead. Otherwise business continues to be of commonplace type and is moderate all told. Prices have undergone none but very slight change, but seem to tend a little in buyers' favor.

Orange Mineral.—Business has been of smaller volume and the demand at present is rather slow. Former prices are generally asked, but the market is slightly soft in tone.

Zincs.—Deliveries of domestic Oxide have been fairly large and the indications are that consumption is fully up to the average. New demand is slow, however, and prices barely hold their own. Foreign brands are still more or less unsettled in price and find slow sale in competition with high grade domestic stock.

Colors, &c.—No important changes in prices have taken place during the past week, but the irregularity that has prevailed for some time past continues and it is the exception that lists are not "cut" more or less. Orders have been chiefly for moderate quantities and the demand at present is rather tame.

Oils and Turpentine.

Few new features have developed in the Oil market during the past week. A certain amount of irregularity has prevailed in prices of Cotton Seed and Menhaden products, and Whale Oil has receded in value under the weight of reports of a remarkably good catch this season. Neither strong points nor weak ones have induced dealers or consumers to take hold on a more liberal scale, however, and the market therefore remains in rather uncertain form, with the future dependent in a great measure upon general trade conditions. Speculation is almost at a standstill and without incentive to freer action.

Linseed Oil.—Prices remain precisely as they were a week ago. The tone of the market has not changed. Buyers have taken little or nothing beyond such lines as well defined wants necessitated and crushers have engaged in no new conflicts. Hence a fairly steady, although rather dull, market.

Cotton Seed Oils.—Transactions have been on a smaller scale the past week and demand from all quarters is tame. There is hardly any speculative interest and new export orders seem to be scarce. Fairly liberal quantities of both crude and refined product come upon the market as a matter of course. Prices are kept somewhat irregular thereby, but show no radical change from the figures that ruled a week ago.

Lard Oil.—The higher range of prices established last week has been maintained, since current production of city pressers and receipts from outside sources were closely taken up. Business has been of perfunctory character, however, and the demand at present is very tame.

Fish Oils.—Lower prices have been made on crude Whale Oil, and quotations for the products are lowered proportionately. Thus far the change has not stimulated buying, and the market is dull, as well as weak. The reduction on the manufactured Oils is to the basis of 45¢ for Natural Winter. Sperm Oils have undergone no change in price, but the market is soft and rather dull. Menhaden products have undergone no change in value and find slow sale.

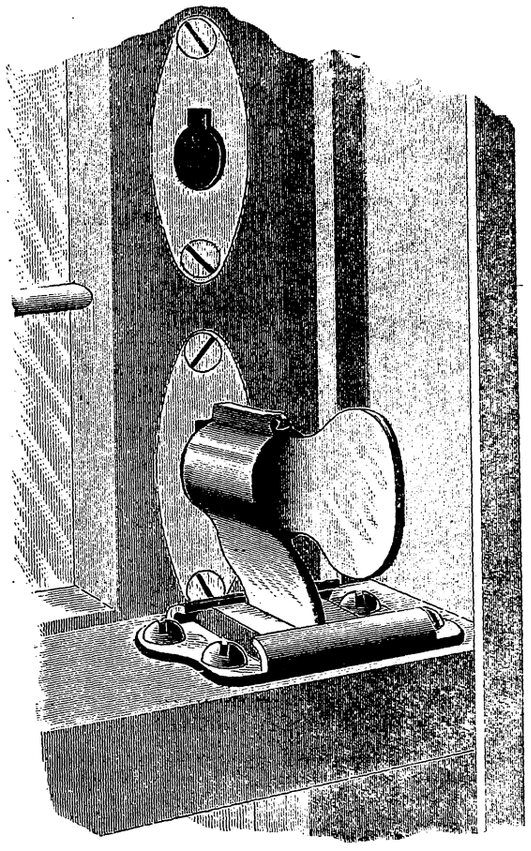
Miscellaneous.—Common Olive Oil in barrels is irregular, with prices ranging from 55¢ @ 57¢ for lots for future shipment up to 60¢ @ 62¢ for spot parcels; the movement is rather slow. Cocoanut Oils are quoted about the same as they were last week, and meet with rather slow sale. Red Oils are unchanged and in moderate demand.

Spirits Turpentine.—Spot supplies have increased somewhat, and there is freer offering also of stock for future shipment. Under the influence of this fact, and merely ordinary demand, prices have receded to 30¢ for regular and 30½¢ for machine barrels.

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Bourke's Ventilating Sash Lock and Fastener.

The accompanying illustration shows a ventilating sash lock and fastener offered by the Bourke Mfg. Company, Youngstown, Ohio. It is made of malleable iron or of bronze metal, and is attached to the sash as shown in the



Bourke's Ventilating Sash Lock and Fastener.

cut. The plate is screwed to the top rail of the lower sash, and the two socket plates are attached to the upper sash at desired intervals. The opposite end of the thumb piece from the one shown corresponds in shape to the opening in the plates into which it hooks. Encircling the hole at the back of each plate is a ridge so shaped that a partial revolution of the thumb piece draws the sash close together at the meeting rails. It is remarked that the device allows the window to be open from either top or bottom, or both, giving perfect ventilation and at the same time securely locking the window; also that drawing the upper and lower sash tightly together, it acts as a weather strip, shutting out rain, wind and dust, and prevents the rattling of the window. It is claimed that the lock is strong and simple in construction, and that having no weak points it will last a lifetime.

B. & M. Corn Knives.

Bruce & Marks Mfg. Company, Gas City, Ind., are offering corn knives, of which illustrations are herewith given. The blade of the Clipper corn knife, Fig. 1, is concaved from the back to the center along its entire length, and has a straight taper from the center to the cutting edge. Thus shaped, the metal gives the knife what the makers term a double back, and is referred to as insuring great strength and stiffness of blade. The blade is as thick at the center as on the extreme back, the object being to evenly distribute the weight of the metal. Another advantage claimed for the even distribution of metal is that it keeps the knife balanced and prevents constant tendency to turn in the hand. It is remarked that the shape of the metal enables a blade to be constructed of considerably less width than is usual, thereby greatly reducing the atmospheric resistance when swinging the knife through the air. The knife is made in three sizes, and although designed for corn cutting it can be used for a variety of purposes. The knife shown in Fig. 2 has a hook for picking up corn that has been blown down, the hook being designed to obviate the necessity of stooping over to lift the corn.

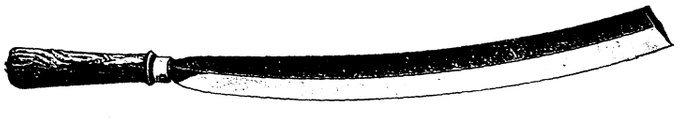


Fig. 1.—The Clipper Corn Knife.

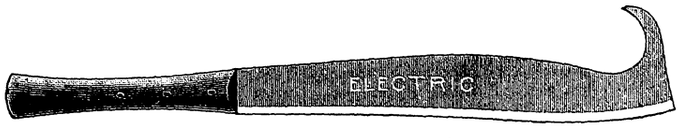


Fig. 2.—The Electric Corn Knife.

Self Piercing Bull Ring.

The self piercing bull ring herewith illustrated is being offered by Peck, Stow & Wilcox Company, Southington, Conn., and 27 Chambers street, New York. The point of the ring, as shown at the top of the cut in Fig. 1, is pointed and has beveled shoulders, the other end of the ring being so cut as to make a perfectly smooth joint when the ends of the ring are joined. The pointed portion of the ring is designed to obviate the necessity of cutting a hole or using an awl previous to inserting the ring in the animal's nose. Fig. 2 represents the flat steel screw driver which accompanies the ring.

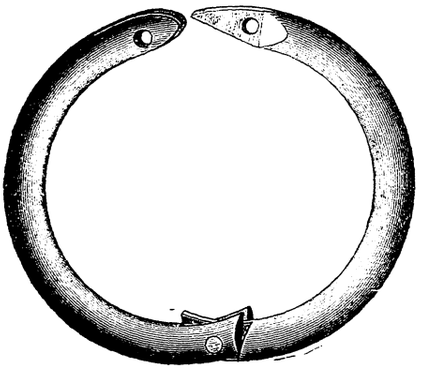


Fig. 1.—Self Piercing Bull Ring.



Fig. 2.—Screw Driver for Self Piercing Bull Ring.

Climax Coal Screens.

The Gilbert & Bennett Mfg. Company, 148 Lake street, Chicago, and 44 Cliff street, New York, have just brought out a coal screen adapted for use either on the side of a car or in a yard. Two illustrations are herewith given, one showing how the Climax screen is secured to a car for screening into a wagon and the other showing how the same screen is adapted for yard use by the addition of a head board and a foot rest. In using it on a car the clamps are secured to the side board and the iron leg adjusts it to the required incline, holding the screen firm and independent of the wagon. If it is wanted to screen from a box car it can be secured to the grain door, or one or two or more planks can be fastened together for the right hight long enough

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to rest against the inside of the door frame. This will also serve to keep the coal from rolling out on the ground. For yard use the clamps are secured to the foot board, and the head board is fastened in position. The screen can be placed at any required incline and

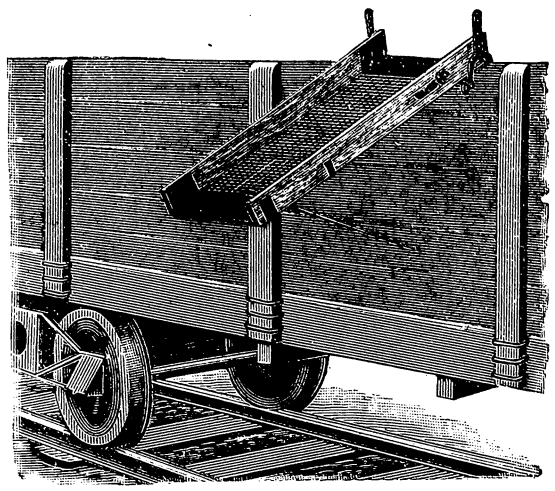


Fig. 1.—Climax Screen on Car.

the clamps secured so the foot board is always vertical, rendering the screen firm to shovel against. The screen will also stand solid. The screens are constructed substantially and at the same time with a view to making them just as light as possible. Double crimped steel cloth is used. The frames are hardwood and covered with heavy sheet iron where the coal rolls down. The sides are strengthened by strong iron braces. The legs and clamps are strong and capable of quick adjustment. There are as few parts as possible to

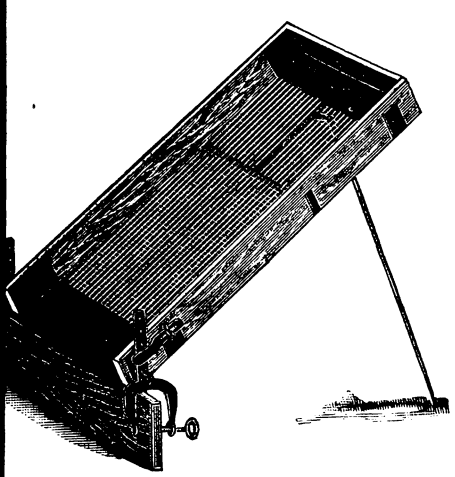


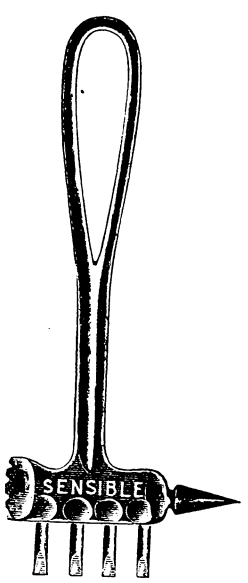
Fig. 2.—Climax Screen for Yard Use.

render the screen complete. All meshes are furnished from $\frac{3}{16}$ inch to 3 inches, but for general use the $\frac{3}{8}$ inch is recommended.

HENRY B. TODD has sold his manufacturing business at Meriden, Conn., to Proudman Bros. of that place, who will in the future supply the trade with the goods formerly made by him, including the Yankee Eave Trough Hangers, Giant Metal Cutter and Meriden Cutting Nippers.

The Sensible Ice Tool.

N. R. Streeter & Co., Groton, N. Y., are offering an ice tool as herewith shown. It is made of cast iron, with sharpened steel points, and measures 9 inches over all. The article is referred to as a combination of an ice pick, chisel, pulverizer and hammer, and as



The Sensible Ice Tool.

being well adapted to use in any of these capacities. The tool is designed to retail for 15 cents.

The Carnegie Steel Company, Limited, have instituted proceedings in the United States Court in Baltimore against the Maryland Steel Company of Sparrow's Point and Frederick W. Wood, their receiver, for alleged infringement of a patent for mixing molten pig metal. The bill of complaint was filed by W. Banewell & Sons and John M. Carter, attorneys, and is signed by H. C. Frick, chairman of the Carnegie Company. It alleges that the patent was obtained by Wm. R. Jones on June 4, 1889, and was afterward assigned to the Carnegie Company.

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Current Hardware Prices.

NOVEMBER 8, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓@33⅓&10%
Excelsior....₩ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Eagle Anvils, ₩ ℔ 9¢.....15@15&5%
Peter Wright's.....11@11½%
Armitage's Mouse Hole.....10½@11¢
Am. Wrought, Horseshoe brand.11@11½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise $3.00.....40&10%
Star .....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—

Common Augers and Bits.....70@70&10%
Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....50%
Russell Jennings' Augers and Bits.25&10%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
Snell's Bits.....60&5%
C. E. Jennings' & Co., No. 10, extension lip 40%
C. E. Jennings' & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32½ quarters, No. 5, $5; No. 30, $3.50.25%
Lewis' Patent Single twist.....45%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
L'Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....15%
Cincinnati Bell-Hangers' Bits.....30&10

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $18.....35@40%
Stearn's No. 2, $48.....20%

Gimlet Bits—

Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25...40&10%
Bee.....25@25&5%
Double Cut:
Shepardson's.....45@45&10%
Ct. Valley Mfg. Co.....30&10%
Hartwell's.....₩ gro.,$10.00..40&10%
Douglass'.....40&10%
Ives.....60@60&10%

Hollow Augers—

Ives', French, Swift & Co. (Beecher), Douglass', Bonney's Adjustable, ₩ doz $48.....33⅓@33⅓ &10%
Stearns'.....50%
Ives' Expansive, each $4.50.....20%
Universal Expansive, each $4.50.....50&5%
Wood's.....20%
Cincinnati Adjustable.....25@25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....25@25&10%
Snell's.....25@25&10%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@1.40
Awls, Handled Brad....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00	$7.50
First qual., other brands	6.50 to 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1 ...3¼@3½¢, No. 2, 5¢@6¢, Nos. 7 to 14.....60&10%, Nos. 15 to 28.....47½%, Nos. 19 to 22.....70%, 3% cash
Concord Axles, loose collar.....4½¢@6¢
Concord Axles, solid collar.....5½¢@7¢
National Tubular Self Oiling.....33⅓%@33⅓&5

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

No.	2000	20	30
Chatillon, ₩ doz.	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10¼-in., $1.80; 12-inch, $2.00; 13¼-inch, $2.50; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Dover.....₩ doz $1.00@$1.20
Duplex (Standard Co.).....₩ doz $1.00
Dover (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)....₩ doz. $3.50
Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ $4.50
Improved Acme (H. & R. Mfg. Co.)....₩ gro. $9.00
Silver & Co.....₩ doz $5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%

Door—

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated.....net
Lever, Taylor's Japanned.....25&10%
Lever, R. & E. Mfg. Co.'s..50&10&2%
Pull, Brook's.....50&10&2%

Electric—

Wollensak's.....20%
Bigelow & Dowse.....20%

Hand—

Light Brass.....70&10@70&10&5%
Extra Heavy.....70%
White.....70%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Miscellaneous—

Call.....45@50%
Farm Bells.....₩ ℔ 3¢&3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Molders'.....40&10@50%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....75@75&10%
Standard.....70&5@70&10%
Extra.....60&10@60&10&10%
N.Y.B.&P. Co., Carbon.....60@60&5%
N.Y.B.&P.Co., Diamond.....50@50&5%
N.Y.B.&P.Co., Para.....40@40&5%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron.60@60&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%
See also *Machines, Hoisting.*

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....80@80&7½%
Genuine Eagle, Norway, list Oct. '84.....80&5@80&10%
Eagle, Norway, list Oct. '84.80&10@80&15
Phila. pattern, list Oct. 7, '84.....80%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....80&10%
Bolt Ends, list Jan. 1, 1890.....80&10%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wrought Square.....70&10@75%
Wr't Shutter, all Iron, Stanley's.....60&10@60&10&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%
Wr't B. K. Flush, Common.....55&10%

Stove and Plow—

Stove.....60&10@60&10&10%
Plow.....60&10&50@60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16 '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Ives' Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20%
Clark's.....33⅓@35%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Boxes, Miter.

Spilker's Excelsior, 3 in. $7.50, 4 in $8 50, 5 in. $13.00, 6 in. $15.00.....20%

Braces—

American Bit Brace and Tool Co.
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber s.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew s,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123. 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Davis Patent.....50&10%

Brackets—

Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting. { Inch..... 9 10 9x11; Per doz...$4.50 5.50 6.50
New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....₩ doz. $12, 50%
Queen City.....33⅓%

Buckets, Well—

Galvanized—

Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers.*

Butts—

Brass—

Wrought Brass.....80@50&10%
Cast Brass, Tiebout's.....50%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts.....
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....
} 75&5@75&10&5

Wrought Steel—

Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Indide Blind, Light.....
Loose Pin.....
} List Jan. 2, 1893, 40@40&10%
Bronzed Wrought Butts.....50@50&10

Cages, Bird—

Hendryx, Brass or Enameled.....50&10%
Hendryx, Wood.....40&10%

Calipers—See *Compasses*

Calks, Toe—

Gautier, One Prong, Blunt.....5½@6¢
Burke's One Prong, Blunt.....6½@6¢
Burke's, Two Prong, Blunt.....7½@8¢
Burke's, One Prong, Sharp.....6½@7¢

Can Openers—See *Openers, Can.*

Cans, Milk—

S S. & Co.: 5-gal., $3.00; 8-gal., $4 40; 10-gal., $4.75 each.....40&10

Cans, Oil—

Galvanized Blue Band, 5 gal., Tip-Top, ₩ doz, $12.00
Galvanized Blue Band, 5 gal , Faucet, ₩ doz., $8.00
Galvanized Blue Band,1 gal.,₩ doz.$2.25
Glass Oil, Friend.....₩ doz.$2.75

Caps—

Percussion—

Hicks & Goldmark's and Union Metalic Cartridge Co. ₩ 1000
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's....47@50¢
Musket. Waterproof, 1-10's.....50@53¢
G. D.....27@30¢
S. B. Genuine Imported.....45¢
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire..$1 60

Primers—

Berdan Primers, $1.00.....2%
B. L. Caps (Sturtevant Shells) $1 00...2%
All other Primers, $1.20.....2%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....25%

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

Rim Fire Cartridges.....50@5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed, Plate, Shallow Socket...	Brass	55@55&10%
	Others	60@60&10%

Deep Socket.....40&10%
Martin's Patent (Phœnix).45&10@50&10%
Tucker's Patent, low list.....45%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Yale Casters, low list.....45%
Yale, Gem.....70%
Giant Truck Casters.....35%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50@50&10%
Gwinner's Common Sense.....45%
Gwinner's Hercules.....45%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised May, 1893.....60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.50	3 40	3.25

Less than cask lots, add1¢@1½¢ ₩ ℔
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12, 1892. 60@60&10%
Covert Halter.....60&2%
Cover tTraces.....35&2%
Cover tHeel Chain.....50&2%
Galvanized Pump Chain.
5 ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.75
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔.....₩ 100 ℔ $7.00
Oneida Halter Chain.....60@60&5%
Jack Chain, Iron and Brass, list July 10, 1893.....60&10%
Barnes' Reinforced Sash.....60&10¢
Barnes' Victor Sash.....65¢

Chalk—

See also Crayons.
White, case lots..₩ gr 50¢; small lots, 52¢
Red, case lots...₩ gr 67¢; small lots, 72¢
Blue, case lots...₩ gr 75¢; mall ots 80¢

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Chalk Lines—See *Lines.*

Checks, Door—
Unity 50%

Chisels—
Socket Framing and Firmer
P. S. & W ..... }
New Haven ..... }
Witherby ..... } 75&10@75&10&10%
Mix ..... }
Ohio Tool Co. ..... }
Douglass ..... 75@75&5%
Buck Bros 30%
Merrill ..... 60&10@60&10&5%
L. & I. J. White ..... 30@30&5%

Tanged and Miscellaneous.
Tanged Firmers ..... 50@50&10%
Butchers' ..... $4.75@$5.00 to £
Spear & Jacksons' ..... $5 to £
Buck Bros 30%
Cold Chisels, fair quality, ℔ lb ..14@16¢

Chucks—
Beach Pat. ..... each, $8.00 ..... 20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury ..... each, $6.00, 30@30&5%
Syracuse, Balz Pat 25%
Graham Patent 33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.
Victor $8.50, 25%
Combination 40%
Vniversal 40%
Independent 40%

Churns—
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.

Clamps—
R. I. Tool Co.'s Wrought Iron 25%
Adjustable, Cincinnati ..... 15&10%
Adjustable, Hammers ..... 15@15&5%
Adjustable, Stearn's ..... 30@30&10%
Stearn's Adjustable Cabinet and Corner ..... 30@30&10%
Cabinet, Sargent's ..... 70&10%
Carriage Makers', Sargent's .. 75@75&5%
Carriage Makers', P., S. & W Co .. 40&10%
Eberhard Mfg. Co ..... 40&5@40&10%
Warner's ..... 40&10@40&10&5%
Saw Clamps, see Vises, Saw Fliers'.
Carpenter's, Cincinnati ..... 25&10%
Barnes' Machinists' Clamps 33⅓%

Cleavers, Butchers'—
Bradley's ..... 25@30%
L. & I. J. White ..... 20&5%
Beatty's ..... 40@40&5%
New Haven Edge Tool Co.'s 40%
P., S. & W ..... 33⅓&5@33⅓&10%
Foster Bros 30%
Schulte, Lohoff & Co ..... 40@40&5%

Clips—
Norway, Axle, ¼ & 5-16 ..... 55&5&5%
2d grade Norway Axle, ¼ & 5-16 ... 65&5%
Superior Axle Clips ..... 60⅔&5@70%
Norway Spring Bar Clips, 5-16 ... 60&5&5%
Wrought Iron Felloe Clips ..... ℔ lb, 5½¢
Steel Felloe Clips ..... ℔ lb, 5¢
Baker Axle Clips 25%

Cloth and Netting, Wire
—See *Wire, &c.*

Cockeyes 50%

Cocks Brass—
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.) ..... 60&2@60&10

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Chapman Mfg. Company, new list 40%
Medford Fancy Goods Co ..... 40&10@50%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list 40%
Brass, Pope & Steven's list 40%

Combs, Curry—
Fitch's ..... 50&10@50&10&10%
Rubber, per doz., $10.00 ..... 25%
American Curry Comb Co. ..... 33⅓@40%
Kohler's Magic Oscillating ... ℔ doz., $2.00
Kohler's Humane ..... ℔ doz., $1.75

Compasses, Dividers &c.
Compasses, Calipers, Dividers. 70&10@75%
Bemis & Call Co.'s
Dividers 65%
Compasses ..... 50&5%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Calipers, Double 65%
Calipers, Call's Patent Inside 55%
Excelsior 50%
Stevens & Co.'s ..... 25&10%
Starrett's
Spring Calipers and Dividers .... 25&10%
Lock Calipers and Dividers 25%
Combination Dividers 25%

Coolers, Water—
S. S. & Co.: 2-gal., $2.00; 3-gal., $2.50; 4-gal., $2.75; 6-gal., $3.40 each 33⅓%

Coopers' Tools—
See *Tools, Coopers'.*

Cord—

Sash—
Common ..... ℔ lb, 8½@9¢
Patent, good quality ..... ℔ lb, 10@11¢
White Cotton Braided, fair ... ℔ lb, 23@24¢
Common Russia Sash ..... ℔ lb, 12½@13¢
Patent Russia Sash ..... ℔ lb, 13½@ 14¢
Cable Laid Italian Sash ..... ℔ lb, 19@20¢
India Cable Laid Sash .... ℔ lb, 11½@12¢
Silver Lake—
A quality, White, 50¢ 25%
A quality, Drab, 55¢ 25%
B quality, White, 30¢ 10%
B quality, Drab, 35¢ 10%
Sylvan Spring, Extra Braided, White. 34¢
Sylvan Spring, Extra Braided, Drab .. 33¢
Semper Idem, Braided, White ..... 26¢
Egyptian, India Hemp, Braided ..... 26¢
Massachusetts, White ..... 25¢
Samson—
Braided, White Cotton ..... ℔ lb, 37¢
Braided, Drab Cotton ..... ℔ lb, 42¢
Braided, Italian Hemp ..... ℔ lb, 40¢
Braided, Linen ..... ℔ lb, 56¢
Tate's Solid Braided—
Hercules, White ..... ℔ lb, 25¢
Hercules, Drab ..... ℔ lb, 30¢
Economy, Drab ..... ℔ lb, 27¢
Economy, White ..... ℔ lb 22¢
Ossawan Mills—
Braided, Giant, White, ℔ lb 30¢ 20%
Braided, Giant, Drab and Fancy, ℔ lb 35¢ 10%
Braided, Crown White, ℔ lb, 50¢ ... 50%
Braided, Crown Drab and Fancy, ℔ lb, 55¢ 30%

Wire Picture—
Braided or Twisted ..... 80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers Nut—
Table (H. & B. Mfg. Co) 40%
Blake's Pattern, ℔ doz., $2.00 ..... 10%
Turner & Seymour Mfg. Co 50%
Acme.
Japanned, ℔ gro., $30 ..... 50%
Nickel Plated, ℔ gro. $30 ..... 10%

Cradles—
Grain ..... 50&2@50&5&2%

Crayons—
White Crayons, ℔ gross ..... 7@8¢
D. M. Stewart Mfg. Co.:
Metal Workers', ℔ gross, $1.75 ..... 25%
Rolling Mill, ℔ gross, 2.50 ..... 25%
Railroad, ℔ gross, 2.00 ..... 25%
Soapstone Pencils, ℔ gross, 1.00 ..... 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—
See *Combs, Curry.*

Curtain Pins—
See *Pins, Curtain.*

Cutters—

Meat—
Dixon's, ℔ doz. ..... 40@40&5%
Nos. 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Woodruff's, ℔ doz. ..... 40@40&5%
Nos. 100 150
$15.00 $18.00
Hale's, ℔ doz. 70%
Nos. 11 12 13
$27.00 $33.00 $45.00
American 35%
Nos. ..... 1 2 3 4 B 5
Each $5 $7 $10 $25 $50 $60
Enterprise 25%
Nos. 10 12 22 32 42
Each $3 $2.50 $4 $6 $15
Little Giant, ℔ doz. ..... 40@10@50%
Nos. 305 310 312 320 322
$35.00 $48.00 $44.00 $72.00 $68.00
Triumph No. 505, ℔ doz., $21.00 .. 25@30%
Miles' Challenge, ℔ doz. ..... 45@45&10%
Nos. 1 2 3
$22.00 $30.00 $40.00
Home No. 1, ℔ doz., $26.00 ..... 55&10%
Draw Cut, each:
Nos. 5 2 6 8
$50 $75 $80 $225 ..... 20@25%
Beef Shavers (Enterprise) 20%
Chadborn's Smoked Beef Cutter, ℔ doz., $66.00

Slaw and Kraut—
Tucker & Dorsey Mfg. Co.:
Slaw Cutters, 1 Knife, ℔ gross .. $21.00
Slaw Cutters, 2 Knife, ℔ gross ... 30.00
Kraut Cutters 40%

Tobacco
Champion ..... 20&10@30%
All Iron ..... ℔ doz., $4.25
Nashua Lock Co.'s .. ℔ doz., $18.00, 50@55%
Wilson's 55%
Sargent's ..... ℔ doz., $24.00, 55&10
Acme ..... ℔ doz., $20.00, 40%

Washer—
Smith's Pat. ... ℔ doz., $12.00, 20&10&10%
Johnson's ..... ℔ doz., $11.00, 33⅓%
Penny's .. ℔ doz., Pol. $14; Jap'd, $16, 55%
Appleton's ..... ℔ doz., $16.00, 60&10%
Bonney's ..... 30&10%
Cincinnati ..... 25&10%

Diggers, Post Hole, &c.—
Samson, ℔ doz., $34.00 ..... 25@25&10%
Fletcher Post Hole Augers, ℔ doz., $36.00, 20@20&10%
Eureka Diggers .... ℔ doz. $12.00@$13.00
Vaughan's Post Hole Auger, ℔ doz., $8.50@$9.50
Kohler's Little Giant ..... ℔ doz., $18.00
Kohler's Hercules ..... ℔ doz., $14.00
Kohler's Invincible ..... ℔ doz., $12.00
Kohler's New Champion .... ℔ doz., $8.00
Scheidler ..... ℔ doz., $18.00
Cronk's Post Bars, ℔ doz., $60.00, 50&5@50&10%
Gibb's Post Hole Digger .... ℔ doz., $15.00
Gibbs' National ..... ℔ doz., $12.00
Gibbs' Columbia ..... ℔ doz., $13.00
Gibbs' Imperial ..... ℔ doz., $7.50
Shimer's Hollow Handle .. ℔ doz., $24.00, 50%
Gem, Improved ℔ doz.., $9.00@$10.00 net

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers.
Money, ℔ doz. ..... $18@$20
Waddel's Improved, ℔ doz. $15.00

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Blacksmiths' ..... each $1.75
Blacksmiths' Self-Feeding, each $7.50 20%
Breast, P. S. & W ..... 40&10%
Breast, Wilson's ..... 30&5%
Breast, Milliers Falls ..... each $3.00, 25%
Breast, Bartholomew's .... each $2.50, 25&10@40%
Ratchet, Merrill's ..... 20@20&5%
Ratchet, Ingersoll's 25%
Ratchet, Parker's ..... 20@20&5%
Ratchet, Whitney's ..... 20&10%
Ratchet, Weston's ..... 20@25%
Ratchet, Moore's Triple Action .... 25@30%
Ratchet, Curtis & Curtis 30%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00 ..... 20&10%
Automatic Boring Tools ..... $1.75@$1.85
Chicopee Automatic Drill ..... 20&10%
Goodell Automatic Drills ..... 40&5%

Twist Drills—
Cleveland ..... 50&10&10%
Diamond, W. & B ..... 50&10&10%
Graham's Pat. Groove Shank. 50&10&10%
Morse ..... 50&10&10%
New Process ..... 50&10&10%
Standard ..... 50&10&10%
Syracuse (Metal list) ..... 50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Douglass Mfg. Co. ..... 20@20&10%
Disston's 50%
Buck Bros 30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles ..... 65&10%
No. 86 ..... 70&10%
Sargent & Co.'s
No. 1, Forged Blade ..... 60&10&10%
Nos. 20, 40 and 60 ..... 66⅔&10&10%
P. S. & W 70%
Knapp & Cowles
No. 1 ..... 60&20@70%
No. 2 ..... 60&10&10@70&5%
No. 3 ..... 60&5@60&10%
Nos. 4 and 00, Acme and Ideal .. 50&5@50&10&5%
Stearns' ..... 25&10&5%
Gay & Parsons 35%
Champion ..... 25&10%
Clark's Pat ..... 30@33⅓%
Ellrich's Socket and Ratchet .. 25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense .. ℔ doz., $6.00, 25&10%
Syracuse Screw-Driver Bits ..... 30&30&5%
Screw Driver Bits ..... ℔ doz., 50@75¢
Screw Driver Bits, Parr's .. ℔ gross, $6.25
Fray's Hol. H'dle Sets ... No. 3, $12.00, 45%
Cincinnati ..... 25&10%
Brace Screw Drivers ..... 25&10%
Buck Bros.' Screw Driver Bits .... 27½&5%
Goodell's Automatic 50%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
C. T. Williamson Wire Novelty Co 50%

Egg Beaters—See *Beaters, Egg*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF.

	46 gr.	150 gr.	F.FF.
Kegs, ℔ lb	4½¢	5 ¢	2½¢
½ kegs, ℔ lb ...	4¾¢	5½¢	2¾¢
¼ kegs, ℔ lb ...	5 ¢	5½¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6½¢	5 ¢
10-lb cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—
Door Lock .... Same dis. as Door Locks.
Brass Thread ..... 60@60&10%
Wood 25%

Expanded Metal—
List No. 5.
Lathing 10%
Fencing, Painted Sheets 20%
Netting, Painted Sheets 20%
Door Mats, Galvanized 25%
Window Guards, Paneled 15%
Tree Guards, Paneled 15%

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Mackrell's, ℔ doz., $1.00 ..... 20@20&10%
Van Sand's Screw Pat, $15 ℔ gr. 60&10%
Van Sand's Old Pat., $15 ℔ gr. .... 55&10%
Austin & Eddy No. 2008 ..... ℔ gr., $9.00
Security Gravity ..... ℔ gr., $9.00
Zimmerman's ..... 50&10%

Faucets—
Fenn's 40%
Fenn's Cork Stops 33⅓%
Star 60%
Frary's Pat. Petroleum 60%
B. & L. B. Co.
West's Lock, Open and Shut Key .. 50%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list .. 60%
Metallic Key, Leather Lined .... 60&10@60&10&10%
Cork Lined ..... 70&5@70&10%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots .... 50&10%
John Sommers'
Peerless Best Block Tin Key 40%
LXL, 1st quality, Cork Lined 50%
Diamond Lock 40%
Perfection, Fla. Red Cedar (in boxes) 40%
Boss Metallic Key 50%
Reliable Cork Lined 60%
O. K. Western Pattern Cork Lined .. 50%
No Brand, Red Cedar (in bbls.) .. 50&10%
Western Pattern Metal Key 40%
No Brand Metal Key 60%
Self Measuring
Enterprise, ℔ doz., $36.00 ..... 20%
Lane's ℔ doz., $36.00 ..... 25&10%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—
Derby and Cincinnati ..... 45&5%
Brewster ..... 50&5%

Files—

Domestic—
Nicholson Files, Rasps, &c. 60&10&5@60&10&10%
Nicholson (X.F.) Files 25%
Nicholson's Royal Files (Seconds) 75%
(extra prices on certain sizes.)
American ..... 66⅔&10@66⅔&10&5%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Arcade ..... 60&10&5@60&10&10%
Eagle ..... 60&10&10@70%
Other makers, best brands .. 60&10&5@70%
Fair brands ..... 70&10@70&10&10%
Second quality ..... 80@80&5%
Heller's Horse Rasps ..... 50&10@60%
McCaffrey's Horse Rasps ..... 50&10%
Chelsea Horse Rasps, Hand Cut .. 50&10%
Arcade Horse Rasps ..... 60&10@60&10&5%
Trojan Horse Rasps ..... 60&10&5%

Imported—
Butcher ..... Butcher's list, 20%
Stubs ..... Stubbs' list 75@80%

Fixtures Grindstone—
Sargent's Patent ..... 70&10%
Reading Hardware Co ..... 30&10%
P., S. & W. Co ..... 50&10%
Moore's 55%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Hay, Manure, &c. Asso. List, 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—

Saw—
White Vermont .... ℔ gro., $9.00@$10.00
Red, Polished and Varnished .... ℔ doz., $1.50, 25%

Screen, Window and Door—
Porter's Pat. Window and Door Frame, 33⅓&10%
Warner's Screen Corner Irons .. 33⅓&10%
33⅓&10%
Stearns' Frames and Corners. 25@25&10%
Cortland ..... 40@40&5%
Phillips' Window Screen Frames .... 50@50&5%
Bonanza Window Screens .. 50&5@50&10%
Empire Fancy Screen Doors, ℔ doz .. $12

Freezers Ice Cream—
White Mountain ..... 60@60&5%
Granite State ..... 65@65&5%
Arctic ..... 70@70&5%
American 60%
Buffalo Champion ..... 65@65&5%
Shepard's Lightning ..... 65@65&5%
Gem 65%
Blizzard 70%
Double Action Crown 60%
Crown 60%
Star 60%
Peerless ..... 60&10%
Giant 60%
Zero 70%
Boss and Pet ..... 60&10&10%
Keystone, P., D. & Co., each, $1.50 .... 20%
Standard ..... 60@60&5%
Standard Double Action ..... 60@60&5%
Good Luck ..... 65@65&5%
Model ..... 60@60&5%
Confectioners' Machine 50%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fruit Pickers—
See *Pickers, Fruit.*

Fry Pans—See *Pans, Fry.*

Funnels—
Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro 30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz 25%

Furnaces, Soldering—
Burgess No. 3 Gem tin reservoir .. $7.00
Burgess No. 3 Gem, Copper reservoir. $8.50
Clayton & Lambert No. 1 Fire-Pot, complete $6.00

Fuse—Dis. 12½@15%. ℔ lb 1000 ft
Common Hemp Fuse, for dry ground. $2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground .. 3.85
Double Taped Fuse, for very wet gr. 4.80
Triple Taped Fuse, for very wet gr. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water 12.00

Gates Molasses—
Stebbin's Pattern ..... 80&10@80&10&5%
Stebbin's Genuine ..... 60&10&10%
Stebbin's Tinned Ends ..... 40&10%
Lincoln's Pattern ..... 70@70&10%
Weed's ..... 20&10%
Boss, ℔ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 ..... 60&10&10%

Gauges—
Marking, Mortise, &c. ..... 60&10%
Starrett's Surface, Center and Scratch, 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 20&10%
Barrett's Comb. Roller Gauge ..... ℔ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale ..... ℔ doz. $5.00
Without Scale ..... ℔ doz., $4.00
Wire, Wheeler, Madden & Co 10%
Wire, Morse's 25%
Wire, Brown & Sharpe's ..... 10@20%
Wire, P., S. & W. Co ..... 10&10%

Gimlets—
Nail and Spike ..... 50&10&5%
Eureka Gimlets ..... 60&10%
Diamond Gimlets ..... ℔ gr $5.00
Double Cut, Shepardson's ..... 45@45&5%
Doub e Cut, Ives' ..... 60@60&5%
Double Cut, Douglass' ..... 40&10%

Glue—
Le Page's Liquid ..... 25@25&5%
Upton's Liquid 35%
Improved Process ..... 25@25&5%
Dodd's Liquid Glue ..... 25@25&5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Fraser's ..... Keg ℔ lb 4¢, Pail ℔ lb 5¢
Fraser's, in boxes ..... ℔ gr $9.50
Dixon's Everlasting, in bxs. ℔ doz 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting ... 10-lb pails, ea. 85¢
Lower grades, special brands. ℔ gr $5.50@$7 00
Axleine, tin boxes ..... ℔ gross $12.00
English Coach, wooden boxes ..... ℔ gross $8.50
English Coach, 5-lb tin pails. ℔ doz, $3.50
Tiger, wooden boxes ..... ℔ gross $7.00
Tiger, 5-lb tin pails ..... ℔ doz $2.85

Grindstones—
Family, regular list 60%
Family, Cleveland Stone Co 20%

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
Sewing, Brass Fer. ℔ gr $1.75
Pat. Sewing, Short. ℔ doz ..... 45@50%
Pat. Sewing, Long ..... ℔ doz $1.20
Pat. Peg, Plain Top. ℔ doz ..... 40@45%
Pat Peg Leather Top. ℔ doz 45@50

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Halters—
Covert's Rope, Jute.....60&10&10&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ¼-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Saddlery Works Halters...33⅓&%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓&%
Covert's Saddlery Works Handy Web Halters.....33⅓&%

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.....
Humason & Beckley.....
Atha Tool Co.....
Verree.....
} ....50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles, new list.....25&10
Peck, Stow & Wilcox.....35@40%
Sargent's.....40@40&10%

Heavy Hammers and Sledges—
3 ℔ and under...℔ ℔40¢ } 75&10@75&10
3 to 5 ℔.....℔ ℔36¢ } &5%
Over 5 ℔.....℔ ℔30¢ }
Wilkinson's Smiths.....10½¢@11¢℔ ℔

Handcuffs and Leg Irons
—See *Police Goods.*

Handles—
Cross-Cut Saw Handles—
Atkins', new list.....40%
Champion.....15%
Ely's Perfection.....℔ doz., $3.00
Sensible.....40%

Iron, Wrought or Cast—
Door or Thumb.
Nos..... 0 1 2 3 4
Per doz....$0.90 1.00 1.08 1.35 1.50
60&10&10%
Roggin's Latches.....℔ doz 30¢@35¢
Bronze Iron Drop Latches..℔ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Barn Door, ℔ doz $1.40.....10&10%
Chest and Lifting.....70@70&10%

Wood—
Saw and Plane.....40&10@50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Brad Awl.....℔ gr $2.00
Hickory Firmer Chisel, ass'd. ℔ gr 4.50
Hickory Firmer Chisel, large. ℔ gr 5.00
Apple Firmer Chisel, ass'd...℔ gr 5.00
Apple Firmer Chisel, large...℔ gr 6.00
Socket Firmer Chisel, ass'd..℔ gr 3.00
Socket Framing Chisel, ass'd.℔ gr 5.00
J. B. Smith & Co.'s Pat File.....50%
File, assorted.....℔ gr 2.75 } 50%
Auger, assorted.....℔ gr 5.00 }
Auger, large.....℔ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....℔ set $1.25
Pat. Auger, Swan's.....℔ set $1.00
Hoe, Rake, Shovel, &c.....60@60&5%

Hangers—
Barn Door, old patterns.....70@70&5%
Barn Door, New England.....70@70&5%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Steel Track.....55%
Champion.....60&10%
Climax Anti-Friction.....55%
Zenith for Wood Track.....55%
Sterling.....50&10@60%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Kidder's.....50@50&10%
Boss.....60&10@60&10&5%
Best Anti-Friction.....60&10@60&10&5%
Duplex (Wood Track).....60&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Ideal.....50&10@50&10&5%
Terry's Solid.....50&10@60%
Terry's Shield.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Cronk's Patent, Steel Covered.....50&10%
Carrier Steel Anti-Friction.....50&10%
Richards'.....30@30&10%
Lane's New Standard.....50@50&5%
Lane's Standard.....50&5@50&10%
Lane's Parlor.....40%
Warner's Pat.....20&10&10%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Cincinnati Nos. 1, $2.25; 3, $2.50; 4, $2.50
Paragon Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15. 40&10@50%
Chicago Anti-Friction.....30&10%
Star.....40&10@40&10&5%
Barry.....50%
Interstate.....50&10@60%
Pendulum, Payson's.....40@40&10%
Moody.....45%
Economy, $6.00.....50&10%
Perfection.....50&10@50&10&5%
Lundy, Steel Parlor.....40%
Matchless.....50&10%
Magic.....45&10%
Wild West.....45&10%
Moore's Elevator.....33⅓&%
Moore's Baggage Car Door.....33⅓&%
Moore's Railroad.....55%

Harness Snaps—See *Snaps.*

Hatchets—
American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's.....
Mann's.....
Peck's.....
Underhill's.....
} 40 & 10 @ 40 & 10 &5%
Fayette R. Plumb.....
C. Hammond & Son.....
Kelly's.....
Buffalo Hammer Co.....
Sargent's & Co.....
P. S. & W. Co.....
Schulte, Lohoff & Co.....
Ten Eyck Edge Tool Co.....
} 50 @ 50 &10%
Collins.....10%

Hay and Straw Knives
See *Knives.*

Hinges—
Blind Hinges—
Parker.....75@75&10%
Huffer.....50%
Clark's Nos. 1, 3, 5, 40 and 60 80&5@80&10%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 12, 13.75@75&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's.
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's, Lull & Porter, Nos. 0, 1, 1¼, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—
Western.....℔ doz $4.20, 60@60&10%
N. E.....℔ doz $7.80, 60@60&10%
N. E. Reversible ℔ doz..$5.60, 6(@60&10%
Clark's, Nos. 1 2, 3.....60&10&5%
N. Y. State.....℔ doz $4.90,60@60&10%
Automatic.....℔ doz $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—
Geer's Spring and Blank Butts....40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's Japanned.....35%
Bommer's All other Kinds.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent Checking.....15%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem and Star.....20%
Oxford.....20%
Royal.....66⅔%
Reliable.....60%
Champion.....60%
} Extra 5@10% often given.
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ℔ gro., $30.....50&5%
Samson.....60@60&7½%
Wiles', No. 1, ℔ gro., $16; No. 2.....$13
Devore, No. 1.....℔ gro , $13.00
Rex.....℔ gro., $13.00
Freeport.....℔ gro., $12.00
New Idea Nos. 1 and 10....℔ gross $13.00
New Idea Dbl. Acting.....45%
Ideal No. 3.....℔ gross $10.00
Stearns' Noiseless Floor Hinge, ℔ set, $5.00.....20&10@30%

Wrought Iron Hinges—
List February 14, 1891.
Strap and T.....50&10@50&10&10%
Corrugated Strap and T.....50&10&5%
Screw Hook and Strap { 6 to 12 in., ℔ ℔.. 4¢ / 14 to 20 in., ℔ ℔..3½¢ / 22 to 36 in., ℔ ℔.. 3¢
Screw Hook and Eye.... { ½ in., ℔ ℔ 7½¢ / ⅝ in., ℔ ℔ 5½¢ / ¾ in., ℔ ℔ 4½¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 252 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges { 8, 10 & 12 in., ℔ ℔.....5¢ / "Providence" { over 12 in. ℔ ℔.....4¢

Hoes—
Eye—
D. & H. Scovil.....20%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat } 60&5
Am. Axe and Tool Co., S. & O. Pat... } @60&10%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—
Garden, Mortar, &c.....70@70&5&2%
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%
Magic.....℔ doz $4.00

Hog Rings and Ringers—
See *Rings and Ringers—*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow-Ware—
See *Ware, Hollow.*

Holders—
Bag—
Sprengle's Pat.....℔ doz $18....60%

Bit—
Extension.
Barber's, ℔ doz $15.00.....40@40&10%
Ives, ℔ doz $20.00.....60&5@60&10%
Diagonal.....℔ doz $24.00, 40%
Angular.....℔ doz $24.00, 40&5%

File and Tool—
Bals Pat.....℔ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—
Motley's Adj. Sash, Medium Size..... ℔ doz $1.20, 40%

Hooks—
Cast Iron—
Bird Cage, Sargent's List....
Bird Cage, Reading.....
Clothes Line, Sargent's list..
} 60&10&10%
Clothes Line Moore's.....70%
Clothes Line, Reading list. 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading. 50&10@50&10&10%
Coat and Hat, Moore's.....70%

Wrought Iron—
Cotton.....℔ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg.Co....50%
Wrought Staples Hooks, &c. See Wrought Goods

Wire—
Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....80&15@80&20%
Atlas, Coat and Hat.....65%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Bright Wire Goods—See Wire.

Miscellaneous—
Grass,No.2, $2.00; No.3, $2.10; No. 4, $2.25
Nolin's Grass.....℔ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—
See *Shoes, Horse.*

Hose, Rubber—
Competition, Fair quality.....75@75&10%
Competition, Low Grade.....80@80&10
Standard.....70&10&70@10&5%
Extra.....60&10@60&10&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40&5@50%
N. Y. B. & P. Co., Dundee.....60@60&5%
Cotton Garden, ¾ in., coupled:
Fair Quality, ℔ ℔.....7¢
Good Quality, ℔ ℔.....8½¢

Huskers—
Blair's Adjustable.....℔ gr $8.00
Blair's Adjustable Clipper.....℔ gr 7.00
Hubbard's Solid Steel.....℔ gr 4.50

Indurated Fiber Ware—
See *Ware, Indurated Fiber.*

Irons.
Sad—
From 4 to 10, at factory....℔ 100 ℔, $2.30@$2.40
Self-Heating.....℔ doz $8.00
Self-Heating Tailors'.....℔ doz $18.00
Mrs. Potts' Sad Irons, per set:
No. 50 55 60 65
Small lots.....90 .85 1.05 .95
Crown Improved.....60&10%
Ideal Irons, new list...60&10@50&10&10%
Salamander Irons.....25%
B. B. Sad Irons, ℔ ℔.....3@3½¢
Chinese Laundry (N.E.Butt Co.).8½¢, 15%
New England.....5¢, 20@20&5%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓&%
National Self-Heating.....30%

Soldering—
Soldering Coppers.....℔ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%
Tinker's Dread..℔ doz $1.75; ℔ gro. $18

Pinking—
Pinking Irons, ℔ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—
Daisy.....33⅓&%
Victor.....33⅓&%
Lockport.....40%

Kettles—
Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Stamped Brass Kettles.....℔ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—
Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.
Wilson's Butcher Knives, List Dec 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AA A1 Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....25@30%
Ames' Bread Knives, ℔ doz $1.50, 15@20%
Moran's Shoe and Bread.....20@20&10%
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—
Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—
Witherby.....
P., S. & W.....
Mix.....
New Haven.....
} ...75@75&10&5%
Merrill.....60&10@60&10&5%
Douglass.....75&75@5%
Watrous.....15&10@25%
L & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓&
Wilkinson's Folding.....25@25&5%

Hay and Straw—
Lightning, from jobbers....$7.50@$8.50
Wadsworth's.....40&7½&@40&10%
Carter's Needle...℔ doz. $11.00@$11.50
Heath's.....℔ doz. $13.00@$13.50
Nolin's Hay.....℔ doz. $7.00@$8.00

Mincing—
Am. (2d quality), ℔ gr., 1 blade, $7
2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ℔ doz., Single, $2; Double $3 45&50%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable....℔ doz. $3.00, 33⅓&

Knobs—
Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nicke.l...$2.00@$2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885..40%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....℔ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladders.
Davies Extension and Single.....20&5%

Ladles—
Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, P., S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—
Tubular—
Regular, with Guard.....℔ doz $3.50
O. K., with Guard.....℔ doz $3.75
Side Lift, with Guard.....℔ doz $4.00
Square Lift, with Guard.....℔ doz $4.25
Anti-Friction, with Guard....℔ doz $4.5
Brass Plated, Sq. Lift, Guard.℔ doz $5.5
Cop. Plated, Sq. Lift, Guard..℔ doz $ 5.

Bull's Eye Police—
2¾-inch regular.....℔ doz $3.60
3-inch regular.....℔ doz $3.90
2¾-inch flash light.....℔ doz $4.00
3-inch flash light.....℔ doz $4.50

Lawn Mowers—
See *Mowers, Lawn.*

Leaders, Cattle—
Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—
See *Squeezers, Lemon.*

Lifters, Transom—
Wollensak's:
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Class 3 and 4, Brass.....50%
Skylight Lifters.....35%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....60@60&10%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's:.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—
Cotton and Linen Fish.....50%
Chalk.....60%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ℔ gro.....25%
Mason's Linen, No. 3½, $1.50; No 4, $2.00; No 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes..Nos. 18 19 20
100 ft.....$3.50 $3.00 $2.50
Ventilator Cord. Samson Braided, White or Drab Cotton..℔ doz $7.50..20%
Ossawan Mills, Chalk, Twisted, 60%; Chalk, Soft Braided, 50% Chalk, Braided, 25%.

Links, Open—
Terry's—per gro.:
Nos..... 1 2 3 4
$6.00 8.00 12.00 16.00

Locks, &c.—
Cabinet—
Eagle, Gaylord Parker and Corbin... } List, March '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Champion Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&10%
Champion Cab. and Combin.....33⅓&
Yale.....net prices
Romer's.....25%

Door, Locks, Latches, &c
R. & E. Mfg. Co., list Mar.20, 1889..... } 60&10@70% Much lower net prices often made
Mallory, Wheeler & Co. list July, '88.....
Sargent & Co., List Aug. 1, '88 }

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Britain, Graham & Mathes, list Jan. 1890.....60&10&10%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Warner's Burglar Proof. ₱ doz. $8.00, 50%

Elevator—

Moore's.....33⅓%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list....50&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505.....15%
A. E. Deitz.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₱ doz $9, 50@50&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Scandinavian.....90&40%
E. T. Fraim's Keystone Scandinavian,
1010 line.....90&40%
120 line.....90&25%
109 line.....65%
510 line.....70&10%
225, 610 and 209 lines.....70%
All other numbers.....50&5%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker, Barry & Co.
No. 1010 line.....90&5%
No. 41 line.....50%
No. 61 line.....60%
No. 21 line.....80%

Sash, &c.—

Clark's No. 1, $10; No. 2, $8 ₱ gr.....33⅓&%
Ferguson's.....33⅓&%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓&%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₱ gr $4.00
Common Sense, Nickel Plated. ₱ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Ives' Patent.....60&10&5@60&10&10%
Fish (Liesche's pat.), No. 100, ₱ gr., $8; No. 105, ₱ gr., $10.....50%
Davis Bronze. Barnes Mfg. Co.....60%
Champion Safety list January, 1893.70&5%
Security.....70%
Giant, list Jan., 1892.....70&5%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—

See *Tools, Lumber.*

Lustro—

Four-ounce bottles.....₱ doz, $1.75; ₱ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.
Douglas	$5.50	$6.75	50%
Snell's, Rice's Pat.	5.50	6.75.	40&10&10%
Jennings'	5.50	6.75.	50@50&5%
Other Machines.	2.25	2.50.	
Phillip's Patent with Augur	7.00	7.50.	
Millers Falls		7.50	25%
Boss, Carpenters'	3.60		
Boss, Ship Bldrs'.	3.85		

Fluting—

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3¼-inch Rolls, $2.15.....35%
Eagle, 5¼-inch Rolls, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal, ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25.....30%
Shepard Hand Fluter, No. 85, per doz $15.50.....40%
Shepard Hand Fluter, No. 110, ₱ doz $11.00.....40%
Shepard Hand Fluter No. 95, ₱ doz $3.00.....40%
Combined Fluter and Sad Iron. ₱ doz $15.00.....30%

Hoisting—

Moore's Hand Hoist, with Lock Brake.20%
Moore's Anti-Friction Differential Pulley Block.....20%
Moore's Rope Differential Pulley Block.....60%
Energy Mfg. Co.'s.....25%
See also *Blocks.*

Washing—

Anthony Wayne, ₱ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American.....₱ doz $36.00
Western Star ₱ doz, No. 2, $36; No. 3 $39
Weisell.....₱ doz $54.00
Fair and Square.....₱ doz $42.00

Mallets—

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks—Regular list. 60&10@60&10&5%

Measures—

Standard Fibreware, No. 1, peck ₱ dozen, $3.50; ½-peck, $3.00

Meat Cutters—

See *Cutters, Meat.*

Menders, Harness—

Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—

Box and Side, List, Jan. 1, 1888..60@60&5%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%
Waddell's New Box Mills, Ideal Brand, New List.....60%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Best Machines: 10-in., $4; 12-in., $4.50; 14-in., $5; 16-in., $5.50; 18-in., $6.
Low-Grade Machines:
10-in. $3; 12-in., $3.25 14-in., $3.50 each

Muzzles—

Safety.....₱ doz, $3.00, 25%

Nails.

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92.....85&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
American	9¼	9¼	9¼	9¼	9¼	net
Ausable	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	.30&5%
Essex	28¢	2¢	25¢	24¢	23¢	40&10@50%
Lyra	9¼	¼	9¼	9¼		net
Snowden	9⅓	⅓	9⅓	9⅓	9⅓	net
Standard	23¢	21¢	20¢	19¢	18¢	35%
Vulcan	23¢	21¢	20¢	19¢	18¢	25%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	40%
A. C.	25¢	23¢	22¢	21¢	21¢	40&10%
Maud S.	25¢	23¢	22¢	21¢	21¢	50&10&5%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&2%
Champion	25¢	23¢	22¢	21¢	20¢	10&10&10%
Capewell	19¢	18¢	17¢	16¢	16¢	..10&5%
Anchor	23¢	21¢	20¢	19¢	18¢	35%
Western	23¢	21¢	20¢	19¢	18¢	50%
Empire Bronzed						.13@14 ₱ ℔

Picture—

Brass Head, Sargent's list.....60@60&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list.40&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.80¢	6.50¢ off list
Cold Punched	5.00¢	5.10¢ off list

In packages of 100 ℔, add 1-10¢ ₱ ℔, net; in packages less than 100 ℔, add ½¢ ₱ ℔, net.

Oakum—

Best or Government. . ....₱ ℔ 6¾@7¼¢
U. S. Navy.....₱ ℔ 6¾@6¢
Navy.....₱ ℔ 5¢@5¼¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Steel, Draper & Williams.....50%
Wilmot & Hobbs Mfg. Co., Steel Anti-Rust.....60%

Openers, Can—

Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $2.75@$3.00
Duplex.....₱ doz 25¢, 15@20%
Lyman's.....₱ doz $3.75, 20%
No. 4, French.....₱ doz $2.25, 55@60%
No. 5, Iron Handle.....₱ gr $6.00, 45@50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2.75@3.00
Star.....₱ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 66%@70%
Excelsior, No. 1 $2.50; No. 2, $1.50.....40%
World's Best ₱ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00.....55&5%
Domestic, ₱ doz $2.00.....45%
Champion, ₱ doz $2.00.....50%
Moore's.....70%

Packing, Steam—

Rubber—

Standard, fair quality.....70@70&10%
Inferior quality.....75@80%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₱ ℔ 80¢....25@25&5%

Miscellaneous—

American Packing.....10¢@11¢ ₱ ℔
Russia Packing.....14¢ ₱ ℔
Italian Packing.....13¢@14¢ ₱ ℔
Cotton Packing.....15¢@17¢ ₱ ℔
Jute.....7¢@8¢ ₱ ℔

Pails—

Creamery—

S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 ₱ doz.....5%

Galvanized—

	Quarts	10	12	14	
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25		
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75		
Sidney Shepard & Co.	2.50	2.75	3.00		
Central Stamping Co.	2.50	2.75	3.00		
Iron Clad	2.50	2.75	3.00		
Fire Buckets	2.75	3.25	3.50		

Buckets—See Well Buckets.

Indurated Fiber Ware

Star Pails, 12 qt.....₱ doz $4.20
Milk, 14 qt.....₱ doz $5.40
Stable, 14 qu.....₱ doz $6.00
Fire Pails, deep.....₱ doz $4.80
Fire Pails, round bottom. ₱ doz $5.40
} 25%

Standard Fiber Ware—

	Plain.	Deer'd
Water Pails, 12 qt., ₱ doz.	$3.15	$3.75
Dairy Pails, 14 qt., ₱ doz.	3.75	4.25
Fire Pails, No. 1, 12 qt., ₱ doz	3.75	
Fire Pails, No. 2, 14 qt., ₱ doz	4.25	
Sugar Pails	5.50	6.00
Horse Pails	4.50	
Buggy Pails	3.50	
Slop Jars (bal. trap)	7.50	8.50
Chamber Pails, 14 qt.	6.00	7.00

Pans—

Dripping—

Small sizes.....₱ ℔ 5½¢
Large sizes.....₱ ℔ 6¢
Silver & Co. (Covered).....40%

Fry—

Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....66⅔%

Dust—

Steel Edge, No. 1.....₱ doz $1.75

Roasting and Baking—

Columbian, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each.....60&10%

Paper and Cloth—

Sand and Emery—

List April 19, 1886.... 50&10@50&10&10%
Sibley's Emery and Crocus Cloth.....30%

Parers—

Apple—

Advance.....₱ doz $4.75
Baldwin.....₱ doz 5.25
Bonanza.....each 5.00
Daisy.....₱ doz 4.00
Dandy.....each 7.50
Eclipse.....₱ doz 4.00
Eureka, 1888.....each 16.00
Family Bay State.....₱ doz 12.00
Favorite.....₱ doz 5.00
Gold Medal.....₱ doz 4.00
Ideal.....₱ doz 4.00
Improved Bay State....₱ doz 27.00@30.00
Little Star.....₱ doz 4.50
Monarch.....₱ doz 13.50
New Lightning.....₱ doz 5.50
Oriole.....₱ doz 4.00
Penn.....₱ doz 3.00
Perfection.....₱ doz 4.00
Pomona.....₱ doz 4.00
Rocking Table.....₱ doz 6.00
Turn Table.....₱ doz 4.50
Victor.....₱ doz 13.50
Waverly.....₱ doz 4.00
White Mountain.....₱ doz 4.00
Reading 72.....₱ doz 4.25
Reading 78.....₱ doz 7.00

Potato—

White Mountain.....₱ doz $4.50
Antrim Combination.....₱ doz $5.50
Hoosier.....₱ doz $13.50
Saratoga.....₱ doz $5.50

Pencils, Soapstone—

See *Crayons.*

Pickers, Fruit—

Prize Fruit Pickers.....50%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10&5@60&10&10&5%

Picture Nails—

See *Nails, Picture.*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co.'s, $17 and $18.....60&10%
Peck, Stow & W. Co....50&10@50&10&5%

Escutcheon—

Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List April 13, 1893.

1¼ and under, Plain.....67½&10%
1¼ and under, Galv.....60&10%
1½ and over, Plain.....67½&10%
1½ and over, Galv.....67½&10%
Boiler Tubes, list Oct. 24, 1892....65&10%
Casing, list Nov. 16, 1892.....52½&10%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%
Cold Drawn Seamless Steel Tubing...50%

Planes and Plane Irons—

Wood Planes—

Molding.....40&10%
Bench, First quality.....45&10%
Bench, Second quality.....50&10%
Bailey's (Stanley R. & L. Co.) ..50&10%

Iron Planes

Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steers' Iron Planes.....50@50&5%
Meriden Mal. Iron Co.'s.....50@50&5%
Davis' Iron Planes.....50@50&5%
Birmingham Plane Co.....60@60&5%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....50@50&5%
Sargent's.....60@60&10%
Standard Tool Co.....50@50&5%

Plane Irons—

Butcher's.....$5.00@$5.25 to $
Buck Bros.....80%

Auburn Thistle.....
Ohio.....
Sandusky.....
} .30&10@30&10&10%
L. & I. J. White.....25%
Stanley R. & L. Co.....50&10%

Plates—

Felloe.....₱ ℔ 6¢@6¼¢

Pliers and Nippers—

Button's Patent.....60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₱ doz.....40%
Humason & Beckley Mfg. Co. 50@50&10%
Lindsay's Giant.....33⅓&%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P., S. & W. Cast Steel.....50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz, $12.00... 30&5%
Cronk's 8 in., $15.00; 10 in.....$20
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels—

Regular List.....75&10@75&10&10%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Cook's.....40&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis Inclinometers.....10&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz. No. 1, $6.00; No. 2, $9.00.....33⅓&%
Silver & Co., 6-Ring, ₱ doz, $4.00; 3-Ring.....$2.00

Pokes, Animal—

Bishop s I. X. L.....₱ doz $6.00
Bishop's Monarch.....₱ doz $4.50
Bishop's Pioneer.....₱ doz $4.00
Bishop's American.....₱ doz $3.00
Eagle, Double Stale.....₱ doz $5.75
Eagle, Single Stale.....₱ doz $3.75
Buckeye, Single Stale.....₱ doz $2.75
Bolding.....₱ doz $6.00
Metallic Horse Poke.....₱ doz $6.00

Police Goods—

R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs; 2 Hands, Polished, ₱ doz, $48.00; Nickeled, $57.00; 3 hands, Polished, ₱ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish—

Metal—

Prestoline.....30%
Prestoline Paste.....33⅓&%
Gaston's Silver Compound.....33⅓&%

Stove—

Joseph Dixon's.....₱ gro, $6.00, 10%
Gem.....₱ gro, $4.50, 10%
Gold Medal.....₱ gro, $6.00, 25%
Lustro.....₱ gro, $4.75
Ruby.....₱ gro, $3.75
Rising Sun, 5 gro lots.....₱ gro, $5.50
Dixon's Plumbago.....₱ ℔ 8¢
Boynton's Noon Day.....₱ gro, $13.00
Parlor Pride Stove Enamel, ₱ gro,

Yates' Liquid,	2	3	5	10 gal
₱ gal.	$0.80	.70	.60	.50

Yates Standard Paste Polish, 10 ℔ cans, ₱ ℔ 12½¢
Jet Black.....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish, ₱ gro $9.00
Bonnell's Paste Stove Polish, ₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₱ gro $6.00
Crown Paste.....₱ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ₱ ℔ 12¢
Black Flag.....₱ gro $7.20
Black Flag, 5 and 10 ℔ pails.....₱ ℔ 12¢
Black Flag, liquid, in bottles, ₱ gro $8.00
Diamond Rock Nickel Cleaner ₱ gro $10 20
Raven Liquid, 6 oz. bottles.....₱ gro $8.00
Raven Liquid, 8 oz. bottles..₱ gro $9.00
Raven Water Polish, large boxes.....₱ gro $7.20
Raven Paste in 5 lb. pails (cases of 6 pails), ₱ ℔ 10¢

Poppers, Corn—

Round or Square,
1 qt.....₱ doz $1.00; ₱ gr $8.00
1½ qt.....₱ doz $1.00; ₱ gr $9 00
2 qt.....₱ doz $1.50; ₱ gr $14.00

Post Hole and Tree Augers and Diggers—

See *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Powder—

In Canisters—

Fine Sporting, 1 ℔ each.....
Duck, 1 ℔ each.....
Rifle, 1 ℔ each.....
Rifle, ½ ℔ each.....

In Kegs—

Rifle, 25-℔ kegs.....
Rifle, 12½-℔ kegs.....
Rifle, 6¼-℔ kegs.....
Duck, 25-℔ kegs.....
Duck, 12½-℔ kegs.....
Duck, 6¼ ℔ kegs.....

} For revised prices see Trade Report.

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....25%
Henis.....₱ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....₱ doz $2.75

Pruning Hooks and Shears—See *Shears.*

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Pullers Nail—

Scranton.. .....₩ doz., $18.00, 33⅓%
Giant, No. 1.....₩ doz., $18.00, 10%
Giant, No. 2.....₩ doz., $15.00, 10%
Pelican.....₩ doz., $9.00, 25%
Eclipse.....₩ doz., $24.00, 40%
Economy.....₩ doz., $6.00

Pulleys—

Hot House, Awning, &c.....66⅔@70%
Japanned Screw.....60&10&10%
Brass Screw.....70%
Japanned Side.....60&10&10%
Moore's Side, Anti Friction.....50%
Moore's Ceiling or End, Anti-Friction.40%
Moore's Dumb Waiter, Anti-Friction.50%
Moore's Electric Light 33⅓%
Japanned Clothes Line.....60&10%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 .....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5 70 .....50%
Hay Fork, "F" Common and Patent Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating....60%
Hay Fork, Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00.....40%
Shade Rack.....45%
Tackle Blocks—See Blocks.
Shepard's Niagara, No. 25..₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense.....60%
Empire.....60%
Ideal, Nos. 2, 4, 10 & 15 } 30% less 1¢ ₩
Acme } .doz net.
Star.....
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. ..₩ doz. 22¢ net.

Pumps—

Cistern, Best Makers..... .60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—

Saddler's or Drive, good..₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Springfield Socket..65%
Spring, good quality..₩ doz., $2.50@$2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Check.....55%
Solid Tinners', P., S. & W. Co., ₩ doz. $1.44.....55%
Tinners' Hollow Punches, P., S. & W. Co.....20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches.....20&2%
Niagara Solid Punches.....55%

Rail—

Sliding Door, Wr't Brass....₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron..₩ ft., 7¢
Sliding Door, Iron, Painted..₩ ft., 4¢, 40%
Barn Door, Light..In. ½ ⅝ ¾
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet.....$3.15 2.70 3.25 Net
Terry's Steel Rail.....₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot.....50&2%
Carrier, double braced, Steel Rail, ₩ foot .....3½@4¢
Lundy Parlor Door, Planed Edge, ₩ ft.7¢
Moore's Steel Rail.....25&10%
Moody Steel Rail ₩ ft., 5¢.....45%

Rakes—

Cast Steel, Association g'ds..70@70&5&2%
Cast Steel, outside g'ds,.....70@70&5&2%
Malleable.....70@70&5%
Gibbs' Lawn Rake.....₩ doz., $4.00
Gibbs' Canton Lawn Rake..₩ doz., $5.75
Gibbs' Acme Lawn Rake....₩ doz., $4.75
Gibbs' Favorite Lawn Rake.₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1.....
₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake.....₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless.....65%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—

J. R. Torrey Razor Co..... Net prices
Wostenholm and Butcher, $10 to $2....10%
Jordan's AAA1, new list.....Net prices
Jordan's Old Faithful, new list.Net prices
Galvanic.....₩ doz., $15.00
Electric Cutlery Co.....Net prices
Campbell Cutlery Co.....60%

Razor Strops—

See *Strops, Razor.*

Registers —

Moore's Japanned.....75%
Moore's Electroplated.....75%
Moore's Bronze Finishes.....70%
Moore's Solid Bronze.....65%
Moore's Stove Pipe.....33⅓%

Rings and Ringers—

Bull Rings—

Union Nut Co.....55%
Sargent's.....75&10%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—

Top of the Hill Ringers.....₩ doz $2.00
Top of the Hill Rings.....₩ doz $1.25
Hill's Improved Ringers.....₩ doz $1.25
Hill's Old Style Ringers.....₩ doz $1.12½
Hill's Tongs.....₩ doz $3.00
Hill's Rings.....₩ doz bxs $1.00
Perfect Rings.....₩ doz bxs $1.50
Perfect Ringers.....₩ doz $2.15@$2.25
Blair's Hog Ringers.....₩ doz $2.00
Blair's Hog Rings.....₩ doz 90¢@$1.00
Champion Ringers.....₩ doz $2.00
Champion Rings, Double.....₩ doz $2.25
Brown's Ringers.....₩ doz $2.00
Brown's Rings.....₩ doz $1.15@$1.25
Electric Hog Rings.....₩ doz boxes $1.50
Electric Hog Ringers.....₩ doz $2.00
Major Rings.....₩ doz $1.25
Major Ringers.....₩ doz $2.00

Rivets and Burrs—

Norway Iron, list Nov. 17, '87....60&10%
Second quality.....70%
Copper .....60@60&10%
Coppere Iron, Betina Brand.....50&5%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—

Stair, Brass.....25@30%
Stair, Black Walnut..... ₩ doz 40¢

Rollers—

Barn Door, Sargent's list. ....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.... .....70%
Moore's Barn Door Stay.....50%
Thompson Mfg. Co.'s Lawn Rollers ..30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ½¢@½¢ on large lots; terms, 1½% for cash.

Manila, 7-16 in. diam. and larger₩ ℔ 8½¢
Manila.....½ in. ₩ ℔ 9 ¢
Manila.....¼ and 5-16 in. ₩ ℔ 9½¢
Manila, Tarred Rope. .....₩ ℔ 8 ¢
Manila, Hay Rope, Medium.... ₩ ℔ 8½¢
Sisal.....7-16 inch and larger ₩ ℔ 6¾¢
Sisal.....⅜ in. ₩ ℔ 7¼¢
Sisal.....¼ and 5-16 in. ₩ ℔ 7¾¢
Sisal, Hay Rope.....₩ ℔ 6¾¢
Sisal, Tarred Rope.....₩ ℔ 6¼¢
Sisal, Medium Lath Yarn.....₩ ℔ 6½¢
New Zealand..7-16 in. & larger ₩ ℔ 6½¢
New Zealand.....⅜ inch, ₩ ℔ 6¾¢
New Zealand..¼ and 5-16 inch, ₩ ℔ 7¼¢
New Zealand, Hay Rope.....₩ ℔ 6½¢
New Zealand, Tarred Rope....₩ ℔ 6 ¢
Cotton Rope.....₩ ℔ 13½@16¢
Jute Rope.....₩ ℔ 6½@7¢

Wire—

List February, 1892. All kinds.....45%

Rules—

Boxwood.. .....80&10&10@80&10&10&10%
Ivory.....50&10%
Starrett's Steel Rules and Straight Edges.....25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—

See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—*See Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—

Note.—Extra 5@10% often given.

Disston's Circular.....45@45&5%
Disston's Cross Cut, list Jan. 1,'93.40&10%
Disston's Hand.....25%
Woodrough & McParlin.
Hand, Panel and Rip.....25&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....30&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Atkins' Circular.....50&10%
Atkins' Cross Cuts, new list. 40%
Atkins' Mulay, Mill and Drag.....50&10%
Atkins' One-Man Saw.....40%
Atkins' Wood Saws.....40%
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip.....25@25&5%
Peace Cross Cuts, list Jan. 1,'93..45&10%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts, list Jan. 1,'93.45&10%
Richardson's Hand, &c .....25@25&5%
C E. Jennings & Co.'s 25%

Hack Saws—

Griffin's, complete.....40&10&50
Griffin's Hack Saw Blades.....40&10&50
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—

Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab Makers'$15,25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—

See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—

Hatch, Counter, No. 171, good quality, ₩ doz $18.00@$19.00
Hatch, Tea, No. 161....₩ doz $6.50@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales.....50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10
Riehle Bros.' Platform.....40%

Scale Beams—

See *Beams, Scale.*

Scissors, Fluting.....45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%
Box, 1 Handle.....₩ doz $2.00
Box, 2 Handle.....₩ doz $3.00@$4.00
Defiance Box and Ship.... ..... 20&10%
Foot.....50&10@60%
Ship, Common..... .....₩ doz $3.50
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—

See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron..... ....55&10@55&10&10%
Bench, Wood, Beech.... .....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....35%

Coach, Lag and Hand-Rail—

Lag, Blunt Point, list Jan. 1, 1890..... 80@80&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890..... .....80@80&5%
Hand Rail, Sargent's... .....70&10%
Hand Rail, H. & B. Mfg. o....70&10@75%
Hand Rail, Am. Screw o.....75%

Jack Screws—

Jack Screws, Millers Falls list.50@50&10%
Jack Screws, P., S. & W.....35%
Jack Screws, Sargent.....70%
Jack Screws, Stearns'.....40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Williamson's Forged Worm, Applewood Handle, ₩ doz., $5.00; Rosewood, $5.50.....40%
Detroit Cork Screw Co.....33⅓%

Machine—

Flat Head Iron.....65%
Round Head Iron.....60%

Wood—

List January 1, 1891.
Flat Head Iron.....70%
Round Head Iron.....65% } Extra
Flat Head Brass.....70% } 10&
Round Head Brass.....65% } 10%often
Flat Head Bronze.....70% } given.
Round Head, Bronze: ...65% }
Rogers' Drive Screws.....82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grain.....40&5@40&10%
Grass.....40&10&50%

Scythe Snaths—

See *Snaths, Scythe.*

Sets—

Awl and Tool—

Aiken's Sets, Awls and Tools, No. 20, ₩ doz$10.00.....60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....45%
Millers Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50...70&10&5%

Nail—

Square.....₩ gr. $4.00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr. $12, 20%

Rivet—

Regular list.....70%

Saw—

Stillman's Genuine....₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $6.50.....55@55&10%
Common Lever.....₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00.....40&20%
No. 11, $16.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00..40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
Leach's..No. 0, $8.00; No. 1, $15..15@20%
Nash's.....20&10@40%
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat.45%
Bemis & Call Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Co.'s Cross Cut.....30&5%
Aiken's Genuine.....$13.00, 60@60&10%
Aiken's Imitation.....₩ doz $3.00@$3.25
Hart's Pat. Lever.....20%
Disston's Star.....25%
Leopold..... .....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10@50%
Avery's Saw Set and Punch.....50%
Kohler's Royal.....₩ doz $7.00
Kohler's Giant Royal.....₩ doz $12.00
Crescent.....₩ doz $3.00
Lloyd's Acme.....₩ doz $15, 40&10%
Taintor Positive.....₩ doz $18, 50%

Sharpeners, Knife—

Larkins'.
Applewood Handles...₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%

Shaves, Spoke—

Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's ₩ doz. $9.00.....25%

Shears—

American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers..₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality.....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Hatch Cutlery Co., Solid Steel Forged.60%
Davenport Cutlery Co..... .60@60&10%
Clauss brand, Japanned.....70%
Clauss brand, Nickeled, same list.....60%
Galvanic 3½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co .....Net
Campbell Cutlery Co., Jap'd.....75%
Nickel Plated.....65%

Tinners' Snips—

Wrt. Handles, Steel Blades. ..20@20&10%
Niagara Snips and Shears. ...20&10%
Cast Handles, Laid with Steel 40%

Pruning Shears and Hook

Disston's Combined Pruning' Hook and Saw.....₩ doz. $18.00, 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 20&10%
E.S.Lee & Co.'s Pruning Tools.50&10@70%
Pruning Shears, Henry's Pat. ₩ doz. $3.50@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₩ doz $12.00
Dunlap's Saw and Chisel, ₩ doz $8.50,30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co..... 60%
Levin Pruner No. 1, $15.00 ₩ doz 40&3%
Levin Pruner No. 2, $21.00 ₩ doz.. 40&3%

Tinners', &c.—

Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888....50&10@60&5%
R. & E., list Dec. 18, 1885..... 55&20%
Corbin's list..... 60&10&2%
Patent Roller..... 60&10&2%
Patent Roller, Hatfield's..... .75%
Russell's Anti-Friction, list Dec. 18, 1885..... 60&2%
Moore's Anti-Friction..... 50%

Sliding Shutter—

R. & E., list Dec. 18, 1885.....60&10&2%
Sargent's list..... 70%
Reading list..... 60&10&10%

Shells—

First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list)..... .20&10&2%
Prize..... 40&2%
Star, Club, Rival and Climax Brands... 33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge..33⅓&10&2%
Selbold's Comb. Shot Shells..... 15&3%
Brass Shot Shells, 1st quality..... 60&2%
Brass Shot Shells, Club, Rival, Climax 65&2%

Shells, Loaded—

Standard List, July 19, 1890..... 40&10&10@40&10&10&5%
7% cash, 10 days.

Ship Tools—

L. & I. J. White..... 20&5

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phœnix, Standard, Diamond State, Bryden's Boss and Crescent, at factory..... $4.00
Bryden's Frog Pressure, at factory.$5.00

Mule—

Add $1 ₩ keg to above prices.

Ox Wrought—

Ton lots..... ₩ ℔ 9¢
1000 ℔ lots..... ₩ ℔ 9½¢
500 ℔ lots..... ₩ ℔ 10¢

Shot—

	Small lots.
Drop, up to B, 25-℔ bag....	$1.45
Drop, up to B, 5-℔ bag.....	.35
Drop, B and larger, 25-℔ bag.....	1.70
Drop, B and larger, 5-℔ bag.....	.40
Buck and Chilled, 25-℔ bag.....	1.70
Buck and Chilled, 5-℔ bag ..	.40
Dust Shot, 25-℔ bag.....	2.00
Dust Shot 5-℔ bag.....	.45

In ton lots a discount of 5¢ ₩ bag is made, and 2½% for cash.

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885..... 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron..... 50&10%
Griffith's C. S..... 60@60&5%
Griffith's Solid C. S. R. R. Goods.... 20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co..... 15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co..... 50&10%
H. M. Myers Co..... 30%
Payne Pettebone & Son..... 33⅓ &5%
Remington's (Lowman's Pat.)40&10@50%
Rowland's Black Iron.. 60&10@60&10&5%
Rowland's Steel..... 60&5@60&10%
Terra Haute Shovel & 25%

Shovels and Tongs—

Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves and Sifters—

Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co....50&25&20%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $21 00
Electric Light..₩ doz $1.50; ₩ gro $15 00
A. & W. Sifters..... ₩ gr $15 00
Hunter's Genuine. ₩ doz $1 75, ₩ gr $16 50
Hunter's Imitation..... ₩ doz $1.75; ₩ gr $15 00

Sieves, Wooden Rim—

	Iron	Plated
Mesh 18, Nested, ₩ doz....	$0.80	$1.00
Mesh 20, Nested, ₩ doz....	.95	1.10
Mesh 24, Nested, ₩ doz..	1.15	1.25

Sinks, Wrought Steel—

Columbus, Painted or Unpainted... 30@30&10%
Columbus, Galvanized and Enameled. 50@50&10%
New Era, Painted..... 40&10@50&5%
New Era Galvanized and Enameled.. 60&10&10@70&5%

Skeins, Thimble—

Western list.....75&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co..... 60%
Seneca Falls Pattern..... 60%
Utica P. S. T. Skeins..... 60%
Utica Turned and Fitted..... 35%

Slates—

School, by case..... .....40@40&10%
Large lots.....40&10&5@50%

Slaw Cutters—See *Cutters.*

Sleds Hand—

Tubular Steel.....₩ doz. $24&50%.00, 40
(Lots of 6 doz. 50%)

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Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.)....65%
Fitch's (Bristol)....50&10%
Hotchkiss....10%
Andrews....50%
Sargent's Patent Guarded....70&10&10%
German, new list....40&10%
Covert....50&10&5&2%
Covert, New Patent....50&10&5&2%
Covert, New R. E....60&10&5&2%
Covered Spring....60&10&10%
Covert's Saddlery Works' Triumph.33⅓&%
John Frotz Snaps....75@75&5%
Kelley & Woolworth's Steel Harness....50&10@60%

Snaths—

Scythe....50&2@50&5&2%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₩ doz., No. 5, $8; No. 5X, $9.
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list....70&10%
Buffalo, S. S. & Co....33⅓&2%

Silver Plated—

4 months or 5% cash 30 days:
Meriden Brit. Co., Rogers....40&15%
Rogers & Hamilton....40&15%
C. Rogers & Bros....40&15%
Rogers & Bros....40&15%
Reed & Barton....40@40&5%
Wm. Rogers Mfg. Co....40, 15&5%
Simpson, Hall, Miller & Co....40, 15&5%
Holmes & Edwards Silver Co....40, 15&5%
L. Boardman & Son....50&12½&%

Miscellaneous—

Holmes & Edwards Silver Co.:
No 97 Mexican Silver....50&10&5%
No. 30 Silver Metal....50&10&5%
No. 24 German Silver....50&10&5%
No 50 Nickel Silver....50&5%
No 40 Nickel Silver....50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal....50&10&6%
18% Rogers' German Silver....60&6%
22% Rogers' Nickel Silver....50&6%
Rogers & Hamilton:
Steel Goods....40&10%
Cimetar, Flatware....40&15&5%
Cimetar, Steel Goods....40&10%
Crown Hamilton, Flatware and Cutlery....30%
German Silver....50@50&5%
Nickel Silver....50&5@50&10&5% cash
Brittannia....60@60&5%
Boardman's Nickel Silver, list July 1, 1891....60&7½&5%
Boardman's Brittannia Spoons, case lots....60&5% cash

Springs—

Door—

Torrey's Rod, 39 in....₩ doz $1.20@1.2
Warner's No. 1, ₩ doz $1.50; No. 2, $3.40....55@55&10%
Gem (Coil), list April 19, 1886....20%
Star (Coil), list April 19, 1886....20&10%
Victor (Coil)....60&10@60&10&5%
Champion (Coil)....60&10@60&10&10%
Cowell's, No. 1, ₩ doz $18.00; No. 2, $15.00....50@50&10%
Rubber, complete, ₩ doz $4.50....55&10%
Hercules....50@50&10%
Phœnix....33⅓&%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll....60&10@60&10&10&10 or net prices
Cliff's Bolster Springs....25%

Squares—

Steel and Iron....80&10&10@80&25%
Nickel-Plated....
Try Square and T Bevels....60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares....25%
Avery's Flush Bevel Squares....40%
Avery's Bevel Protractor....50%

Squeezers—

Fodder—

Blair's....₩ doz $2.00
Blair's "Climax"....₩ doz $1.25

Lemon—

Porcelain Lined, No. 1....₩ doz $6.00....25&30%
Wood, No. 2....₩ doz $3.00, 35%
Wood, Common....₩ doz $1.70@1.75
Dunlap's Improved....₩ doz $3.75, 20%
Sammis No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz....25&10%
Jennings' Star....₩ doz $2.50
The Boss....₩ doz $2.50
Dean's..No. 1, ₩ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant....50@50&5%
King....40&5%
Hotchkiss Straight Flash....₩ doz $12.00
Silver & Co., Glass....₩ gro. $9.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Stanley—

Barbed Blind, ½ in. and larger. ₩ ℔ 7@7½¢
Barbed Blind, ¾ in....₩ ℔ 8@8½¢
Fence Staples, Galvanized. } Same price as B'rb Wire
Fence Staples, Plain. } See Trd. Rep
Grand Crossing Tack Co.'s list....75&10%

Steelyards....40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods....35%
Butterfield's Goods....35%
Lightning Screw Plate....25@30%
Reece's New Screw Plates....25@30%
Reversible Ratchet....30%
Gardner....25%
Green River....25@30%

Stone Boat, Bench—

Morrill's, ₩ doz, No. 1, $10.00; No. 2, $11.00....40&20%
Hotchkiss'....₩ doz, $5, 10@10&10%
Weston's, No. 1, $10, No. 2, $9, 25&10&5%
McGill's, ₩ doz $3....10%
Cincinnati....25&10%
Terrell's Nos. 1 and 2, ₩ doz., $3; No. 3, $3.60....30%
Millers Falls....25%
Stearns'....20&10%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892....33⅓&%
Cleveland Stone Co., list Nov. 1892..33⅓&%

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₩ ℔....8¢
Sand Stone....5¢
Turkey Oil Stone, 4 to 8 in....80¢
Turkey Slips....$2.00
} 40@40& 10%
Lily White Washita....60¢
Rosy Red Washita....60¢
Washita Stone, Extra....50¢
Washita Stone, No. 1....40¢
Washita Stone, No. 2....30¢
Lily White Slips....90¢
Rosy Red Slips....90¢
Washita Slips, Extra....80¢
Washita Slips, No. 1....70¢
Arkansas Stone, No. 1, 3 to 5¼ in., $2.80
Arkansas Stone, No. 1 5¼ to 8 in., $3.50
} 33⅓@33⅓&10%
Lake Superior....₩ ℔ 13¢
Lake Superior Slips....₩ ℔ 20¢

Stove Polish—

See *Polish, Stove.*

Stretchers Carpet—

Cast Steel, Polished....₩ doz $2.3
Cast Iron, Steel Points....₩ doz 75@80¢
Socket....₩ doz $1.75
Bullard's....25@25&10%

Strops, Razor—

Genuine Emerson....60@60&5%
Imitation " ..₩ doz $2.00, 20&10&5%
Torrey's....Net prices
Badger's Belt and Com....₩ doz $2.00
Lamont Combination....₩ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89. 50%
Electric Cutlery Co....Net prices
Campbell Cutlery Co....Net prices

Stuffer, Sausage—

Miles' Challenge, ₩ doz $20....50@50&5%
Perry....₩ doz, No. 1, $15.00; No. 0, $21.00....50&5@50&10%
Draw Cut No. 4, each $30.00....20%
Enterprise Mfg. Co., list Jan 17, '93..25%
Silver's....40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5....₩ doz $17.00
Bissell No. 8....₩ doz $20.00
Bissell, Grand....₩ doz $36.00
Standard....₩ doz $24.00
Domestic....₩ doz $21.00
Domestic, No. 2....₩ doz $22.00
Grand Rapids....₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic....₩ doz $15.00
Improved Parlor Queen,
Nickeled....₩ doz $27.00
Japanned....₩ doz $24.00
Excelsior....₩ doz $22.00
Garland....₩ doz $18.00
Parlor Queen....₩ doz $24.00
Housewife's Delight....₩ doz $15.00
Ladies' Friend....₩ doz $15.00
Ladies' Friend No. 2....₩ doz $16.00
Advance....₩ doz $18.00
Our Leader....₩ doz $19.00
Triumph....₩ doz $20.00
Supreme....₩ doz $22.00
Easy..Jap'd, ₩ doz $22.00; Nickel, $24.00
Gilt Edge....₩ doz $24.00
Acme....₩ doz $26.00
Imperial....₩ doz $26.00
Grand Republic....
Jap'd, ₩ doz $30.00; Nickel, $33.00
Banner....
Jap'd, ₩ doz, $22.00; Nickel, $24.00
The Star....₩ doz $21.00
Reliable....₩ doz $22.00
Rapid..Jap'd, ₩ doz, $22.00; Nickel, $24.00
Our Own....₩ doz $27.00
Model....₩ doz $27.00
Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months....₩ doz $1.00
10 dozen in 6 months....₩ doz $2.00
Except on L.F., when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co....30%

Swings—

Davies Lawn....25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued....66⅔%
American, Tin'd and Cop'd....70%
Steel, Bright and Blued....66⅔%
Steel, Tinned and Coppered....70%
Swedes Iron, Blued....72½%
Swedes Iron, Tinned....75%
American Iron Tacks, Domestic.66⅔%
Swedes Iron Tacks—
S. S., Blued....66⅔%
S. S., Tinned....70%
Lanc., Blued....55%
Lanc., Tinned....60%
Gimp and Lace Tacks—
S. S., Blued....62½%
S. S., Tinned....66⅔%
Lanc., Blued....55%
Lanc., Tinned....60%
Basket and Trimmers' Tacks—
Lanc....52½%
S. S....55%
Hungarian Nails....60%
Common and Patent Brads....55%
Leathered Tacks....10%
Brush Tacks, S. S....60%
Looking Glass Tacks, S. S....35%
Picture-Frame Points, S. S....35%
Finishing Nails....60%
Trunk and Clout Nails—
Black....65%
Tinned or Coppered....67½%
Basket Nails....60%
Chair Nails....52½%
Cigar Box Nails....45%
Tin Capped Nails....50%
} Extra discount 25&2½

Miscellaneous—

Double Point....90&10@90&10&10%
Wire Carpet Nails....50&10%
Claw Handle Carpet....₩ gross $4.00
Bonnie Blue....₩ box $1.50
Bill Nye Brad Box....4 00
Parisian Gilt Nails, cartoon....50
Home Tacks, No. 50 ₩ case (12 cartons), $36.00; No. 100, ₩ case (12 cartons), $72.00.
Home Nails, No. 200, ₩ case (12 cartons), $30.00; No. 400, ₩ case (12 cartons), $60 00.
} 50&2½
Upholsterers' Nails....50&10%

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list 50&10%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each....50&10&5%

Tapes, Measuring—

American....40@40&10%
Spring....40%
Chesterman's, Regular list....25@30%

Thermometers—

Tin Case....80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list....50&10&5%

Tinners' Shears, &c.—

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's....20%
Barton's....20@20&5%
L. & I. J. White....20&5%
Albertson Mfg. Co....25%
Beatty's....30%
Sandusky Tool Co....30@30&5%
Shaves Cincinnati Tool Co....20%

Lumber—

Ring Peavies, "Blue Line"..₩ doz $20.00
Ring Peavies, Common....₩ doz $18.00
Steel Socket Peavies....₩ doz $21.00
Mall. Iron Socket Peavies...₩ doz $19.00
Cant Hooks, "blue Line"....₩ doz $16.00
Cant Hooks, Common Finish..₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish....₩ doz $12.00
Hand Spikes....₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks....₩ doz $18.00

Saw—

Atkins', new list....40%

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse....40@40&5%
Oneida Pattern....75@75&10%
Game, Blake's Patent....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₩ doz holes, 9@10¢
Mouse, Round Wire....₩ doz $1.50 10%
Mouse, Cage, Wire....₩ doz $2.50 10%
Mouse, Catch-'em-alive..₩ doz $2.50 15%
Mouse, Bonanza....₩ doz 0.90@$1.00
Rat, Decoy....₩ gr $10.00, 10%
Ideal....₩ gr $10.00
Cyclone....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 75¢; in full cases, ₩ doz. 60@65¢
Hotchkiss Imp. Rat Killer...₩ gro $13.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer....₩ gro $15.00
Dandy....₩ doz., $1.75
Waddel's Go Bang, ₩ gro....$12.50

Fly—

Harper, Champion or Paragon....₩ doz. $1.75, ₩ gro. $16.50
Balloon, Globe or Acme....₩ doz. $1.50, ₩ gro. $13.50

Triers—

Butter and Cheese....25%

Trimmers, Spoke—

Bonney's....₩ doz $10.00, 50%
Stearns'....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. 55&10%
Douglas'....₩ doz $9.00, 20%
Cincinnati....25%

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering....15%
Disston's Br'k and Plastering..25@25&10%
Peace's Plastering....25@25&5%
Clement & Maynard's....20@20&5%
Rose's Brick....15@20%
Brade's Brick....25%
Worrall's Brick and Plastering....20%
Garden....70%
Cleves' Angle Trowel, ₩ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list....40%
Thompson Mfg. Co....40%
Barnes' Barrel Trucks....40%
Daisy Stove Trucks, Improved pattern, ₩ doz. $18.00

Tubes. Boiler—

See Pipe.

Twine—

Flax Twine—

	BC.	B.
No. 9, ¼ and ½ ℔ Balls	25¢	31¢
No. 12, ¼ and ½ ℔ Balls	22¢	30¢
No. 18, ¼ and ½ ℔ Balls	20¢	29¢
No. 24, ¼ and ½ ℔ Balls	20¢	20¢
No. 36, ¼ and ½ ℔ Balls	18¢	28¢

No. 264 Mattrass, ¼ and ½ ℔ Balls, 52@54¢
Chalk Line, Cotton, ½ ℔ Balls....25¢
Mason Line, Linen, ½ ℔ Balls....55¢
2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine)....15½¢
3-Ply Hemp, 1 ℔ Balls....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔..15¢@16¢
2, 3, 4 and 5 Ply Jute, ½ ℔ Balls....10¢
Wool....6½¢@6½¢
Paper....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz. 18¢

Vises—

Solid Box....50&10@60%

Parallel—

Fisher & Norris Double Screw....15&10%
Stephens'....25@30%
Parker's....20@25%
Wilson's....55%
Howard's....40%
Bonney's....50%
Millers' Falls....40@40&10%
Trenton....40&5@40&10%
Merrill's....15@20%
Hollands'....35@40%
Sargent's....70&10%
Backus and Union....40%
Double Screw Leg....15&10%
Prentiss....20@25%
Simpson's Adjustable....40%
Moore's....20%
Massey Quick Action....20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00....40&10@50%
Stearn's....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises....33⅓@35%
Hopkins'....₩ doz $17.50, 10%
Reading....40&10%
Wentworth....20&10%
Economy, ₩ doz., Nos. 110, $10.00; 120, $15.00....50&10&10&5%

Miscellaneous—

Phœnix Vises....33⅓&%
Phœnix Hand Vises....₩ doz $3.60, 33⅓&%
Cowell Hand Vises....20%
Bauer's Pipe Vises....10%
Cincinnati....25&10%
Enterprise Pipe Vises....each $3.00, 40%
Massey Combination Pipe Vise....40%

Wads—Price Per M.

U.M.C.&W.R.A.—B. E., 11 up..68¢
U.M.C.&W.R.A.—B. E., 9&10..82¢
U.M.C.&W.R.A.—B. E., 8....96¢
U.M.C.&W.R.A.—B. E., 7....$1.10
U.M.C.&W.R.A.—P. E., 11 up..1.15
U.M.C.&W.R.A.—P. E., 9&10..1.50
U.M.C.&W.R.A.—P. E., 8....1.70
U.M.C.&W.R.A.—P. E., 7....1.80
Eley's B. E., 11 and larger....$1.70@$1.75
Eley's P. E., 12 to 20....$3.00@$3.25
} Dis 20&2½

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow

Stove Hollow-Ware—
Ground....60&10@60&10&10%
Unground....65&10@70&5
White Enameled Ware—
Maslin Kettles....70&10@75%
Boilers and Saucepans....60@60&5%
Tinned Boilers and S'pans....60@60&5%
Rustless Hollow Ware....50@50&5%
Gray Enameled Ware—
Stove....50%
Maslin Kettles....60@60&10%
Boilers and Saucepans....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889....33⅓&% Ironclad Enameled Ware....dis 33⅓&10%
} Extra 10% on many leading articles.

Kettles—

Galvanized Tea-Kettles—

Inch	6	7	8	9
Each	55¢	60¢	65¢	75¢

Standard Fiber

	Per Doz. Plain.	Decorated
Wash-Basins, 10½ in.	$1.80	$2.00
Wash-Basins, 12 in.	2.00	2-50
Keelers, 11¼ in.		3.50
Cuspidors		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure	3.50	
Half-peck Measure	3.00	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₩ doz....$6.00
Basins, Ringed, ₩ doz., No. 2....2.80
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), ₩ nest....$5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest....$2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest....$1.50
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), ₩ set....$1.20
} 25%

See also Pails.

Silver Plated, Hollow—

4 mo. or 5% cash in 30 days.
Reed & Barton....
Meriden Britannia Co....
Simpson, Hall, Miller & Co....
Rogers & Brother....
} 40&5%
Hartford Silver Plate Co....
William Rogers Mfg. Co....
} 40&5&5%

Washers—

Size hole....5-16 ⅜ ½ ⅝ to 1¾
Washers....5½ 4½ 3¼ 2¾
In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Washer Cutters—

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Iron....₩ ℔ 3½¢@3½¢
Steel....₩ ℔ 3½¢

Weights, Sash—

Solid Eyes....₩ ton, $18.00@19.00

Well Buckets Galvanized—See *Buckets, Well Galvanized.*

Wheels, Well—

8 in., $2.00; 10 in. $2.50; 12 in., $2.75

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Whips

American Whip Co.: Length.	4½	5	5½	6	6½	7	7½	8 ft.
X. L. Whalebone Driving	$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone.	....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whale bone	....	....	11.00	12.00	13.00	15.00	....	....
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors	....	....	....	6.00	....	....	....	....
Americus, 93 Pen Whip	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106	....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No. 103	....	....	3.75	4.00	....	....	....	....

Per dozen.

A large variety of cheaper grades.....50¢@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....₩ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Wire and Wire Goods—

Iron—

Market,

Br. & Ann., Nos. 0 to 18, 75&10@75&10&5%
Cop'd, Nos. 0 to 18, 75&5%
Galv., Nos. 0 to 18, 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18, 70@70&10%

Extra 5@10% often given and net prices often made on large lots.

Stone,
Br. and Ann'd,
Nos. 16 to 18.....80%
Nos. 19 to 26.....80&5%
Nos. 27 to 36.....82½&5%
Extra 10% often given.

Tinned Broom Wire, 18 to 21, ₩ ℔....4½¢
Galvanized Fence.....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Ossawan Mills, An'ld and Tinned on Spools.....60&10%
Ossawan Mills, Brass and Copper on Spools.....50&10%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported....60@70% ₩ ℔
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....85&10@85&10&10%

Wire Cloth and Netting—

Painted Screen Cloth ₩ 100 ft.....$1.75
Galvanized Wire Netting.....75&10@75&10&5%

Wire Barb—

See Trade Report.

Wire Rope—

See *Rope, Wire.*

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50@50&10%
Coes' "Mechanics".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
W. & B. Diamond.....
75&10@80%

Bemis & Call's:
Pat. Combination Bright.....40&5%
Pat. Combination Black.....40&10%
Merrick's Pattern.....45%
Brigg's Pattern.....30&10%
Cylinder or Gas Pipe.....45&5%
No. 3 Pipe.....55%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz., $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....30%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Eagle.....50&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70@70&5%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

Am. Wringer Co.'s list, July 1, '93..2% cash
Colby Wringer Co., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list July 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	40
Linseed, City, boiled	..	@	43
Linseed, Western, raw	38	@	40
Lard, City, Extra Winter	80	@	82
Lard, City Prime	78	@	80
Lard, City, Extra No. 1	..	@	50
Lard, City, No. 1	..	@	45
Lard, Western, prime	..	@	75
Cotton-seed, Crude, prime	34	@	36
Cotton-seed, Crude, off grades	32	@	34
Cotton-seed, Summer Yellow, prime	39	@	40
Cotton-seed, Summer Yellow, off grades	36	@	37
Sperm, Crude	70	@	..
Sperm, Natural Spring	75	@	77
Sperm, Bleached Spring	80	@	82
Sperm, Natural Winter	81	@	82
Sperm, Bleached Winter	86	@	88
Whale, Crude	..	@	..
Whale, Natural Winter	48	@	..
Whale, Bleached Winter	..	@	51
Whale, Extra Bleached	..	@	52
Sea Elephant, Bleached Winter	..	@	..
Menhaden, Crude, Sound	35	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed	39	@	40
Menhaden, Bleached W'ter	..	@	43
Menhaden, Extra Bleached	..	@	46
Tallow, City, prime	..	@	60
Tallow, Western, prime	..	@	55
Cocoanut, Ceylon	5½	@	5¾
Cocoanut, Cochin	6½	@	6¾
Cod, Domestic	38	@	40
Cod, Foreign	42	@	45
Red Elaine	44	@	46
Red Saponified ₩ ℔	4¼	@	4¾
Bank per gal	38	@	..
Straits	39	@	..
Olive, Italian, bbls	58	@	60
Neatsfoot, prime	75	@	80
Palm, prime, Lagos ₩ ℔	7¾	@	8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test per gal	7	@	7¼
Black, 29 gravity, 15 cold test	7½	@	8
Black, 29 gravity, summer	6	@	6¼
Cylinder light, filtered	14	@	16
Cylinder, dark, filtered	10	@	13
Paraffine, 23½ @ 24 gravity	11	@	12
Paraffine, 25 gravity	10	@	11
Paraffine, 28 gravity	7½	@	8
Paraffine, red	9½	@	10½

Paints and Colors—

Barytes, Foreign, ℔ ton	$22.00	@	24.00
Barytes, Amer. floated	29.00	@	32.00
Barytes, Amer. No. 1	16.00	@	18.00
Barytes, Amer. No. 2	13.00	@	15.00
Barytes, Amer. Nc. 3	11.00	@	12.00
Blue, Celestial ₩ ℔	6	@	8
Blue, Chinese	40	@	50
Blue, Prussian	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	..	@	1
Brown, Vandyke, Amer	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk	2.75	@	..
Carmine, No. 40, in boxes or barrels	2.85	@	..
Carmine, No. 40, in ounce bottles	3.75	@	..
Chalk, in bulk ₩ ton	1.75	@	2.00
Chalk, in bbls. ₩ 100 ℔	33	@	40
China Clay, English ₩ ton	13.00	@	18.00
Cobalt Oxide, prep'd	9.00	@	11.00
Cobalt Oxide, black, lots 100 ℔	1.90	@	....
Cobalt Oxide, black, less 100 ℔	1.96	@	....
Green, Paris, in bulk	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs	10½	@	11
Green, Paris, small pack	12	@	17
Green, Chrome, ordinary	6	@	12
Green, Chrom'n, pure	22	@	25
Lead, Eng., B.B. white	8½	@	10
Lead, Ann. White, dry or in oil:			
Kegs, lots less than 500 ℔	7	@	7¼
Kegs, lots 500 ℔ to 5 tons	6½	@	6¾
Kegs, lots 5 tons to 12 tons	6¾	@	6¾
Kegs, lots 12 tons and over	6¼	@	6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price	..	@	½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	..	@	2½
Lead, Red, bbls. and ½ bbls	6	@	7
Lead, Red, kegs	6¼	@	7¼
Litharge, kegs	6¼	@	7¼
Litharge, bbls. and ½ bbls	6	@	7

Terms, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35	@	1½
Ocher, French Washed	1½	@	2½
Ocher, German Washed	1½	@	3
Ocher, American	½	@	1½
Orange Mineral, English	8½	@	9
Orange Mineral, French	10	@	10½
Orange Mineral, German	8½	@	9
Orange Mineral, American	8¼	@	8¾
Paris White, English Cliff-stone ₩ 100 ℔	1.00	@	1.15
Paris White, American	65	@	75
Red, Indian, English	5½	@	7
Red, Indian, American	2	@	6½
Red, Turkey	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American ₩ 100 ℔	1.00	@	1.10
Red, Venetian, English	1.20	@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔	4	@	5
Sienna, Ital., Burnt Lumps	1½	@	3½
Sienna, Ital., Raw, Powd	4½	@	5½
Sienna, Ital., Raw, Lumps	1¾	@	3½
Sienna, American, Raw	1½	@	1¾
Sienna, American, Burnt and Powdered ₩ ℔	1½	@	1¾
Talc, French	..	@	1½
Talc, American	1¼	@	1⅝
Terra Alba, Fr'ch. ₩ 100 ℔	95	@	1.25
Terra Alba, English	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered ₩ ℔	3½	@	4
Umber, Turkey Bnt. Ln	2¾	@	3
Umber, Turkey, Raw and Powdered	3½	@	....
Umber, Turkey, R'w Lumps	2¾	@	2¾
Umber, Turkey, Bnt. Amer	1½	@	1½
Umber, Turkey, R'w Amer	1½	@	1½
Yellow, Chrome	10	@	25
Vermilion, American Lead	11¼	@	12
Vermilion, Quicks'er, bulk	53	@	..
Vermilion, Quicks'er, bags	54	@	..
Vermilion, Quicksilver sm'r pkgs	62	@	..
Vermilion, English Import	85	@	90
Vermilion, Imitation, Eng	8	@	35
Vermilion, Trieste	90	@	92½
Vermilion, Chinese	92½	@	95
Whiting Common, ₩ 100 ℔	37½	@	42½
Whiting Gilders'	45	@	55
Zinc, American, dry ₩ ℔	4	@	4¾
Zinc, French, Red Seal	7½	@	..
Zinc, Frech, Green Seal	9	@	..
Zinc, Frech, V. M. X	..	@	7
Zinc, Antwerp, Red Seal	7¼	@	..
Zinc, Antwerp, Green Seal	7¾	@	..
Zinc, German, L. Z. O	6¾	@	7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over	10¾	@	11½
lots less than one ton	11	@	11½
Zinc, V. M. in Poppy Oil, Red Seal	..	@	..
lots of 1 ton and over	10	@	10½
lots of less than 1 ton	10¼	@	10¾

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort	25	@	30
Black, Drop, English	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory	8	@	15
Blue, Chinese	35	@	40
Blue, Prussian	20	@	45
Blue, Ultramarine	12	@	18
Brown, Vandyke	7	@	12
Green, Chrome	8	@	13
Green, Paris	16	@	18½
Sienna, Raw	7	@	14
Sienna, Burnt	7	@	14
Umber, Raw	7	@	10
Umber, Burnt	7	@	10

Putty—

In barrels and ½ bbls	.01¾	@	.01¾
In tubs	.01⅝	@	.01¾
In tin cans	.01½	@	.02½
In bladders	.01⅞	@	.02½

Spirits Turpentine—

In regular bbls	..	@	29½
In machine bbls	..	@	30

Glue—

Low Grade ₩ ℔	8	@	10
Cabinet	12	@	14
Medium White	13	@	15
Extra White	17	@	20
French	10	@	22
English	10	@	15
Irish	12	@	..

THE IRON AGE.

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CURRENT METAL PRICES.

NOVEMBER 8, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:	
¾ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in.	₩ lb 1.80 @ 1.90¢
Refined Iron:	
¾ to 2 in. round and square. 1 to 4 in. x ⅜ to 1¼ in..... 4½ to 6 in. x ⅜ to 1 in.	₩ lb 1.90 @ 2.00¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.10 @ 2.20¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.00 @ 2.10¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price.	₩ lb 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.80¢
"Ulster"	₩ lb 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store—

	Per lb
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2½¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

Black—

Best Refined Iron.

Nos. 14 to 20	3 @ 3⅛¢
21 to 24	3¼ @ 3⅜¢
25 to 26	3⅜ @ 3½¢
27	3½ @ 3⅝¢
28	3⅝ @ 3¾¢

Common ¼¢ less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 16	2½ @ 2⅝¢
" " " 18 to 20	2⅞ @ 3¢
" " " 21 to 24	3⅛ @ 3¼¢
" " " 25 to 26	3⅜ @ 3⅝¢
" " " 27 to 28	3⅝ @ 3⅞¢

Best Bloom Sheets, ¼¢ extra over above prices.
Best Bloom, Galvanized, jobbing dis. 70 @ 70&5%
Ordinary Bessemer, ⅛¢ @ ¼¢ lower than above prices.

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 12¢ @ 13¢
Patent Planished	₩ lb A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel	₩ lb, 8½¢

English Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 20 ¢

METALS—

Tin—

	Per lb
Banca, Pigs	22¢
Straits, Pigs	21¢ @ 21½¢
Straits in Bars	22½¢

Tin Plates—

Duty: 2.2¢ ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality.

	Per box.
Melyn and Calland Grade. IC, 10 x14	@ $6.50
" " " IC, 12 x12	@ 6.75
" " " IC, 14 x20	@ 6.50
" " " IC, 20 x28	@ 13.00
" " " IX, 10 x14	@ 8.50
" " " IX, 12 x12	@ 8.75
" " " IX, 14 x20	@ 8.50
" " " IX, 20 x28	@ 17.00
" " " DC, 12½x17	@ 6.00
" " " DX, 12½x17	@ 8.00
Allaway Grade IC, 10 x14	@ 6.00
" " IC, 12 x12	@ 6.25
" " IC, 14 x20	@ 6.00
" " IC, 20 x28	@ 12.00
" " IX, 10 x14	@ 7.50
" " IX, 12 x12	@ 7.75
" " IX, 14 x20	@ 7.50
" " IX, 20 x28	@ 15.00
" " DC, 12½x17	@ 5.50
" " DX, 12½x17	@ 7.00

Coke Plates—Bright—

Steel Coke. IC, 10 x 14, 14 x 20	$5.40 @ $5.50
10 x 20	@ 8.50
20 x 28	11.50 @ 12.00
IX, 10 x 14, 14 x 20	@ 7.00
BV Grade—IC, 10 x 14, 14 x 20	@ 5.50

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC, 14 x 20	@ $5.65
20 x 28	@ 11.00
IX, 14 x 20	@ 6.40
20 x 28	@ 12.80
Abecarne Grade.—IC, 14 x 20	@ 5.55
20 x 28	@ 10 75
IX 14 x 20	@ 6 40
20 x 28	@ 12.80

Tin Boiler Plates—

IXX, 14x 26 112 sheets	@ $13.35
IXX, 14 x 28 112 sheets	@ 14.50
IXX, 14 x 31 112 sheets	@ 16.00

American Terne Plates.—Apollo.

IC, 14 x 20	$6.25
IC, 20 x 28	12.50
IX, 14 x 20	7.25
IX, 2 x 28	14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot—

Lake	@ 11 ¢
Ansonia grade Arizona	@ 10½¢
Ansonia grade Casting	@ 10 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 25 %, according to size of order. Stubs' gauge standard.

Not wider than	Not longer than	And longer than	Weights per sq. foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30		72	22	22	23	23	25	27	31	....
36	96		22	22	23	24	26	30	33	....
36		96	22	22	23	25	27	31	35	....
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅝ inch diameter and over, ₩ lb 22¢
Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per lb.
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter, 2¢ ₩ lb additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned	₩ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz.	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

July 6, 1892.

O. G.	N. G.	Net. ⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional
Brazed Brass Tubing. (To No. 20 inclusive.)
Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	$1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list	30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 10	in. 10 12	in. 12 14	in. 14 16	in. 16 18	in. 18 20	in. 20 22	in. 22 24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.2	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 26	in. 26 28	in. 28 30	in. 30 32	in. 32 34	in. 34 36	in. 36 38	in. 38 40
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0.30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.62
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2 00
No 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

— % discount.
Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

	Per lb.		Per lb.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No. 10	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive	17¢ ₩ lb
Over 3½ to 5 inches inclusive	18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive	18¢ ₩ lb
Over 3½ to 5 inches inclusive	19¢ ₩ lb

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.	
Western Spelter	4½¢@4¾¢
Bertha (pure)	8¢@8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.	
600 lb casks	5⅛¢@5¾¢
Per lb	6½¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.	
American Pig	4¢@4.10
Bar	4½¢
Pipe, subject to discount 20%	6¼¢
Tin-Lined Pipe, subject to discount 20%	15¢
Block Tin Pipe, subject to discount 20%	37½¢
Sheet, subject to discount 20%	7¢
Old Lead in exchange, 3¼¢ ₩ lb.	

Solder—

½ @ ½	13½¢ @ 14½¢
No. 1	11½¢ @ 12½¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson	₩ lb 11 ¢
Hallett's	10½¢

Aluminum—

Duty: 15¢ ₩ lb.

No. 2 grade metal, in to s lots	₩ lb .75
No. 1 (guaranteed to be 98 % pure and over), in ton lots	₩ lb .90
Lots less than 1 ton	10¢ ₩ lb additional

Old Metals—

Prices Paid in New York.

Heavy Copper	₩ lb 7½¢
Light and Tinned Copper	₩ lb 6½¢
Heavy Brass	₩ lb 5½¢
Light Brass	₩ lb 4½¢
Lead	₩ lb 3 ¢
Tea Lead	₩ lb 2 ¢
Zinc	₩ lb 2¾¢
No. 1 Pewter	₩ lb 1¢ ¢
No. 2 Pewter	₩ lb 7 ¢
Wrought Scrap Iron	₩ gross ton $9.00
Heavy Cast Scrap	₩ gross ton 7.00
Stove Plate Scrap	₩ gross ton 4.50
Burnt Iron	₩ gross ton 3.00

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THE IRON AGE

THURSDAY, NOVEMBER 16, 1893.

Naval Rapid Fire Guns.

Considerable interest attaches to the competitive tests of rapid fire guns for the navy recently concluded at the Indian Head proving grounds, they having been the first ever held in this country under such conditions as to afford the opportunity for rigid comparison As all the guns tested were of home manufacture, the results, as embodied in the report of the Board of Officers, will be of additional interest. Three rapid fire guns were tried—namely, the Hotchkiss, the Driggs-Shroeder and the Sponsel. Of these the first and last are manufactured in New England, while the second is of Philadelphia make. The tests were of an exhaustive nature, special attention being directed to the simplicity and strength of the mechanism and the facility of handling the weapon. As the barrels and ammunition of all three guns are practically identical, the real question to be determined was as to which breech system is best adapted for the naval service.

The board found that although none of the guns withstood all the tests each possessed points of merit peculiar to itself. The Driggs-Shroeder gun, for instance, excelled in rapidity of fire, while the Hotchkiss made the best showing in actual operation—that is, in dismounting and reassembling parts for firing. The Sponsel gun showed the greatest strength in its breech mechanism, but is reported as not attaining to the general merits of the other two. The board found, in short, that there was little to choose between the Hotchkiss and Driggs-Shroeder weapons, although in the opinion of the majority the advantage inclined slightly in favor of the former. Consequently the guns are placed in order of merit in the report, as follows: Hotchkiss, Driggs-Shroeder and Sponsel. While valuable and satisfactory in many ways the tests tend to prove that the ideal naval rapid fire gun has not yet been produced. Meanwhile the results of the competition may serve to stimulate further inventive efforts in this direction.

The death rate of New York City for last week was 17.46 in 1000, the lowest ever recorded in the city.

Four-Valve Tandem Compound Engine.

The four-valve tandem compound steam engine here illustrated is built by Russell & Co. of Massillon, Obio, and is designed to meet the requirements of the highest economy in steam consumption. To this end recourse has been nad to results obtained from a long experience with the two leading types of automatic engines—namely, releasing and positive, so called from the manner in which the cut off valve is operated. The aim in designing this engine has been to blend the best qualities of both these types. The bed, as shown in Figs. 1 and 2, is of the well known Tangye type, which rests on the foundation its entire length, and possesses great strength and rigidity. The arrangement of the cylinders, pistons, valves and valve gear is clearly shown in Figs. 1 to 4.

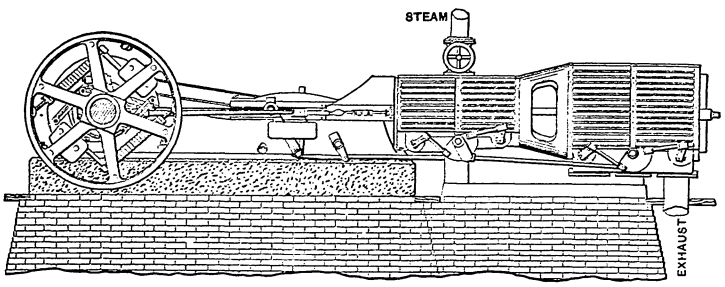


Fig. 1.—Side Elevation.

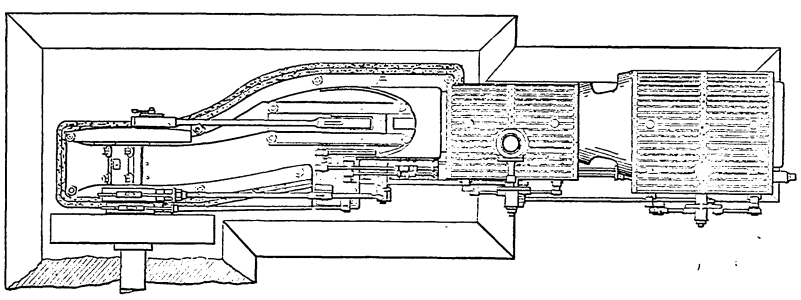


Fig. 2.—Plan.

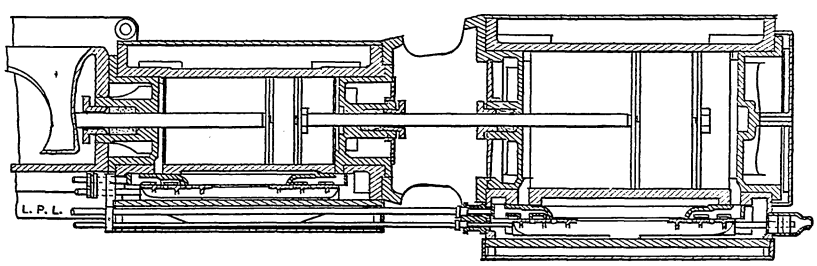


Fig. 3.—Horizontal Section through Cylinders.

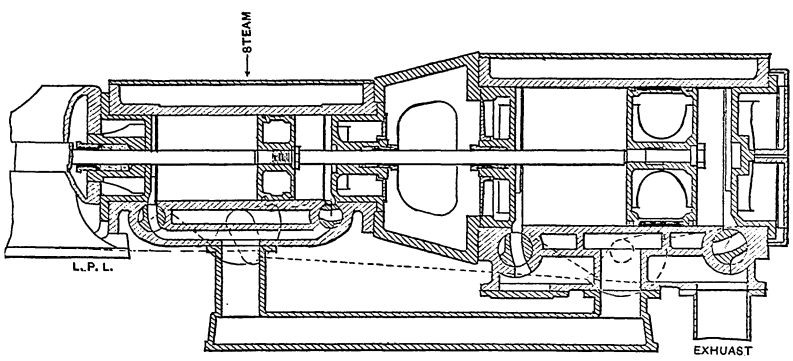


Fig. 4.—Vertical Section through Cylinders.

FOUR-VALVE TANDEM COMPOUND ENGINE.

The piston is in one piece, cast hollow and fitted with two narrow rings sprung into place for packing. Between these two rings is a broad band of anti-friction metal, the composition of which is such as to expand—on being heated—more than iron, and this makes the anti-friction portion of the piston project beyond the cast iron surface, thus throwing all the wear upon this band and preventing cutting or scoring of cylinder.

The wrist of the crosshead is made of steel, lead lapped to size, and inserted into its place, after which the hole through head and wrist is reamed out and a steel bolt, fitting snugly, driven through and secured with a nut as shown; thus it will be seen that should occasion require the wrist can be removed and another one inserted in its place. The sliding sur-

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faces are lined with the best anti-friction metal, and means for taking up wear in all directions provided. The connecting rod is made of forged steel and its length from center to center of boxes is six cranks. An especial feature of this rod is that the wear in the boxes is taken up in the same direction at both ends, thereby maintaining the length between centers always the same, which in the case of small clearance is very desirable.

The governor shown in Fig. 5 is that employed with the automatic engines built by this company. It controls the speed of the engine through the cut off eccentric, which fits loosely on the engine shaft and is connected with the weight arms in such a manner that the cut off eccentric is moved around the engine shaft, either forward or backward, as the weights change their position, thereby cutting the steam off earlier or later in the stroke as the governor, or more properly the weights, adjust themselves to the load. When the cut off eccentric is rotated forward—that is, around the shaft in the direction the

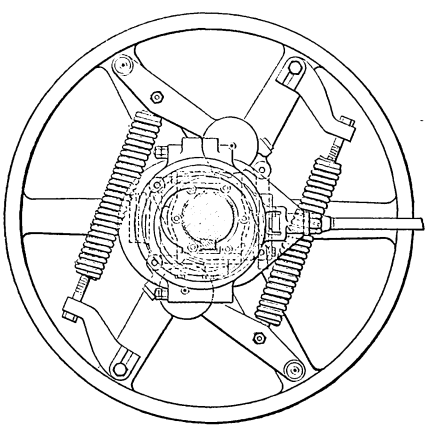


Fig. 5.—Governor.

FOUR-VALVE TANDEM COMPOUND ENGINE.

engine runs—the steam is cut off earlier in the stroke; when the eccentric is rotated backward the steam is cut off later in the stroke. Indicator cards taken from these engines show the governor to be extremely sensitive under widely varying conditions of load.

A. Falkenau of Eleventh street and Ridge avenue, Philadelphia, mechanical engineer, is making a number of dummy projectiles for the Pneumatic Torpedo & Construction Company of New York, which are intended for service on board of the steamship "El Cid," recently purchased by the Brazilian Government. They are 10-inch subcaliber and for 15-inch guns.

The works of Pedrick & Ayer of Philadelphia, manufacturers of machine tools, which firm recently made an assignment for the benefit of their creditors, are now in full operation and running 10¼ hours per day, under the management of the assignee, James M. Hibbs of the firm of Hoopes & Townsend, Philadelphia. A good many orders are in hand, and will be filled as rapidly as possible. A company is in process of formation for the purpose of taking over the business of the late firm, and Mr. Pedrick, one of the partners, will be one of the largest shareholders.

The Rail Combination.

Some facts bearing upon the Steel Rail Association, which is to terminate its existence at the end of this year, are pertinent, because during its history the industry has undergone important changes from a technical and commercial point of view. The character of the agreement under which the mills worked during the earlier part of its life is well shown by the following memorandum, entered into on August 2, 1887:

Memorandum of agreement, entered into August 2, 1887, by and between the North Chicago Rolling Mill Company, the Cambria Iron Company, the Pennsylvania Steel Company, the Union Steel Company, the Lackawanna Iron & Coal Company, the Joliet Steel Company, the Western Steel Company, the Cleveland Rolling Mill Company, Carnegie Brothers & Co., Limited; Carnegie, Phipps & Co., Limited; the Bethlehem Iron Company, the Scranton Steel Company, the Troy Steel & Iron Company, the Worcester Steel Works and the Springfield Iron Company.

We, the before-named companies and corporations, manufacturers of steel rails, hereby mutually agree one with the other, that we will restrict our sales and the product of steel rails of 50 pounds to the yard and upward, applying to orders taken by us and to be delivered by us or from our respective works during the year 1888, as hereinafter allotted and limited; and we respectively bind ourselves not to sell in excess of our current allotments, without first obtaining the consent of the Board of Control thereto—that is to say:

IT IS AGREED, "There shall now be made an allotment of 800,000 tons of rails, which shall be divided and apportioned to and among the several parties hereto to be sold by them during the year 1888, upon the following basis of percentages, to wit: North Chicago Rolling Mill Company, 12½ per cent.; Pennsylvania Steel Company, $9\frac{8}{10}$ per cent.; Bethlehem Iron Company, 9 per cent.; Carnegie Bros. & Co., Limited, and Carnegie, Phipps & Co., Limited, (jointly), $13\frac{5}{10}$ per cent.; Joliet Steel Company, 8 per cent.; Lackawanna Iron & Coal Company, 8 per cent.; Cambria Iron Company, 8 per cent.; Scranton Steel Company, 8 per cent.; The Union Steel Company, 8 per cent.; Cleveland Rolling Mill Company, $4\frac{8}{10}$ per cent.; Troy Steel & Iron Company, $4\frac{5}{10}$ per cent.; Western Steel Company, $4\frac{5}{10}$ per cent.; Worcester Steel Works, $1\frac{4}{10}$ per cent."

And in addition to the said allotment of 800,000 tons of rails above allotted, an additional allotment of 250,000 tons is hereby made and allotted to the Board of Control, to be reallotted and reapportioned by it, as and to whom it may deem equitable, in the adjustment of any differences that may arise. It being also further agreed that all subsequent allotments of rails hereafter made, to be sold under this agreement during the year 1888, shall also be divided and apportioned to the several parties hereto in the same ratio of percentages as said apportionment of 800,000 tons is herein divided and apportioned.

It is further agreed, "That the Board of Control shall, from time to time, make such further allotments as shall be necessary to at all times keep the unsold allotments at least 200,000 tons in excess of the total current sales, as shown by the monthly reports of sales. This is to be in addition to the then unappropriated part of the 250,000 tons hereinbefore allotted to the Board of Control to adjust differences."

It is further agreed, "On the first day of April, July and October, the Board of Control are authorized and directed to cancel such part of the unmade allotments of the respective parties hereto as they the said Board of Control shall determine such party unable to make in due time, and all allotments so canceled the Board of Control shall have the right to reallot to any of the other parties hereto; it being understood that all such cancellations shall apply only to allotments standing to the credit of the respective parties hereto on the dates above named, but no reallotment as aforesaid shall be made by the Board of Control to any of the parties hereto for the purpose of enabling them, or any of them, to make and sell rails from foreign made blooms."

It is further agreed, "That all transfers of parts of allotments from one party to another shall be made by the Board of Control."

It is further agreed, "That there shall be a Board of Control, consisting of three members, namely, Orrin W. Potter, Luther S. Bent and W. W. Thurston, who shall have power to employ a paid secretary and treasurer."

It is further agreed, "That the Board of Control, upon the written consent of 75 per cent. of the percentages as hereinbefore named, shall increase the allotments for the year 1888, and such increase shall be allotted to the parties hereto as hereinbefore provided."

It is further agreed, "That each party whose name is hereunto annexed, shall and will make monthly returns to the Board of Control of all contracts for delivery of rails of 50 pounds to the yard and upward during the year 1888, and also of all shipments of such rails made by them during said year; a copy of such return shall be furnished to each party hereto."

It is further agreed, "That all the parties hereto shall and will, on or before January 15, 1888, make a written return to the Board of Control of all rails of 50 pounds to the yard and upward (designating the weight) which they respectively had on hand January 1, 1888, stating whether the same are sold, and if sold, on what order they apply."

It is further agreed, "That the Board of Control shall have the right whenever they deem it expedient to convene a meeting of the parties hereto, and they shall give at least ten days' previous notice of all meetings, and any business transacted at such meetings, and receiving 75 per cent. of the votes present thereat, either in person or by proxy, shall be binding on all the parties hereto, excepting as to a change in percentages as aforesaid."

The Board of Control shall be required to call a meeting of the parties hereto when requested so to do in writing, signed by any three of the contracting parties, but such request and such notice shall state the object for which such meeting is called.

It shall be the duty of the Board of Control to have a proper record kept of all the returns made to it, with power from time to time to change the form of return as they may deem expedient.

The Board of Control shall have authority to levy an assessment, pro rata to the allotted tonnage, to defray the actual expenses made necessary to carry out this agreement.

It is further agreed, "That we will, respectively, immediately make return

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to the Board of Control of all rails of 50 pounds to the yard and upward which we are now under contract to deliver during the year 1888, said return to state to whom such rails are sold and when they are to be delivered."

North Chicago Rolling Mill Company, by O. W. Potter, president
Cambria Iron Company, by E. Y. Townsend, president.
Pennsylvania Steel Company, by Luther S. Bent, vice-president.
The Union Steel Company, by H. A. Gray, secretary and treasurer.
Lackawanna Iron & Coal Company, by B. G. Clarke, vice president.
Joliet Steel Company, by W. R. Stirling, treasurer.
Western Steel Company, by A. M. Wilcox, president.
Cleveland Rolling Mill Company, by Wm. Chisholm, president.
Carnegie Bros., Limited, by D. A. Stewart, V. C.
Carnegie, Phipps & Co., Limited, by John Walker, chairman.
The Bethlehem Iron Company, by Wm. W. Thurston, vice-president.
The Scranton Steel Company, by W. W. Scranton, president.
Troy Steel & Iron Company, Selden E. Marvin, secretary.
Worcester Steel Works, by Samuel D. Nye, manager.
The Springfield Iron Company, by Charles Ridgely, president.

It will be observed that the allotment was changed somewhat from that prevailing in 1887, when the figures were:

	1887 Allotment. Tons.	Per cent.	1888 Allotment
Bethlehem	199,130	10.15	9.0
Cambria	158,111	8.07	8.0
Carnegie	249,130	12.70	13.5
Cleveland	96,549	4 92	4.8
Joliet	158,111	8.07	8.0
Lackawanna	158,111	8 07	8.0
Scranton	158.111	8.07	8.0
North Chicago	244,644	12.47	12.5
Pennsylvania	199,130	10.15	9.8
Troy	101,982	5 20	4.5
Union	130 563	6.65	8.0
Worcester	27,247	1.39	1.4
Western	80,340	4.10	4.5
Tota's	1,961,139	100.00	100.0

The actual shipments of rails during the year 1888 on account of the allotments of that year were as follows:

Shipments in 1888.

	Tons.
North Chicago	161,945
Carnegie	138,946
Scranton	136,029
Lackawanna	128,510
Union	126,016
Pennsylvania	121,960
Joliet	114,675
Bethlehem	88,448
Cambria	82,063
Western	39,168
Cleveland	29,940
Troy	25,110
Worcester	6,589
Springfield (extra)	3,705
Total	1,200,184

In March, 1889, the consolidation of the mills in the Illinois district took place, the North Chicago, Joliet and Union companies being merged into the Illinois Steel Company. This left out of the combination only the Duquesne Works, at Pittsburgh, and the Colorado Coal & Iron Company, at Pueblo. The shipments of the different mills in 1889 were:

Shipments in 1889.

	Tons.
Illinois	401,795
Carnegie	267,461
Scranton	155,814
Lackawanna	139,141
Bethlehem	121,262
Pennsylvania	108,931
Cambria	64,947
Cleveland	14,807
Troy	2,280
Total	1,271,438

The next year brought a dropping out of all the smaller mills for good. Only the Cleveland Rolling Mill made an effort later on to remodel its mill, but received inducements to abandon the effort.

The product of the different mills in 1890 is shown in the following table:

Rail Product in 1890.

	Tons.	Allotment. Per cent.
Bethlehem	128,262	8
Cambria	105 552	8
Carnegie	301,659	57
Illinois	413,850	
Lackawanna	138.737	8
Pennsylvania	115,077	9
Scranton	182,049	8
Total	1,388,186	

The active competition in the West of the Duquesne mill, which kept outside of the combination, and the sharp rivalry between the Scranton and Lackawanna works robbed the existing arrangement of much of its power for good. In November, 1890, the Duquesne mill was acquired by the Carnegie interest, and negotiations were opened for a consolidation of the two Eastern mills named. These led to the purchase of the Scranton by the Lackawanna Company early in 1891.

There had been modifications in the percentages, and ultimately the allotment system was modified in one particularly important feature. Monthly reports of shipments were made to the secretary, who distributed the total according to the allotment basis. Those mills which had exceeded their share paid into the treasury a penalty of $1.50 per ton at one period of the life of the association and $2.50 during another time. Thus it might happen, and it did occur, that mills whose customers called for their material early in the year might far exceed their allotment, but latter in the season, having finished their orders, they became receivers from the fund instead of contributors. At no time was the price of steel rails a part of the formal agreement, although understandings among mills concerning work emanating in debatable territory did occur, and in some instances protection was accorded to mills called upon to fight foreign rails in distant markets.

Later on the Pennsylvania Steel Company built the Sparrow's Point mill, and again an element of uncertainty appeared. The deliveries in 1892 were as follows:

Rail Deliveries in 1892.

	Tons.
Bethlehem	115,661
Cambria	86,739
Carnegie	324,713
Illinois	411,4 7
Lackawanna	179,818
Pennsylvania	51,058
Maryland	88,705
Total	1,260,141

The allotment of the Maryland Company was adjusted by giving that mill 8 per cent., making the total 108 per cent., the others retaining the same distribution of the 100 per cent. The shipments of the first half of the current year were as follows:

Rail Shipments, First Half 1893.

	Tons.
Bethlehem	35,189
Cambria	44,336
Carnegie	122,545
Illinois	156,433
Lackawanna	119,849
Maryland	66,023
Pennsylvania	27,509
Total	571,884

Differences arose this year among the Eastern mills as to percentages, but they were finally adjusted among them, and the Eastern works went into the meeting held a month since as a unit so far as that question was concerned, the figures arrived at to be retroactive to April 1. They offered the Western mills the same aggregate percentage, to be distributed among the two, as before, by agreement between them. The Carnegie interest demurred to a further continuance of the association after its expiration by limitation. The same party declined, furthermore, to go into any understanding as to prices, and thus practically disrupted the organization.

In the earlier days of the life of the association prices showed a pretty steady, though slow, decline. The ties which united the different mills were exceedingly loose. Individual mills took as much business as they could capture, and when their allotment had been filled or had been exceeded simply demanded the distribution of additional tonnage and got it. The existence of an understanding among the mills probably did have some effect upon prices at that period, but it was far from exercising a commanding control upon values.

It was only when the second phase in the history of the association was entered into, when the penalty clause for shipments in excess of allotment was introduced, that some resemblance of uniformity and steadiness was given to values. While there were times when an informal agreement as to prices did exist among the makers, that feature was never a part of the formal contract entered into by the mills. It is technically true, therefore, that the combination allowed every mill freedom to produce as much as it desired at any price which it might see fit to name. The penalty feature of the agreement induced the mills to keep cutting within bounds and acted as a check upon a too aggressive campaign of selling.

At one time the producers lowered the price by $1 per ton, but did not follow the market for raw materials down. The result was a constantly widening gap between the price of steel rails and the price of Bessemer pig and soft steel billets, the latter a parallel product. It is conceded by authorities in the rail trade that this refusal to abandon the higher level was a mistake in more than one direction.

With the rapid falling off in the demand, the temptation to capture business became greater and greater. Rather than make open concessions in prices the different companies resorted to other means. Inducements were offered in the way of exceedingly low prices on splice bars and other track material, much to the distress of producers whose sole specialty this class of trade was. Another method was to quote prices delivered to point of consumption at a nominal advance over the mill price. Again, the railroads who agreed to take new rails got a chance to sell their old material at figures considerably above the prices which they could possibly realize in the open market. It goes without saying that all this had a very demoralizing effect on the producers themselves and on the buyers.

The steel rail industry was getting the credit and subjecting itself to the reproach of pursuing a tyrannical course in its relations with the buyers. It was a shining mark for the attacks of free traders, whose long list of trusts and combinations in the iron trade had shrunk to that one organization, all the others having collapsed under the stress of a declining market. It was in this

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way involving the whole iron trade in difficulties and was putting its members on the defensive.

There were other features which made the steel rail association unpopular in the iron trade. It was supposed to be injurious to other branches, notably to the outside mills who were rolling splice bars. It was urged that some of the works which had other departments than the rail business were sacrificing a part of the profits of that branch in order to operate more vigorously and effectually in their competition against outside rival concerns in their other branches. Thus the lack of full employment for rails was supposed to indicate the danger that the idle plant would be utilized to produce steel billets. There can be no doubt that the decline in billets was aided by the eagerness, at times, of some of the rail mills to keep their Bessemer plants and rolling mills in active operation.

We have frequently protested against the persistent misrepresentation on the part of the enemies of the American iron trade of calling the steel rail combination a trust. If it had been it would not have succumbed to the pressure of hard times. Whether or not the combination has abused its power may be a matter for controversy. From an organization which was essentially weak, it became a power through consolidation and purchase of some of the original members, and through the elimination owing to inherent weakness of the smaller concerns. But at the time when the stronger compact was formed the price which was asked for rails by the mills was decidedly reasonable. It was fair alike to the consumer and to those manufacturers who had managed to survive, and whose aggregate capacity the country needed in order to possess the equipment to meet the extraordinary demands which spurts in railroad building in this country suddenly thrust upon the makers. We hold that it is poor policy on the part of consumers whose requirements are subject to violent fluctuations to starve a large percentage of producers to death during the lean years, because in periods of an extraordinary demand they must submit to tremendous advances and vexatious and costly delays.

The Canton Steel Roofing Company, Canton, Ohio, have reproduced their factory, which was destroyed by fire, and have added many new facilities. The building is lined inside and outside with sheet iron, following the surface, care being taken not to leave any places which would act as fire flues or air conductors. It is said to be the first building of its kind ever constructed. Every part of the wood work is covered completely. The plant will be equipped with new and improved machinery, calculated to produce maximum quality at minimum cost.

On the night of October 31 the plant of the Irondale Steel & Iron Company, at Anderson, Ind., was entirely destroyed by fire, which is supposed to have originated in the oil house. The works, consisting of two sheet mills and a puddle mill, with the necessary bar rolling capacity, were in full operation at the time, but as the buildings were almost entirely constructed of wood, which was very old and dry, the fire was of brief duration. With the exception of some new parts added last spring, the plant consisted of buildings and machinery which had passed through the hands of various owners, having been moved from Aurora, Ind., several years ago. The loss was about $40,000, partly covered by insurance. It is probable that the company will rebuild at a nearby point and take advantage of an abundant supply of natural gas in the territory under consideration. This unfortunate circumstance takes 20 tons of sheets per day out of the market at a time when orders are becoming more plentiful, and throws about 150 men out of employment.

American Versus English Wood Working Machinery.

Frederick Danner, vice-president of the J. A. Fay & Egan Company of Cincinnati, has written a letter to the *American Exporter*, in which he deals with the statement emanating from English manufacturers of wood working machinery, in the columns of the *Ironmonger*, concerning the character of this class of machinery as made in this country and abroad. We take from it the following passages:

M. Glover & Co. attach considerable importance to their having sold one machine to an American house, they having put the same in on its merits, and as it was not returned they take it for granted that its equal is not made in the United States. It is possible that this is correct, because kindling wood choppers are not made, or even thought of, by any reliable wood working machinery manufacturer in this country. Englishmen who have called upon us, and who have lately purchased our wood working machinery, tell us that Messrs. Glover & Co. are manufacturers of kindling wood choppers and emery grinding machines. If so, their ability as expert judges may be questioned by the trade. They claim that they cannot understand why American manufacturers do not pay more attention to the construction of their machines, so as to bring them up to the English standard, and then add that foundry castings, wages and materials are higher in price in America, and so we make up the deficiency by eulogizing our goods and ideas more than English makers find it necessary to do. But, at the same time, they allow that Americans know better than they how to apply machinery to new purposes, and that if we can only get a variety of machines to do the work we are elated, and this they consider a weakness. I consider this ignorance on their part, and hence I will take this matter up in detail.

In the first place, all English manufacturers of wood working machinery acknowledge the superiority of American machinery by copying the same. Some do it openly and admit it; others do it on the sly and disclaim it. Sager of Halifax and Haigh of Oldham acknowledged this to me when I was in England in 1889, by saying: "We take an American machine as a copy, and by putting in a little more metal, and placing the same on the market as an improved English-American machine, we can sell them." These two manufacturers are leading houses in their line in England. A. Ransome & Co., some years ago, thought enough of American ability to hire an American designer of wood working machinery, and a number of machines designed by this American are illustrated in their present catalogue. A short time ago one of the Ransomes came to America for ideas, and, I believe, for the special purpose of copying what he could, for the purpose of rearranging his company's plant upon the American plan upon his return home.

Thomas Robinson & Co. of Rochdale wrote to the Egan Company for plans of their power feed sanding machines, but could not agree upon the price, and they now make a power feed sander which is a direct copy of American machines. Now, this wholesale copying is bound to result as follows: The American manufacturer puts a new machine on the market, which is at once copied by an English or a German manufacturer, but as it takes time and practical experience to develop the weak points in any newly designed machine, it is to be assumed that the copyist does not get the benefit of this practical experience when he copies the original, untried machine. It sometimes takes years to develop all the weaknesses, and the reason why the English manufacturer considers our machinery too light in weight is simply because he has copied discarded machinery. The question arises, are the American machines light in weight? At the present time I say "no." The J. A. Fay & Egan Company make a 24-inch single cylinder thicknessing planer, weight 5000 pounds, and they also make a 30-inch double cylinder machine which weighs 8000 pounds. I doubt very much if any English manufacturer can show as heavy machines as these for the purposes intended.

As to the high price of castings and wages: From a conversation I had with several foundrymen from England a short time ago I find that the price of castings there varies from 2 to 8 cents per pound, which is exactly the price in Cincinnati. That wages are higher in this country I admit, but it is a well-known fact that the American mechanic does more work than the English or the German mechanic in the same time. Then, the American iron is far stronger than the English, and consequently it does not require so much of it to obtain the same result.

In regard to separate machines for special work, we only recommend combination machines for small manufacturers, so as to enable them to do a variety of work with as little outlay as possible at the outset for machinery. Where close competition, however, has to be overcome it is necessary to have machines made to do only one class of work, so as to keep them running steadily on one kind of stock, the results of which, while apparent to the American, cannot be appreciated by Englishmen.

In regard to babbitt metal: This our English manufacturers take special pains to condemn, while at the same time they are using it. In 1889 I visited the London & Northwestern repair shops at Rugby, and there saw babbitt metal bushings fitted to the connecting rods of the locomotives. To this fact I called the attention of my friend, who, by the way, was an engineer of 40 years' experience with the same company, and he replied: "This is your Yankee babbitt metal. It wears well, is used to put in the rods, and is liked by all our men." Some of the users of wood working machinery in England are beginning to realize that when babbitt metal is used it costs less for repairs, because they can then do their own repairing.

In conclusion, I ought to say something about balancing. While in Glasgow I visited a large furniture factory, and there saw a nearly new machine, weighing about 6000 pounds, fitted with bronze boxes, and built by a responsible English firm, making moldings 2 inches wide, at the rate of 1500 feet per day of ten hours. The cutter head and countershaft pulleys were all very much out of balance; the boxes were loose in the frame; the cutter head mandrel was running loose in the journal and the machine vibrating badly, while the work turned out was extremely rough. An American machine for this class of work would weigh about 1200 pounds and would turn out about 10,000 feet of molding in the same time. The boxes as we construct them could not get loose in the frame, while less power would be consumed and the work turned out would be smooth. Another instance occurred at Keighly, Yorkshire, where I found a 24 inch planer running with the cutter head out of balance enough to make the machine shake the whole floor on which it stood. The boxes were loose in the frames and the machine was condemned by a wood working machinery manufacturer, although it was not an old machine by any means. The trouble was that the cutter head was out of balance. In the South of England I visited a shop where a large manufacturer of wood working machinery had undertaken to put up some line shafting 3 inches in diameter, with a pulley on same 4 feet in diameter and 20-inch face. When under speed it shook the building, and the proprietor, becoming alarmed, consulted the expert of the firm who did the work. It was decided that the shaft was too light, and a 4-inch shaft was substituted, with the same result. A Yankee mechanic, who was in the mill, remarked that if they would take the pulley off and balance the same they would have no trouble. They finally tried this, and found the pulley several pounds out of balance, and when this was remedied the trouble ceased.

Now, taking the Glasgow machine, which weighed about 6000 pounds; why did not a frame of this size and weight hold the cylinder from jumping about in the boxes? Simply because 6000 pounds did not affect

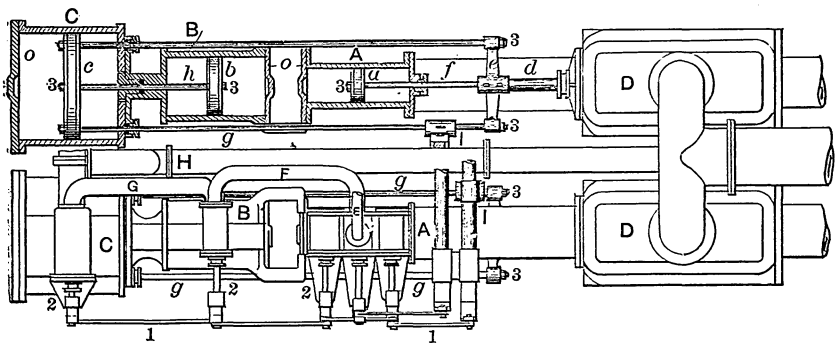
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the running of the cylinders in any manner.

The English makers of wood working machinery should not run down American machinery, for their own weaknesses can be shown up at all times to their disadvantage.

Multiple Expansion Engine.

The principal object sought by the inventor of this engine, C. C. Worthington of Irvington, N. Y., was to render the pistons of the respective cylinders more readily accessible and removable than in the usual constructions of this type. The drawing represents the design applied to a duplex horizontal direct acting pumping triple expansion engine of the Worthington type. A, B and C are the high, intermediate and low pressure steam cylinders and *a*, *b* and *c* their respective pistons, D being the water cylinders on each side of the engine. Steam is delivered to the high pressure through the pipe E and exhausted from that cylinder to the intermediate through the pipe F, thence to the low pressure through the pipe G and to the condenser through the exhaust H. The steam valves may be of any suitable construction and operated by any suitable valve movement, but cut off valves on only the high pressure cylinder are preferably used, and rotary valves arranged as shown, these valves being operated by the lever valve motion I, connecting rods 1 and cranks 2 on the valve stems, as usual in this class of engines.



MULTIPLE EXPANSION ENGINE.

Referring to the sectional drawing, *d* is the main piston rod through which the power from the three cylinders is applied. Upon this rod is a cross head, *e*, to which the pistons of the three cylinders are connected. The high pressure piston is connected to the cross head by the rod *f*, which is preferably separate from the main piston rod *d* and secured to the cross head by a separate key, as shown. The cross head is connected to the low pressure piston by the rods *g*, which pass outside the high and intermediate cylinders.

The intermediate pressure piston *b* is connected directly to the low pressure piston *c* by its piston rod *h*, secured at its opposite ends to the pistons *b*, *c*, preferably by nuts 3, as shown. Each of the cylinders, therefore, has one head through which the piston rod does not pass, and these heads *o* are made removable in the usual manner, the two inner cylinders A, B being separated sufficiently to afford space for the removal of the respective heads *o* and pistons *a*, *b*. It will be seen that in this construction each of the three pistons is readily accessible by removing the respective cylinder heads *o*, that each of these heads may be removed readily and without interference with any piston rod or stuffing box, and that, as each of the pistons is carried at the end of its rod, they may all be removed by simply slacking off the respective nuts 3. In this construction, also, the use of keys in the cylinders may be entirely avoided, and the area of the smaller pistons need not be reduced by rods larger than sufficient to carry their respective individual loads. The direct course of steam between the high pressure and intermediate and low pressure cylinders is retained, also, and in case of repairs either the intermediate or the high pressure pistons and valves, or both, could be removed and the engine run with the remaining cylinders or cylinder.

Lake Superior News.

There is no question but iron ore matters look better along all the Lake Superior ranges. Two or three mines on the Marquette and Menominee ranges have decided to start, and, in fact, are starting, while the Norrie, the giant of the Gogebic, will resume next week with a quarter force. *Per contra*, there has been one complete shut down at Ishpeming, the Cliffs shafts. The big Minnesota Iron Company are to begin at once a gradual resumption, mining to start so soon as pumps and bailers can clean out the water. The Minnesota has shipped all the Bessemer stock piles that were on hand when mining ceased in August, but has some 120,000 tons of non-Bessemer on hand. The Chandler, also on the Vermillion, is to resume, and will employ a goodly force. On the Mesaba, the Franklin, which shut down two weeks ago, is to resume with 200 men next week, and will stock pile 100,000 tons during the winter. This mine, which has an enormous ore body and is one of the best underground properties on the new range, will put in hoisting equipment for 8000 tons a day—two 200 horse-power Corliss enginess and two three-skip shafts—and expects to send out next year 500,000 tons. Franklin Rockefeller and G. Corrigan are its owners. The Consolidated Iron Mines are stripping a full 48 acre tract at the Mountain Iron and Rathbun, and talk of 1,000,000 tons from there next season.

Iron ore shipments last week were 52,353 tons from Duluth, 25,349 from Two Harbors, and 22,000 from Ashland. For the season they will probably total 810,000 from the Vermillion range, 550,000 from the Mesaba, and 1,100,000 from Ashland, which latter includes eight-tenths of the Gogebic business.

A vast quantity of unsold ore is doubtless lying on Lake Erie docks, for a great deal of what has gone forward during much of the season, especially when freight rates were lowest, was sent out to gain the advantage of low rates.

Interest on the bonds of the ambitious West Superior Iron & Steel Company, brought into much prominence through the operations of that late Napoleon of Finance, Weeks, is understood to have defaulted November 1, and the plant will fall to the bondholders, who are claimed to be friendly to the new Rockefeller-Merritt combination. It is not at all improbable that the plant may be started up next spring and operated in an all around businesslike way. If so, several departments will necessarily be added.

L. Merritt, president of the Consolidated Mines, talks in a very businesslike way of the work of his company for next year and their standing among the ranges. He expects the company to mine 1,000,000 tons in 1894, and looks for nearly as much more to come off the new range from leased mines that will ship over the Consolidated road. The entire range will likely mine, he thinks, not over a quarter the ore from Lake Superior, so that it could not, if it would, set the price. This he looks to see about $4 for standard Bessemer, with the new mines selling at a little less in order to introduce their untried ores to Eastern furnaces.

The Turner & Seymour Mfg. Company, at Torrington, Conn., have decided to build their new foundry of iron and have placed the contract with the Berlin Iron Bridge Company of East Berlin, Conn. The old foundry burned a short time ago and the company have determined to build the new foundry entirely of iron and brick, the side walls being of brick, the roof of iron. The roof will be furnished by the Berlin Iron Bridge Company of East Berlin, Conn., and will consist of iron trusses and iron purlins covered with the Berlin anti-condensation corrugated iron. When completed, the building will contain no wood work whatever except the window frames and casings, so that it will be absolutely fire proof, and it is the intention of the Turner & Seymour Mfg. Company to carry no insurance on the building, as the Berlin Company guarantee that if all the wooden flasks which the company use at one time were piled in one place in the building and fired the roof would suffer no damage.

J. Sandford, proprietor of the Pioneer Eskbank Iron Works, Lithgow, New South Wales, who is now visiting England, is reported to be negotiating for an extensive steel plant of the most modern description. It is the intention of this Australian capitalist to lay down works in New South Wales for steel manufacture, in order to obviate the necessity of importing English and other foreign material. He has lately embarked in the production of corrugated iron roofing, sheets and other similar building material, the first ever made in Australia.

J. G. Pangborn of Baltimore, who was in charge of the railroad exhibit at Chicago, is preparing an *edition de luxe* on railroads as represented at the World's Fair. We understand that the expenditure involved in completing this volume is nearly $120,000 and that the book will be published by subscription at $25.

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Sheet Mill Progress.—II.

BY A. BEARD, CAMBRIDGE, OHIO.

Modern Housings.

Parallel with the increase in weight of sheet mill machinery designs have been improved. The strength has been distributed to parts where it is required, and an effort more pleasing to the eye obtained. Illustrations are given in this article of various makes of housings. These will serve to show the ideas of different makers.

The high shoulders have disappeared and there is more symmetry about the modern housings. Wrought iron screws, which were continually being "jammed" and a source of great trouble and annoyance, have given place to steel screws, and the diameter has been increased from 6 to 8 inches. Dovetailed bed plates, in which housings were fastened by means of wooden blocks and iron wedges, have disappeared and V-shaped bed plates have taken their place. Upon this bed plate housings can be easily moved and made secure in a few minutes; previously it took hours to do this work. Every improvement that can be suggested has been made to prevent breakage and keep things moving.

Herein lies profit for progressive mill owners. Keeping in continuous operation reduces standing charges, such as salaries, taxes, &c., to a small cost per ton of finished product, and success follows.

It is an unexplained truth that while all these changes have been going on in design and construction of machinery, sheet mill men have made but little progress in improving methods of working. Outside influences have done more in this direction than has been done in sheet mills. Steel bars rolled on universal and other specially constructed mills, cleaned from scale in rolling, have to a large extent taken the place of bars made from muck bar piles. Quality has been improved without additional cost, and so many steel sheets of superior finish have found their way into market at the same price as iron sheets that consumers have grown critical, and it is a difficult matter to dispose of large quantities of iron sheets unless corrugators and roofing men are ready to buy.

Reworking Scrap.

Following cheap steel sheet bars several mills have been built without bar mills attached to them, no provision being made for reworking the scrap or trimmings from sides and ends of sheet packs. This has been found to be a source of trouble, as sheet scrap cannot be sold at a figure that will pay for the trouble and expense of handling and transporting it to other mills to be reworked. It is too light and bulky. Sheet mill managers have always found it necessary to devise means of using their scrap in an economical manner. A common method is to bushel the scrap in an ordinary puddling furnace, pass through the squeezer and roll into a bar, which is cut to length and made into a pile, reheated and rolled into sheet bars. To save the expense of one heat, it is now a custom in many mills to fagot scrap.

The method employed is as follows: A bench is constructed upon which a wrought iron box is placed, the ends being open and a door on the front side. In the bottom of this box a muck

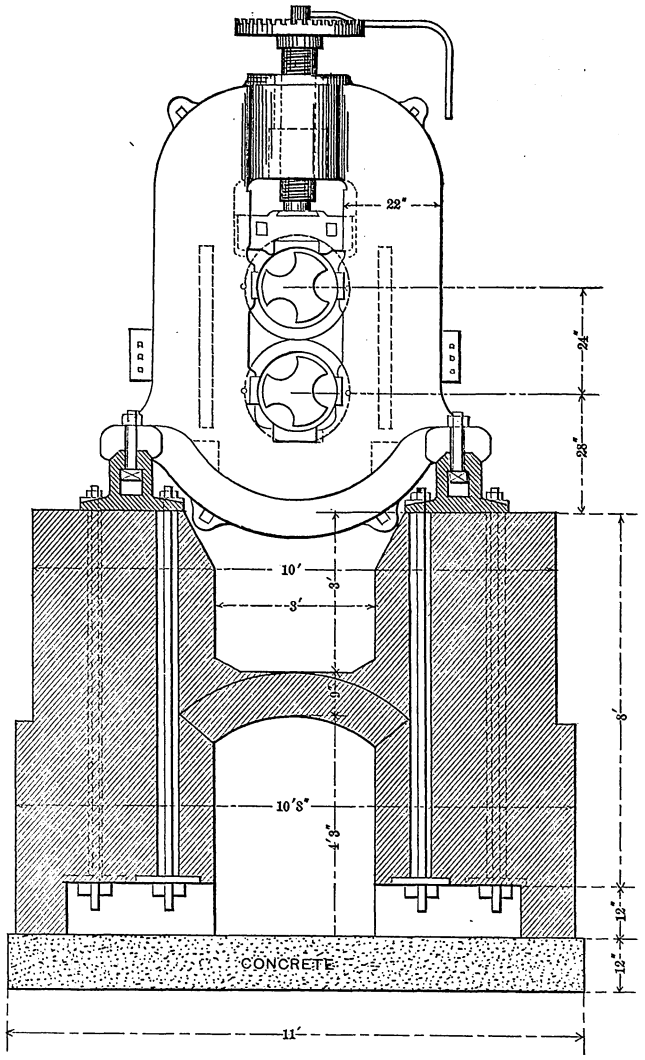


Fig. 6.—Sheet Mill Housing, Booth Design, 1893.—24-Inch Rolls.—Weight, 23,000 Pounds.

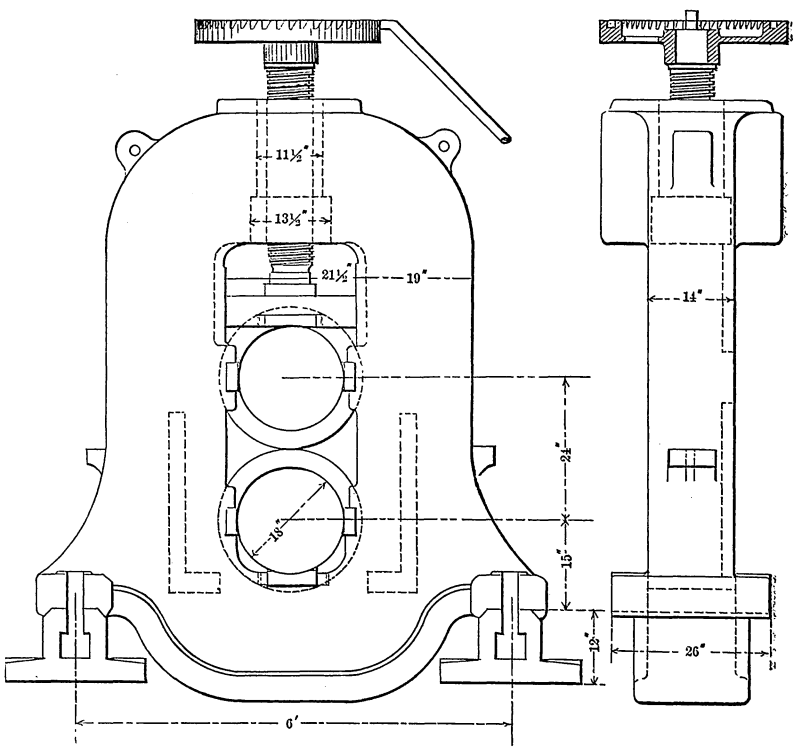


Fig. 7.—Sheet Mill Housing, Lewis Design, 1893.—24-Inch Rolls.—Weight, 19,500 Pounds.

SHEET MILL PROGRESS.

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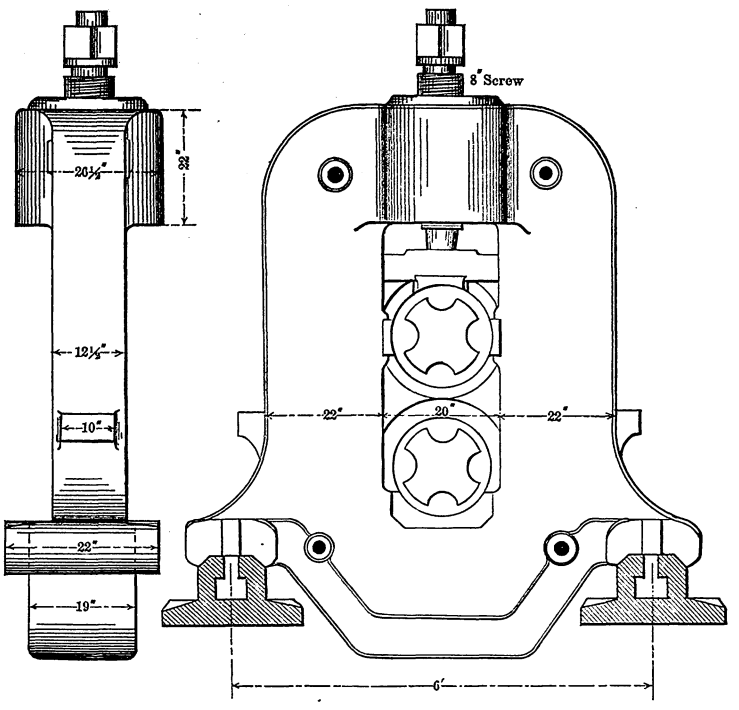


Fig. 8.—Sheet Mill Housing, Leechburg Design.—24-Inch Rolls.—Weight, 21,000 *Pounds.*

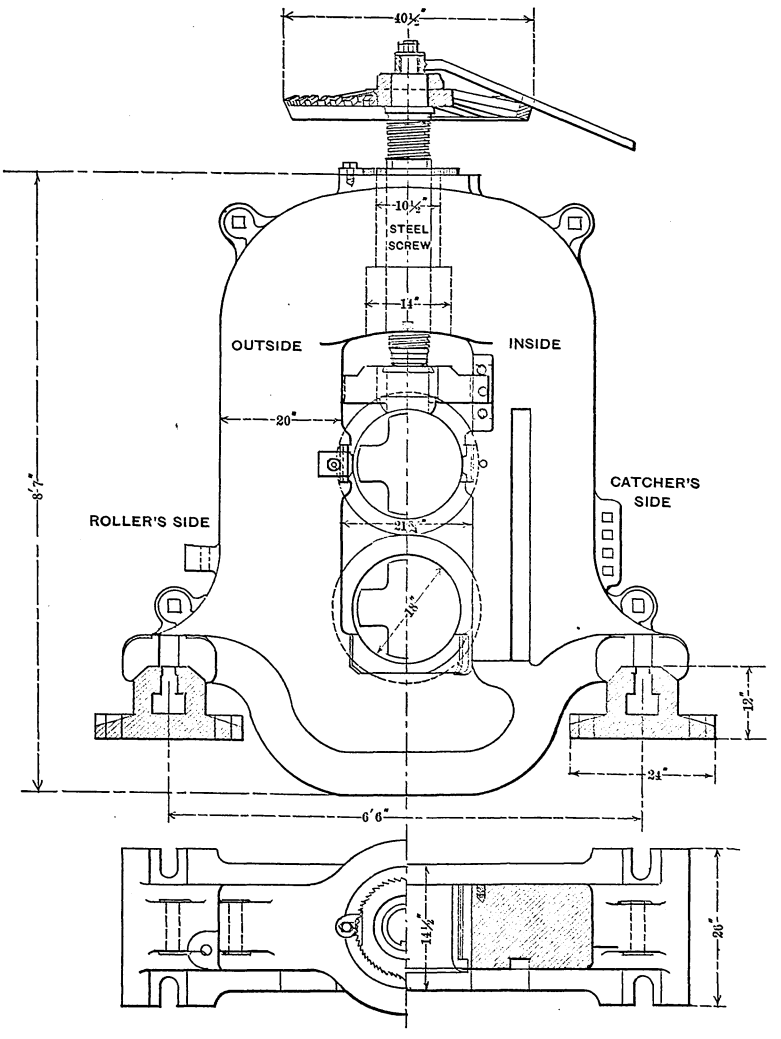


Fig. 9.—Sheet Mill Housing, Garrison Design.—Weight, 21,000 *Pounds.*

SHEET MILL PROGRESS.

bar is placed, and upon this sheet scrap bent to the length of the bar is piled, another muck bar is placed on top of the scrap, then more scrap and a third muck bar on top of the fagot. The whole pile or fagot is then about 12 inches high, it is reduced by means of a screw to a hight of 7 or 8 inches and bound together with round iron ¼ inch diameter. It is necessary that iron be used for binding, if steel is used it will not unite with the muck bar and a seam is left in the bar. In this manner nearly all the scrap can be worked up into such shape that only one heat is required to roll into sheet bars ready for use. Attempts have often been made to work scrap fagots in this manner without using muck bars but without success. The scrap works dry and muck bar is necessary as a flux. The proportion of scrap to muck bar in a well made fagot is about two-thirds. This plan of using scrap is second only in cheapness to the practice of rolling sheets from ends of boiler and ship plate. In Scotland large quantities of sheets are made in this manner, but American shipyards are not so numerous, and only a limited quantity of the material can be obtained.

Having described the general methods of rolling sheets of iron or steel and noted the changes made in machinery during the past 20 years this article would not be complete without reference to the attempts recently made to revolutionize the method of rolling sheets.

Continuous Mills.

Last year a patent was granted to William Garrett, Joliet, Ill., for a progressive process of rolling iron and steel sheets. If the process was ever given a trial the fact has not been made public, but experiments were made in an Indiana mill last year which embodied some important points of Mr. Garrett's plan. In sheet mill practice it has always been a custom to use only one pair of chilled rolls, upon which the work of molding out, running over and finishing is done. The reason given for this being that if sheets molded out through one pair of rolls are taken to another pair of rolls to complete the process of elongation, the fit or concave shape of the two pairs of rolls would not be the same unless they were turned exactly alike and were subjected to precisely the same amount of work and degree of heat. To preserve a uniform shape the rolls must each have the same treatment. If this shape is not equal buckling or dishing will result when a pack of sheets is taken from one stand of rolls to the other. If the finishing rolls are more concave in shape than the other pair the edges of the pack will elongate faster than the sides, and buckling will result, but if the conditions are contrary the middle of the pack will elongate faster than the sides, and the pack will be dished. This is the established theory of sheet iron rollers for years past, and the experiments made in Indiana seem to have proved that it is correct. A plan of the mill in which experiments were made is presented herewith, Fig. 10. The roughing mill was provided with four pair furnaces which were kept full of bars. When taken from the pair furnaces bars were passed through the sand rolls and molded out to about No. 18 gauge on one of the two pairs of chilled rolls; two roughers were employed who took turn about at the sand rolls, also two pair heaters. After being molded out the sheets were matched in threes and taken to the reheating furnaces and when ready were run over through

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chilled rolls A in the finishing mill. They were then doubled and again heated, after which they were finished on chilled rolls B, and thrown off to squaring shears. The method was tried many times, and sometimes a good heat would be rolled, but the general result was "stickers, "pinched packs," "buckles" and other imperfections, and it was generally conceded that the old established theory regarding the fit of rolls was correct. It was expected that the output of the mills would be more than doubled as compared with old methods, but in this also disappoin'ment was met and the plan was finally abandoned. The mills have since been changed to old style, and old methods continue to hold full sway.

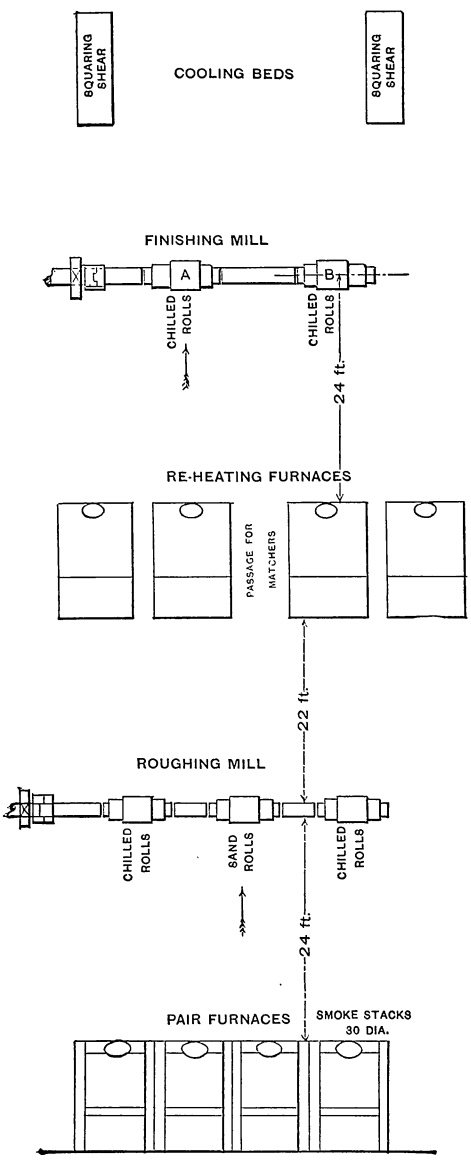


Fig. 10.—Plan of Experimental Continuous Sheet Mill.

If all other conditions and mechanical possibilities had been favorable the test of this plan would have resulted in failure, for the reason that there was a lack of concerted action on the part of the workmen and an evident opposition to the innovation. This indifference on the part of the men was apparent even to an outsider, and was in general line with their attitude toward all improvement that is liable to increase tonnage and reduce the number of men required to do a given quantity of work.

Since this article was written news comes from Bohemia that a method has been introduced by Carl Wittgenstein of Rudolfshutte, near Teplitz, by which means sheets about 150 feet long and No. 20 gauge are produced directly from the ingot with only one intermediate reheating, but so far the output has only reached 30 tons per day. Five stands of rolls are used and they are placed in continuous order. Nearly all the labor is performed automatically and only a few men are employed. Considering the enormous expense of the plant the output ought to be considerably over 30 tons per day to prove a paying investment. It will be noticed that sheets are only reduced to No. 20 gauge by this method. If Americans ever adopt this process they will have to use their wits and devise means for reducing sheets to much lighter gauge, as more sheets are sold lighter than No. 20 than are sold of heavier gauges.

A dozen or more different methods of rolling sheets have been heard of, but the inventors have so far failed to find the man with the money and energy to test their ideas. When that man is found we may hear of important sheet mill progress.

The Mercantile Cruisers of Foreign Powers.

While the vulnerability of modern ocean mail steamers render them unsuitable for fighting purposes, yet their speed, carrying capacity and sea keeping qualities cause them to be generally regarded as an important adjunct to the naval force of a nation, since they are well adapted for special employment in time of war in preying on an enemy's commerce, in transporting men and supplies, in maintaining communication with detached forces, and in various other ways. The maritime powers of Europe make careful provision for the speedy arming and equipping of such vessels for public service in case of need, and most of them, with a view to the prompt utilization of the finest merchant steamers under their respective flags, have entered into formal agreements with steamship companies which are organized under their laws and the development of which has in many cases been fostered by substantial government aid in one form or another.

Although there are nearly 7000 merchant steamers under the British flag yet this enormous fleet can only furnish about 50 vessels each combining a displacement exceeding 2500 tons with an actual sea speed of not less than 16 knots. By a system of Admiralty subventions, the payment of which is in addition to the amounts earned under ocean mail contracts, the right is secured to employ some of the fastest of these steamships in the public service should the necessity arise, upon terms agreed upon beforehand. The guns being kept in readiness and the work necessary to fit the vessels for such service having been already done as far as practicable, Great Britain could within a very short time equip as armed cruisers the "Campania" and "Lucania" of the Cunard Line, the "Majestic" and "Teutonic" of the White Star Line, the "Victoria," "Britannia" and "Oceana" of the Peninsular & Oriental Steam Navigation Company, and the "Empress of India," "Empress of China" and "Empress of Japan" of the Canadian Pacific Railway Company. Besides those named a number of other steamships belonging to the same owners are held at the disposition of the Admiralty upon demand. There are also many large and fine British merchant steamers which, though subject to no special agreement, conform to some of the Admiralty requirements in certain respects, as in their subdivision by water tight bulkheads, and these vessels form a separate list as being available for public employment in one way or another.

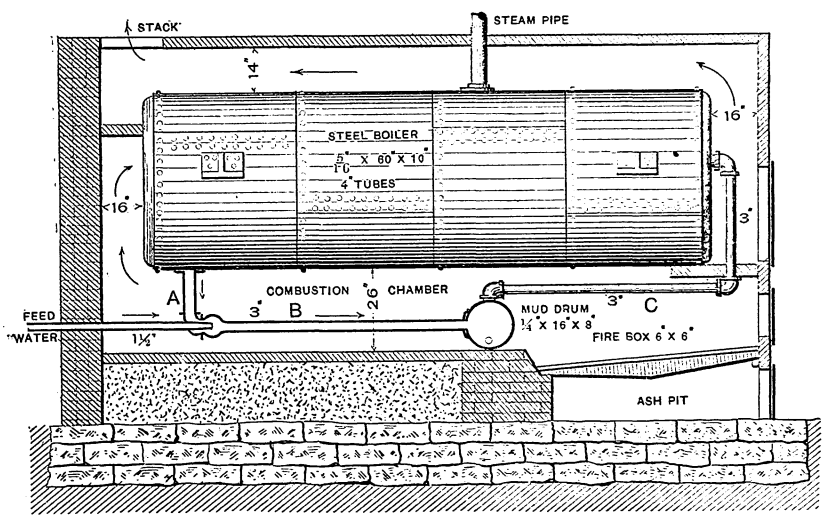
In Germany the Government claims the right to avail itself of the services of vessels belonging to private owners upon the outbreak of war. Of about 850 merchant steamers under the German flag there are not less than 15 each of which has a displacement of over 2500 tons and a sea speed of more than 16 knots. Foreign writers assert that provision has been made for supplying with guns and equipments at least seven of these steamers, which are said to be the "Fürst Bismarck," with an ocean speed of 20 knots, the "Normannia" and "Columbia," 19 knots, and the "Augusta Victoria," 18 knots, all belonging to the Hamburg-American Line, besides three of the fastest of the fleet belonging to the North German Lloyd, with sea speeds of 18 and 19 knots. The price to be paid for these ships, as well as for others, should they be pressed into the public service, has been fixed in advance by boards composed of representatives of the Government and of the owners. Officers and men of the reserves are in readiness, and upon the receipt of their war orders those assigned to each vessel would proceed at once to the point where the guns and equipment of their vessel are stored and enter upon the duties assigned them. The battery provided for each of the German merchant cruisers is said to consist of eight 5.9-inch and four 4.9-inch breech loading rifles, four rapid fire guns and 14 revolving cannon of smaller caliber.

In France the names of the merchant steamers which would be employed as armed cruisers are carefully guarded, as are the agreements understood to have been executed regarding them between the Government and their owners. It is known, however, that they belong to the two great subsidized steamship companies, the Compagnie Générale Transatlantique and the Messageries Maritimes. There are about 530 seagoing steamers under the French flag, of which 13, all belonging to the two companies named, have a displacement of at least 2500 tons each and an actual speed of not less than 16 knots. Statements have been published in foreign journals to the effect that batteries have been provided for the "Touraine," which has shown an average speed of fully 19 knots on several transatlantic passages; the "Gascogne," "Burgogne" and "Champagne," all credited with speeds of between 17 and 18 knots; the "Normandie," a somewhat slower vessel, and four new steamers engaged in passenger and mail service between France and the East, these being the "Australien," "Polynésien," "Armand Béhic" and "Ville de la Ciotat," classed as 17-knot ships. The battery assigned them is said to be the same in all cases, seven 5.5-inch guns and about 20 smaller pieces. Careful study has been given to the question of augmenting the force ordinarily on board with officers and men for special naval duties, and each vessel has a rendezvous station to which she would repair promptly to be fitted out if required. All steamers employed under postal contracts are required to have the necessary fittings for receiving a battery and special premiums are given for speed. Under the law of 1881

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authorizing bounties for French vessels not employed on subsidized routes, an increased navigation bounty was provided for steamers built to meet naval requirements, but the inducement offered was not great enough and the results were meager, only two steamers having been built in accordance with the special requirements. In the new bounty law enacted in January, 1893, the premium offered in the case of steamers built on plans approved by the Minister of Marine was considerably increased.

Russia, with a seagoing steam merchant marine comprising about 250 vessels, has nine steamers each of over 2500 tons displacement and having a greater speed than 16 knots. The list of merchant cruisers designated as available for armed service includes also some smaller and slower vessels, the total number at present being 15, exclusive of vessels not yet completed. All of them belong to the Black Sea Company or to the Volunteer Fleet, both subsidized. The former own the "Alexis" and the "Constantine," both



INTRODUCING FEED WATER INTO BOILERS.

credited with speed of 18 knots. The Volunteer Fleet, originally organized by popular subscriptions with a view to strengthening the resources of the Government, is practically a part of the public armed force, although belonging to private owners and engaged in trade between Odessa and Vladdivostock. Its vessels are used largely to transport men and supplies for the Government, and the officers and crews are drawn from the regular navy. It is indirectly controlled by the Russian Admiralty, and new vessels recently added to it or now building have been designed primarily with a view to their rendering efficient service as armed cruisers, the employment given them in time of peace being regarded as of secondary importance. In this respect the conditions which govern the construction of merchant steamers for service under other flags are exactly reversed in the case of the Russian Volunteer Fleet, and the "Orel" and "Saratov," the former launched in 1889 and the latter in 1891 for service in this fleet of trading vessels, are practically naval cruisers in many respects. The "Orel" has a displacement of 6000 tons and the "Saratov" of 8500 tons. The older one can make 18 knots and the other 19.5 knots. Each of them is fitted to carry one 8-inch and six 6-inch breech loading rifles, besides a secondary battery of smaller guns. Eleven new steamers are building or have been ordered for the Volunteer Fleet. They are to show a trial speed of 20 knots, and will probably be put in complete readiness for mounting batteries similar to those assigned the "Orel" and "Saratov."

While Italy, with about 230 seagoing steamers, has but one which combines a displacement of over 2500 tons with a sea speed of over 16 knots, she has eight merchant steamers borne on her list of mercantile cruisers for the arming of which special provision has been made. They belong to two companies, the Navigazione Generale Italiana, better known as the Florio-Rubatino Line, which is subsidized by the Italian Government, and the Veloce Company. Five of these vessels are classed as available for service as armed cruisers, and the remaining three are regarded as suitable for employment as armed dispatch vessels. The battery assigned to each of the cruisers consists of two 4.7-inch guns and four machine guns. The dispatch vessels would carry a lighter battery. The Italian system of shipping bounties, like the French, makes provision for an increased bounty in the case of vessels built to meet naval requirements.

The American Exhibitors' Agency Company, 218 La Salle street, Chicago, have been appointed commissioners and official representatives for the forthcoming California Midwinter International Exposition, to be held in San Francisco from January 1 to June 30, 1894. They will secure space for exhibitors and take full charge of exhibits for the term of the fair at a fixed schedule of rates based on their weight and bulk. The president of the company is A. C. Oldenburg, commissioner for Canada, and the manager is H. B. Hardt. Exhibitors are charged for space at the rate of $2 per square foot in buildings, and $1 per square foot in the grounds. The minimum space allowed an exhibitor is 10 square feet.

The Executive Committee of the Western Foundrymen's Association have decided not to hold a meeting of the association in November, but to hold the next regular meeting on the third Wednesday evening in December. It is hoped that this action will result in a full attendance at the December meeting, when an interesting paper on "Furnace *vs* Foundry Practice," by E. A. Wheeler of the Wheeler Furnace Company, Sharon, Pa., will be read. The association will then meet as usual in Temple Court Building, Chicago, in the rooms of the Detroit Foundry Equipment Company.

Introducing Feed Water Into Boilers.

BY J. M. SEARLE, GRAND RIVERS, KY.

In *The Iron Age* of October 5, page 608, you produce drawings of two modern methods of introducing feed water into marine boilers.

It may be of interest to some of your readers who are paying extravagant bills for fuel and repairs to learn that extraordinary economy, both in the use of fuel and repairs, has been obtained by the adoption of a feed water device for stationary boilers which is in some respects similar to the one described in *The Iron Age* of the 5th ult.

I herewith inclose a sketch of this device, which was in use at the Dickerson Mine, N. J., in 1886, and until that mine closed down in 1892.

The cold feed water is introduced into pipe B, through a ¾-inch nozzle, so arranged as to induce a current of hot water down from the bottom of the boiler through pipe A, and at the same time force this current forward to the mud drum.

While passing to the mud drum the hot and cold water are thoroughly mixed, and so much lowered in temperature that the sediment is precipitated and allowed to settle in the mud drum, from which it may be blown off at pleasure—say once every 24 hours.

The feed water passes to the boiler through the pipe C, entering the boiler above the upper row of tubes.

To insure the best economy it is necessary to construct the cylinder of the mud drum of one piece of good metal, place the seam opposite the fire and below the inlet pipe B, raise the outlet end C 1 inch higher to insure a full drum of water at all times and always connect the outlet pipe C at the highest point. The first four boilers upon which this device was placed were in constant service for five months, including nights and Sundays, before an examination was made of their interior. Upon opening each of them they were found to be absolutely without internal scale or deposit of any kind.

There was no sign of repairs necessary and they were very economical in the use of fuel. There is a constant circulation of water in the boiler, "even when they are not being fed," owing to the location of pipe C. The device is simple, economical and easily applied to any stationary boiler, and as it is not patented, is, of course, public plunder.

[Mr. Searle placed the following note on the drawing he sent: Four of these boilers easily supplied the steam for a 30 x 48 inch pumping engine, a 22 x 30 inch hoisting engine and a 12 x 18 inch air compressor. Water pumped equaled 125 gallons per minute; ore hoisted equaled 100 to 150 tons per day; ore and water raised 850 feet to top of shaft; 90 tons of pea coal (anthracite) used each month; natural draft.]

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San Francisco News.

Among the events of the past two weeks must undoubtedly be placed first in order the launching of the great battle ship "Oregon." Heretofore we built and launched swift cruisers, coast defense ships, &c., but not till the present year have we done anything like building a great battle ship. The "Oregon," which is as fine a vessel as was ever turned out in any navy yard in the world, and which is a triumph of modern steel shipbuilding, was launched from the Union Iron Works shipbuilding yards, at the Potrero, on Thursday, October 26. There were fully 50,000 people in attendance to witness the event, which reflected so much credit on California shipbuilding. Every steel plate, her guns, &c., have been or are to be forged in the East. They were put together here, but there is a great deal of work in them and it seems to many that there should be, as has been proposed, a gun foundry on this coast and an establishment where those great plates of steel should be forged. This would add immensely to the industrial importance of San Francisco and of the coast. If any reasonable proportion of the work of Government shipbuilding were to be given out here it would pay the Scotts or a corporation to put up a proper establishment in this city. Various proposals have been made to this end and an attempt has been made to establish a corporation to do this, but as yet the endeavor has not met with any marked success. The capital of the proposed establishments would mount up into the neighborhood of $5,000,000 to $6,000,000. Accompanying these have been proposals to establish furnaces for the production of iron and steel from California, Washington and Mexican ores, but as yet nothing has come of them. Doubtless the financial complications of the past few months, which have borne with considerable, if not visible, severity on our capitalists and business men, may be the cause of the quiet that has been maintained with regard to these projects.

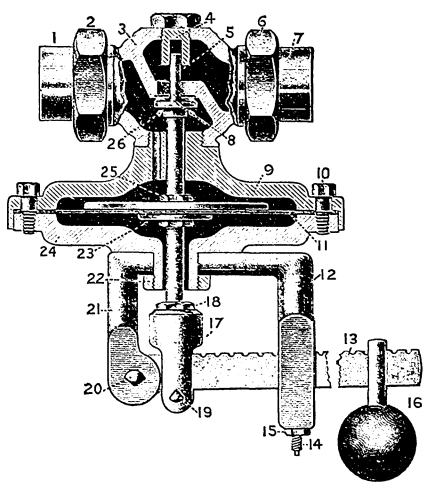
And here I may say that the merchants, jobbers and retailers doing business in iron, steel and hardware have borne the pressure remarkably well. Collections have been pretty bad with them, as with all others, but as a class they have made no sign of having been seriously incommoded, except, indeed, where the discharge of employees has told a tale of financial stress. Some other lines of business have not escaped so well, especially the lumber business. The hardware and iron and steel houses are, as a rule, institutions of great capital and have always been very conservative, so that when the day of trouble comes they are not found unprepared. The volume of their sales has shrunk very largely; on the whole, we should say 10 per cent. when compared with former seasons. In particular instances the shrinkage has been much greater. During the past two weeks there has been a fair amount of business, sufficient to give us encouragement of better things to come. We are still selling close to the limit of cost, and, no doubt, will continue to do so for the rest of the present year.

A general depression exists in insurance circles in this country, and many very unsatisfactory statements are looked for in January. Experts assert that the fire underwriting outlook is far from cheerful.

The Mason Vacuum Regulating Valve.

This valve, of which we show a sectional view, is designed to regulate and maintain an even vacuum irrespective of the suction force made by the pump. It is to a vacuum what a reducing valve is to steam. Where a large number of vacuum chambers are attached to one pump one of these valves may be placed on the outlet to each chamber and a separate amount of vacuum be kept on each one by the use of this valve.

The coupling 1 attaches to the pipe leading to the vacuum chamber; the coupling 7 to the pipe leading to the pump. Suppose, for instance, that it is required to keep a vacuum of 20 inches. When it exceeds that amount the suction passing through the small hole from the upper to the lower or diaphragm chamber will exhaust the air in that chamber sufficiently to pull up the diaphragm 23, which is weighted, and in so doing will close the valve 8, communicating with the passage to the steam pump. That vacuum—namely, 20—will be maintained until it drops below that amount, when the weight 16, not having sufficient vacuum in the



The Mason Vacuum Regulating Valve.

chamber 25 to sustain it, will drop, opening the valve 8 and allowing the pump to bring vacuum up to the normal. The weight 16 can be placed at different points along the lever 13 in order to attain any desired amount of vacuum. The yoke 12 can be turned around in whatever direction it may be wished to have the lever 13 point. This valve was manufactured by the Mason Regulator Company of Boston at the request of a large Canadian sugar refinery.

The Iron and Steel Roofing Industry.

In looking backward over the conditions that have existed in the iron and steel trade during the past six months it may be a source of wonder to many that those mills devoted to the manufacture of sheets of the lighter gauges have been running steadily notwithstanding the hue and cry about hard times and the unparalleled, complicated labor troubles which have claimed so much attention locally and generally. In searching for reasons why sheet mill operators should be the favored few the main causes soon become apparent. Building has not been interrupted to any great extent during this year and the demands of iron roofers and cornicemen for black and galvanized sheets have been quite lively compared with activity in other branches of the trade. It is these demands which are the life of the sheet iron trade and their importance is probably only thoroughly understood by those having a direct connection with the business.

Without taking into consideration the quantity of galvanized sheets consumed by manufacturers of cornices, skylights, ornaments, conductor pipe, &c., figures regarding quantities of sheets annually consumed by manufacturers of iron and steel roofing prepared ready to lay will probably surprise the uninitiated.

Twelve years ago the sale of iron and steel roofing and siding, such as corrugated, rolled roofing, standing seam, V-crimp, beaded siding and the innumerable variety represented in the hundreds of patents granted to roofing men, had to be pushed hard, and traveling men were obliged to spend their time telling customers in the best and most effective language they could command the virtues of the new material and instructing how it should be applied. The order of things is now changed. Good advertising does nearly all the work of selling, and as the quality is necessarily nearly uniform, the stock used being standard grade, the seller who names the lowest price and best terms usually gets the orders.

The State of Ohio produces fully one-half of the total quantity of iron and steel roofing sold in the United States. As nearly as can be ascertained, Cincinnati was the first important seat of the industry and it still heads the list as a producing center. The first business of the kind was established about 1868, and up to 1880 there were some few additions made yearly to the number of manufacturers. It was a hard struggle against prejudice, and not more than 15,000 tons of sheets were consumed for the purpose during 1880. After this time, however, the material found favor and a wonderful development commenced. It has increased year by year and there are now about 75 concerns engaged in the business, East and West. A conservative estimate of the annual consumption of iron and steel sheets for these purposes is about 100,000 tons. The surface which this enormous quantity of material would cover may be easily estimated, basing the weight at 1 pound per square foot when laid. To give an idea how the above figures are arrived at, a table is printed below showing the approximate tonnage of 59 manufacturers:

	Number of manufacturers.	Tons.
Ohio	27	55,000
Illinois	8	10,000
Pennsylvania	5	4,000
Missouri	3	8,000
West Virginia	3	8,000
New York	2	2,500
Indiana	2	1,000
Minnesota	2	2,000
Michigan	2	1 000
Tennessee	1	1,250
New Jersey	1	500
Massachusetts	1	500
Alabama	1	7 0
Kentucky	1	2,000
Small manufacturers	..	3,500
Totals	59	100,000

It would be interesting to illustrate how this enormous quantity of material is handled, but as the machinery used for the purpose is mostly built to special designs, and as details of economical and effective manufacture are closely guarded, information on the subject is not considered due to the trade generally. It is sufficient to say that vast improvements have been made, both in the power of producing quantity and good quality, and the low prices at

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which iron and steel roofing is now sold are due to energy and enterprise spent in this direction. The favor into which this material has grown is illustrated by the figures presented. In Australia and other British colonies the use of iron and steel for roofing purposes has been an established industry for a great many years, but the methods of applying it are not so effective as in the United States. American ingenuity has developed the industry into a distinctive business, and the sales have increased during about 12 years from $1,000,000 to $6,000,000 per annum.

The World's Fair Diploma.

Through the courtesy of the *Inland Printer* of Chicago, we print herewith a *fac-simile* of the diploma granted by the World's Fair, the accepted design being that of Will H. Low, New York. There seems to be considerable misunderstanding concerning the awards made. Announcements that a manufacturer has received the "highest award," the "first prize," &c., are not justified except under special circumstances. Every exhibitor obtaining an award at the World's Fair will receive a medal and a diploma. There is only one medal, bronze. All receive the same. It conveys no statement as to rank or relative quality of the exhibit. The only distinction there is lies in the wording of the award which is engrossed on the diploma. This is the finding of the jury. If the claims for superiority allowed by the jury, as forming the basis upon which the diploma has been granted, are clearly greater than those of any competitor, the manufacturer may be justly entitled to the assertion that he has received the



THE WORLD'S FAIR DIPLOMA.

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highest award. In view of the large number of awards granted, successful exhibitors will closely study the verdict of the jury in their own case and in that of rivals.

Washington News.

(*From our Special Correspondent.*)

WASHINGTON, D. C., November 14, 1893.

The Committee on Ways and Means, which started out apparently with plain sailing, is beginning to experience some of the symptoms of very serious disagreements in matters of detail.

It is a significant fact that the opposition to the programme of revision on the line of free raw material and a horizontal scaling down of duties comes from an unexpected quarter. For instance, Texas and Ohio are against free wool. Alabama, West Virginia, Maryland, Pennsylvania and New York are against free coal. Alabama, Virginia, Pennsylvania and New York are opposed to free iron ore.

There is a general clashing of productive interests and partisan policy now confronts the committee. The majority is restive, but not diverted under these protests from their home States.

If the conversations of Chaiman Wilson of West Virginia, Turner of Georgia, McMillin of Tennessee, Breckenridge of Arkansas, Montgomery of Kentucky and Bynum of Indiana are put into practice there will be no change of plans, but the policy already foreshadowed in *The Iron Age* will be carried out.

The three conservative members of the majority—Cochran of New York, Whiting of Michigan and Stevens of Massachusetts, will doubtless yield to the work of the majority of their colleagues, although it would be in their power to repeal any unfavorable legislation, according to their ideas, if they should vote with the minority.

This, however, they are not likely to do. Therefore the bill will be reported as the majority frames it. A conflict may spring up in the House, but it is not improbable that in the Senate the House bill will be thoroughly sifted and made to conform to the conservative view of the tariff even for revenue only.

As far as the elections have been considered, Senator McMillin said to the correspondent of *The Iron Age:* "We regard the national election of 1892 as the expression of the will of the people in reference to Tariff matters. The recent elections were on State issues and candidates, and not national. We must carry out the platform on which we were elected. On this line we are willing to take the judgment of the people."

It is evident that the Congressional campaign next year will be fought almost wholly on the tariff, with some local silver interests thrown in.

The line the committee is now operating upon is all the free raw materials reported or passed by the last House in the tentative bills, with pig iron at $5 a ton, steel rails at $8 a ton, tin and terne plate 1 cent a pound and a cut ranging from 25 to 40 per cent. on articles in the metal schedule. An effort is being made to get the bill ready for printing next week.

Commodore Hichborn, Chief Constructor of the Navy, speaking of the sensational allegations about the "New York" and "Montgomery," said today: "There is just enough in these stories to give a color of veracity, but to say that the statements as made are true would be decidedly untrue. There is nothing in the alleged defects in the vessels named or any other vessels of Department designs, if these agitators should see fit to lug them in also, which cannot be remedied by simply going back to the calculations upon which the designs were based. Every vessel of the United States Navy will carry all the weights, armor, armament, supplies, coal and everything else for which she was designed. But a vessel constructed for an armament of 6, 8 and 10 inch guns with the auxiliary batteries, and then to mount her with 8, 10 and 12 inch guns, would simply be like building a house with a foundation for two stories and putting on four. Under ordinary conditions the foundations might hold the weight, but we design ships upon scientific calculations; not to meet smooth water conditions, but the roughest weather and the severest strain of battle. When you increase the hight or weights on top, the center of gravity rises.

"We are now making heavier guns than when some of the earlier ships were built. It would be folly to attempt to mount them with guns of greater power than their class. The nicety of calculation covers weight of hull, machinery, batteries, munitions, fuel and stores. The dimensions of the hull and draft are adapted to these requirements, and they are all correct for the weights originally intended.

"The best evidence," said the Commodore, "of the hollowness of this outcry is the charge that the draft of the 'New York' was miscalculated, and that she cannot enter any of the docks of the Government. The latter part is true, and the first is false. The statement should have read: 'The Government of the United States does not possess a dry dock which can suitably accommodate any of the battle ships or large armored cruisers.' The 'New York' can get into the larger docks now available, by taking out some of her heavy guns. The subject of dry docks is one which must be met in order to keep pace with the great ships we are now building. We were not in position to build such ships when our present dock accommodations were built.

"The only serious thing about this agitation is the danger that it may create an unfavorable impression toward the new navy. There is no danger of the ships being top heavy if mounted as designed. This fact is acknowledged by the naval experts of the world, that the ships of the new navy of the United States are not excelled by any other class anywhere. We will match the 'New York,' 'Columbia,' 'Massachusetts,' 'Indiana,' 'Illinois' or 'Oregon' against any of them. We are not afraid of scrutiny nor of criticism, but we would prefer to have it based upon facts and not inferences upon false premises."

Secretary Herbert has reached that part in the preparation of his annual report in which the important question of additional ships to be asked for from Congress must be decided. The Secretary when chairman of the Committee on Naval Affairs of the House always entertained liberal views on the subject of new ships. He is now in consultation with the bureau chiefs on this subject. His disposition is to recommend two additional battle ships and a liberal number of torpedo boats. The torpedo branch of the navy has made very satisfactory progress. The Secretary accordingly favors the construction of a fleet of these destructive machines according to the latest and most approved designs.

In regard to the battle ships, the Secretary's idea is that we are not sufficiently well equipped for aggressive or defensive naval purposes with actual stand up and fight ships. The fleet of cruisers is sufficient at present for destroying commerce and eluding the enemy's fleet. The disposition among Senators and Representatives is generally favorable to a liberal policy. Their confidence, also, in the judgment of Secretary Herbert will also go a great way toward the carrying out of his recommendations.

Russian Manganese Ore.

Steel manufacturers and others interested in the use of manganese should peruse the Foreign Office Report, No. 307, by P. Stevens of Batoum, on the "Manganese Ore Industry of Sharopan." The annual export of this ore is about 150,000 tons from the district in question, about half of it being sent to Great Britain. Latterly, some has been sent to the United States. The mines extend over an area of some 13½ square miles, and are estimated to contain 66,500,000 tons of the ore, so that at the present rate of export the supply ought to last some 200 years. That period will be shortened, however, if the exports increase, as they seem likely to do, the estimate for this year being 322,000 tons. The mines are situated in a very mountainous district, and the ore had been removed by hand, and carried by carts; but a railway is now in progress, and will be completed before long. Mr. Stevens puts down the cost of the ore delivered at Poti or Batoum at 8¾ pence per pood of 36 pounds, or equal to $10.94 per ton of 50 per cent. metallic contents, equivalent to 20 cents per unit and ton, f.o.b. Poti. The average freight from the Black Sea to the United Kingdom is $3 per ton. The standard quality of the Chiatur ore is 54 to 55 per cent. of metallic contents, or 83 to 87 of peroxide when dried at 212° F., and about 0.16 per cent. of phosphorus, but Mr. Stevens says some of the ore is mixed with inferior ore, and so brought down to 50 per cent. Mr. Stevens recommends that buyers should give the preference to Government samplers and analysts holding official positions rather than to private samplers, who are apt to select the heavier pieces of ore for the use of the analysts.

In a few weeks the Cambridge Corrugating Company, Cambridge, Ohio, will place on the market Stanley's patent felt lined iron and steel roofing. Sheets treated in this manner are said to be impervious to the action of moisture arising from the insides of buildings, and this company claim to be able to manufacture the material at a slight increase over the cost of plain roofing.

The 9585 men who enlisted in the United States army last year represented some 200 different trades or occupations, including lawyers, doctors, chemists, school teachers, civil engineers and others from the educated professions. The large majority, however, were drawn from the laboring and mechanical occupations.

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An 1893 Bessemer Steel Works.

[*With Supplement.*]

During the last four years each year has seen the completion and starting of a new Bessemer steel works—*i. e.*, Duquesne Steel Works, 1889; Jones & Laughlins, Limited, 1890; Maryland Steel Company, 1891; Shenango Valley Steel Company, 1892. The close of 1893 witnesses the completion of another works in the plant of the National Tube Works Company, at McKeesport. Each one of the above works is fairly typical of the "state of the art" of the year in which it was built.

An examination of the general plans of the different works shows no radical departure from the accepted lines, with the exception of the plant of the Maryland Steel Company, in which case the method of adapting the converting house to cast upon cars was boldly followed.

Each of the above works, however, shows variations in detail, which, while in themselves not amounting to much, still in the aggregate would show that the works built to-day have many points of difference from the ones built six years ago. The tendency has been toward quicker handling, greater reductions and higher speeds. That corresponding economies have resulted is evidenced by the fact that $6.50 per ton fairly represents the difference between the price of pig and billets to-day.

The new works of the National Tube Works Company are located on the Monongahela River, 12 miles above Pittsburgh. They are connected with three separate lines of railways—*i. e.*, P. R. R., B. & O. and P. & L E —thus having facilities for shipping that are unsurpassed. The works are immediately adjacent to the Monongahela furnaces, which are operated by the same company, and from which hot metal will eventually be taken to the rolling mills of the same company. The products of the steel works will be chiefly slabs for rolling into skelp, the present capacity of the National Tube Works being such that under ordinary conditions the entire product of the works would be consumed.

The works were designed by the Pittsburgh Iron & Steel Engineering Company and were contracted for in their entirety July 11, 1892, and have been carried forward under the personal supervision of General Manager Jno. T. Wilcox and Chief Engineer Saml. Forter. The initial blow will be made in November. The site was an exceptionally difficult one to build upon, the yard level requiring to be filled over 20 feet over the greater part of the 11 acres, and the heaviest machinery is located where a deep swamp or morass existed, requiring many thousand 40 foot piles to be driven to reach gravel. The system of car casting, vertical stripping, soaking pit furnaces and electric traveling charging cranes has been followed. The plant essentially consists of two 8-ton vessels mounted side by side and blowing to the rear. They are placed at an elevation of 14 feet (measured to center of trunnion) above yard level, enabling a *débris* car to be run under the nose of the vessel when tipped. The cupola house is situated on one side of the converting house, the hot metal ladle being moved by stationary engines. Three cupolas are provided, each 10 feet shell and 27 feet from mantel plate to charging floor; the cupolas have three rows of tuyeres and have continuous wind boxes. A feature of the cupolas is that they end with the charging floor; what extends above that point is a hood or spark stack only, leaving a clear opening entirely around the cupola for charging purposes. All arrangements are made to use melted metal direct from the blast furnace in case same is found desirable. The charging floor of the cupola is 51 feet above the general level, the hoist consisting of a pair of 10 x 12 Crane furnace hoisting engines, with two cages, 7 feet 6 inches by 9 feet.

A 35-inch blooming mill is provided, driven by a pair of 36 x 48 engines, all of Mackintosh, Hemphill & Co.'s build. The gearing is respectively 4 feet and 8 feet diameter, 8 inches pitch, 30 inches face, of cast steel. The mill will give a range of sizes from 22-inch slabs down to 4 x 4. The blooming shears are located 100 feet from the mill, and midway between the mill and shears is located an auxiliary hydraulic shear, which is used to cut off crop ends and also cut the billet into two or more pieces, thus enabling the main shears to cut several pieces at once.

The blowing engines consist of a pair of horizontal compound tandem engines, high pressure steam cylinders, 28 inches diameter; low pressure, 50 inches diameter; blowing cylinders, 54 inches diameter; all 60 inches stroke. The steam cylinders are fitted with piston valves having adjustable cut off, and the blowing cylinder has positive inlet valves. The pair of engines are provided with one fly wheel 25 feet diameter and 25 tons weight. An independent Worthington air pump and condenser serves both engines. The ordinary wind pressure is to be 25 pounds. The engines were designed and built by Mackintosh, Hemphill & Co., and are beautiful pieces of massive engineering, the total weight of the pair of engines being about 370 tons. Steam is supplied by 2500 horse power Babcock & Wilcox boilers arranged in five batteries. A steel stack 11 feet by 6 inches in the clear by 180 feet high serves all the boilers. Roney stokers are used, and all the steaming coal is unloaded upon a platform on a level with the charging hopper of the stoker. The boilers are intended to carry regularly 140 pounds of steam. The feed

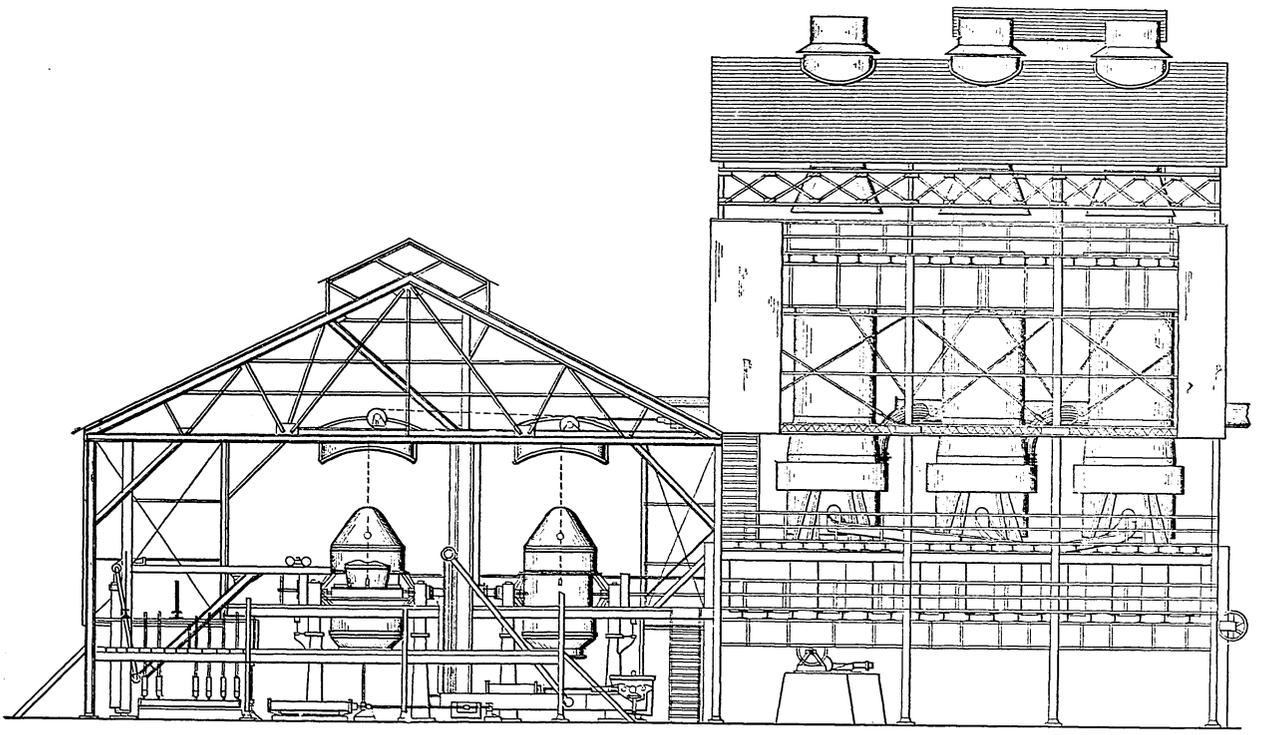


Fig. 1.—Converting and Cupola House.

AN 1893 BESSEMER STEEL WORKS.

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pumps are controlled by an auxiliary accumulator.

The hydraulic system is supplied by three Wilson-Snyder compound duplex outside packed plunger pumps, 16-inch high pressure cylinders, 28-inch low pressure, 7½ inch water plungers, all 24 inches stroke. The accumulator is 18-inch plunger, 8-foot stroke, and is loaded to 450 pounds. The cupolas are served with three 88-inch Boston pressure blowers, the shells being made of plate steel. The electric power is furnished by two 40 horse-power, 250-volt, Westinghouse generators, the fans and dynamos being driven by a 250 horse-power Ball & Wood compound engine. Three five-hole soaking pit furnaces are provided, each hole being 4 x 4 feet. Owing to occasional high water in the river, it was compulsory to have the top of the heating furnaces 8 feet 6 inches above the mill level. Each hole has a cover moved by a hydraulic cylinder, all of which are operated from one point. The heating furnaces are fitted with disk reversing valves, and each furnace has its own stack 4 feet in the clear by 80 feet high. The furnaces are built entirely of Mt. Savage brick.

The gas plant consists of six circular producers 8 feet 6 inches diameter, 14 feet high. A feature of the producers is the absence of any grate bars, the burning coal resting directly upon an ash bed. The gas mains are all under ground, but are steel tubes, brick lined, the principal main being 6 feet 3 inches shell, lined with 4½ inch brick, and made of ¼-inch steel. The bottom house is provided with four large drying ovens and a stopper oven, the bottoms being handled by a hydraulic crane. The mixing house is equipped with one large Gates crusher and two 7 foot pans (wet and dry), the stock being handled by elevators. The soaking pit furnaces are charged and drawn by two electric traveling cranes, built by the Shaw Electric Crane Company. They are 55 feet span, and are intended to handle 5-ton loads at very quick speeds, hoisting and lowering at 100 feet per minute, and having a travel of 300 feet per minute. They are fitted with an electric tong releasing device. Covering the blooming mill and reversing engines is a 20-ton traveling crane of the Morgan Engineering Company's build, 47 feet span.

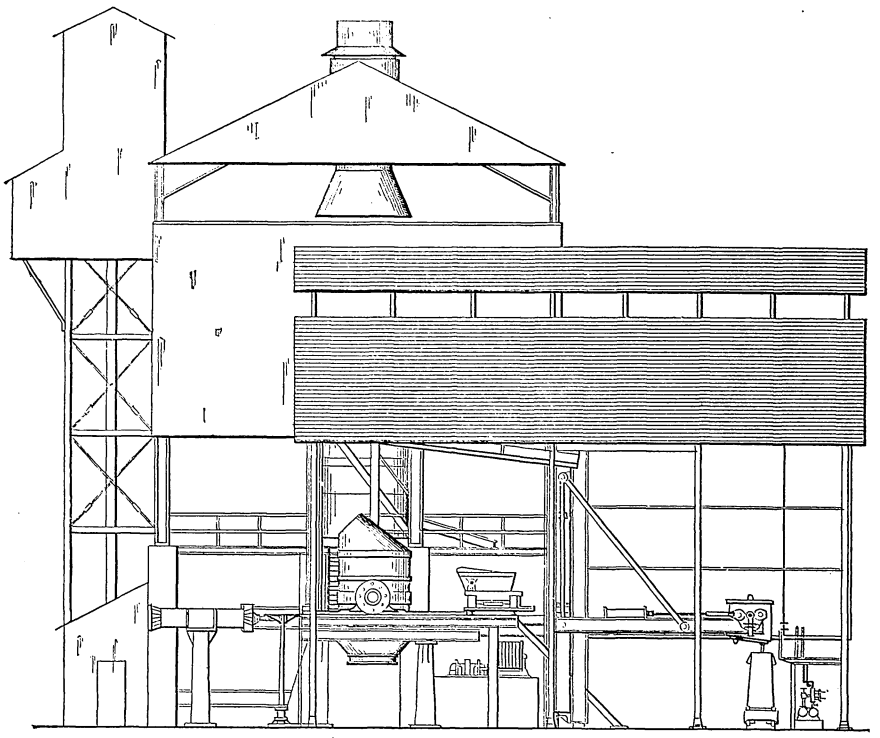


Fig. 2.—Converting House.

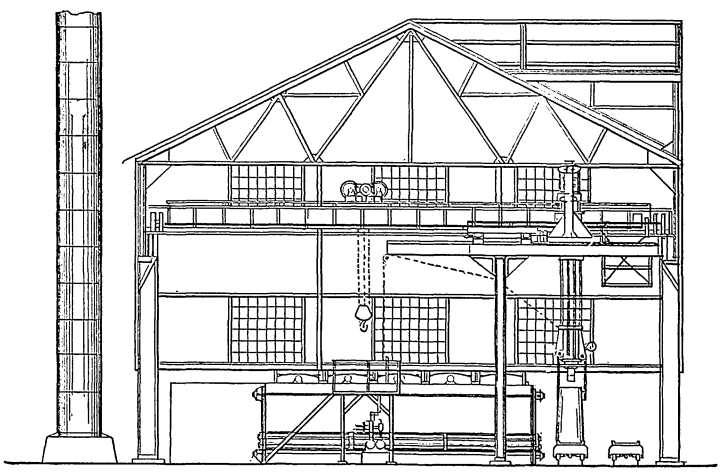


Fig. 3.—Furnace Building.

AN 1893 BESSEMER STEEL WORKS.

It will be noted from the plan that the grouping of the buildings is very convenient for handling of steel during its various states of manufacture. The cupola house is convenient to the blast furnaces, and the ingots move in straight lines to the heating furnace building. The shears are on the river side of the works, where there is ample room for any arrangement of shipping tracks that may be desired. The buildings are all of iron except the engine, pump and bottom houses, which are of brick. The various buildings, as well as all structural work, converters, ladles, &c., were furnished by Riter & Conley. The buildings are of the following dimensions: Cupola house, 42 feet 6 inches x 54 feet; converting house, 58 x 68 feet; heating furnace building, 58 x 125 feet; blooming mill, 50 x 95 feet; blooming mill, 45 x 181 feet; engine house, 47 feet 9 inches x 157 feet 9 inches; bottom house, 50 feet 9 inches x 98 feet; mixing shed, 55 x 54 feet; pump house, 36 feet 3 inches diameter.

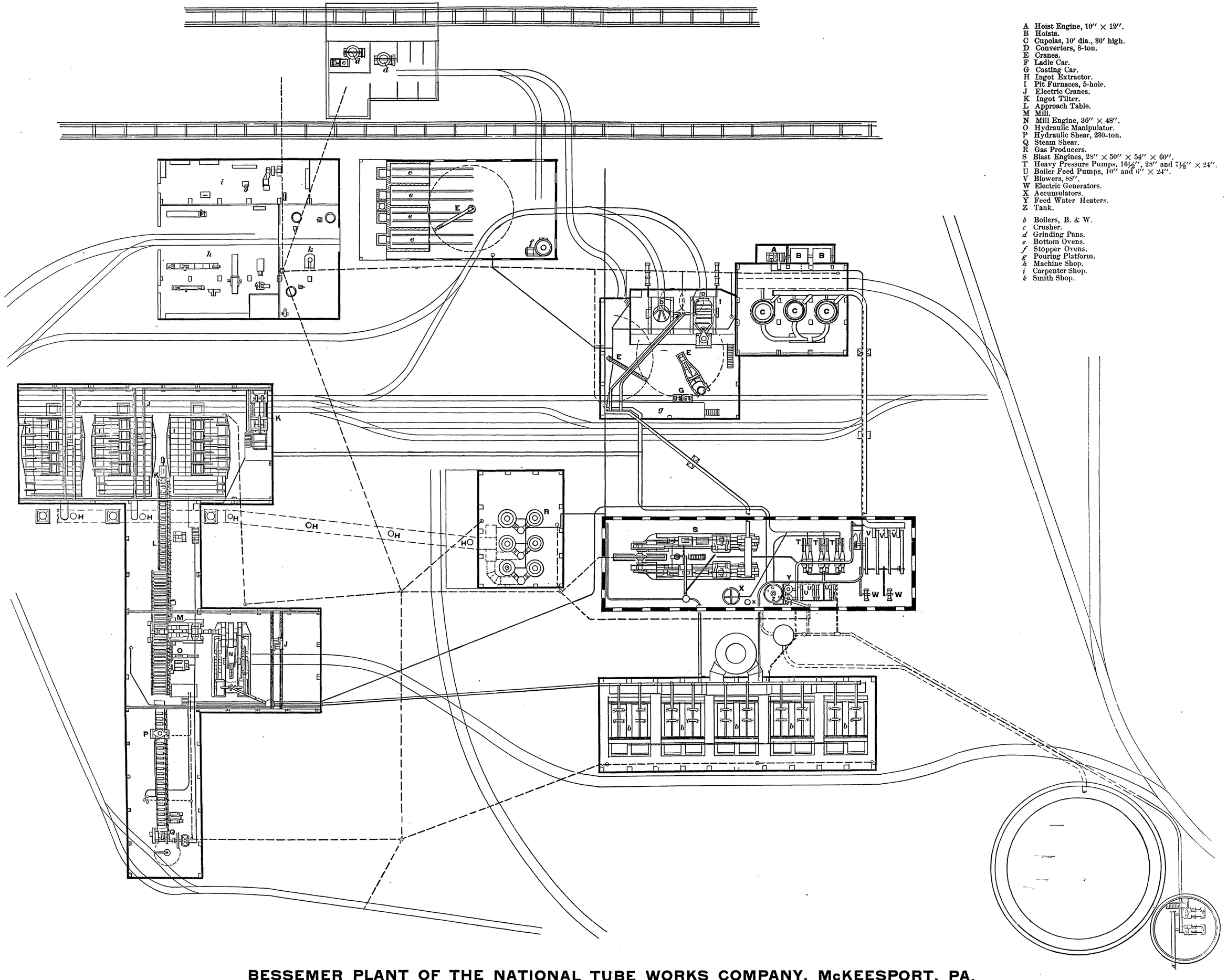
The works represent the most advanced and progressive views on the subject of Bessemer construction, and no expense has been spared to embrace in them all features that tend to economies. The executive officers of the National Tube Works Company, under whose direct personal supervision the works were constructed, are: Wm. B. Schiller, manager; Taylor Allderdice, superintendent; Mr. Schultz, master mechanic.

The first decision of the State Board of Arbitration of Ohio has been promulgated by Secretary Joseph Bishop in the matter of the difference between the Forsythe Coal Company and the employees thereof. The company appeared by counsel before the board, but denied its jurisdiction. All differences had been settled amicably, except the refusal to employ two miners who were officials of the local union. It appearing that there was no good reason for this, these officials having done nothing outside their duty to their principals, the board recommended their reinstatement. This the company refused, and the board, exercising the functions conferred by sections 5 and 14 of the Arbitration law, publicly declares "that the blame for the continuance of this strike lies at the door of the Forsythe Coal Company."

At Harrisburg, Pa., on the 10th inst., Judge McPherson delivered an opinion in which he holds the Hecla Coke Company of Pittsburgh liable to taxation on their capital stock invested in mining leases and improvements and in dwelling for employees, and exempts their capital stock invested in the manufacture of coke, following a recent decision of the Supreme Court in another case involving a like principle.

Prices of California cereals have of late been the lowest ever known on the Pacific Coast, and over two-thirds of the surplus wheat for export is still being held in the State, on the chance of a rise.

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BESSEMER PLANT OF THE NATIONAL TUBE WORKS COMPANY, McKEESPORT, PA.

Designed and Built by THE PITTSBURGH IRON & STEEL ENGINEERING COMPANY.

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THE WEEK.

The Howell torpedo tests at the Newport trial station have been brought to a close. About 80 tests, of the most severe character, have been made in all, and, so far as is known, to the complete satisfaction of the naval ordnance officers. Considerably more than the contract speed was obtained.

In some districts in England coal is retailing at $15 a ton, in consequence of the miners' strike. Cold weather having set in early, the condition of the poor, who cannot afford to pay so high a price, is considered serious.

October's fire loss of the United States is estimated at $11,014,700, which is over $2,000,000 less than the amount lost in Octobar, 1892. The increase in the total for the first ten months of this year, as compared with the same months of last year, amounts, however, to nearly $25,000,000, a sufficiently startling presentment. The actual figures are: January 1 to October 31, 1893, $132,847,400; same period, 1892, $108,341,550.

A decree has been published by the Italian Government that all customs duties in that country shall hereafter be paid in gold.

The ponderous after barbette of the United States battle ship "Indiana," building at Cramp's yard, was put in place last week. It is composed of the heaviest nickel steel armor ever fitted, and has been in course of construction at Bethlehem for nearly two years, the work of putting it in place occupying two months. The barbette is made in 13 plates, which were forged under the 125-ton hammer. It is 30 feet in diameter, 13 feet high and 17 inches thick, the total weight being 406 tons. The "Indiana" will, it is calculated, be ready for her builders' trial trip by February 1, and the vessel will be delivered to the Government about June 1.

An engineering feat worthy of note was accomplished a few days ago in the completion of the boring of the Busk-Ivanhoe Railway Tunnel under the Rocky Mountains, at Hagerman Pass, Col. The tunnel is close upon 2 miles long, and is bored through solid gray granite. Its accomplishment involved 3 years and 20 days' work, each day being of 20 laboring hours. The tunnel is 10,800 feet above sea level, and is on the line of the Colorado Midland Railway.

The Edison patent on incandescent lamps expired in England on November 10, and from that date their manufacture and sale in that country will be free, with the probability of a considerable reduction in prices.

Depression in the shipping trade is reflected in the returns of Suez Canal receipts for the first nine months of this year. They were $754,000 less than those for the corresponding period of last year. Hitherto each year has shown an advance on the previous one.

At Indianapolis every effort is being made by the Commercial Club, the Board of Trade and the city officials, in combination, to organize relief for the more than 6000 idle workingmen in that city. Citizens have been appealed to to make every improvement of any sort that will give employment, and renters are asked to be lenient.

The work of fitting out a new navy for the Brazilian Government is being urgently pushed at New York, where a number of recently purchased craft are undergoing rapid transformation into war vessels. Most of the ships are expected to be ready for service by the end of this week.

Immigration returns for October show the number of aliens entered during that month to have been less than half the average for the season. Last year 36,798 were landed in October, but this year the number sunk to 15,466. The authorities attribute the falling off to the business depression in this country having prevented people from sending prepaid passage tickets to their friends in Europe.

October's foreign trade returns for the port of New York show a decrease of $16,500,000 from the aggregate of October, 1892; but this falling off is due entirely to the large contraction in imports of foreign goods. Exports, indeed, show a slight increase for the month; and for the ten months of the year the aggregate movement of foreign trade shows $57,150,522 over the corresponding period of last year.

The new steamer "Gloucester," built at Baltimore for the Merchants & Miners' Transportation Company and which made her first trip to Boston a few days ago, is probably one of the finest coasting vessels afloat. The hull is built of steel throughout, and she has four decks as well as a promenade deck. Her length over all is 293 feet; beam, 43 feet; depth, 33½ feet, and tonnage, 2500. Power is furnished by direct tri-compound engines with inverted cylinders, and the four cylindrical and return tubular boilers are capable of developing 3000 horse-power. The arrangement of her water tight compartments renders the vessel practically unsinkable.

The new Pacific built cruiser, "Olympia," underwent a most successful trial off San Francisco last week, proving herself remarkably speedy and an excellent sea boat. Her record showed a maximum speed of 21.26 knots; and her average for 68 hours, with a heavy sea and strong head wind, was just under 21 knots. The builders of the "Olympia" believe she will manage 22 knots on her official trial, and thus carry the palm of the American cruiser fleet.

The Manchester Ship Canal was completed last week and water was admitted to its entire length. It will take two weeks for the canal to receive its full depth of water. The first steamer to traverse the full length of the canal will, it is expected, make the trip on December 1.

It is estimated that damage to the extent of at least $4,000,000 has been caused to the crops in the Northwest during the present year by a weed known as the Russian thistle. The Department of Agriculture is now investigating the pest.

The dry goods trade has figured prominently in recent notices of failures and embarrassments.

Buffalo, N. Y., now enjoys the distinction of possessing the largest grain elevator in the world in the new Eastern Elevator, which was completed and opened for service on Monday. Its capacity is 45,000 bushels an hour.

Washington advices have it that the Secretary of the Navy will recommend a considerable appropriation for the construction of battle ships.

Estimates based on the November crop report of the Department of Agriculture place the corn yield of the United States for this year at 1,648,000,000 bushels. Last year the crop was estimated at 1,628,000,000 bushels and in 1891 at 2,060,000,000 bushels.

The Valley Situation.

Contrary to expectations, the finishing departments of the plants of the Mahoning Valley Iron Company, Union Iron & Steel Company and the Andrews Brothers Company, at Youngstown, Ohio, did not resume operations last week, although the wage scale of the National Union of Iron and Steel Workers had been signed by the above firms. When the officials of the Amalgamated Association learned that a rival labor organization had made terms with a number of the valley mills they at once saw that if the mills resumed operations under such a scale it would work serious harm to their organization. To prevent this if possible, President M. M. Garland, Secretary J. C. Kilgallon and one or two other officials of the Amalgamated Association went to Youngstown and held a conference with a number of the valley mill owners. What transpired at this meeting was not made public, but it is known absolutely that promises were made that if the owners of the valley mills who had signed the scale and others who had not signed it, but were considering it, would agree to remain idle for a week or so, strong efforts would be made to get as favorable terms from the Amalgamated Association as had been secured from the National Union of Iron and Steel Workers. It was also promised that the request of the valley mills for a $4.50 per ton puddling rate would be brought up, and the officials of the Amalgamated Association would use their influence and endeavor to have the members of the valley lodges agree to grant it, or in any event, to compromise and return to work on a scale based on $4.75 for puddling. After consideration this request was granted, the valley mill owners agreeing to keep their plants closed until Monday morning, the 20th inst.

In the meantime a vote is being taken by the lodges of the Amalgamated Association in Western Ohio on the question of holding another conference with the valley mill owners. It is the impression that the result of the vote will be in favor of holding such a conference. It is believed that rather than allow the Youngstown mills to resume operations under the scale of the National Union of Iron and Steel Workers the Amalgamated Association will agree to make such concessions in their scale as were made by the first named organization. At all events, it is reasonably certain that a number of the mills in the Mahoning Valley and other parts of Western Ohio which have been idle since June 30 last will start up on Monday, the 20th inst., though not to full capacity. The fact that two or three concerns in the Mahoning Valley have signed the scale of the National Union of Iron and Steel Workers may complicate matters to some extent, as it is not believed that members of the rival organizations will agree to work side by side. In certain quarters the intimation has been thrown out that if the Amalgamated Association will make a scale suitable to the Mahoning Valley mill owners they, in return, will agree not to treat with the new organization. This report, however, has not been confirmed, and is not believed to any extent.

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The Iron Age

New York, Thursday, November 16, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Fall in Scrap Values.

Manufacturers of bar iron have been benefited considerably by the very great depreciation in the price of scrap. Perhaps we might say, they will be benefited when the demand for finished iron enables them to get to running and to running steadily. Early in the present year a comparison was made in these columns of the selling price of bar iron at different producing points and the cost of the scrap purchased by the bar iron manufacturers. It was shown that wrought scrap then commanded from 48 to 52 per cent. of the selling price of bar iron. This was considered wholly disproportionate, and conclusions were drawn that the price of such scrap should be somewhere between 30 and 35 per cent. It was not at that time expected that within a few short months this theory of the relation of these values would be realized. Such is the fact, however, as reports of transactions in old material during the past month show that it is a fortunate dealer who is able to get 35 per cent. of the market price of bar iron for his wrought scrap. From present appearances the value of scrap seems to have been put permanently on that low plane. Accumulations of old material are very large, especially in the West, in sections in which rolling mills have of late been running on short time, if at all. In fact, there are not a few great railroad systems whose stock of scrap has been growing steadily larger all this year in spite of attempts made to move it by sale or in exchange for new material of some description.

Among railroad officials there is a disposition to overvalue this sort of material, although they are persistent bears on the value of whatever they have to buy. Reasoning from past occurrences, they appear to believe that the value of the material they sell will in a reasonable time react from its present depression, and they will then obtain considerably better prices. They overlook two facts, one of which is that owing to the unparalleled depression this year in the iron trade the accumulations of scrap have very far surpassed anything previously experienced, and the other is that steel is more than ever supplanting all forms of rolled iron. The traditions of the old material trade must be completely set aside now, as we are working under a new dispensation. Those who are holding scrap for higher prices will evidently have to hold it a very long time, and pray in the meanwhile for war or some other great disturbance to create a temporary scarcity of iron and steel. This view of the question is taken without regard to possible tariff changes. Even if scrap is not put on the free list, as now seems probable, other adverse influences are sufficiently strong to prevent a return to higher prices.

With the exception of those who may still have stock in their yards which was bought some months since, the dealers in scrap are gratified at the decline in its value. Much less capital is required for the purchase of material, there is consequently a smaller amount at hazard on each time sale, and there is the hope of a much heavier volume of business in the course of time, as the consumption of everything approaches its normal condition. The use of steel has not altogether displaced iron and it probably never will in the bar trade.

Cleaning up Stocks.

It would be extremely interesting if statistics could be obtained of the exact condition of stocks of material held by foundries and other iron consumers. Careful observers believe that at no previous time have such stocks been as light as they now are. It is always a question as to how large this invisible supply may be. The stocks in producers' hands are usually known, probably not accurately, but sufficiently so to form an intelligent idea of the current relation between production and consumption. As to consumers' stocks, however, the situation is altogether different. There is no datum on which reliance can be placed. Iron salesmen making periodical visits to their customers report stocks light or heavy, as the case may be, and this vague statement often finds its way into print. And it is likely that there will never be anything more definite known about such stocks. The vast number of consumers precludes any attempt to make the inquiry by even the most zealous advocate of statistical research.

While nothing of an official or even an authoritative character can be had on this subject, there are nevertheless some points making themselves prominent which throw considerable light on it at this time and which seem to form a substantial basis for the assertion that stocks in consumers' hands are less than were ever before known.

Pig iron salesmen report that for months they have found their customers using up accumulations of scrap in their yards to avoid the incurring of liabilities for new material or the payment of cash, for which they had pressing use in other directions. Running much lighter than usual, they did not need a very large supply and most of that was at hand in their own yards. Not only have old flasks been broken up and melted, but castings which had been thrown aside for slight imperfections that it was expected would some day be overlooked by an emergency buyer have shared the same fate. It has not been unusual for a foundryman consuming generally 2000 or 3000 tons of pig iron per annum to find that he had 300 or 400 tons of such castings in his yard, and under the stress of the financial stringency to decide that it was better for him to break up and remelt them than to lay out cash in buying more iron. Many cases of this character are cited by salesmen, in which foundries have continued in operation to at least half capacity with no pig iron on hand and managers refusing to purchase any, alleging that it was not wanted, which seemed a mystery until the true source of supply of material was explained.

Bar iron salesmen report a somewhat similar experience in their line. Manufacturing consumers will in time accumulate quite a stock of odd sizes and shapes in their warehouses, but continue to buy what they need for work in hand and only occasionally find a place for something out of the old stock. Latterly, however, this has been very carefully overhauled, and in more than one establishment shapes have been made to fit and sizes have been made to suit that would have been rejected without a moment's consideration in easier times. It will probably be found that such warehouses have cleaner racks at this time than they have had for years, if ever before.

This general cleaning up of stocks now seems to be about ended. There may be some consumers here and there who can run on for a little longer time without buying fresh material, but their number must certainly be small. A considerable part of the improvement in the demand for pig iron in some important markets is thus accounted for. The general condition of trade may not have grown much better, but the producers of crude iron are again in the enjoyment of a demand which had for a time been cut off by the economy that consumers were able to practice.

At a recent meeting of the Engineers' Club of Philadelphia Wilfred Lewis exhibited a section of a 7-inch steel stay bolt from a hydraulic riveter, which had broken in the nut about 2¼ inches from the end of the bolt. The static load on the bolt was 450,000 pounds, and at the time the actual load probably did not exceed 600 pounds. It has been found by experiment that when a nut is made to come at the end of a bolt to obtain uniform stress throughout the bolt it is not sufficient to make its thickness equal to half the diameter of the bolt, as is generally supposed. The thickness of the nut should be at least equal to the diameter of the bolt. Mr. Lewis then explained and illustrated a method of calculating the stress in a bolt, showing that it varied with the square of the diameter, and stated that experiments, which he believed verified the equation given, had been made by the Edge Moor Iron Works, but that he was not yet in possession of the figures.

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CORRESPONDENCE.

Boiler Awards.

To the Editor: My attention was arrested by the letter in your issue of November 9 coming from the Babcock & Wilcox Company containing an excuse for their non receipt of an award for their boiler exhibit at the World's Columbian Exposition. As the writer's position and intimate relation with the boiler plant at the exposition will vouch for his ability to write on this subject, and knowing that many, if not most, of your readers are more or less interested in boilers, and especially in this, the largest and most interesting boiler plant the world has ever seen, I beg to offer the following that injustice may not be done to the exposition nor to the judges.

Concerning these judges, I would ask are they not men of acknowledged standing, experience and integrity in the engineering world, who sacrificed their regular practice at home and virtually gave their service to the World's Fair? Surely it cannot be denied that they contributed not a little to the success of the department in which they acted, establishing a reliable record of the many engineering exhibits which probably would never have been accurately recorded had it not been for their conscientious efforts to discharge the duty which was intrusted to them.

This letter from the Babcock & Wilcox Company states that "it was the purpose of the jury to make awards on boilers based entirely upon the written statements of the exhibitors of boilers without tests or any personal knowledge in the possession of said jury concerning the comparative construction, operation, economy and durability of said boilers."

It is very true that each one of the manufacturers exhibiting boilers there was asked to make either a written or verbal statement of the points of excellence in his boiler to the judges, but we would ask you and your readers whether these statements were made before a body of laymen entirely ignorant of the subject in question, or were they made before men who were well informed as to the construction and working of all the boilers in operation at the World's Fair? Such men as George H. Barrus of Boston and Prof. James E. Denton of Stevens Institute headed the list of these jurors, men whose position has made it impossible for them to be prejudiced in favor of any one make of boiler over another; men who have made test after test on most of the leading modern makes of boilers.

As I have already stated, it is true that the boiler manufacturers were asked to testify before this competent jury of experts who were well able to "separate the wheat from the chaff" and investigate not new boilers, but old acquaintances, we might say, which were before them at the fair and with their past experience judge the points of superiority which each of these manufacturers stated as being contained in his boiler. Besides these mere "written statements of the exhibitors" for the judges to consider, much valuable information has been collected by the engineering corps of the fair, who had charge of the boiler plant, which in itself brings out some points of comparison quite worthy of consideration.

Why is it that the Babcock & Wilcox Company shrank when they were called upon to appear before such a jury as this? One would think, after reading this letter from the Babcock & Wilcox Company, that they had entered their boilers in the exposition boiler house with eager expectation for a competitive test, but alas, they had been denied the opportunity to show their production superior to all its neighbors.

If this was really what they wished, if they wanted a public record based on the actual performance of their boilers at the World's Fair, why did they not accept the invitation of the exposition officers and participate in a series of boiler tests which would have been conducted with the utmost care and fairness by such able men as we have named above. If they were so sure of the superiority of their boiler, as claimed in this letter, why did they not go on with these tests and challenge all other companies there to compete with them? If they had done this they would most positively have met with a quick response. There was never a better opportunity to prove their boast, and probably it will not occur soon again. On the contrary, when this proposition was made they were, I believe, the very first to "withdraw their boilers from all competition," including such tests.

ALBERT A. CARY.

NEW YORK, November 15, 1893.

"Julian Bessemer," Impostor.

To the Editor: On Wednesday last a smooth faced young man came into my office, and in very friendly terms greeted me, saying he was the grandson of Sir Henry Bessemer, and after humming and hawing a good deal he very coyly stated that he had been in the cattle ranch business in Colorado and had been swindled by his partner, &c., showing numerous bullet wounds, &c., but cautiously avoided asking for help. He was very glib tongued, and is seemingly a very well educated young man. He was invited to view our works, but through all his smartness I seemed somehow or other dubious of his real identity, because the thought passed through my mind that I had read in some paper of some young man having assumed a false name, but at the time could not fully make up my mind where I had seen the notice. One of our officials who took him around the works was also doubtful of his being whom he represented himself to be, and after bringing him back into the office his (the official's) thoughts wandered to *The Iron Age*. I had in the meantime offered him shelter for the night at the club house, and the aforesaid official in a few moments brought me the notice given in your paper showing him to be the identical party who had misrepresented himself in the Mahoning Valley. I immediately caused his arrest, and he completely broke down during an examination and gave me his correct name, and stated that he was trying to make his passage money back to Europe by these means. Not having had any trade or business, he no doubt had found it difficult getting employment in these times. He was locked up for the night and was admonished very severely by the magistrate, and on his promise to leave the district he was told to get out as quickly as possible. We had it published in the Philadelphia papers, and also showed him the copy of the papers, so that his game is ended in that line. He had no idea that he had been published in *The Iron Age*, and was taken back considerably when shown your article.

He gave 22 years as his age, and I firmly believe he is of good people, and I intend finding out if that is so, so I do not think, for his parents' sake, that it would do the public any good to give his true name, and keep them from being heart broken over the affair. We owe thanks to J. G. Butler of Youngstown, who took trouble to write to Sir Henry Bessemer and get his denial of his story, and to you for publishing it in your paper, otherwise he might have gone on the same plan for an indefinite period. Very truly yours,

FRED. HERON,
Gen. Manager Phœnix Iron Works.

PHŒNIXVILLE, PA., November 13.

OBITUARY.

LUTHER DORR EMERSON.

Luther Dorr Emerson, president of the Emerson & Stevens Mfg. Company, Oakland, Maine, died suddenly on the 28th ult. He had been in poor health for some time, but had recently improved in health, and an hour before his death had been sitting up reading the newspapers. Mr. Emerson was born in Arrowsic, now Georgetown, Maine, in 1816. He attended the Bloomfield and Farmington academies, and subsequently taught school, worked in a woolen mill and was clerk in a store in Quincy, Mass. In 1842 he moved to Oakland, then West Waterville, where he entered the employ of Sherman Hale & Co., manufacturers of scythes. In 1844 he went with R. B. Dunn to North Wayne, where he was employed in connection with the North Wayne Tool Company. He remained with Mr. Dunn until 1865, when a new scythe and axe concern was formed under the firm name of Hubbard & Blake Mfg. Company, and Mr. Emerson was made manager of the shop. In 1870, having withdrawn from this firm, he associated himself with J. E. Stevens, W. R. Pinkham and G. W. Stevens and built a shop and continued the manufacture of scythes and axes up to the time of his death. One of Mr. Emerson's most prominent characteristics was his love for old Maine history and antiquarian research, in which respect he was very well informed. He was a member of the Maine Historical Society. Mr. Emerson had a kind, warm heart and his charitable deeds were numerous. He was one of Oakland's most prominent citizens, and was held in very high esteem by all who knew him.

PERSONAL.

J. von Ehrenwerth of Leoben, Austria, has sailed for home.

Eckley B. Coxe of Drifton has been nominated for a second term of the presidency of the American Society of Mechanical Engineers.

Dr. Claus, general manager of the famous old Thale Works, in the Hartz Mountains, manufacturers of sheets and enameled ware, will soon return home, via Gibraltar.

James Jessop, of the firm of Wm. Jessop & Sons, Limited, importers of steel, 91 John Street, New York, has returned from a trip abroad, very much improved in health.

Fr. Lehman of Naylor & Co., New York, sails for Europe next Tuesday.

All work on the old Springfield rifles at the army arsenals has been stopped and every effort is now being made to complete as quickly as possible the new small caliber magazine rifle to replace the old pattern in the army.

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MANUFACTURING.

Iron and Steel.

The machinery equipment of the Spearman Furnace of the Spearman Iron Company, Sharpsville, Pa., is being put in thorough repair in order that the plant may be in the best possible condition when it has been decided to put the furnace in blast. At present, however, this is very uncertain, as operations will not be resumed before December 1 next, if then.

The Emporium Steel Company of Emporium, Pa., have made application for a charter of incorporation. The officials are as follows: J. Pitt Felt, president; Hon. S. S. Smith, vice president; John D. Logan, treasurer; L. K. Huntington, secretary, and R. L. Watters, superintendent.

In the Supreme Court of Pittsburgh last week the case of Jas. Mathews against Park, Brother & Co., Limited, of that city, appealed from the lower court by the defendants, was heard. Mr. Mathews was a roller in the employ of the firm and was discharged before his contract expired. He then sued for the balance of the wages he claimed was due him under his contract. This is the second time the case has been tried in the Supreme Court. At the last trial the plaintiff was given a verdict for $6052.67.

No. 2 Rolling Mill of the plant of the Cambria Iron Company, at Johnstown, Pa., which has been idle for some time, resumed operations last week. We are advised that the outlook among the larger industrial establishments at Johnstown is much better now than for the past three or four months. At the various mills of the Cambria Iron Company there is more activity, and at the plant of the Johnson Company, manufacturers of steel rails, nearly every department is in operation to full capactity, with good prospects of continuing in this way for some time to come.

Rosena Furnace, at New Castle, Pa., owned by the Oliver Iron & Steel Company, Pittsburgh, has again resumed operations after an idleness of some months. During the time the stack was idle extensive repairs were made, including the building of new stoves, new draft stack and other improvements. The furnace is now one of the best equipped in every way in the Shenango Valley, and is expected to turn out about 200 tons of iron per day.

The Oil Well Supply Company of Pittsburgh, manufacturers of oil well supplies, are endeavoring to obtain an extension on all accounts of $500 and over. We are advised that the prospects are encouraging.

The capacity of the Solar Iron Works of Wm. Clark's Son & Co., Pittsburgh, is being increased by the erection of three iron buildings, 100 x 100, 50 x 218 and 56 x 260 feet, respectively.

The Anderson Steel Casting Company, at Anderson, Ind., have resumed operations.

The furnace of the Temple Iron Company, at Temple, Pa., is being blown out.

The Philadelphia *Enquirer* is authority for the statement that experts working on the books of the Cambria Iron Company of Johnstown, Pa., have discovered irregularities which indicate that a deep plot was laid to defraud and rob the company.

The Columbia Rolling Mill Company, Columbia, Pa., have resumed.

An explosion occurred last week at furnace H of the Edgar Thomson plant, at Bessemer, Pa. Considerable damage was done to the furnace and a number of the employees were seriously injured. The stack will be idle some days while necessary repairs are being made.

The Marlin Iron & Steel Company, Incorporated, of Allegheny, Pa., were granted a charter last week, with a capital stock of $40,000. The new concern propose to engage in the manufacture of iron and steel. The directors are as follows: Harry A. Marlin, Francis D. Marlin, John B. Chapman, Perry O. Laughner of Pittsburgh and Elmer E. Laughner of Coraopolis, Pa.

The puddling and rolling mills of the Harrisburg Rolling Mill Company, at Lochiel, Pa., which shut down August last, have resumed with about one-half the old force of men.

The new additions to the armor plate press department of the Homestead Steel Works, at Homestead, Pa., are being pushed rapidly to completion. The large hydraulic press and other castings lately arrived from England are being put in place.

The Philadelphia Rolling Mill of Hughes & Patterson, Philadelphia, which has been idle since October 18, has resumed, giving employment to over 600 hands, the complete force.

The E. & G. Brooke Iron Company, Birdsboro, Pa., are installing new boilers in their nail works in order that this department may be run independent of the other departments of the works.

Judgments have been taken for $8387.59 in favor of the Ashland Iron & Steel Company of Ashland, Wis., against the West Superior Iron & Steel Company of West Superior, Wis.

The annual meeting of the stockholders of the Reading Rolling Mill Company, Reading, Pa., was held in Philadelphia last week. The following directors were elected: Joseph H. Cofrode, Francis H. Saylor, Josiah F. Bailey, Charles A. Sterling, George W. Bush, Ellis Ames Ballard and Edward J. Kelly, the latter two being additions to the board. A committee consisting of A. M. DeHaven and Siddons Harper were appointed to prepare certificates of the status of the business of the Reading Rolling Mill Company.

In the courts at Pittsburgh last week a verdict for $7890.36 for the plaintiff was given in the case of C. W. Badgley & Co. for use of W. P. White against the Columbia Iron & Steel Company. The suit was for commissions on the sale of iron and steel, and no defence was made. In the United States Circuit Court, in the case brought against the same company by Pennock Brothers, Judge Buffington made an order refusing the motion made by the plaintiffs for the appointment of a receiver for the defendant company. The first mortgage bondholders of the Columbia Iron & Steel Company have foreclosed bonds to the extent of $7000, and it is expected that the property will be forced to a sale at once. The bonds were held by the Dollar Savings Bank of Pittsburgh, and were foreclosed through the agency of Safe Deposit & Trust Company of Pittsburgh.

Hiram H. Peck, a banker of Covington, Ky., and Charles D. McGuffey of Chattanooga, Tenn., have been appointed receivers for the Southern Malleable Iron Company of the latter city. The company owe the Northern Bank of Kentucky $28,026, and joined in the application for a receiver. The bonds of the receivers were fixed at $20,000 each. It is understood that the works will continue to be operated by the receivers.

It is stated that all the departments of the Diamond State Rolling Mill, at Wilmington, Del., except the horseshoe mill, have shut down for an indefinite period.

The Portage Iron Company of Duncansville, Pa., have started all their departments, including the guide, bar and hoop mills.

We are advised that the statement that the Monongahela Iron & Steel Company, manufacturers of muck iron, whose plant is located at Hay's Station, near Pittsburgh, have secured enough orders to run for the entire winter is without foundation. This plant is running on a few light orders, but there is not sufficient work ahead by any means to warrant the statement that the plant will be run right along.

Allegheny Furnace, at Iron Gate, Va., has resumed operations after one month's idleness.

The workingmen of the Belleville Steel Company, Belleville, Ill., have succeeded in raising $14,000 of the $15,000 necessary to start the works of the company. The reorganization will be effected at the end of 30 days, and the mills will then be started.

The Massillon Rolling Mill of Jos. Corns & Son, at Massillon, Ohio, has started up, giving employment to 250 men. The works have been idle since July 1.

The annual meeting of the stockholders of the Norristown Steel Company of Norristown, Pa., was held at the office of the company on the 8th inst., when a reorganization was effected by the election of the following officers: President, H. H. Haines; vice-president, E. M. Daniels; treasurer, C. C. Highley; secretary, Joseph H. Hampton, and general manager for the company and receivers, George J. Humbert. The receivers presented an exhaustive report showing the affairs of the company to be in a prosperous condition.

The difficulty between the firm of Morrison, Colwell & Page, proprietors of the rolling mill at Cohoes, N. Y., and their employees has been settled and an agreement made. Heretofore the prices paid were $3.75 per ton for the best iron and $3.50 for common iron. The men resumed at the rates of $3.25 for the best iron and $3 for the common iron. Mr. Page has promised the employees that as soon as business improves he will restore the old scale of wages.

The merchant train at the Rensselaer Iron Works, Troy, N. Y., has again been started and 200 men are employed. This was done in accordance with an order from the court permitting the Troy Steel & Iron Company to complete certain orders that had been taken before the works closed.

The Etna Furnace, at New Castle, Pa., will blow in as soon as it can be put in working order.

A press dispatch from Wheeling, W. Va., states that the Whitaker Iron Company's Crescent Iron Works have been destroyed by fire. The loss is given as $85,000, and the insurance at $70,000 The works were built in 1855, and embraced 15 double puddling furnaces, three heating furnaces and nine trains of rolls. Their product was sheet iron exclusively, of which they had an annual capacity of 13,000 net tons.

From Reading, Pa., comes the news that the Carpenter Steel Company of that city, who have furnished the Government with $750,000 worth of projectiles, have received another order for projectiles for coast defense purposes which will keep the firm busy for two years.

At the annual meeting of the stockholders of the Eagle Iron & Steel Company, Ironton, Ohio, manufacturers of bars and iron and steel sheets, Wm. Marting, Jr., was elected a director in place of F. C. Tomlinson. Geo. T. Thomas also succeeds F. C. Tomlinson as secretary and treasurer.

Niagara Furnace of the Tonawanda Iron & Steel Company, at Tonawanda, N. Y., which has been banked for 70 days, resumed blast on the 15th, and made a successful start.

The construction department of the Phildelphia Bridge Works, at Pottstown, Pa., has resumed operations on double turn, and the nail mill of the Pottstown Iron Company has started 20 machines.

B. F. Hean, Jacob M. Shenk and John Meiley, Lebanon, Pa., have completed the appraisement of the assigned estate of Robert H. Coleman, the Cornwall iron manufacturer. The real estate is valued at $3,448,948 68 and the personal property at $702,177.90, making the total appraisement $4,141,126.60. It does not include Mr. Coleman's interest in the Jacksonville, Tampa & Key West Railroad.

Machinery.

The Buckeye Engine Company of Salem, Ohio, have recently received an order from the Ohio Steel Company of Youngstown, Ohio, for two 300 horse-power tandem engines, non-condensing, with a fly wheel 13 feet in diameter by 36-inch face.

Arrangements have been about perfected by which the Common Sense Engine Works of Muncie, Ind., will be taken from the receiver's hands and started up at an early date. G. Campbell Janney is to be president, J. C. Johnson vice-president, James R. Sprankle secretary and treasurer and Jeny. F. Howell general manager. A number of orders are now on hand.

The J. I. Case Threshing Machine Company of Racine, Wis., are increasing their capacity by the erection of a new molding shop—two L's, 210 x 80 feet and 84 x 80 feet respectively. It will be of brick, with an iron truss roof having a span of 80 feet. Two cupolas, capable of melting 50 tons a day, will be furnished by the Detroit Foundry Equipment Company.

The Brown & Sharpe Mfg. Company of Providence, R. I., are operating their works nine hours a day, six days in the week, with about three-quarters of their regular force. Their sales for the past two months have been better than they anticipated, in view of the great depression in the machinery and kindred trades.

The Lowville Iron Works Company of Lowville, N. Y., manufacturers of wood pulp and paper mill machinery, have shipped a cargo of wood pulp machinery to the Milton Wood Pulp Company, Milton, Nova Scotia, which is part of the equip-

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ment of that mill, and will ship two more carloads at an early date.

F. E. Reed & Co., manufacturers of machine tools, at Worcester, Mass., are at present employing about 100 men, or a trifle over half their usual force.

The Woodruff Mfg. Company of Hartford, Conn., makers of key seat milling machines, are operating their factory 50 hours per week with a greatly reduced force. In view of the general depression of business among the manufacturers of machinery, the company do not regard the immediate outlook for business in their particular line as very promising.

The Columbian Regenerative Furnace Company, capital $25,000, and the Columbia Foundry Company, capital $25,000, have been chartered under the laws of Pennsylvania to carry on business at Philadelphia.

The Penberthy Injector Company of Detroit, Mich., are meeting with success in the introduction of their improved automatic injector and other steam specialties. The increase in their business made it necessary for them to enlarge their factory in May last, since which time the works have run without interruption.

The E. Horton & Son Company, Windsor Locks, Conn., manufacturers of the well known Horton lathe chuck, are operating their works on full time but with a reduced force.

The National Pipe Bending Company, makers of the National feed water heater, of New Haven, Conn., contemplated building an addition to their south factory this fall, but the change in the times, the falling off of business and the stringency of the money market compelled them to lay the plans over for another year.

Since their reorganization and incorporation, on May 17 of last year, the Wais & Roos Punch and Shear Company of Cincinnati, Ohio, have largely increased their facilities for manufacturing by installing new tools and an addition increasing their floor space one-third. They have improved their 10½ foot over geared power shear, and perfected a leveling machine used largely by galvanizers, besides adding to their line doublers, branning and cleaning machines used by tin plate manufacturers. The company believe that only for the lack of confidence in the policy of the Government they would be taxed to their full capacity, but at present orders are slow.

N. P. Bowsher, South Bend, Ind., manufacturer of Bowsher's combination feed grinding mills, reports sales fully up to last year's mark, with better prospects for future business than at any time during the last three years. He is operating his works with a full complement of men.

The Fox Machine Company, makers of wood and iron working machinery at Grand Rapids, Mich., have completed a 30-foot extension to their knife department in order to obtain better facilities for handling their increased knife business.

The Chandler & Taylor Company, Indianapolis, Ind., well-known as manufacturers of engines, boilers and saw mills, are operating their plant with from one-quarter to one-third of their regular force.

H. Bickford of Lakeport, N. H., who makes the manufacture of boring and turning mills an exclusive specialty, has continued to operate his works on full time.

The Ingersoll-Sergeant Drill Company of New York are moving their machinery to the new works at Odenweldertown, Pa.

The inventory of the assets of the Eagle Machine Works Company, Indianapolis, Ind., shows bills receivable and accounts, $44,514.97; real estate, $48,500; machinery, tools and fixtures, $13,290.45; stock on hand, $11,954.91, a total of $118,260.33. The liabilities, admitted and contested, aggregate $130,000. It is not thought advisable at this time to put the plant on the market or continue the manufacture of machinery. It will be kept in operation only to the extent of doing such repair work as is incidental to the business.

Notices have been posted in the North Reading Foundry, at Reading, Pa., to the effect that a reduction of 10 per cent. in wages would take effect at once. About 150 men will be effected, but it is hoped to give them work all winter.

The Briggs Mfg. Company of Niagara Falls, with a capital of $1,000,000, have been organized in Wheeling, W. Va., to manufacture the Briggs automatic press feeder, a Niagara Falls invention. The members of the company are chiefly the directors of the Carter-Crume Company of Niagara Falls, who intend, it is understood, to operate a large factory at the Falls for the manufacture of several patents held by Mr. Briggs.

The new plant of Reeves Bros., at Alliance, Ohio, has been put in partial operation, although it is not yet in a completed condition. The old works at Niles have been kept in constant operation, but an excess of orders made it necessary to begin work in the new plant. The latter represents an investment in machinery alone of $60,000, and the facilities are far superior to the Niles works. It had been the intention to proceed with the erection of a second building as large as the main building, but owing to the depressed condition of business the work of erecting the second building will not begin before spring.

The Phœnix Iron Foundry, at Syracuse, N. Y., has shut down, it is stated, on account of dull times.

The works of the Columbian a Pump & Machine Company, at Columbiana, Ohio, have started up after a shut down of four weeks. Forty-five men are at present employed.

Clark Bros. & Co.'s Machine Bolt Works, at Milldale, near Southington, Conn., have been burned to the ground. Loss, $60,000; insurance, $40,000.

The foundry of Daniel T. Kelley & Sons, at Portland, Maine, has been damaged by fire. The loss is about $12,000, chiefly on patterns, caused by the indiscriminate use of water by the Fire Department.

The new machine shop of the Boston Iron & Steel Company, at McKeesport, Pa., has been totally destroyed by fire. The loss is about $5000, covered by insurance.

The Grant Anti-Friction Ball Company of Fitchburg, Mass, have sold their business to the Cleveland Machine Screw Company of Cleveland, Ohio, and the business will be removed to the last named place as soon as suitable buildings can be erected, probably in the spring. The transfer includes the real estate, buildings, machinery and tools.

The business formerly carried on at Toronto, Ontario, under the name of the Doty Engine Works Company and the John Doty Engine Company, Limited, will henceforth be known as the Bertram Engine Works Company. The company operate engine and boiler works and conduct a general shipyard business.

The preparations for the industries at Love's model city, near Buffalo, N. Y., are progressing rapidly. The foundation for the Empire Mfg. Company's new building and machine shop is completed. The cupola and rattling room are well under way. The town company have secured another industry in the shape of the plant of Ezra F. Landis of Lancaster, Pa., who is a manufacturer and dealer in engines, boilers and other machinery. He will erect a substantial plant in the spring. He will remove his machinery to the model city at once, placing it in temporary buildings.

The new factory of the Interchangeable Tool Company, near Utica, N. Y., has been completed and the concern are all ready to commence operations.

Warren Webster & Co. of Camden, N. J., report business good in their line. They have a large number of orders in hand for Webster vacuum feed water heaters and purifiers, among them one from the Chicago Edison Company for a 4000 horse-power heater, which is a second order received from that concern, the first being for a heater of 1700 horse-power, and another from the Carnegie Steel Company for two heaters, each 2750 horse-power capacity, which is also a second order.

The plant formerly operated as the Bogart Gas Engine Company, Covington, Ky., including all the machinery used by that firm, has been leased by C. W. Bogart and H. W. Sumner, who will continue the production of high grade gas and gasoline engines. A new store room will be erected and the new firm anticipate a large demand for the new type of engine they are now producing.

The Loeb Mfg. Company have been recently organized to manufacture and deal in polishing materials and nickel and electro platers' supplies. Charles Loeb is president of the company, the office being at 216 Church street, New York. The works of the new company are in Brooklyn.

Woodward & Rogers, manufacturers of machine tools and special machinery, at Hartford, Conn., report a material increase in business thus far this month over the three preceding months. They are running their plant nine hours a day with a full force of men.

A. T. Shoemaker, Boreel Building, 115 Broadway, New York, is placing on the market a geometric boring and turning tool.

Hardware.

The Syracuse Steel Wire Company, Syracuse, N. Y., have been incorporated for the purpose of manufacturing steel wire. The company have a capital of $20,000, and their directors are Edwin D. Dickinson, Austin R. Dickinson, Charles H. Halcomb and William S. Teal, all of Syracuse.

The works of the Dominion Horse Shoe Nail Company, Montreal, P. Q., were damaged by fire on the 6th inst. to the extent of $5000, a loss which is partially offset by insurance.

The men employed on gun work by Colt's Patent Fire Arms Mfg. Company, Hartford, Conn., have commenced to work ten hours a day. They have been on an eight-hour schedule for several months.

The machinists employed by the Pope Mfg. Company Hartford, Conn., about 35 in number, will hereafter work 14 hours per day on account of the approaching busy season on bicycles.

The Upson & Hart Company, Unionville, Conn., are now running but eight hours a day.

The Hatch Cutlery Company, Milwaukee, Wis., have amended their articles of incorporation, by which the capital stock is increased from $100,000 to $200,000.

Sargent & Co., New Haven, Conn., are now reported to be running five days a week, owing to improved business.

Nichols, Shepard & Co., Kansas City, Mo., will erect a new implement warehouse. The building will be 63 by 128 feet, four stories high, and will cost $15,000. It is expected that the new building will be completed by January 1.

The shops of the Weir Plow Works, Monmouth, Ill., which have been idle since June, have started up for the winter. One hundred and fifty men have been given employment. It is thought that the force will soon be doubled.

Clark Bros. & Co., Milldale, Conn., whose works were recently destroyed by fire, will rebuild.

Cordley & Hayes, 172 Duane street, New York, issue a circular under date of November 10, in which they state that their factory at Lockport, N. Y., which was destroyed by fire some time since, will be running again within two weeks, and with this increase of capacity they will be able in future to be more prompt in the filling of orders. It is intimated by the agents that they now have on their books orders for a large quantity of goods, which will be filled as nearly as possible in the order in which they were received.

The factory of the Bridgeport Crucible Company, Bridgeport, Conn., a three-story wooden structure, was totally destroyed by fire on the 9th inst. The loss is estimated at $40,000, the company having had a large stock on hand. The insurance is $37,500, and was only taken out three days prior to the fire E. G. Burnham of the Eaton, Cole & Burnham Company is president of the concern

A can of naphtha caught fire from a gas jet in the factory of the Rush Cutlery Company, Springfield, Mass., on the 9th inst. The building was badly damaged by fire and water, and the machinery is nearly a total loss. A large stock of finished cutlery for Christmas orders is also damaged. The loss is estimated at $8000, partly insured.

The factory of the Grand Rapids Refrigerator Company, Grand Rapids, Mich., manufacturers of the Leonard cleanable refrigerators, is running full time and force The company advise us that they have been awarded three medals and a diploma at the World's Fair on the excellence of their goods. Their new catalogue is now in preparation and will soon be distributed to the trade. It is stated that many new designs and improvements have been added for the coming season.

C. & A. Hoffman of Frankford, Philadelphia, manufacturers of butchers' and table steels, finding their business demanded larger quarters, have established themselves in a two-story brick building recently erected by them on Orchard street. The

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greater part of the ground floor is used as a forging, grinding, annealing and cutting shop, and the remainder is taken up for engine and boiler room, tempering room and offices. The second floor accommodates the finishing and mounting departments, packing and store rooms. The line of steels made by the firm covers all kinds in general use from the extra long carvers' steels for hotel use to the small table steel. The steels are made entirely by machinery, securing, it is claimed, a keen and uniform cut. The annealing and tempering are done under the personal supervision of the partners. The firm's goods enjoy a high reputation for their quality. The firm report a heavy demand for their butchers' and slaughter house steels and among recent shipments have been some to Asia and Africa. The present equipment of their factory provides for the employment of 12 hands and enables them to turn out about 300 dozens of assorted steels per week.

Dunham Nut Company, formerly Dunham Nut Machine Company, Unionville, Conn., are equipping their new factory with machinery. They are also putting in a 20 horse power engine and 25 horse-power boiler When the factory is in running order the company's specialty will be finished nuts of the various grades, including case hardened, triple and semi-finished. They will also continue to make the cold press machines as heretofore.

Miscellaneous.

The new factory of the Franklin Brass & Bronze Company, at Birmingham, Conn., is about completed, and the machinery is being put in place. The main building is 150 x 40 feet, two stories high, and the foundry is 50 x 25 feet, the total floor space being 13,250 feet. Operations will begin in three weeks.

The Bath Iron Works, Bath, Maine, have secured the contract for furnishing the windlasses and steam capstans for the two vessels which the Cramps are now building for the Inman line, the contract price being about $40,000.

The California Wire Works of San Francisco, Cal., have shipped the first of 14 steel cables they are making for the St. Louis, Mo., cable railways. The cable shipped was 21,500 feet long, 1¼ inches in diameter and weighed 55,000 pounds. The company have secured the exclusive right to manufacture the Hallidie ropeway, and have already erected several at the leading mines on the Pacific Coast, in British Columbia and in Mexico.

The Anniston Pipe Works, which have been in the hands of a receiver for three years, will be sold December 4, at Anniston, Ala.

The annual meeting of the stockholders of Cofrode & Saylor, Incorporated, was held in Philadelphia last week, at which the following directors were re-elected, Jos. H. Cofrode, Francis H. Saylor and Henry R. Leonard.

The Penn Bridge Company of Beaver Falls, Pa., contractors and manufacturers of bridges and structural material in iron and steel, have recently reduced wages of their employees 10 per cent. This action was necessary on the part of this firm in order to meet similar action taken by their competitors in business.

The tin and stamping works of the Thos. McDonald Mfg. Company, at Montreal, P. Q., have been burned. The loss is $50,000, covered by an insurance of $27,000.

About 375 men have gone to work at the Hoosick Falls, N. Y., plant of the Walter A. Wood Mowing & Reaping Machine Company to fill an order from South America for 367 harvesters and binders and an order for 247 mowers.

Levi Case & Co. of Schenectady, N. Y., are building a copper torpedo boat, which is said to be intended for the Brazilian Government.

At Pittsburgh last week a bill in equity was filed by U. S. Byram against the Pennsylvania Fence Company, Limited. The plaintiff holds a judgment against the defendant company, whose only assets consist of a patent for a metallic fence. He wants the concern restrained from disposing of the patent except by order of the court and the first proceeds from its sale to be appropriated to his judgment.

TRADE REPORT

There is little that is new in the Steel Rail trade, although a good deal of eager searching for work is going on. More than ever before, the surrounding circumstances govern the basis on which business is being negotiated. Pittsburgh advices indicate that $20 at that point is spoken of in order to reach distant markets in competition with mills whose natural territory it is.

Thus far the break has brought out but little work. Buyers seem inclined to watch further developments before taking action. In the Iron trade generally the question most eagerly discussed, with apparently little positive evidence available, is the relative cost of Steel Rails and Steel Billets, under the extraordinary circumstances now prevailing. The capacity of the giants in the business to inflict and stand punishment is commented on. The verdict of the knowing ones is that they are more closely matched than some of the contestants themselves may fondly believe.

In Pig Iron there has been a somewhat livelier buying movement, notably in Cincinnati, where Pipe founders have covered the material for sales made. In Philadelphia contracts for about 24,000 tons of Cast Iron Pipe have been taken, a part being captured by a Southern foundry. Another Southern works has secured the contract at Waterbury for about 6700 tons. The Chicago market has been upset by a cut in freight rates on Southern Iron to $3.65 from Birmingham.

In Soft Steel quite a large business has been done in Pittsburgh, and some advices report the market as firmer. It is certain that some of the makers decline to enter new business for early next year at present prices. Rumors of extraordinary figures continue to make the rounds. An investigation through the best sources among both sellers and buyers shows them to be without any justification whatever. $17.25 is a close price now.

The prospect of the early starting of the Valley mills has caused some weakening of Bars in Western markets, and Chicago notes also some very low prices on Beams. What contracts for Structural Material have come up lately in Eastern markets have been taken by Pittsburgh mills.

The sales of Wire Rods at $24.50 in Western markets have ceased and $25 is now bottom. The Western Wire Nail mills report that their tonnage has been very heavy lately, apparently due to the pressure to stock up distant markets before the close of navigation.

In Copper the fact is established that the Calumet & Hecla Company have made a large sale. Details, however, are not available as yet. The market has stiffened up since then.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., November 14, 1893.

Attempts are being made to persuade people that things are improving, but evidences thereof are not very satisfactory. It would not require very much of a demand to start such a movement, however, and the chances in that direction are not unfavorable, but that the turn has actually been made is "not proven." Prices are in no case better than they were a week ago; there has been no general increase in the volume of business, and no tangible evidences that either of these desirable features are on the point of being immediately realized. A more cheerful feeling has been manifested since the elections, however, and there is more inquiry for quotations, indicating that the trade are disposed to anticipate requirements, providing that developments are favorable, but confidence has not been strong enough to induce heavy purchases. It may also be noted that there is less pressure to sell, so that, taking everything into account, even if there has been no other gain, the disposition is to look for better times, rather than the reverse.

Pig Iron.—The market ought to improve, but it has not responded as promptly as could be desired. The decrease in stocks and the extremely small output ought to inspire confidence, considering the low prices now ruling, but in most cases orders can be placed at the same prices as last week, and, so far as we can find, no one has had courage enough to ask an advance. At the same time there is less pressure to sell, and buyers may not be entirely safe in postponing their orders much longer. It would not take much to start the market on an up turn, but it evidently needs something to start it, or the movement would have been well under way by this time. The market is a waiting one, sales in the meanwhile being within the following range for Philadelphia deliveries:

No. 1 Foundry	$13 75 @ $14.25
No. 2 Foundry	13.00 @ 13.25
Standard Gray Forge	12.00 @ 12.50
Ordinary Gray Forge	11.50 @ 11.75

Steel Rails.—It has been evident for some time that prices were crumbling away, so that the recent sharp break was not much of a surprise. It is probable, however, that there is more in it than appears on the surface, and that the break is a kind of preliminary to something which is not yet ready for announcement. Opinions vary as to the effect of the reduction; it would be a good thing to secure work for the men during the winter months, but it is very doubtful if it will increase the demand at all, as the roads are in no condition to anticipate their needs, and as the president of the Pennsylvania Company remarked: "We are not speculating in Rails." Nevertheless, prices were too high, and a reduction to $25 is only in fair proportion with other articles; moreover, it is claimed that no such prices as $22, Pittsburgh, have been named or accepted. It is said that the Carnegie Company offered to deliver 3000 tons to the Boston & Albany Road at $25, but the order went to the Scranton Company at a price a shade under $23.75, f.o.b. Under the circumstances prices are very unsettled and may be anywhere from $22.50 to $24, f.o.b. cars—all depends on quantity, delivery, &c., but in the meanwhile there is no great desire to place orders notwithstanding the lower cost.

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Steel Billets.—The market is dull and prices not particularly strong. Sellers quote $19.75 @ $20, delivered, but to the right kind of buyer there would be no difficulty in shading the inside figure. Consumption is not large, however, hence there is comparatively little disposition to buy, except in small lots.

Finished Material. — Things are practically in the same condition as noted for some time past. The volume of business does not increase in the aggregate, although some mills are doing very much better than they were two or three months ago, but they are the exception and not the rule. The large mills (with one or two exceptions) are in a most unsatisfactory position. They have plenty of orders on their books, but the buyers are not in a position to take deliveries, so that nothing can be done until they are ready. Those who cater to a smaller class of trade manage to run pretty full, as they are constant buyers week by week, and while orders have not accumulated, they are received often enough to insure steady work at the mills. There is no big work coming out at present, but on the whole business keeps up to the average of the past several weeks. Prices show no improvement, however, and on large lots are made considerably lower than quoted for small lots, which are as follows:

Grooved Skelp, delivered	1.47½¢	@	1.50¢
Best Refined Bars	1.52½¢	@	1.55¢
At interior points	1.40¢	@	1.50¢
Tank Steel	1.55¢	@	1.60¢
Heavy Plates	1.60¢	@	1.65¢
Shell	1.70¢	@	1.80¢
Flange	1.90¢	@	2.00¢
Angles	1.65¢	@	1.70¢
Beams and Channels	1.75¢	@	1.90¢

Old Material.—The demand is somewhat better, but with large supplies it is difficult to secure satisfactory prices. General quotations are about as follows:

No. 1 Wrought Scrap, delivered	$12.00	@	$13.00
Machinery Cast, delivered	10.00	@	11.00
Heavy Steel Scrap, delivered	12.00	@	13.00
Old Iron Rails, delivered	14.00	@	14.50
Old Street Rails, delivered	15.50	@	16.00
Wrought Turnings, delivered	10.00	@	11.00
Cast Borings, delivered	6.00	@	7.00
No. 2 Light Scrap	6.00	@	7.00

Louis R. Baldwin, until recently with the late H. W. Middleton, has established himself in business on his own account at Room 5, 205 Walnut place. Mr. Baldwin has had a considerable experience in the trade, and will make a specialty of Iron, Steel, Nails and General Railroad and Mine Supplies.

St. Louis.

(By Telegraph.)

Office of *The Iron Age*, Bank of Commerce Building, ST. LOUIS, November 15, 1893.

Pig Iron.—A general feeling of improvement is noted and inquiries are more frequent. Prices have been advanced 25¢ ℔ ton on Nos. 1, 2 and 3 Foundry, and nearly all the leading furnaces are holding firm at the advance. Locally the demand is not urgent, but consumers who have Iron due them are taking it more regularly than heretofore. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	$13.25	@	$13.50
Southern Coke, No. 2 Foundry	11.50	@	11.75
Southern Coke, No. 3 Foundry	10.75	@	11.00
Southern Gray Forge	10.25	@	11.50
Southern Car Wheel	17.25	@	18.25
Lake Superior Car Wheel	16.50	@	17.00
Ohio Softeners	16.00	@	16.50

Bar Iron —The jobbing trade is quite brisk and 1.75¢ from store is well maintained. Mills quote 1.45¢ @ 1.50¢ for carload lots, half extras, f.o.b. cars East St. Louis.

Barb Wire.—The improvement noted last week continues the feature of this department. Mills quote Painted at $2 @ $2.05 and Galvanized at $2.40 @ $2.45. Jobbers ask $2.10 @ $2.15 for Painted, with the usual advance for Galvanized.

Wire Nails.—The Nail market does not appear as weak as last reported and there continues to be a fair amount of business doing. Mills quote $1.40 for carload lots to jobbers. Smaller lots are quoted at $1.45 @ $1.55, according to quantity.

Rails and Track Supplies.—There has been quite an improvement in the demand for Track Supplies, which are firmer in consequence. We quote as follows: Splice Bars, 1.65¢ @ 1.70¢; Spikes, 2¢ @ 2.05¢; Bolts, Square Nuts, 2.50¢; with Hexagon Nuts, 2 60¢. Steel Rails are dull at $24.50 @ $25. Old Iron Rails are nominally $14.

Pig Lead.—Acting under the improved condition of the New York market this metal is higher. Sales of several hundred tons were made at 3.15¢ @ 3.20¢, and 75 tons were placed today at 3.22½¢. At the close to-day 3.22½¢ was bid; sellers are asking 3 25¢.

Spelter. — This metal is a trifle firmer, in sympathy with Lead. Sellers ask 3 40¢, but consumers continue to buy sparingly, and any rapid improvement seems out of the question.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, November 15, 1893.

More business is now doing in nearly every line of finished material except for Structural work, in which the demand is light owing to the close of the building season. Orders are improving in a marked degree from the railroads. These orders are small, showing that they are for absolute requirements, but they are numerous and steady, which is in marked contrast with the quietness of this class of business for several months.

Pig Iron.—The most important event of the past week was the decline in Southern freight rates of 20¢ ℔ ton, making the existing rate $3.65 from Birmingham. It only applies to Chicago business and was done by the Ohio River lines and not by the railroads further South. It is expected that this reduction will only be temporary, but it has had the effect of reducing prices all along the line. It has not yet had the result of increasing sales, but it would be natural that buyers should take advantage of it as soon as the fact becomes generally known. The demand for Southern Iron for the past week has only been for small lots, although there are some inquiries for round lots which it is hoped may result in transactions at an early day. Business on local Coke Iron has been fair, but no heavy sales have taken place. The quotations made on this class of Iron are for small lots only. Concessions are given on sales of any size and in direct competition with Southern Iron prices are made to take the business. Sales are reported of several hundred ton lots of Lake Superior Charcoal Iron and one inquiry is in the market for 500 tons. Quotations are now as follows for cash:

Lake Superior Charcoal	$16.00	@	$16.50
Local Coke Foundry, No. 1	13.50	@	14.00
Local Coke Foundry, No. 2	12.75	@	13.00
Local Coke Foundry, No. 3	12.25	@	12.75
Local Scotch	14.00	@	14.50
Ohio Strong Softeners No. 1	15.50	@	16.00
Southern Silvery, No. 1		@	14.25
Southern Silvery, No. 2		@	13.75
Southern Coke, No. 2	11.85	@	12.10
Southern Coke, No. 3	11.10	@	11.35
Southern, No. 1, Soft	11.85	@	12.10
Southern, No. 2, Soft	11.10	@	11.35
Tennessee Charcoal, No. 1	16.00	@	16.50
Southern Gray Forge	10.60	@	10.85
Alabama Car Wheel	18.25	@	18.50
Jackson County Silvery	16.50	@	17.00
Other Ohio Silvery	15.00	@	15.50

Bars.—The volume of business is steadily increasing. Manufacturers' agents who have recently tested the market by circulars report that they have brought in numerous inquiries and some orders. The outlook indicates a continued buying movement in this line, and there are some good sized orders in sight. Prices are hardly as firm as they were a week since on account of the efforts being made by mills which are now starting up to get their order books comfortably filled. Prices on Bar Iron range from 1.37½¢ to 1.45¢, Chicago, according to the location of the mill. The Valley mills are endeavoring to maintain their base price of 1.30¢ at mill. Competition is brisk on Soft Steel and prices range from 1.45¢ to 1.55¢, Chicago, according to the specification. Jobbers report a better business, with an improving demand from the small manufacturers. They quote from stock 1.60¢ @ 1.70¢ on Bar Iron and 1.65¢ @ 1.70¢ on Soft Steel Bars.

Structural Material.—The demand for Beams is light in consequence of the gradual cessation of building operations. Rumors are current of much lower prices than have been hitherto named in this locality. The bridge works are purchasing moderate quantities of Shapes, but the demand in that direction can hardly be called active. Quotations are as follows, Chicago delivery: Beams, 1.65¢ @ 1.75¢; Tees, 1.90¢ @ 2¢; Angles and Universal Plates, 1.60¢ @ 1.65¢. Small lots are sold from stock at an advance of 10¢ @ 15¢ ℔ 100 above those prices.

Plates.—Mill agents report light inquiries, but merchants are experiencing an improvement in business and report much better sales from stock. Boiler makers are doing a little more than they have been, which causes an improved demand for Boiler Plates. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.62½¢ @ 1 70¢; Shell Steel, 1.82½¢ @ 1.90¢; Flange Steel, 2.2½¢ @ 2.10¢; Fire Box, 2 75¢ @ 5¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2.25¢ @ 2.40¢; Tank Steel, 2 10¢ @ 2.20¢; Shell Steel, 2.20¢ @ 2.40¢; Flange Steel, 2.50¢ @ 2.65¢; Boiler Tubes, 70 and 5 % off.

Sheets —Not much new business is reported, but the recent ravages of fire among sheet mills have made it necessary for contracts to be replaced, and this has brought up several transactions which otherwise would not have taken place. No. 27 Common Sheet Iron is still quoted at 2.75¢, Chicago, for mill shipment, but this is shaded by some manufacturers. Small lots from stock are selling at 2 90¢ @ 3¢. Galvanized Iron continues in good demand. The mills in operation are now so well sold

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up that agents believe prices can shortly be advanced. The best brands are selling at about 70 and 10 % off for Juniata, but less known brands may yet be purchased at 70 % off. Small lots from stock are quoted at 70 % @ 70 and 5 % off. Sheet Copper is weaker from stock, small lots being sold at 30 % off, while manufacturers quote 35 % off for large lots.

Merchant Steel.—Cheerful reports continue to be received from representatives of this branch. Contracts are steadily being made for season deliveries and specification are coming in fairly well on old orders and values are well maintained. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel, 1.90¢ @ 2¢; Ordinary Bessemer Machinery, 1.60¢ @ 1.65¢; Ordinary Bessemer Tire, 1.55¢ @ 1.60¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Steel Billets.—Considerable inquiry is reported for deliveries extending into February. Quotations range from $19.25 to $19.50, Joliet, according to specifications, for 4 x 4 inch. The Joliet mill will resume operations on the 20th.

Rails and Track Supplies.—The drop in the Eastern price of standard Steel Rails is not yet reflected in quotations in this market. The railroads are making inquiries as to how prices here will be affected, but so far they have not asked for quotations on specified quantities and it may be some time before they decide to enter the market as purchasers. There are rumors of a sale of 5000 tons to a Texas road by an Eastern mill at a very low price. Quotations are confined to small quantities, on which the price is made $27 @ $28, according to the customer. Iron and Steel Splice Bars are quoted at 1.50¢ @ 1.55¢; Track Bolts with Hexagon Nuts, 2.55¢ @ 2.60¢; Spikes, 1.90¢ @ 1.95¢, according to quantity.

Old Rails and Car Wheels.—Nothing has been doing lately in Old Iron Rails, but the railroads are offering large quantities, and seem desirous of selling them. They ask $14 75, which buyers refuse to pay. Old Steel Rails have sold recently at $10 50 for long lengths. Short pieces are quoted at $8.50, but holders are trying to get more money. Old Car Wheels are extremely quiet, with large lots probably worth about $11, and single carloads $13 to $14.

Scrap.—Quite a fair demand is noted for various kinds of Old Material; even Malleable Cast is again in demand, after having been neglected for a long time. Steel Scrap is very quiet. Dealers' selling prices, net ton, are as follows: No. 1 Forge, $10; No. 1 Mill, $8; Sheet Iron, $4.50; Pipes and Flues, $8; Axles, $16; Horseshoes, $11; Fish Plates, $12; Spikes and Bolts, $10; Cast Borings, $4.50; Wrought Turnings, $6.50; Axle Turnings, $8; Heavy Cast, $9.50; Stove Plate, $7.75; Malleable Cast, $8; Mixed Steel, $7, gross ton; Leaf Steel, $14 50.

Metals.—A little better business is reported for Lake Copper and prices are firm but unchanged at 10⅜¢ for carloads. Leading casting brands are held at 9¾¢, notwithstanding sales of less known brands at somewhat lower figures. Spelter is firm at 3.50¢. A good business has been done in Pig Lead, sales having been made of about 600 tons within the week. It is quoted at 3 30¢ @ 3.35¢, according to quantity.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, Pittsburgh, November 14, 1893.

The break in the price of Rails has been the main topic of discussion in the Iron and Steel trades here during the past week, and it is the opinion that it will have a good effect on trade in general and the Steel trade in particular. At different times during the past two years the Edgar Thomson Steel Works and several Eastern plants were put on Billets when there were no Rail orders to be had, the inevitable result being a material weakening in the price of Billets, or at best checking any advance in prices that would possibly have taken place. If the lowered price of Rails should serve to keep the mills fairly well employed, the Steel market will undoubtedly be materially benefited. During the week reports of offers to sell Rails on the basis of $20 at mill have been current here. For the first time in its history the Amalgamated Association has issued a call for a second convention in one year and which will be held in this city, commencing on Thursday morning, the 16th inst. At this meeting some important business will be brought up for consideration. The request of the Sheet manufacturers for a reduction of 10 % on the present scale, also the request of the Mahoning Valley mills for a reduction of wages in the finishing departments to correspond with similar reductions made by the National Union of Iron and Steel Workers, and the request of the Valley mills for a $4.50 ₱ ton puddling rate, will be brought up for action. The question of making the Amalgamated Association wage scale a continuous one will also be considered, and, altogether, the session promises to be one of the most important in the history of the Amalgamated Association. The week under review showed no material changes in the condition of the Iron and Steel trades. The demand is undoubtedly much improved, but prices are as low as ever.

Pig Iron.—We can report a perceptible improvement in demand for both Bessemer and Gray Forge Iron. A number of sales have been closed within the past week, and $11.25, Pittsburgh, for Bessemer and $10.50 for Gray Forge are being closely observed, while some of the Valley furnaces are holding Bessemer at $10.75 at furnace, equal to $11.35, Pittsburgh, and are getting it. While stocks of Pig Iron at furnaces are large, the increased demand for Steel and the prospect of some business in Rails is expected to lead to a material lessening of stocks before this year is out. The uncertainty existing as to what price will have to be paid for Coke after December 31 next, on which date a good many contracts expire, is having the effect of making furnace operators unwilling to accept contracts for Iron for delivery very far into next year at present prices. Taking all these facts into consideration, it is not unreasonable to believe that prices of Bessemer and Gray Forge cannot well go much, if any, lower than they are to-day. We repeat quotations of last week, as follows:

Neutral Gray Forge	$10.50	@ $10.75	cash
All-Ore Mill	10.75	@ 11.00	"
Bessemer	11.25	@ 11.50	"
No. 1 Foundry	12.50	@ 13.00	"
No. 2 Foundry	11.50	@ 12.00	"

While our lower quotation on Bessemer has been slightly shaded in several instances, it has been in cases where terms were equivalent to spot cash. We note a sale of 1000 tons of Bessemer for November at $11.25, Pittsburgh, and one of 1500 tons of Gray Forge for November and December at $10.50, Pittsburgh.

Ferromanganese.—We quote domestic at $52.50 @ $53, delivered. The demand is reported as improving, owing to the increased demand for Steel.

Muck Bars.—There is a better demand, owing to the starting up of a number of mills. We are advised of two or three sales involving about 1000 tons for delivery this year at $21, @ $21.15, delivered at buyer's mill. Some off grades of Muck Bar can be had at prices slightly lower than the above.

Billets.—The demand continues fairly active, and it is claimed that enough business has been booked and is in sight to insure fair activity among the mills for the balance of this year. Steel makers are apparently well satisfied over the break in the price of Rails, as it is expected to favorably affect the market by largely removing the chances of the Rail mills making Billets for some little time at least. During the week under review a number of orders calling for from 500 to 1500 tons have been placed, and it is understood that two or three contracts involving some 8000 or 10,000 tons are pending and may be closed this week. We quote the market at $17 25 @ $17.50, with the last named as the ruling price. A good order for Rod Billets with favorable terms of settlement would probably be accepted at our lower quotation.

Steel Rails.—Owing to the many rumors in circulation it is next to impossible to give a quotation on Rails that would be reliable. It is claimed that offers to sell on the basis of $20 at mill have been recently made. Owing to the open hostility now existing between Eastern and Western mills it is not unfair to assume that even this price would be shaded if necessary.

Structural Material.—Pittsburgh is reported to have taken a fairly large order for Beams and Channels to be used in a large office building now under construction in a Western city. There continues to be a fair run of small orders, with several large contracts in sight, which are expected to be closed before the year is out. We repeat quotations of last week, as follows: Beams up to 15 inches, 1.50¢ @ 1.60¢; Angles and Universal Plates, 1.60¢ @ 1.65¢; Tees, 1.75¢. It is expected that the plant of the Columbia Iron & Steel Company will be offered at public sale in a short time. This is claimed to be one of the best equipped mills in the country for the production of Structural Material.

Plates.—The demand has shown slight improvement lately, although prices are as low as ever. Tank Steel is in fairly good demand, some fair sized orders having been placed last week. We quote as follows: Tank, 1.40¢ @ 1.45¢; Shell, 1.60¢ @ 1.75¢; Flange, 1.65¢ @ 1.75¢; Fire Box, medium quality, 2.50¢ @ 3¢, best quality, 3.50¢ @ 4¢. For round lots the above prices continue to be shaded to some extent.

Wire Rods.—Beyond the fact that there are inquiries in the market for several round lots there is nothing of interest to note. However, as the views of makers and buyers on prices on the above are pretty far apart, there is not much prospect of the business being closed at an early date. We quote at

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$25.50 at maker's mill, and under favorable conditions this price would be shaded.

Bars.—There is a fair amount of business, the heavier demand being for Steel Bars owing to their being obtainable at about the same price as Iron Bars. We quote Steel Bars at 1.30¢ @ 1.40¢, according to order, with Bar Iron extras. In the Valley Bars are quoted at 1.30¢ @ 1.35¢, half extras. The Valley mills have not yet started up, agreeing to remain idle until Monday, the 20th inst., in order to allow the Amalgamated Association to prepare a new wage scale, and also to consider the offer of the manufacturers to pay $4 50 ℔ ton for puddling.

Barb Wire.—The demand continues light, and will not show improvement until buyers commence to place their orders for spring delivery. It should be noted that makers have refused to contract for delivery next year at present ruling prices. We continue to quote Four-Point Galvanized at $2.20 in carload lots at mill, with the usual advances for less quantities. There is a good demand for Plain Wire, which may be quoted at $1.50 @ $1.60 for Nos. 6 to 9, in carload lots.

Wire Nails.—There is nothing new to report. There is a good demand, with prices unchanged. We quote at $1.25 in carload lots at mill. For round lots this price would be slightly shaded. Cut Nails are also in fair demand, with prices ruling at $1 at mill, with the usual averages.

Pipes and Tubes.—The situation is unchanged, the demand being light and none of the mills employed to full capacity. Prices continue low, although makers hope for an improvement before long.

Connellsville Coke. — During the week ending Saturday, November 4, there were 5960 ovens in the Connellsville region in blast, and 11,530 idle, with a total estimated production for the week of 55,280 tons. Compared with the previous week this was a net gain of 228 active ovens and an increase in production of 2965 tons. Prices are unchanged, on the basis of $1.10 for Furnace Coke, in tons of 2000 lb, f.o.b. cars at oven, and $1 50 for Foundry Coke to dealers and $1.65 to consumers. Coke makers confidently expect a better demand for Furnace Coke between now and the first of the year, owing to the starting up of a number of blast furnaces that have been idle for some time, and owing to the better outlook in the Rail trade, which will, of course, lead to increased production of Bessemer Pig Iron.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, November 15, 1893.

That there has been a large increase in the volume of business in Pig Iron during the past week is gratifying, but that there has been no improvement in prices is not what was confidently expected. The sales aggregate upward of 50,000 tons, and were chiefly of No. 2 Soft, No. 3 Foundry and Gray Forge, on the basis of $8 ℔ ton, f.o.b. Birmingham, for No. 2 Foundry; $7.50, and in some instances $7.40, for No. 3 Foundry, and $7 ℔ ton for Gray Forge. The purchases were made by Iron Pipe works in the East, in the West and in the South, and are for deliveries running to next May. It seems that these Pipe works have secured some orders for Iron Pipe at low prices, and held off from buying raw material as long as possible, so that when these trades were closed it was necessary in some instances to telegraph the furnaces to make prompt shipments. That all of these orders came upon the market about the same time may be a coincidence or it may be by design, but the Pipe works have obtained work for the winter by making low prices for Pipe, and the furnaces, while furnishing the raw material at low rates, secured some business on which there cannot be much profit. Other than these orders there has not been much business, but there is about the usual run of orders from the jobbing foundries, but Charcoal Iron is exceptionally dull, and there are free offerings of No. 2 Foundry. There continue to be fair deliveries on old contracts. Collections are all that could be desired. Quotations are as follows:

Foundry.

Southern Coke, No. 1.	$12.75 @ $13.00
Southern Coke, No. 2	10.75 @ 11.00
Southern Coke, No. 3	10.25 @ 10.50
Ohio Soft Stone Coal, No. 1	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2	14.50 @ 14.75
Lake Superior Coke, No. 1	15.00 @ 15.25
Lake Superior Coke, No. 2	14.00 @ 14.25
Hanging Rock Charcoal, No. 1	18.50 @ 19.00
Hanging Rock Charcoal, No. 2	17.50 @ 18.00
Tennessee Charcoal, No. 1	14.00 @ 14.25
Tennessee Charcoal, No. 2	13.00 @ 13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @ 18.00
Lake Superior Car Wheel and Malleable	17.00 @ 17.25

Forge.

Gray Forge	9.75 @ 10.00
Mottled Coke	9.50 @ 9.75

Metal Market.

Copper.—Current report has it that the Calumet & Hecla Company have effected a large sale. No particulars were divulged as to the quantity of metal involved, as to the price paid or whether home consumers or exporters, or both, were the buyers. That there has been a deal is the fact, however, since the company referred to have refused subsequent orders for deliveries this year, while other producers have marked their price up to 10¢. Other descriptions are also held higher, or say 9¾¢ for Electrolytic and 9½¢ for ordinary casting stock, but the intimation was given in some quarters that desirable orders for the cheaper varieties would have been taken at some concession from those figures. James Lewis & Sons, in circular of November 1, remark as follows regarding American Copper: "The export to Europe continues on a very large scale, that for the last four months exceeding the total quantity previously allowed for 12 months by about 10 %. Chief part of this enormous export has gone to Germany, where it seems to have been readily absorbed. A further sale of 1500 tons of Lake Copper is reported to have been made for export, while a large quantity of Anaconda Matte has been sold to American smelters on better terms than are obtainable here."

Pig Tin.—The level of prices has been lower and the market characterized by depression during the greater portion of the week. No great amount of Tin came out, but there proved to have been enough to force values down to 20.30¢ @ 20.35¢ for prompt and immediate future delivery. Speculative manipulation, it is alleged, played some part in the turn, but the force of an alleged large "invisible" supply is claimed to have been a factor of some weight, and there is more than a vague possibility that the steady depreciation in London prices has had a certain amount of unfavorable influence. In any event the movement of prices continues very perplexing to the general buyer, as also the fact that the range is lower at the present time than it was a year ago. Toward the close of the week under review bids were raised to 20.40¢ for prompt and 20 50¢ for November delivery. Straits shipments during first half of November, as per Metal Exchange advices, were 1175 tons, including 700 tons to Great Britain and the United States and 475 tons to the Continent. Total shipments during the corresponding period last year were 1475 tons.

Pig Lead —The market is decidedly firmer, but at the higher range of prices there is hardly any buying on the part of home consumers. In other words, it looks very much like a speculative movement with the more aggressive operators well fortified. One strong point is that late low prices have checked production and prevented any serious accumulation of the metal at first hands, while operating to increase the consumption. The export of 90 % of the Lead made from Mexican ores and facilities for livelier work in that direction have a certain amount of influence in quarters where the real situation is understood. There are rumors of falling off in Australian production and certain facts connected therewith suggest that export movement from this country may be heavier later on. Prompt and current month deliveries have been sold at 3.37½¢ @ 3.40¢. Speculative bids were made of as high as 3.42½¢ for December, 3.45¢ for Janary and 3.47½¢ for February delivery.

Spelter.—None but ordinary sales on home account have been made in this quarter the past week, and the demand has continued slow. Such as they were, however, the orders were difficult to execute, since most replies from smelters virtually amounted to a refusal to sell for delivery during the next six weeks. The presumption is that the bulk of stock is in second hands. There were intimations of a "short" interest in the market. The nominal quotation at the close was 3.70¢ @ 3.75¢ for ordinary brands.

Tin Plate.—Orders for futures have dropped off to very moderate proportions, and buyers' views seem to have been moderated also. Spot business has not exceeded ordinary proportions, nor have ordinary out of town inquiries been hardly up to the average. Prices are somewhat uneven, yet show no radical change. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $5.30; J. B. grade, do., $5.35; Bessemer full weight, $5.35; light weights, $4.95 for 100 lb, $4.85 for 95 lb, $4.70 @ $4.75 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60; Siemens Steel, IC basis, $5.65; IX basis, $6.75 @ $7. Charcoals—Melyn grade, IC, $6.37½ @ $6.50; Crosses, $8; Allaway grade, IC, $5.60; Crosses, $6.75; Grange grade, IC, $5.75; Crosses, $6.85. Charcoal Ternes—Worcester, 14 x 20, scarce; do., 20 x 28, $11.35; M. F., 14 x 20, $7.50; do., 20 x 28, $14.75; Dean grade, 14 x 20, $5.35; do., 20 x 28, $10.50 @ $10.60; D. R. D. grade, 14 x 20, $5.15; do., 20 x 28, $10.10; Alyn, 14 x 20, $5.32½ @ $5.35; do., 20 x 28, $10.40; Wasters —S. T. P. grade, 14 x 20, $4.75;

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do., 20 x 28, $9; Abercarne grade, 14 x 20, $4.60; do., 20 x 28, $8.87½.

The Metallgesellschaft of Frankfurt, a. M., Germany, whose agents in this country are the American Metal Company, 80 Wall street, have issued a pamphlet bearing on the statistics of Lead, Copper, Zinc and Tin for the years 1890-92. It covers the world's production of these metals and the import and export statistics of the leading industrial nations and is the most complete presentation yet made on the subject.

Financial.

The week has been, on the whole, a tame one in financial circles. No developments of any magnitude have opened out in any one quarter, and our last week's review might, in its general features, be reprinted at this writing, and fairly stand for a presentation of the existing situation. That business is slowly but surely improving all along the line is evident from the marked increase in the volume of bank exchanges and from the increased demand for manufactured products represented by trade reports throughout the country as having taken place within the past week, or since the recent elections. The removal of the silver question as a disturbing factor and the settlement of the currency on a sound basis appear to have induced a distinct improvement in the business feeling of the East and South in particular. Among other interests the dry goods trade is showing a more favorable aspect. Many manufacturing establishments are announced as being busy or expanding and others have recently resumed or are about to resume operations. In nearly every line, in short, some improvement is noted, although, perhaps, not sufficient to satisfy the too sanguine expectations of those who looked for an immediate and universal revival to follow on the passage of the repeal bill. As we have previously pointed out, the reflux of the tide of business activity from the depths of depression which it reached this year must necessarily be a somewhat prolonged operation. Moreover, the anticipation of tariff changes has very probably much to do with the slowness of recovery; and until that question is decided a complete return of confidence and active enterprise cannot, in reason, be expected. It may be said, however, that the recovery which began with the month continues with steadily increasing force, and, in the opinion of competent judges, its ratio is no less than should have been counted on when a reasonable view of all the existing conditions is taken.

Railway earnings, which are so unfailing a gauge of the business condition, are being watched with interest. These showed a decided change for the better in the month of October over the preceding month, and although the cessation of World's Fair traffic during the present month has caused a contraction in the receipts of several roads, the returns of earnings in general make a better showing than was generally expected. Hopeful views are taken of the future in this interest, as the increasing demand for produce and for stocks of goods, which is now developing, will, it is believed, tend largely to increase the demand for freight transportation in the near future. The great curtailment of production during the past few months, coupled with a steady consumption during that time, has necessarily reduced stocks of all kinds in the interior to the lowest ebb. Before long these must be replenished; and the railways will be the gainers.

Money, meanwhile, continues to accumulate rapidly at the chief centers of reserve, and the question is, what will be done with this great amount of funds? The public shows as yet little or no interest in investments on the Stock Exchange, although there has been, it is true, a considerably increased demand of late for the better class of bonds, and it is not likely that much will be done in this way until it becomes clear that trade is once more on a normal basis. When this occurs, however, the abundance of money in reserve will have a decidedly important effect on speculation. Saturday's bank statement showed a further increase in the surplus reserves of nearly $8,000,000, bring the holdings of the banks up to nearly $58,000,000 above legal requirements. The loans, meanwhile, increased only $600,000. This great accumulation of money is evidence that hoarding is over, and that, to that extent at least, confidence has been restored.

The money market shows no material change. Money on call continues in abundant supply at easy rates, the offering being, however, considerably above the demand, although that shows some increase in consequence of the recent expansion of business. Business has been done from 1 % to 2 %, the average being at 1½ %. Time loans are liberally offered by banks and trust companies at easy rates; but, as in the case of call loans, the supply far exceeds the demand. Rates usually quoted are 3 % for 90 days, 3½ % @ 4 % for 6 to 9 months, on dividend paying securities. A good deal of business is reported in commercial paper, which is being bought by both city and country banks at about 4½ % @ 5 % for choice indorsed receivable, 5 % @ 6 % for lesser known names, and 6 % for best single names.

The stock market has had a week of monotony, speculation being at a low ebb. The public has been entirely out of the market for reasons before mentioned, and such business as has passed has been entirely professional and on an exceedingly narrow scale. The tendency of prices, on the whole, has been to decline, but, except in a few cases, the changes of the week have been relatively unimportant, rarely exceeding 1 %. American Sugar Refinery stocks were the object of bear attacks on Monday, which caused a break of nearly 4 points in that stock. As the manipulation of sugar certificates has been one of the inexplicable features of the stock market for months the break was not believed to bear any special significance. The market during the early part of the current week has been languid and irregular, closing on Wednesday with a little firmer tone. The news of the assignment of the Thurber-Whyland Company, a great New York grocery house, on Tuesday, had a depressing effect on some of the industrials. New England was weak and sold down sharply on Saturday on rumors of aggressive action against the McLeod schemes. General Electric was another victim of the "bear" faction. Otherwise no fluctuations of any importance were reported. The following list shows the extreme fluctuations of some of the active stocks during the week, with their closing price on November 15:

	Highest.	Lowest.	Closing. Nov. 15.
Am. Sugar Ref.	102¼	93¼	93⅞
Atchison, T. & S. Fé	20⅞	18⅝	18⅞
Balt. & Ohio	71	70¼	70½
Chicago Gas	63⅜	59⅝	60⅞
Chic., B. & Q.	82⅝	80¼	80⅜
Chic., Mil. & St. Paul	65¼	62½	62½
Chic., Rock Isl. & Pac.	68	65¾	66⅜
Del. & Hudson	133½	130	130
Del., Lack & Western	172½	168	168
Gen. Electric	45½	41⅛	41⅜
Lake Shore	128¼	127	127
Louisville & Nashville	48⅛	46½	47
Manhattan	133	127⅜	127
Missouri Pacific	25⅛	23⅞	24
Minnesota Iron, asked	....	....	40
National Lead, Common	27½	25⅜	26
New Jersey Central	119¼	115¼	115¼
New York Central	103	101	101
N. Y., L. E. & Western	14½	13⅝	13¾
Northern Pacific, Pfd.	22⅛	20⅞	20⅞
Philadelphia & Reading	23	20½	22⅝
Richmond & West Pt., Terml	3⅜	3¼	3⅜
St. Paul & Omaha	37⅞	36¼	36¼
Union Pacific	18	17	17¼
Western Union	89⅛	86⅛	86⅝

Government bonds, which were firm during the early part of the week, declined 1 % for 2s registered on Tuesday, when there was a sale of $20,000 at 25¼. The 4s show a fractional advance. Latest quotations were as follows:

	Bid.	Asked.
2s, 1891, registered	94	.....
4s, registered	112¼	113
4s, coupon	112¼	113

Railway and miscellaneous bonds have been firmer and in fairly large demand.

The market for sterling exchange has been firm, owing to a scarcity of bills early in the week and a slight decline in discount in the London market. Actual business was done at the close on Wednesdav at $4 82 @ $4.82½ for 60 days; $4.84¼ @ $4.84¾ for demand; $4.84¾ @ $4.85 for cables and $4.81 for commercial. Domestic exchange on New York is quoted as follows: New Orleans, commercial 75 discount, bank par; Charleston, buying ⅛ discount, selling par; San Francisco, sight 5, telegraph 10 premium; Savannah, buying par; selling ⅛ premium; Chicago, 75 @ 80 premium; St. Louis, 75 premium.

Bar silver has declined in London to 32 pence, and in New York to 69½¢ ℔ ounce. Some large shipments of the metal have been made during the week.

New York.

Office of *The Iron Age*, 96-102 Reade street, New York, November 15, 1893.

Pig Iron.—A very encouraging feature, so far as the consumption of Pig Iron is concerned, is the appearance of a number of large orders for Cast Iron Pipe. Through Warren, Wood & Co. of this city, the Chattanooga Pipe & Foundry Company secured the order for 6700 tons of Pipe for Waterbury, Conn., at $23.52, delivered, per gross ton. The Howard Harrison Company of Bessemer, Ala., captured about 8000 tons of the 48-inch Pipe for Philadelphia at $24.12 per gross ton, delivered on the streets, the balance of the order, about 16,000 tons, going to Eastern shops. About 1300 tons has been closed for Burlington, Vt., and a good lot is coming up in Northern New York. We quote: Northern brands, $14 @ $15 for No. 1; $13 @ $14.25 for No. 2; $12.25 @ $12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, $13 @ $14 for No. 1; $12 @ $13 for No. 2; $11.50 @ $12.25 for No. 3; $11.75 @ $12.25 for No. 2 Soft, and $12.25 @ $12.50 for No. 1 Soft. Gray Forge is $11.25 @ $12.

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Spiegeleisen and Ferromanganese.—No business of any consequence is recorded. Inquiries from England indicate that stories are afloat there of shipments of American Ferromanganese to the English market. Since Ferro is selling, f.o.b. Liverpool, at about $46, while domestic is quoted at Pittsburgh at $52.50, the absurdity of reports indicating a chance to do a regular business is evident. We quote: Foreign Spiegeleisen, nominally, for 10 % @ 12 %, $21.50 @ $22, and 20 %, $25.50 @ $26, on cars, Jersey City, and Ferromanganese, $55 @ $55 50.

Billets and Rods.—No sales of any consequence are reported in this market. We quote nominally: Domestic Billets, $20.25 @ $22.50, and foreign Billets, $28 @ $28.50, tidewater; domestic Wire Rods, $28 @ $29, and foreign Rods, $39.50 @ $40, tidewater.

Steel Rails.—A good many contradictory stories are afloat, and little that has appeared in the daily newspapers relating to the situation is correct. The sale of 15,000 tons to an Eastern road credited by Pittsburgh dispatches to the Maryland Steel Company was not made by that mill. Pittsburgh advices indicate that $20 at mill there might be accepted. A good deal of quiet negotiating is going on, but we cannot learn that any business has been transacted. Buyers are not taking hold thus far. We quote $23.50 @ $24 at Eastern mill.

Track Material.—Small lots are selling at the following prices: Spikes, 1.80¢ @ 1.90¢; Fish Plates, 1.40¢ @ 1.60¢; Track Bolts, Square Nuts, 2.25¢ @ 2.40¢, and Hexagon Nuts, 2.40¢ @ 2.50¢, delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—The contracts for Structural Material for three buildings alluded to recently involving about 5000 tons have been closed, Western mills taking the business. There are only small orders going in Plates. We quote nominally: Beams up to 15 inch, 1.70¢ @ 2¢; 20-inch, 2¢ @ 2.25¢, for round lots; Angles, 1.75¢ @ 1.90¢; Universal Mill Plates, 1.60¢ @ 1.75¢; Tees, 2¢ @ 2.15¢; Channels, 1.70¢ @ 2¢, on dock. Steel Plates are 1.60¢ @ 1.70¢ for Tank; 1.75¢ @ 1.90¢ for Shell; 2¢ @ 2.15¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.50¢ @ 1.9¢, on dock, and Common, 1.40¢ @ 1.50¢; Soft Steel Bars are 1.50¢ @ 1.70¢; Scrap Axles are quotable at 1.70¢ @ 2¢, delivered; Steel Axles, 1.70¢ @ 1.90¢, and Links and Pins, 1.70¢ @ 1.80¢; Steel Hoops, 1.75¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ ℔ 45-lb bundle, at mill.

Old Material.—Old Iron Rails are nominally at $13 @ $14; Old Steel Rails, $8 @ $9, and Wrought Scrap, $9 @ $11.

Warren, Wood & Co., Pig Iron merchants, Boreel Building, are introducing the Spathite Pig Iron, with which excellent results have been obtained.

The Frasse Company, 19 Warren street, are putting on the market Poldi Steel. No. 0 is a special for tools used on fast running works, such as screw machinery. They also have a self hardening Steel, Gold Label, No. 00.

The first carload of material, consisting of black sheets, turned out at the new plant of the New Castle Steel & Tin Plate Company, at New Castle, Pa., was shipped to Chicago on Thursday the 2d inst., the statement that this product consisted of tinned plate being incorrect. As yet no product has been tinned by the above concern, but as soon as a sufficient supply of black sheets has been made the tinning department will be put in operation. The firm expect to send out in a short time printed matter giving full information regarding the different brands of tin and terne plate which they propose to manufacture and other information of interest to the trade.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, November 15, 1893.

In the price of Pig Tin for prompt delivery there has been a decline to £75. 10/, and the market has shown irregular, weak form. Demand early in the week was freely met by large dealers. This with general uncertainty impaired confidence. Later a slight improvement took place on covering of "short" sales, but unfavorable Eastern advices caused a further decline. At the close the market was weak under free selling of futures, with £75. 10/ @ £75. 12/6 quoted for prompts, and £76. 7/6 @ £76. 10/ for futures.

Copper has undergone little change. Early in the week there was a slight advance in prices, due to reports of purchases for American accounts, but liberal offering by importers, and some selling by tired outside holders, caused a reaction. The same conditions prevailed up to the close of the week, with transactions small and outside interest very light. Last quotations were £42. 2/6 for Merchant Bars, prompt, and £42. 12/6 for futures, and £46. 5/ for Best Selected English.

There has been no improvement in the Tin Plate market. From the Continent there is a little more inquiry, but as the expected demand from the United States was not realized buyers became reserved and purchased only as immediate orders required. Black Plate is scarce and £8. 5/ is now quoted at Swansea. The Cynon Works have been closed down. Stocks at Swansea are now about 265,000 boxes. Liverpool quotations were as follows:

IC Charcoal, Alloway grade	12/6 @ 13/
IC Bessemer Steel, Coke finish	11/6 @ 11/9
IC Siemens " " "	11/9 @ 12/
IC Coke, B. V. grade, 14 x 20	11/6 @ 11/9
Charcoal Terne, Dean grade	11/3 @ 11/6

Pig Lead has been quiet, but the market remains quite steady at £9. 15/ for Soft Spanish.

Spelter has undergone no further change, demand being fair while prices are steady at £17 for ordinary Silesian.

Steel, with the exception of Sleepers, is very dull and prices are soft. Work has been stopped at the Barrow establishment. The Iron market is without change and makers' prices stand practically as they have been for some time past. Last dealings in warrants were at 42/5 for Scotch, 34/4½ for Cleveland, and 44/4½ for Hematite.

To Inspect Boiler Plates at the Mills.

In the report of the Supervising Inspector-General of the Steamboat Inspection Service we find that the following amendment to the laws is recommended:

"And the Supervising Inspector-General may, under the direction of the Secretary of the Treasury, detail assistant inspectors from any local inspection district where assistant inspectors are employed to inspect iron or steel boiler plates at the mills where the same are manufactured, and if the plates are found in accordance with the rules of the supervising inspectors the assistant inspector shall stamp the same with the initials of his name, followed by the letters and words 'U. S. Assistant Inspector,' and material so stamped shall be accepted by the local inspectors in the districts where such material is to be manufactured into marine boilers as being in full compliance with the requirements of this section regarding the inspection of boiler plates; it being further provided that any person who affixes any false, forged, fraudulent, spurious or counterfeit of the stamp herein authorized to be put on by an assistant inspector shall be deemed guilty of a felony, and shall be fined not less than $1000 nor more than $5000, and imprisoned not less than two years nor more than five years."

The object of this amendment is to provide for testing plate at the mills where manufactured instead of at the boiler works, and thus save the expense frequently incurred of returning plate that has been rejected to the mill, besides saving valuable time to the boiler manufacturers, whose workmen in many cases are kept idle while waiting for new plates to take the place of rejected ones.

For the first time in its history the Amalgamated Association will hold a second convention in Pittburgh in one year, commencing on Thursday morning, the 16th inst., at 10 a.m. The call for this convention was issued from the headquarters of the organization in Pittsburgh a few days ago, and it was made necessary by the fact that a full expression of opinion is desired among the members on the question of granting the demand made by the Mahoning Valley mill owners for a material reduction in the finishing departments of the scale and also to consider the request that a rate of $4.50 for boiling be allowed. In addition to this there will come up for action the question of allowing the sheet manufacturers a reduction of 10 per cent. over the wage scale agreed upon in Pittsburgh in July last. Altogether this session of the Amalgamated Association, while it will, of course, be a short one, promises to be one of the most important in the history of that organization. Should the requests of the Mahoning Valley mill owners be granted, it is very likely that the idle mills at that place and also other mills in Western Ohio, which have been idle for about four months, will resume operations within a few days. If the 10 per cent. reduction is conceded to the sheet manufacturers it will also lead to renewed activity among the sheet mills.

The United States cruiser "Columbia," in an unofficial trial over the measured course between Cape Ann and Cape Porpoise, a distance of a little less than 44 knots, averaged the remarkable speed of 22.87 knots per hour on November 14.

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HARDWARE.

Condition of Trade.

THE TENOR of recent reports from the trade shows something of an improvement in feeling, indicating that a more confident tone is prevailing, with, perhaps, an increase in the volume of business. Orders are referred to as more frequent, but for small quantities, indicating that stocks throughout the country are exceptionally limited and that purchasers are adhering to the conservative policy which has governed them for some time. Collections also are better, and little complaint is now made on this score. Another favorable indication is in the fact that the large trade are placing orders for next season, the size of which suggests the expectation of at least an average trade. Prices are without special change, most lines being held pretty firmly, but with the low prices ruling for the raw material and the low quotations current for some staple goods, the tone of the market is not strong, and it is not unlikely that prices in the future on some lines will be lower. The result is probable if, as seems not unlikely, a reduction in wages is made. Manufacturers are certainly scrutinizing their costs very closely, effecting economies wherever possible, and the question as to wages is receiving consideration. Both manufacturers and merchants are thus pursuing a conservative course, but it is pleasant to note the better feeling in mercantile and manufacturing circles and the continuance of a steady if not a large business.

Chicago.

(*By Telegraph.*)

A better demand has been experienced within the past two or three days for seasonable goods, caused, of course, by the change to colder weather throughout the Northwest. In other respects the trade in Shelf Hardware is about as previously reported, but there is some encouragement in the fact that the trade seems to be going along steadily, and not decreasing in volume. There may be a slight shading on prices here and there by jobbers with large stocks, but the movement is not by any means general, and prices may be said to be well maintained considering the circumstances. Heavy Hardware is doing considerably better this month. Sales so far are about double what they were during the corresponding period of last month. The movement is principally in Iron and Steel, but the demand for season goods is improving, and cold weather will probably make it much more active. Competition on staple goods in Heavy Hardware is getting a little keener and some shading is being done, in which, however, all the jobbing houses are not participating.

St. Louis.

(*By Telegraph.*)

Hardware jobbers report a steady demand for shelf goods, but say that orders do not increase in size. Retailers continue to buy sparingly, and will doubtless do so for the balance of the year. A cold snap has at last made its appearance, and seasonable goods are moving in good quantities. Barb Wire and Wire Nails are good sellers just now and prices are firmer. Money is easier, and credits are not so closely scrutinized. Collections are excellent.

Boston.

BIGELOW & DOWSE.—The past two weeks show a better feeling, and an improvement in the business outlook. A settled financial policy and easy money are working a gradual improvement, as shown by increased orders and a better demand for all kinds of Hardware. There is unmistakable evidence that confidence is returning, and that buyers are beginning to see their way clear to making contracts for their future wants. This change will be gradual, but it is none the less sure to come. It is too late to expect much this fall, but it is pleasant to believe we have seen the worst, and that future changes are to be for the better. Prices are still very low, but it is not to be expected that they will soon, if ever, return to the higher prices that have ruled in the past. The recent depression is to have its effects on the future. Manufacturers have been forced to produce their goods at the smallest possible expense, and by strict economy are able to place their goods on the market at very much lower prices than ever before. Under these circumstances it seems fair to believe that old standards are gone, never to return. A manufacturer lately made the statement that he was able, without protection, to pay his workmen $1.50 per day and compete with foreign markets where the laborer's pay was but 50 cents per day. The American laborer, by his application and intelligence, would produce more than three times as much as the foreigner. This increased production must necessarily make new standards for future prices, and many goods that seem ridiculously low to-day are liable to be a standard for the future. Thus far there have been but few changes in prices, but dealers are all anxious to sell. There is a variety of causes working in New England to the advantage of the retail buyers. Some reforms are being introduced, old fogyism is holding back, and in the struggle profits are being sacrificed and each is trying to demonstrate to the customer that his way is the better.

New Orleans.

A. BALDWIN & CO.—The condition of business in this section is constantly improving from day to day. Money is easier, collections show a very marked improvement and travelers' orders as well as mail orders are arriving very freely, which tends to show that the conditions have almost got back to their normal state. Some of the large buyers are taking advantage of extremely low figures on some of the leading staples and are placing orders more freely, which leads us to believe that they are beginning to get their stocks into shape for a better business in the near future. The large receipts of our staple crops, sugar and cotton, are tending to enliven the situation considerably.

Baltimore.

CARLIN & FULTON.—Now that the Senate has voted and the silver question passed into history and the State elections are over, with their results gratifying or disappointing, according to the several points of view; with the closing of the World's Fair and the consequent cessation of the steady drain it had made upon the spare money of every town and community in this country, business should soon adjust itself to normal conditions. Unfortunately, November in this section has never been classed among the busy months, and aside from the activity incidental to the approaching holiday season little can be expected for the balance of the year.

Orders are probably nearly as numerous as they have ever been, but the aggregate is disappoining, and with the low prices which are ruling for everything and the readiness with which orders can be duplicated and the facilities for transportation, the trade is disposed to limit purchases to almost absolute wants. This has one encouraging feature in the fact that the average dealer owes probably less than ever before, and while sales have been dull mercantile failures are comparatively few.

What the effect of the recent elections will be upon future business is problematic; for while one party claims the victory upon the grounds of a changed feeling in regard to a reform of the tariff, the dominant party argues that the depression of business could not have resulted from changes in the tariff which have never been made, and possibly were the present Administration to demonstrate the wisdom of any proposed change in the duties two years from now, the reaction would again occur, except where such votes were given as a rebuke for maladministration instead of a criticism of principles.

However much the people of this nation may differ in their political theories, they can and should discuss and act intelligently without bitter-

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ness, feeling that the interests of the whole people are above that of any one party and that no one party can claim a monopoly of all the brains and all the virtue any more than the opposite party can be charged with all the ignorance and all the vice of government.

Louisville.

W. B. BELKNAP & Co.—Business about holds its own. It can hardly be said that there is much increase in volume, though individual days of encouragement come every now and then. If two or three of them come together, and we begin to cherish the hope of permanent increase, it is only to lose the same in a corresponding period of light buying sure to follow. Not much improvement now is looked for until the first of the year, though prices are apparently firm at recently established low levels.

Quite a number of mills which announced their probable starting up a while since must have abandoned that idea, as they still continue to sell from stock lists only.

The season for Light Sheets is pretty well over and no large orders are being placed for them, although a touch of cold, bad weather would bring about a temporary consumers' demand.

The weather of summer and autumn throughout has been exceptionally fine, clear skies and uniform temperatures making all out of door life a luxury.

The financial situation here continues to improve. Banks are running exceptionally strong. We think the last call on the national banks showed them to be carrying a reserve of between 40 and 50 per cent., but all money lenders are still timid and collateral is scanned very closely, and a good deal of it is required before making the loans. Not any enterprises of consequence are under way that we can recall; the contractions and consolidations are still the order of the day. The latest in this way is the absorption—or what amounts to the same thing—of the C. O. & S. W. R. R. from here to Memphis by the L. & N. This takes the competitor out of the way of the latter, but is not altogether relished by the shippers who rely on open and free competition for getting into certain territory. The river, however, will always prevent our being bottled up.

Cleveland.

THE W. BINGHAM COMPANY.—The recent elections have told our legislators in no uncertain tones that they must not meddle too much with the tariff. Whether they obey instructions or not remains to be seen, but in any event, we have no doubt of a good effect upon business, although it is too late to expect very much this fall. We can see a slight improvement in trade since our last, the number of orders being a decided increase, but the size of the orders is not much improved. Prices on staples have weakened some, in sympathy with the low price of Steel Billets and Wire Rods. The demand for season goods has kept up remarkably well. Skates, particularly, have had a ready sale, and there is no doubt but there will be a shortage when the season is fully on. Money is easy and collections are fair.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—The even, continuous run of trade at the pace that has been set for some time past has not been disturbed during this month. Weather has been very favorable for farm work and the farmers have used it to good advantage, and their farm work is up in fine shape, but this condition of things has been obtained at the expense of fall trade. The retail trade is light over the country generally and the orders to the jobbers are correspondingly small.

No changes in prices that deserve mention.

Collections are up to expectations. A less amount than usual will be outstanding at January 1 and stocks will also be low and the wholesale and the retail trade will both go into the new year with reduced and clean stocks.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—We feel that trade has taken another step and ascended one more round on the ladder of prosperity; therefore what little changes have taken place in trade circles during the last two weeks have been on the side of improvement.

Country and interior merchants continue a conservative policy in buying, but as stocks are exceedingly light, it look as if the present demand was for actual and current business.

Salesmen's orders are more frequent, and cover a more extended line of goods.

Besides taking a review of the situation throughout the country, bank clearings in the volume of business show about 75 per cent. of the trade of one year ago. We think as a rule merchants give that as a fair individual estimate, although in very many instances it fell far below that in August and September.

The improved monetary conditions, coupled with improved trade, have had a beneficial effect upon many of the manufacturers located in our State.

The vaults of the banks, which have accumulated a vast amount of money, are now open to manufacturers, although they ask unquestioned security, and the partail resumption of quite a number of manufacturing industries has given employment to many who have suffered from enforced idleness during the last four months, and has had the effect of stimulating trade that has lain dormant for some months past.

There has been a liberal demand for season goods, and a desire to provide for holiday trade is noticeable.

The few changes in value of Hardware show conclusively, as a rule, that low water mark had been reached. The few exceptions of the slight decline of a few cents in Barb Wire and Wire Nails may naturally be looked upon as the result of a reduction made in wages rather than a reduction in the small profit of the manufacturer.

The recent reduction in the price of Steel Rails, which came like a thunder clap, is looked upon as rather suggestive. Some attribute it to a desire to stimulate activity of the various railroads, which have recently been so economically inclined.

Others look upon it as an era of lower wages, which they claim is yet in its infancy.

The reduction in the price of Steel Rails brings them to within 5 per cent. of the price in the English market, where the production is made upon a lower level of wages.

Whatever may be the cause or causes or the result, it is certain the demand had reached the lowest level within the last 20 years, and resumption has started with wages on a lower level than at any time within the last 15 years.

The same causes may perhaps be coupled with the recent increased production of Pig Iron, and while we are glad to see this advance in production we, with others, regret the necessity of reduction in the level of wages.

Collections may be looked upon as nearly normal.

Congress having adjourned, the World's Fair, with all the attractive features surrounding the same, having closed, and the smoke of election having to a great extent disappeared, the feeling of the hour seems to be "now let us get down to business."

Portland, Ore.

CORBETT, FAILING & ROBERTSON.—Trade has dropped into a rut where only a charge of dynamite could lift it. With wheat selling at 30 cents a bushel in Eastern Oregon and Washington, it is hardly to be expected that the demand for goods would be heavy or collections good. The farmers are becoming discouraged, as not only the low price was against them the present season, but the weather also The damage to crops was very heavy in some sections. The demand is now for an extra session of the Legislature in Washington to pass a law to stay execution. This, of course, only puts off the evil day, and debtors meanwhile pay very heavy rates of interest. The fact is pay day has at last come in this Northwest territory. Heretofore credit has been liberal, if not cheap. The question of the hour with many is how not to pay, at least for the present. Prices show no change, as it is more a question of whether the goods will sell at all rather than what to pay for them.

Notes on Prices.

Wire Nails.—The past week has brought but little change in the market for Wire Nails. Prices remain on about the same level as for the past few weeks and are apparently not any firmer, quotations being on a basis of $1.20 to $1.25 for carload lots at mill, and it is intimated that the former figure is given a little more freely than it has been, so that on good orders it about represents the market. While thus in the matter of price there is no improvement, the volume of business has somewhat increased, and a good many houses have been taking advantage of the low prices ruling and have been purchasing more freely than for some time past. As a result the mills are quite well supplied with orders. The desire to have goods shipped before the close of navigation has something to do with purchases, and the improved financial condition is also having a perceptible influence on trade in this line. Small lots from store are quoted in the New York market at $1.60 to $1.65.

Chicago, by Telegraph.—A remarkable change is perceptible in the tone of the Wire Nail trade. Manufacturers' agents report their books well filled with orders and specifications coming in freely. Orders for 1000-keg lots have been decidedly more numerous of late. The condition of this trade is much better now, so far as the volume of business is concerned, than at any time for the

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past month. Quotations are maintained at $1.30 to $1.32½, Chicago, for factory lots. Jobbers quote $1.45 to $1.55 for small lots from stock.

Cut Nails.—A moderate volume of business is reported by the manufacturers. The trade are not purchashing with much freedom and the market on the whole is sluggish. Prices are represented by the quotation of 95 cents for carload lots at mill. Five cents more is sometimes asked, but, on the other hand, attractive orders can be placed at 90 cents. The New York price for small lots from store is about $1.20.

Chicago, by Telegraph.—Business in Cut Steel Nails keeps up very well also. The trade with Southwestern points continues to be a good feature of current business. Prices are fairly steady at $1.20, Chicago, for factory lots, the only variation from the base price being made in case of particularly good specifications. Small lots are selling from stock at $1.30.

Barb Wire.—Barb Wire continues to move in moderate quantities and at the somewhat irregular prices which have been ruling for the past few weeks. Manufacturers are evidently desirous to secure such orders as are going and the market is decidedly in the buyers' favor. We continue to quote $2.15 for carload lots of Four-Point Galvanized at mill as fairly representing the market, but concessions are made with more or less freedom.

Chicago, by Telegraph.—Trade has improved considerably in Barb Wire. Jobbers in the Northwest are beginning to inquire as to prices and terms on spring shipments, and those who have bought for delivery after January 1 are in some cases ordering shipments to begin now, as they are out of Wire. Prices are not so low here as reported in other sections of the country, carload lots being quoted $2.40 for Galvanized Barb Wire, and small lots from stock at $2.55.

Carriage Bolts.—The manufacturers of Common Carriage Bolts generally report an unusually light business. There being no association to govern prices, the tendency of quotations has been downward, until they have reached a point which is referred to as being nearly as low as the goods have ever touched.

Machine Bolts.—The condition of the market in Machine Bolts is similar to that of Carriage Bolts, as above referred to, except that prices are perhaps a little better sustained. They are, however, low and somewhat uneven and manufacturers are competing actively for business.

Perkins' Snow Shoes.—Rhode Island Perkins Horse Shoe Company, Providence, R. I., for whom J. C. McCarty & Co., 97 Chambers street, New York, are agents, announce that the price of Perkins' Snow Shoes is 4 cents per pound, instead of 4¼ cents, this change dating from November 1.

Axles.—The market for Axles has been fairly regular for some time, with, however, something of a downward tendency, which has resulted in somewhat lower prices. It is now fairly represented by the following quotations, which are subject to a discount of 3 per cent. for cash:

	Cents.
No. 1	3¼ to 4
No. 2	4½ to 5
	Per cent.
Nos. 7 to 14	70
Nos. 15 to 18	47½
Nos. 19 to 22	70
	Cents.
Concord Axles, No. 5, loose collar	4½ to 5
Concord Axles, No. 6, solid collar	5½ to 6

Machine Finished Anvils.—Markt & Co., 87 to 95 North Moore street, New York, have received a shipment of Machine Finished Anvils made by Soeding & Halbach, Hagen, Westphalia, and are about introducing these goods into the American market. A circular is issued giving a few selected cuts of the different patterns, especial attention being called to the American and English patterns. Special emphasis is laid on the fact that instead of grinding the faces and punching the holes, as is usually done, the faces and edges are planed, the round holes are drilled and the square holes mortised, and they are thus made perfectly true and rectangular. The following are the prices for the Anvils, which are subject to a discount of 15 per cent. on five or more, while on import orders of over 50 Anvils, with an average weight of 150 pounds, a discount of 25 per cent. is allowed:

No. 10 American Pattern or No. 9 English Pattern.

Pounds.	Per pound.
44–66	$0.14
66–88	.12½
88–110	.12
110–165	.11¾
165–220	.11½
220–440	.11½
440–880	.12
880–1100	.12½
1100–1320	.14

With stock and bending edge like No. 58, as shown in their circular, the prices are as follows, subject to the discount named above:

Pounds.	
220–440	$0.12½
440–880	.13

Soeding & Halbach are manufacturing over 200 different patterns to meet the requirements of the different markets of the world. A stock of the American pattern is carried as above by Markt & Co. in this city.

Scythe Snaths.—A change has been made in the list prices on Swing Socket and Slide Socket Snaths, which are advanced 50 cents per dozen for the coming season. The corrected list is given as follows by Derby & Ball, Bellows Falls, Vt., for whom John H. Graham & Co., 113 Chambers street, New York, are general selling agents, the list being subject to a discount of 50 per cent., and an additional 2 per cent. for cash in ten days:

Scythe Snaths.	Per doz.
000. Patent Swing Socket, Loop Snaths, Brass Trimmed, Screw Nib, heavy	$10.50
000. Patent Swing Socket, Loop Snaths, Brass Trimmed, Screw Nib, medium	10.50
00. Patent Swing Socket, Loop Snaths, Iron Trimmed, Screw Nib, medium	10.00
00. Patent Swing Socket, Loop Snaths, Iron Trimmed, Screw Nib, heavy	10.00
No. 50. Loop Snath, Brass Trimmed, Screw Nib, Solid Plate Socket	10.00
No. 150. Loop Snath, Iron Trimmed, Screw Nib, Solid Plate Socket	9.50
No. 0. Ring Snath, Z Plate, Brass Trimmed, Screw Nib, heavy	9.00
No. 02. Ring Snath, Z Plate, Iron Trimmed, Screw Nib, heavy	8.25
No. 1. Ring Snath, Patent Socket, Screw Nib, Brass Trim'd, heavy	8.50
No. 1. Ring Snath, Patent Socket, Screw Nib, Brass Trim'd, medium	8.50
No. 2. Ring Snath, Patent Socket, Screw Nib, Iron Trim'd, medium	7.50
No. 2. Ring Snath, Patent Socket, Screw Nib, Iron Trim'd, heavy	7.50
No. 3. Ring Snath, One Hole Socket, Screw Nib, Iron Trimmed	6.50
Double Ring, Bush Snaths, Patent Socket, Screw Nib, Iron Trimmed,	10.00
Patent Loop, Bush Snaths, Screw Nib, Iron Trimmed	11.00
No. 20. Loop Snaths, Brass Trim'd, Screw Nib with Frost's Patent Socket	10.00
No. 120. Loop Snaths, Iron Trim'd, Screw Nib with Frost's Patent Socket	9.50
No. 10. Loop Snaths, Brass Trim'd, Screw Nib, Slide Socket,	10.50
No. 102. Loop Snaths, Iron Trim'd, Screw Nib, Slide Socket,	10.00
No. 1. Ring Snaths, Solid Plate, Heavy Screw Nib	9.00

Dutch, Mulay and Jersey Bend Snaths, list price, $1 per dozen extra.

Cherry Snaths.

	Per doz.
Cherry Snaths, 000	15.00
" " 00	14.00

Machine Screws, &c.—The following discount sheet has recently been issued by Reynolds & Co., New Haven, Conn., applying to their catalogue, August 1, 1893. Terms, cash in 30 days, or 2 per cent. for cash:

	Discount. Per cent.
Steel Set Screws	70
Iron Set Screws	70
Soft Set Screws (iron or steel)	70&5
Square Head Cap Screws	65
Hexagon Head Cap Screws	60
Round Head Cap Screws	50
Flat Head Machine Screws, milled from solid bar	50
Button Head Machine Screws, milled from solid bar	50
Round Head Iron Machine Screws	60
Flat Head Iron Machine Screws	65
Filister Head Iron Machine Screws	60
Round Head Brass Machine Screws	60
Flat Head Brass Machine Screws	65
Stove Bolts, in boxes	60
Stud Bolts, milled over all	55
Milled Tap Bolts	60
Milled Coupling Bolts, heads and nuts ground	50
Milled Coupling Bolts, heads and nuts not ground	60
Forged Tap Bolts	75
Taps	25
Machine Bolts, with Black Nuts	80–15
" " " C. & T. "	80–10
Coach Screws, Plain Points	80–15
" " Gimlet "	80–10
Finished Hexagon Nuts, 1¼ inches and smaller	60&5
Finished Hexagon Nuts, larger than 1¼ inches	50
Semi-Finished Hexagon Nuts, 1¼ inches and smaller	60&5
Semi Finished Hexagon Nuts, larger than 1¼ inches	50

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Standard Watering Pot. — The Standard Watering Pot, manufactured by Engelhart & Co., Glenville, Ohio, which was described in a recent issue, is sold from the following list, which is subject to a discount of 33⅓ per cent.:

Quarts.....	8	10	12	14	16
Each.....	$1.25	1.35	1.50	1.75	2.00

Bread, Cake and Paring Knives — The Clauss Shear Company, Fremont, Ohio, and 100 Chambers street, New York, issue a revised net price-list of the Clauss Bread, Cake and Paring Knives and Perfect Carver, as follows:

	Per dozen.
Set A, consisting of Bread, Cake and Paring Knives	$6.00
Set B, consisting of Bread and Paring Knives and Perfect Carver	6.00
Bread Knife	3.00
Cake Knife	2.00
Paring Knife	.00
Perfect Carver	3.00

Glass.—Window Glass houses continue to go into operation, one by one, and probably a large proportion of the entire number will be making Glass by the end of this month. It is not anticipated that the amount of Glass manufactured will be allowed to be much in excess of the demand. The Glass business may be said to compare favorably with other lines, although prices are unsettled. There is no basis for official quotations, as each maker or jobber is getting what he can. A Cleveland jobbing house quotes Single and Double Glass, by the box, at 80 and 20 per cent. discount, f.o.b. Cleveland, or in 25-box lots, 80 and 20 per cent. discount, freight allowed. Some of the Plate Glass works are starting up, the open weather having been favorable for building, and the demand, though not large, shows no signs of falling off, nor have prices advanced.

Communication.

NATIONAL RETAIL HARDWARE DEALERS' ASSOCIATION.

SECRETARY'S OFFICE,
9 DOCK SQUARE, BOSTON, MASS.,
November 13, 1893.

To the Editor: The columns of *The Iron Age* are always interesting and instructive, but occasionally an article appears that is of exceptional interest. Such an article is the one entitled "Selling at a Loss," printed in your issue of November 2.

The writer of this article speaks of the practice of some dealers selling goods at little or no profit, simply for the purpose of knocking out their hated rival in business, and then goes on to condemn the practice in unmeasured terms.

In the opinion of the writer, such policy—or perhaps it would be more appropriately named lack of policy—cannot be too strongly condemned, but the fact cannot be denied that there is much of the business of the country at present being conducted in this way, and leads me to ask, in addition to the question of the writer above referred to, "Why goods should be sold at no profit," the more pertinent one of why he should have any hated rival?

And having asked this question, does it not at once occur to any one giving the subject the least thought that it is this kind of rivalry that causes the loss of profit in the trade? Admitting this to be the case, why not try and find a remedy? Why not stop at once and forever this unnatural, unchristian and uncalled for rivalry? But how are we to do this?

I answer, by organization. Form an association of the trade in every State. Ask the members to meet together once a month for social and business purposes, and you will be surprised to find how quickly this feeling of enmity will disappear, and the only rivalry will be to see who can do most for the welfare of all. Possibly some may laugh and say that this is impossible. To such I would say that this is written from experience in the working of our own association here in Boston, and every member will testify to its correctness.

Therefore I say again, organize. Organize in the city, the State and the nation. The city and State organizations should be for the purpose mainly of becoming friends instead of enemies, of doing away with this feeling of rivalry, and of helping one another. The national organization should be broader in its scope and seek by its methods to promote the interests of all throughout this entire land. And such it is intended be be, and as such, we invite the trade to join it.

I am now sending through the mails to every retail dealer in the country (of which there are something over 18,000) copies of the constitution and by-laws of the National Association, a blank application for membership and a letter, of which the following is a copy:

DEAR SIR:

Enclosed please find constitution, by-laws and blank application of the National Retail Hardware Dealers' Association, organized at Chicago September 20. We invite an earnest perusal of these, and would suggest that it is for the interest of every dealer in the country to become a member, and trust that you will promptly fill out the application and return the same, together with the membership fee, to Wm. T. Humes, 50 State street, Chicago, Ill., or to the Secretary, H. G. Janvrin, 9 Dock Square, Boston, Mass. It is not the disposition of this association to use any means to accomplish its objects that will not commend themselves to all fair minded men, and we are led to believe that many of the leading manufacturers and jobbers will co-operate with us.

I trust that whoever receives these will not lay them aside for future consideration, but will act at once and favorably. This is a matter that concerns the welfare of all, and it hardly seems necessary to ask for favorable consideration. It must be pertinent to every thinking man that an organization of this character, comprised, as we believe it will ultimately be, of a majority of the entire trade in the United States, will be a great power for good to all.

In my article of October 12 I solicited correspondence from dealers from any State, and am pleased to say that I have received quite a number of letters expressive of approval of the association and offering assistance.

I now desire to repeat this request, and in addition to ask the assistance of the secretary of each State or city organization. Will these officers please write me? I understand there are quite a number, but am unable to learn their addresses.

H. G. JANVRIN, Secretary.

Massachusetts Hardware Dealers' Association.

A REGULAR MONTHLY MEETING and dinner of the Massachusetts Hardware Dealers' Association was held at the United States Hotel, Boston, Wednesday evening, November 8. The principal business transacted was the adoption of a resolution to join the Massachusetts State Board of Trade, and the admission of new members. The business meeting was followed by a dinner, at which L. H. Pease of the Stanley Works, New Britain, Conn., a guest of the association, was the principal speaker, in the absence of W. H. Sayward, who had promised to be present, but was detained at Chicago. The next meeting of the association will be held at the same place December 13.

Export Notes.

THE TRADE are familiar with the fact that there is an increasing tendency on the part of English and Continental manufacturers to imitate American goods, notably in the line of specialties. They are thus able to avail themselves of the results of the ingenuity and enterprise of manufacturers in this country and produce goods at lower figures than they can profitably be imported for from here. This practice applies to a wide range of goods, and we are advised that American repeating Rifles recently offered in Belgium on examination proved to have been manufactured in Liege. In view of this tendency it is advisable that our manufacturers should have their names and addresses marked indelibly in the metal wherever possible instead of relying, as they often do, upon adhesive labels. In this way the foreign counterfeits could be readily detected, which would be to the advantage of our manufacturers, as there is a general preference abroad for goods made in this country.

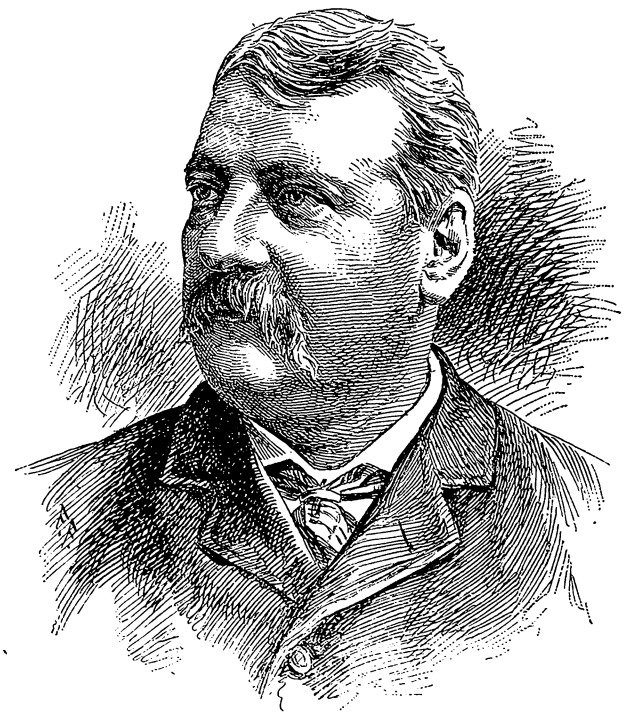
The Governor of British Honduras has, says the *Ironmonger's Chronicle* of London, sent to the London Chamber of Commerce a collection of samples of wood cutting tools, in the hope that the attention of manufacturers might be directed to the competition in such goods which has now sprung up between the United States and Great Britain for the supply of these implements. He suggests that it might be possible for English manufacturers to turn out as serviceable an article as the United States and at the same cost.

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Julien P. Cordier.

WE PRESENT HEREWITH an excellent portrait of the late Julien P. Cordier, manager of the Western branch of the Lalance & Grosjean Mfg. Company, 81 Michigan avenue, Chicago, who died somewhat suddenly at his residence, 5943 Wabash avenue, in that city, on the 2d inst. of hemorrhage of the lungs. Mr. Cordier was 51 years of age, and was born in the city of New York, of French parentage. He had been connected with the company since boyhood, having entered their employment at their organization, 35 years ago. The past 11 years of his service were spent in Chicago, where he was manager of that branch since its opening. He had previously traveled over every section of the United States and through the various South American countries in the interests of the concern. He was, perhaps, most intimately known, however, in the Southern States, where he spent much time and possessed a troop of friends. At the time of his death Mr. Cordier was a stockholder and one of the directors of the Lalance & Grosjean Company, of which his brother Augustus is the vice-president. Another brother, Joseph, is connected with the company's factory at Woodhaven, L. I., while a third brother, Charles, is connected with the Bridgeport Brass Company.

Julien Cordier was widely known and highly esteemed by the hardware trade of this country, and his acquaintance was also extensive in other parts of the American continent. He was a man of polished address and many accomplishments, and his genial nature and strict integrity gained for him a host of devoted friends, to whom the tidings of his too early death will bring a feeling of sorrow and loss. He leaves a widow and daughter. The funeral services were held in Chicago, and temporary interment was made there.



JULIEN P. CORDIER.

Branford Lock Works.

UNDER DATE of November 7, on a petition unanimously adopted at a meeting of the stockholders of the BranfordLock Works, Branford, Conn., asking for the appointment of Henry R. Towne, president of the Yale & Towne Mfg. Company, Stamford, Conn., as receiver, the Superior Court of Connecticut made the desired appointment. The necessity for this action is referred to as arising from the fact that the Branford Lock Works lack the capital needed to continue business successfully and to carry out their agreements with the Yale & Towne Mfg. Company.

It will be remembered that on July 1, 1892, a contract took effect between the Yale & Towne Mfg. Company and the Branford Lock Works, whereby the former became the exclusive sales agents of the latter. The contract contemplated that the business at Branford should be confined to manufacturing and should have the benefit of the extensive selling organization of the Yale & Towne Mfg. Company. It was then supposed that the Branford Lock Works, with the financial assistance which it was stipulated should be given to them by the Yale & Towne Mfg. Company, would be able to successfully conduct their business and to produce the character and quantity of goods which would be called for.

As is now known, the Branford Lock Works at that date were endeavoring to do business on a capital so insufficient that they would soon have been compelled to close. The financial assistance given them by the Yale & Towne Mfg. Company, which finally was much more than the contract called for, enabled the works to continue in business until now, instead of closing long ago, as they would otherwise have been forced to do. The facts have been placed before the stockholders, who were urged to provide the new capital needed to continue the business, but who were unable to do so. The latter have in a most cordial and grateful manner expressed their appreciation of the efforts of the Yale & Towne Mfg. Company to assist and continue the business, and when a receivership became inevitable they requested, by a unanimous vote, the appointment of Henry R. Towne, president of the Yale & Towne Mfg. Company, who has for the past year, by request of the stockholders, also acted as president of the Branford Lock Works, as the receiver. The present management has succeeded by new and better methods in placing the business in a much better condition than has obtained for many years, but, of course, cannot continue the business without adequate capital. As yet no plan has been proposed which makes it an object to the Yale & Towne Mfg. Company to make further advances of capital, and as the stockholders are unable to do so themselves it is not yet certain that the business can be permanently continued. These questions are now under consideration, and in the meantime the business is being conducted as usual by the receiver, and orders promptly attended to. As soon as a final decision is reached due notice of it will be given to the trade.

Export Notes.

HEMENWAY & BROWNE, 47 Cedar street, New York, have the steamer "Moldava" for Talcahuano, Valparaiso and Antofagasta, west coast Pacific ports, to sail about December 15. They call the attention of manufacturers and shippers to this opportunity for getting exhibits of mining and metallurgical machinery to Santiago, Chili (via Valparaiso) for the World's Fair to be held there next April. It will be remembered the Chilian Government has appropriated money for such an exhibit for the purpose of advancing and developing the resources of that country, and undertakes to pay actual freight charges both ways by sea and land, as well as the expenses of the workmen sent out to install the exhibits.

M. J. Ulery, formerly in charge of the New York office of the Clauss Shear Company, at 100 Chambers street, has for some months been in London, England, at the Company's headquarters, 55 Holborn Viaduct, supervising the seven or eight salesmen who canvass Europe in the interest of the line of goods made by this company, particularly the series of special Carving, Bread, Cake and Paring Knives with scalloped edges and metal handles.

Trade Items.

WE ARE ADVISED by Joseph Lucas & Son, Birmingham, England, for whom the New Departure Bell Company and John H. Graham & Co., 113 Chambers street, New York, are sole agents in this country, that they are making additions to their line of Bicycle Lamps, including some patterns new in design, and are also making improvements in those with which the trade are familiar. A line of their samples may be seen and a stock is carried at the store of their agents, who with this recent addition to their line of agencies are headquarters on a number of Bicycle specialties. The New Departure Bell Company, for whom they are agents, are also making several new patterns and their assortment will thus be exceptionally large and complete. A variety of Bicycle Locks made by Slaymaker, Barry & Co. are also offered by them, as is also the Acme Luggage Carrier, made by the Hall Mfg. Company.

SHEPARD HARDWARE COMPANY Buffalo, N. Y., issue three circulars, which they are sending out, offering for sale metal patterns of any goods formerly made by them, second hand machinery, also a considerable number of Floor Flasks for foundry use. Included in second hand machinery, fixtures, &c., are Boilers, Steam Pump, Blowers, Riveting Machine, Fire Extinguishers, Ladle Shanks, Japan Ovens, Office Furniture, Fixtures, &c. Metal Paterns include those of Blind and Shut-

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ter Hinges, Gate Hinges and Latches, Dampers, Presses, Toy Banks, Stove Lid Lifters, Sausage Stuffer, Coffee Pot Stands, Boiler Handles, Iron Toys, &c. Any inquiries regarding these articles will be cheerfully answered by the company.

BRADLEY & HUBBARD MFG. COMPANY, 26-28 Park Place, New York, have rehabilitated their extensive display rooms, renewed their samples and otherwise completely effaced the ruin accomplished by the recent fire. On entering from the street, at the foot of the stairs leading to the main floor, they have a large show window which is kept brilliantly lighted by electricity so as to effectively display the high class goods, consisting of Lamps, Shades, Statuary and other articles contained in it. On the floor above, where their line is really seen, will be found some very recent attractions in the way of Venetian Iron Work in dead black. Many of these goods are not of the customary wrought iron, but have been successfully made of cast iron to resemble the genuine and more expensive goods. These wares are offered at approximately one half the usual cost. Among the kinds of goods treated in this manner may be mentioned Andirons, Fenders, Fire Sets (including Shovel, Tongs and Poker). They have likewise brought out lines of goods of cast iron finished in brass plate, which for delicacy of treatment and excellence of design will readily pass for real cast brass. This class of goods are offered largely to people of refinement with modest incomes at a much reduced price.

THE MANAGERSHIP of the Chicago branch of the Lalance & Grosjean Mfg. Company of New York, rendered vacant by the lamented death of Julien P. Cordier, has been filled by the appointment to that position of Charles W. Hyde. Mr. Hyde, who is widely known and esteemed in Hardware and house furnishing trades, has been connected with Lalance & Grosjean Company for several years, having represented their interests for a considerable period in the Southern States and recently in the territory lying between New York and Chicago.

E. C. STEARNS & Co., Syracuse, N. Y., who have accepted the challenge issued by the St. Louis Refrigerator & Wooden Gutter Company, St. Louis, relative to the strength of the Lu-minum frame used in their Bicycle as compared with any steel tubing frame, have selected for their judges William A. Redding of Redding & Kiddle, attorneys, 38 Park Row, New York, and Charles E. Lipe, M.E., 208 South Geddes street, Syracuse. The St. Louis Refrigerator & Wooden Gutter Company have selected as their judges Edward Flad, C.E., member of the American Society of Civil Engineers and the American Society of Mechanical Engineers, St. Louis, Mo., and Robert Moore, C.E., member of the Institution of Civil Engineers and late chief engineer of the St. Louis Merchants' Bridge Terminal Railway. The amount of forfeiture stipulated in the challenge has been forwarded by the contestants to the Wheelman Company of Boston to be held by them as trustees pending the result of the tests. The four judges, as above, are now conferring together with a view to appointing the fifth judge. As soon as this is done and the details of the tests decided upon arrangements for the completion of the same will be commenced.

HENRY A. ROGERS has been appointed a school commissioner by Mayor Gilroy of New York City. Mr. Rogers is a dealer in Railroad Supplies at 19 John street and has taken great interest in educational matters, for ten years having been a school trustee in the Twenty-second Ward. He was United States Commissioner of Jurors for nine years and is a director in the Seventh National Bank. Mr. Rogers' appointment is regarded as a most excellent one.

SOME TIME SINCE we announced the failure of the Denver Hardware Company of Denver, Col. This concern has been confounded by some persons in the trade with the Denver Hard ware Mfg. Company, who have, we are advised, no connection whatever with the Denver Hardware Company. The former concern are manufacturing a full line of Hardware and advise us that they are taking care of all orders sent to them.

S. A HAINES of Indianapolis has been making a trip East and spending a few days in this city, where he receives a very hearty welcome from his many friends.

WILLIAM R. GRAEF of Graef & Schmidt, 29 Warren street, New York, is now in Chicago supervising the dismantling and shipment to Germany of the extensive Cutlery exhibit made by the old establishment of J. A. Henckels, Solingen, at the World's Columbian Exposition. It was said to have been one of the largest and most attractive exhibits of its kind.

JUDGE SEVERENS of the United States Circuit Court, on the 8th inst. rendered a decision in the case of the Bissell Carpet Sweeper Company *vs.* the Goshen Sweeper Company, both located at Grand Rapids, Mich. Application had been made for an injunction restraining the defendants from using the Plumb patent in the manufacture of the Goshen Sweeper. This injunction was denied by Judge Severens, who is of the opinion that the defendants' machines do not infringe Plumb's patents.

IN THEIR ADVERTISEMENT in this issue the Coburn Trolley Track Mfg. Company of Holyoke, Mass., direct the attention of the trade to their parlor, barn, mill and fire Door Hangers, also to four styles of Rolling Ladders for store use. These are made to reach shelving of any hight.

WE ARE ADVISED that Charles J. Healy, 106 Chambers street, New York, has dispensed with the services of S. R. Droescher, whose connection with him terminated on the 11th inst.

THE TRADE will observe the advertisement of Smith, Lyon & Field, 139 Duane street, New York, in which they announce that they have purchased the Bailey Auger Bit Company's entire stock of Auger Bits, Car Bits and Augers, and offer them at prices which should be an inducement to the trade. They refer also to the special qualities of this Bit and its advantages.

THE AMERICAN CURLING IRON WORKS, 72 to 74 Market street, Chicago, are manufacturing a varied line of Hardware specialties. Among these are Curling Irons of several patterns, such as the Improved American Waving Iron, the Columbian Folding Curling Iron, and the Nellie Bly Hair Curler. In addition, their line comprises the Western double-acting Door Spring, Reiher's Standard Transom Lifters, nickle-plated raised and flat House Numbers, &c. They also manufacture Fisher's patent lever Latch and Handles for all sizes of refrigerators, cooling rooms, closets or other doors which it is desirable to keep tightly closed. Three sizes are made, either right or left handed. They are finished in black japanned malleable iron, brass, nickel plate on brass, silver plate on brass, or solid bronze.

Price-Lists, Circulars, &c.

WM. FRANKFURTH HARDWARE COMPANY, Milwaukee, Wis.: Price current of fall and winter goods. Illustrations and list prices are given of the Winslow and Czar Skates, Table Cutlery, flat Silver Ware, Butcher Knives, Carvers, Scissors, Pocket Cutlery, Razors, &c.

JOSEPH F. MCCOY COMPANY, 26 Warren street, New York: Illustrated circular and price-list of Coates' and French Horse and Hair Clippers, for which they are headquarters. Numbers are given of the most desirable patterns of Clippers for use on horses, especially patterns with anti-friction rollers, and for trimming horses' legs. An assortment to order is suggested as desirable for those who have never handled these Clippers.

THE CLAUSS SHEAR COMPANY, Freemont, Ohio.: Shears, Scissors, Knives, &c. A pamphlet sent out by the company illustrates the Clauss Carver, Bread, Cake and Paring Knives, also Shears, Scissors. Knife Sharpener, Flexible Pot and Kettle Cleaner. The company were awarded three medals and three diplomas at the World's Fair for Shears, Scissors and Knives.

PERKINS & Co., Grand Rapids, Mich.: Shingle Mill Machinery. The Columbia edition of their illustrated descriptive catalogue calls attention to hand feed Shingle Machines, one, two and ten block power feed Shingle Machines, knee and power feed Bolters, pivoted and power feed Cut Off Saw Machines, Drag Saw Machines, Log Jacks, Wheel Jointers, Packers, Saw Grinders, and Saw Gummers, Rat Catchers, &c.

VON LENGERKE & DETMOLD, 8 Murray street, New York: Firearms, Ammunition, Sporting and Athletic Goods. A special illustrated catalogue just issued by them directs attention to the Francotte Shot Guns made in Liege, Belgium, for which they are agents in America. In the higher grades of this hammerless arm have been concentrated a number of improvements, which are referred to by them as follows: The barrels are fitted with a doll's head extension rib, with a cross bolt through the rib, together with Purdey's side extension frame to keep the barrels rigid and prevent lateral motion. There is also a safety block which is designed to prevent the jaw from jarring off. The last page of the pamphlet shows changes which have been made in the list of Hand Loaded Shot Gun Cartridges, which has been made possible. it is stated, through the reduced cost of powders.

BRISTOL BRASS & CLOCK COMPANY, Forestville, Conn., and 32 Warren street, New York: Kerosene Burners, Lamps, Lamp Trimmings, &c. An illustrated catalogue shows Lamp Burners, Collars, Feed Caps and Collars, Reducing Collars, Expanding Screws, Globe Holders, Shade Holders, Brass Trays, Night Lamps, Brass Lanterns, Electric Fount and Lamp, Bristol Central Draft Lamp, Ætna Lamp, Hand Lamps, Hanging Lamps in a variety of styles, Banquet and Table Lamps, &c.

THE IONA MFG. COMPANY, 336 Congress street, Boston, Mass.: Electrical specialties. Their illustrated catalogue and price-list shows Lamp Sockets, Switches of various kinds, Cut Outs, Insulating Joints, the Iona gas lighting Burner, Gongs, Watchmen's Time Registers, &c. All goods are accompanied by descriptions and list prices.

B. F. AVERY & SONS, Louisville, Ky.: Plows and Cultivating Implements. Their sixty-eighth annual catalogue illustrates and describes these

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goods. As new and seasonable specialties attention is directed to Avery's Simple Sulky Plow, Simple Sulky Stalk Cutter; two, three, four and five furrow Gang Plows, Moon Rolling Colter and Plow Gauge, Granite chilled Plows, new Garden Plow, &c. The manufacturers remark in this connection that their factory has run uninterruptedly throughout the present year, stopping only a few days for necessary repairs and annual stock-taking.

E. C. NEWTON, Batavia, Ill.: Newton's improved Cow Tie. The Tie, as illustrated in the catalogue, is made of wood bent in shape of a bail or three sides of a square, the open ends of which are pivoted by bolts to the front part of the manger. A swivel is fastened to the Tie, in front, at the center, so that one part turns with the rope on the animal's neck, and the other part revolves around the wooden Tie, to make it impossible for the animal to get it twisted. It is claimed that the Tie is more humane than stanchions and that it keeps cows cleaner than other methods of fastening, as it pushes them back when standing and draws them forward when lying down.

It Is Reported—

That burglars recently entered the Hardware store of Teeple & Caldwell, Pinckney, Mich., and stole about $50 worth of Cutlery.

That William Roseberry has opened a new Hardware store at Wharton, Texas.

That the Hardware firm of Atchison & Knowlton, Newton, Kan., has been dissolved. T. B. Atchison will continue the business under his own name. The firm had been in business for 18 years.

That Alexander Warner has sold his Hardware business at Palouse, Wash., to Wheeler Bros.

That J. E. Fawcett is preparing to build a large Hardware store at Platteville, Ill.

That A. O. Wible, formerly with A. J. Turney, has entered the firm of Allshouse, Beck & Co., who have just opened a new Hardware store in Greensburg, Pa.

That C. Wirths, Hardware merchant, 844 West Indiana street, Chicago, shot and seriously wounded a burglar who on the morning of the 6th inst. tried to effect an entrance into his store.

That John P. Barnes, a Hardware dealer, who has been in business in Anderson, Ind., for more than a quarter of a century, is soon to retire. An Indianapolis firm have made a deal with Mr. Barnes and are now practically in possession of the business, as the stock has been invoiced. Mr. Barnes will be retained for the present as business manager, but will probably retire altogether in a few weeks.

That Grossman & Geiseman's Hardware stock, at Shannon, Ill., was destroyed by fire on the 6th inst. Loss, $2000; insurance, $500.

That the Hardware store of Joseph Mohr, Danvers, Ill., was destroyed by fire on the 6th inst.

That James King's Hardware store, at Arena, Wis., was burned out on the 30th ult.

That E. W. Johnson has sold his interest in the Rockford Hardware Company, Rockford, Mich., to H. C. and W. F. Hessler and retired from the business.

That the Hardware store of M. J. Wilson, Rushville, N. Y., was broken into by burglars on the 29th ult., and robbed of 30 dozen Pocket Knives and a quantity of Table Cutlery.

That Turner & Archibald, Hardware merchants, Ridge Farm, Ill., have sold out to W. F. Jenkins & Bro.

That James A. Moren of the Hardware and Stove firm of Draper & Moren, Converse, Ind., has disposed of his interest to A. J. Webb. The business will hereafter be carried on under the style of Draper & Webb.

That the Hardware firm of Wentworth & Brown, Benton Harbor, Mich., are now Wentworth & Baker, Elwood Brown having sold his interest to J. J. Baker.

That Monroe Hoffman has opened a Stove and Tin store at Alliance, Ohio.

That the store of the Shafers Hardware Company, Butler, Ohio, was recently damaged by fire.

That H. D. Newcomb, dealer in Hardware, Stoves and Guns, Ironton, Ohio, has sold out to Goldcamp Bros. & Co.

That C. N. Hopkins is out of the Hardware business at Union City, Ind. Hatch & Hopkins will continue.

That Geo. W. Harris, Petaluma, Cal., has disposed of his Stove business to Hurd & Dies.

That E. H. Robinson has sold out his Hardware business at Santa Cruz, Cal.

That H. Edwards' Hardware store, at King City, Mo., was recently visited by fire.

That David S. Donovan has entered the Stove and Tin business at Plainfield, N. J.

That the Hardware firm of Worstencroft & Son, Payson, Utah, have been dissolved.

That J. F. Long's Hardware store, at Alvord, Texas, was robbed on the 3d inst.

That in a fire on the 11th inst., the store of Thompson & Hoague, Hardware merchants, Concord, N. H., was destroyed.

That the Hardware store of H. Hatch, Fort Pierre, S. D., was burglarized on the 3d inst. About $70 worth of Revolvers, Rifles, Cartridges and Pocket Cutlery was taken.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Business in all branches of the market is low. This is no uncommon experience at the middle of November, but that the dullness should be so pronounced in the face of the quiet business experienced last month is somewhat surprising. The explanation is that the markets are not in shape to encourage free buying; that the surroundings justify the idea that there is everything to gain and nothing to lose by going slow. The productive capacity in all departments is heavy. The outlook for average consumption during the balance of the year is poor. Stocks of everything in the shape of base material are quite large. Competition between manufacturers is keen.

White Lead.—The market is unsettled and weak. The "combine" list prices and terms as per last circular are the exception rather than the rule where business of a wholesale character is involved. Outside competition is keen in various quarters, and is being met. Jobbers undersell the list to the small trade. Dry Lead in kegs has been sold in 5-ton lots at 5¢ @ 5¼¢ by the outside manufacturers, and Lead in Oil at ⅛¢ @ ¾¢ above those figures. It is stated that orders for deliveries during the first quarter of next year would be booked at the same rate.

Red Lead.—Few orders for round lots have been placed, and the demand for jobbing quantities has hardly reached the average volume. Prices are a little weak, particularly on foreign stock for future delivery, but no positive changes have been quoted.

Litharge.—Orders have been almost uniformly rather small and few in number. Interest in future deliveries continues tame. Previous prices are asked for both foreign and domestic, but the market is rather weak.

Zincs.—Deliveries of domestic Oxide on old contracts cover about the entire movement at present. Hardly any disposition is shown to contract for supplies for next year. Former prices are generally quoted, but the tone of the market is soft. Foreign brands are very slow of sale.

Colors, &c.—Bulk colors have been taken sparingly by the large consumers, nearly all of whom claim to have enough stock to last 60 days ahead. Oil Colors have also had slow sale. Varieties taken by the retail trade fared very little better, if at all, while mixed Paints continued exceedingly dull. Prices are more or less variable, but no radical changes have been quoted during the past week.

Oils and Turpentine.

The movement of Oils from first hands has been commonplace and jobbers note a tame experience also. Speculation seems to have disappeared for the time being, since there is no incentive to venture, and regular trade purchases are gauged almost wholly by imperative wants. Prices are somewhat uneven, as is generally the case when trade runs slow, but no radical changes have taken place.

Linseed Oil.—City crushers maintain the prices that have ruled for several weeks, but state that sales are light at present and that the demand is remarkably slow. There has been rather freer offering of out of town brands, in carload lots, and prices have ruled irregular; sales were made at 37¢ @ 38¢, according to brand.

Cotton Seed Oil.—Conditions have been more or less adverse, and the market has suffered, Supplies are larger here, the offering for future delivery is more liberal, while lower prices for Lard and inferior greases have prevailed. Late business was at prices on the basis of 35¢ @ 36¢ for prime crude and 39¢ @ 40¢ for prime Summer Yellow.

Lard Oil.—Prime brands, local make, were sold as high as 80¢, but the price subsequently weakened to 78¢, and the market is now unsettled, with sellers at the last named rate. There is hardly any movement at present except of rather small lots, and the demand is tame.

Fish Oils.—No change has taken place in the market for crude Sperm or crude Whale. Sellers seek former prices, but find no outlet at present. Crude Menhaden has been sold to a fair extent at former rates. Prices for the pressed and bleached Oils are unchanged, and the market is quiet.

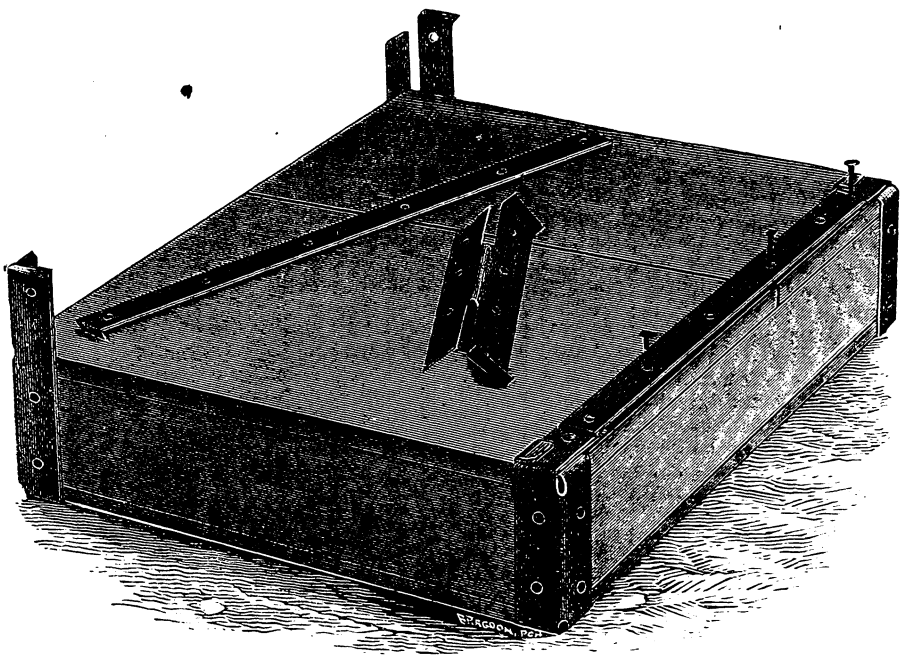
Miscellaneous.—Common Olive Oil on the spot is firmer at 60¢ @ 62¢, but for future deliveries there are sellers at 55¢ @ 57¢. Business is moderate. Ceylon Cocoanut rather weak, with sales at 5⅜¢ @ 5½¢. Cochin sold at 6⅝¢ @ 6¾¢, in moderate quantities. Red Oils are quiet and unchanged.

Spirits Turpentine.—Prices have remained almost stationary at 30¢ for regular and 30½¢ for machine barrels. There is no new feature, supply being fair and the demand very ordinary.

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Box Strap and Corner Iron.

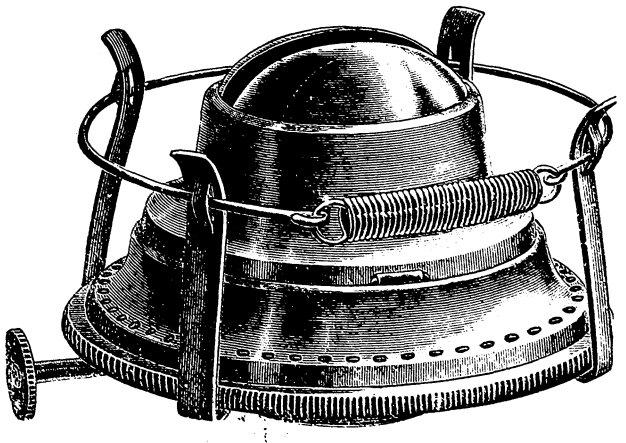
The accompanying cut represents a box strap and corner iron being introduced by Dunshee & Snowden, McKeesport, Pa. One of the straps and one of the corner irons are shown across the top of the box, in the cut, while straps and corners are fastened to the box, to show the manner in which they are applied. After the corner piece has been nailed in position its wings or ends at top and bottom are beat across one another. One of the wings at each end has hook shaped ends, which are engaged with similar hook shaped ends on the strap pieces when put in position on the box and then hammered together. The straps and corners have countersunk holes, to allow the edges of the holes to be driven into the wood, and to prevent the nails or screws projecting beyond the surface of the metal. The side edges of the straps and corner irons are beveled or curved, to prevent the otherwise sharp edges of the irons catching against persons or other boxes, and to provide runners upon which the boxes may be easily slid. The object of the device is to adapt boxes of somewhat frail construction to receive and transport materials of great weight. The manufacturers remark that the straps and corner irons are well adapted to boxes for tin plate, as shown in the cut, and that the corner irons and bottom strips are best put on during the construction of the box. Straps and corner irons suitable for boxes of any size are made to order.



Box Strap and Corner Iron.

Improved Security Burner.

The accompanying cut represents an improved burner being introduced by the Bristol Brass & Clock Company, Forestville, Conn., and 32 Warren street, New York. The improvement consists of a circular shaped wire, with a spiral spring connecting the ends. It is designed to secure the chimney in place and to make a hand lamp safe to carry about the house. The manufacturers claim that the burner secures a steady light, obviates accidents, results in better combustion and prevents chimneys falling off and breaking.

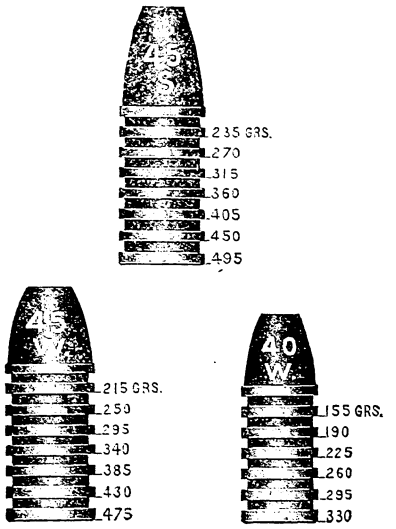


Improved Security Burner.

Meriden Bronze Company, 30 Park place, New York, in addition to several other recent departures in the way of supplementing their already large line of fine lamps, table and art goods, have just brought out an assortment of hall lanterns for gas in Venetian wrought iron work, consisting of many attractive shapes and designs in dead black finish. There are also a number of chandeliers for gas of the same character of workmanship, together with a line of chandeliers of the same sort, finished in real gold plate, some of which also combine onyx effects. These goods were all prepared for the current season's trade and have just been placed in their showrooms.

Ideal Bullets.

The Ideal Mfg. Company, New Haven, Conn., have designed the bullets herewith shown for 45 caliber Sharp's rifles, or Ballard or Winchester rifles using 45-70 Sharp's shells $2\frac{1}{10}$ inches, 45-90 Sharp's $2\frac{6}{10}$ inches, 45-105 Sharp's $2\frac{7}{8}$ inches and 45-120 Sharp's $3\frac{1}{4}$ inches. It is remarked that these shells are nearly straight, and are loaded at the factory with patched bullets and not with grooved bullets. The cut 45 S illustrates a grooved bullet, or series of grooved bullets, for use in the above shells. It is cast in one of the Perfection molds, and represents seven different weights, ranging from 495 to 235 grains. The point is made that the forward part of the bullet is such that all the various weights shown carry symmetry with them, none appearing out of balance. When desired a single mold of any of the weights shown may be had. The manufacturers state that the bullet represented in the 45 W cut covers the same ground for all of the 45-caliber Winchester rifles, such as 45-60-300, 45-70-350, 45-75-350, 45-90-300, 45-125-300. Attention is called to the fact that the forward part of this bullet is identical with all of the above 45-caliber Winchester, so that the bullets cast in these molds may be seated in the shells with the regular standard tools; thus those having the Winchester make of tools or the Ideal tools will require only the mold. The same may be said, it is stated, of the 40 W, for 40-60-210, 40-65-260, 40-82-260 and 40-110-260 Winchester rifles or others chambered for these cartridges. Thus, it is explained, bullets of various weights may be had, with which, with different charges of powder, the shooter may make his ammunition as he desires.



Ideal Bullets.

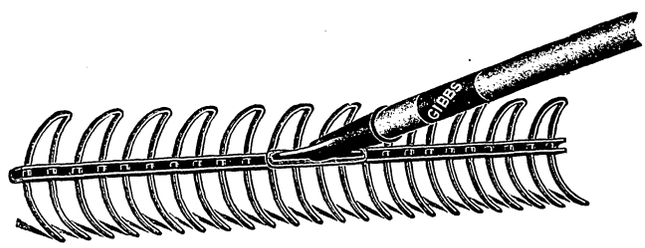
P. & F. Corbin, New Britain, Conn., and 24 Murray street, New York, several weeks ago placed several sets of

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their double action butts (with automatic device to prevent sagging) on the heavy double swinging storm doors of the Equitable Building, 120 Broadway, this city. This place was selected so as to afford a severe test. The advantage claimed for this particular hinge is that no matter from which side the door is opened, in closing it will never swing past the center, and that it cannot sag, thereby striking its mate or the jamb if it be a single door. Their liquid door check, which belongs to the set, closes the door gently and expeditiously, and there is no risk to a person following being struck by the door in returning to its position.

The Hustler Lawn Rake.

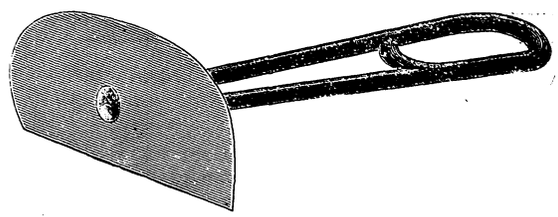
Gibbs Mfg. Company, Canton, Ohio, are putting the Hustler lawn rake on the market, as shown in the accompanying cut. The rake has a steel head bent to secure stiffness, in which the teeth are held. The socket is referred to as strong and firmly fastened to the head without the use of rivets. The rake is coated with tin to give it a fine, bright finish and to prevent rust or its becoming shop worn. It is reversible, the single teeth for taking up cut grass and the double teeth for leaves and rubbish. The manufacturers claim that in either position a hood is had which gives more raking capacity; that the curve of the teeth is such as to run smoothly and rake clean without tearing the sod, and that the teeth do not clog, a backward motion cleaning all the teeth at once.



The Hustler Lawn Rake.

Smith's Novelty Scraper.

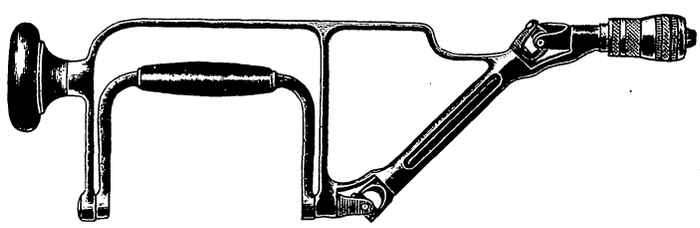
Fernando B. Smith, Canton, Ohio, is putting on the market the scraper herewith shown. The scraper is well and strongly made, a steel blade being attached to a malleable iron japanned handle. The manufacturer remarks that with it any kitchen utensil can be cleaned, whatever its shape—corners, angles, flat and round surfaces, any kind of kettles, sinks, chopping bowls, tables, cupboards, molding boards, rolling pins, bread and pudding pans, &c. It is further remarked that fish are easily cleaned with the scraper, and that it will be found useful for scraping walls preparatory to papering. The point is made that in its use the hands are not soiled, as it is not necessary to put them into hot or greasy water, and that all danger of cutting or burning the hands or tearing the finger nails is avoided.



Smith's Novelty Scraper.

Universal Brace.

The accompanying cut represents the Universal brace which is being introduced by the National Mfg. Company, Wilkesbarre, Pa. The brace is described as having a light frame, rigid and strong, made of the best malleable iron, with a crank arm of steel resting in solid upper and lower journals in the frame. It is remarked that the universal joints merely convey the rotary motion of the crank arm to the bit spindle, and carry no other strains. It is further remarked that the prominent feature of the brace is convenient as well as effective operation, that the brace is readily and firmly controlled in any desired position with one hand, and that the working of the crank arm, as in the ordinary brace, is at right angles to the bit; thus the use of the tool is at once familiar and natural. The point is made that the construction of the brace shows a high grade of workmanship; that all parts are simple and durable, and that in case of damage any part can be duplicated. The tool is designed for boring and screw driving in angles, corners, close to washboards and walls, and in all places difficult to reach with the ordinary brace.

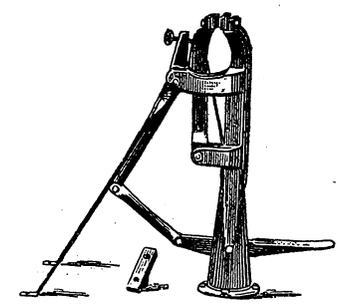


Universal Brace.

The Folsom Locking Vise.

The Kinsley Iron & Machine Company, Canton, Mass., are offering the locking vise illustrated herewith. The vise is described as being made of the best stock in every part, the jaws being of tempered steel of high grade and interchangeable. The locking parts are so made that a single pressure of the foot, it is stated, sets the jaws as though screwed up in a screw vise. The jaws are adjustable to different thicknesses of iron by means of the thumb screw near the top of the vise.

The base is made small, so as not to be in the way of the workmen's feet, and is secured to the floor by lag screws. The vise was designed especially for hot filed shoes, but, it is claimed, is equally serviceable for ordinary blacksmiths' work, and may be used in place of a screw vise.



The Folsom Locking Vise.

Linenoid Goods.

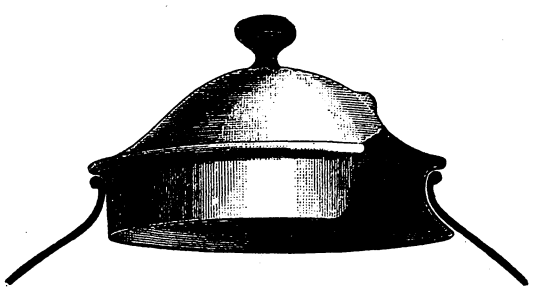
Crane Brothers, Westfield, Mass., manufacture a line of goods made of linenoid, including seamless pleasure boats, canoes, warehouse and mill baskets; butchers', grocers', bakers' and laundry baskets; desk, office and school baskets; bathtubs, washtubs, umbrella holders, &c. The manufacturers state that in making linenoid nothing is used but the strongest new linen stock, such as linen threads, canvas cuttings, &c., which, after being reduced to pulp in a beating engine, and chemically treated to render it impervious to water, is run on a cylinder machine into endless sheets of any size and thickness. It is then molded on wooden or iron forms, subjected to great heat and pressure, which, it is stated, results in a material that cannot be broken; that is light, tough, water proof, durable, taking a high polish, and similar in appearance to rawhide. It is remarked by the manufacturers that owing to their method of molding boats on forms, and thus making them seamless, they have what makers of wooden boats have been aiming to produce for years—absolute freedom from leakage. Another advantage mentioned is that, as there are no seams to open,

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the boats are not affected by heat or cold, will not warp, crack or split, and gain no weight by use.

Hingeless Cover.

Stransky & Co., 27 Murray street, New York, are introducing hingeless covers, as shown in the accompanying

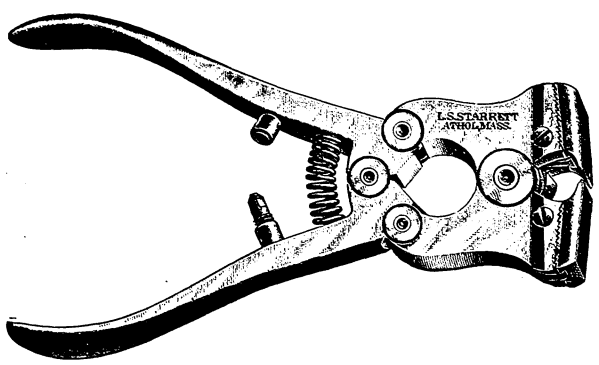


Hingeless Cover.

cut, in connection with their Cameo English tea pots. The breast of the pot is represented by the lines on each side of the rim of the cover. It will be noticed that one side of the rim corresponds to the shape of the breast lines, while the other side of the rim is straight, also that a small elevation on the cover above the rim indicates the point at which the flare of the rim is the most pronounced. In use the cover is placed on the tea pot so that the flare of the rim is at the back of the pot nearest the handle. As the pot is tipped forward the flare of the rim is to prevent the cover from falling off the pot. The cover is stamped from one piece of metal, which obviates the possibility of the rim coming off.

Starrett's Adjustable Jaw Cutnipper.

The adjustabe jaw cutnipper, shown herewith, is put on the market by L S. Starrett, Athol, Mass. The head and



Starrett's Adjustable Jaw Cutnipper.

handles are described as being made of drop forged steel, finely finished, and all parts case hardened except the jaws, which are made from a high grade of steel, nicely tempered. The jaws are detachable, so that they can be removed, ground and adjusted when they become worn. It is pointed out that each jaw can be ground away to the extent of ¼ inch, remaining as good as new for practical use; and when used up, if ever, new jaws can be procured. The jaws have a dovetailed slot in their under side to receive a spline which extends into a slot in the frame. A tapering screw through the frame and spline draws the jaw firmly down to a toothed seat in the frame, holding it securely. The nipper has a flat spring below the cutting edges and over the joint, forming a yielding seat for the end of the wire to press against while being cut. This spring is to obviate the breaking of the jaws, which might occur if the wire was inserted against a solid surface, thus creating a pushing out strain on the jaws when they are pressed together. Jaws warranted to stand for cutting music wire have the cutting edge ground to a steep bevel. The jaws for general use, it is stated, are not ground to so acute an edge, and are better for cutting soft wire and for ordinary purposes. The tool shown in the cut is known as No. 1, and is 6 inches long. A larger size, we are advised, will be made later.

Metallic Weather Strips.

A line of metallic weather strips is being manufactured by W. H. Cosper Company, 63 and 65 South Canal street, Chicago, in connection with which, it is stated, the best quality of rubber is used. The strip is made of copper, brass, german silver and zinc. The copper strip has rubber of a deep maroon color to harmonize with many of the finest varieties of wood. German silver, brass and zinc strips have gray rubber. The manufacturers remark that the rubber will remain soft and pliable, being made for them, and after being cured to a certain degree of temperature it is subjected to a test before being used. The strip is regularly cut into 7-foot lengths, tied up 36 pieces to the bundle, four bundles for 1000 feet; this allows 8 feet for waste in each 1000 feet. The strip is designed for use on cars, residences, &c.

The American Aluminum Pencil Company, Cincinnati, Ohio, are adapting aluminum as a material for slate pencils. The handle is of red enameled wood, similar in appearance to a penholder, attached to which by means of a ferrule is a point of pure aluminum, over 1 inch long, thoroughly finished with chemical processes so as to make it write perfectly smooth upon any school slate without injuring the slate's surface. The point is made that the pencil can be used two or three years, as no sharpening is required, and that the markings can be quickly erased with a damp sponge or cloth.

Buckingham's Check Controlled Umbrella Lock.

The accompanying cuts represent an umbrella lock controlled by a check, which is offered by the Check Controlled Lock Company, Cleveland, Ohio. The

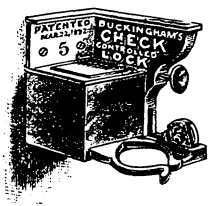


Fig. 1.—Buckingham's Check Controlled Umbrella Lock.

lock, as shown in Fig. 1, consists of a nickel plated box, with movable circular arms at the bottom, in which the handle of the umbrella is held. The box is also provided with a slot, into which the check is dropped, and a push button. As in Fig. 2, an ornamental cap surmounts the box, to prevent the umbrella or cane from being lifted up and out of the locked arms ; and a ring is placed under the box to receive the

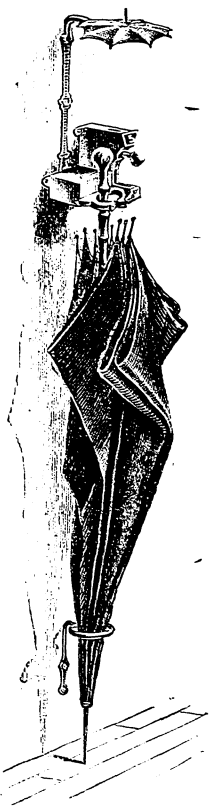


Fig. 2.—Lock and Other Parts in Position.

lower part of the article. The check is a brass disk, with grooves to correspond with projections at the mouth of the slot. In operation the check is dropped into the slot at the top of the box ; the box is unlocked only when the check is inside. The umbrella is

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then stood in the lower ring, the handle between the arms, and after they snap shut the button is pressed, the pressure being continued until the checks roll out into view, as in Fig. 1. The umbrella is then locked up. The point is made that an umbrella can thus be put in without wrapping it up, thus allowing it to drip and dry.

The owner keeps the check in his possession while his umbrella remains in the lock. The locks are designed to secure umbrellas against borrowers and others, and are recommended for use in hotels, halls, churches, libraries, art galleries, business houses, billiard rooms, barber shops, club houses, offices, flats, residences and other places.

Union Skate Sharpener.

The Union Hardware Company, Torrington, Conn., and 95 Chambers street, New York, are putting a skate sharpener on the market, as shown in Fig. 1.

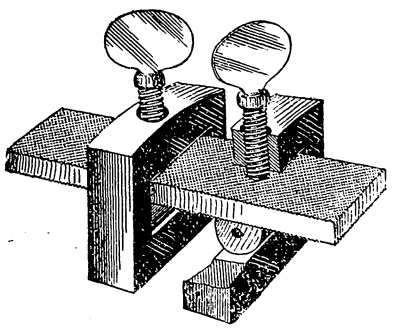


Fig. 1.—Union Skate Sharpener.

A file 1½ inches long, ¾ inch wide, is held in two metal frames by set screws. The file rests on rollers, one side of which is flattened, to allow the frames to be adjusted to any make or style of runner. In Fig. 1 one of the frames is cut away to show the position of the screw and roller. In operation the sharpener is adjusted to the skate as in Fig. 2, and is pushed forward and backward on the runner. The manufacturers claim that the article sharpens perfectly with little labor; that to use it requires no practice or skill, a child being able to do as good work as a machine shop; that being composed of but three pieces it is easily adjusted at once; that the sharpening is done with a file set in frames, and can be so adjusted that there is no chance to do anything but perfect work, and that it can be carried in the pocket, always ready for work.

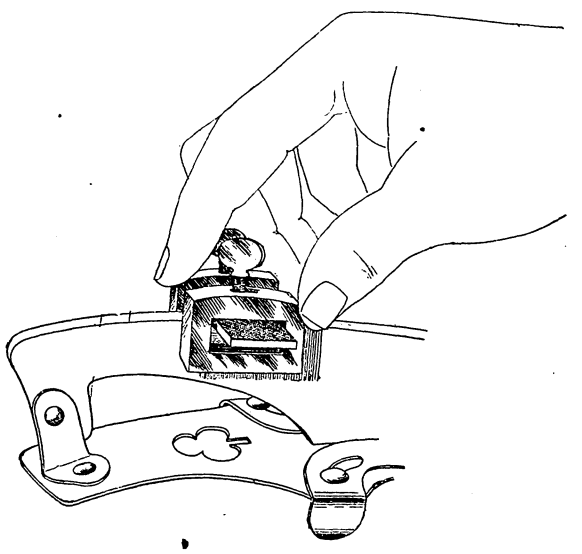


Fig. 2.—Skate Sharpener in Use.

Improved Lamp.

Clark Bros. Lamp, Brass & Copper Company, 43-45 College Place, New York, and Trenton, N. J., whose plant is operated by the American Lamp & Brass Company, are introducing an improved center draft lamp, the main features of which are alluded to by them as follows: The fount has sufficient oil capacity to burn eight hours. There is a patented feeder cup, with double seating, making it oil tight, also a lift guide of extra length. A patented concave chimney gallery contains 1080 extra large perforated air conductors, making, it is remarked, by improved combustion a reduction in heat equivalent to 40° F. by actual test. There is likewise a new chimney lift and beaded top center tube to keep the flame spreader from direct contact with the wick, thereby preventing the weeping of oil down the center tube. It is also provided with an improved wicking device. This lamp carries an 8-inch wick.

THE DEATH is announced in the English journals of Henry Harrison, one of the founders of the well-known Sheffield Cutlery firm of Harrison Brothers & Howson of that city. The present Master Cutler of Sheffield, George Howson, is a member of the firm.

A METHOD HAS BEEN ADOPTED by the W. Bingham Company, Cleveland, Ohio, for calling attention to special goods, which is unique in its conception and bids fair to make an effective appeal to the trade. An open letter to the trade, the first of a promised series, one of which is to be sent each month, is issued in circular form, and comes "From the corner desk." "The man in the corner" writes in an interesting, social way, combining valuable suggestions about increasing trade with mention of desirable goods with which to supply the trade. Carvers are the line to which particular attention is directed in the November letter. An attractive representation is given on the front cover of the man at his desk in the corner, while on the back cover are cuts of Carvers in cases.

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Current Hardware Prices.

NOVEMBER 15, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓@33⅓&10%
Excelsior....₩ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Eagle Anvils, ₩ ℔ 9¢.....15@15&5%
Peter Wright's.....11@11½%
S. & H., machine finished..10½¢@11½¢
Armitage's Mouse Hole.....10½@11¢
Am. Wrought, Horse shoe brand.11@11½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise $3.00.....40&10%
Star .....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—

Common Augers and Bits.....70@70&10%
Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....50%
Russell Jennings' Augers and Bits.25&10%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
Snell's Bits.....60&5%
C. E. Jennings' & Co., No. 10, extension lip.....40%
C. E. Jenning' & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32⅛ quarters, No. 5, $5; No. 30, $3.50.25%
Lewis' Patent Single twist.....45%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
L'Hommedieu Car Bits.....15&10%
Forstner Pat. Auger Bits.....15%
Cincinnati Bell-Hangers' Bits.....30&10

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $18.....35@40%
Stearn's No. 2, $48.....20%

Gimlet Bits—

Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25.....40&10%
Bee.....25@25&5%
Double Cut:
Shepardson's.....45@45&10%
Ct. Valley Mfg. Co.....30&10%
Hartwell's.....₩ gro.,$10.00..40&10%
Douglass'.....40&10%
Ives.....60@60&10%

Hollow Augers—

Ives', French, Swift & Co. (Beecher), Douglass'.....33⅓@33⅓& 10%
Bonney's Adjustable, ₩ doz $48.....50%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood s.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....25@25&10%
Snell's.....25@25&10%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@ 1.40
Awls, Handled Brad....₩ gr. $2.60@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands.	$7.00	$7.50
First qual., other brands	6.50 / 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles

No. 1....3¼¢@4¢; 4½¢@5¢
Nos 7 to 14.....70%
Nos. 15 to 28.....47½%
Nos. 19 to 22.....70%
Concord Axles, loose collar..4½¢@5¢
Concord Axles, solid collar..5¢@6¢
} 3% cash

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz.	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-in., $1.80; 12-inch, $2.00; 13½-inch, $2.50; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Dover.....₩ doz $1.00@$1.20
Duplex (Standard Co.).....₩ doz $1.00
Dover (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)...₩ doz. $3.50
Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ $4.50
Improved Acme (H. & R. Mfg. Co.)....₩ gro. $9.00
Silver & Co.....₩ doz $5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10%
Dodge, Genuine Kentucky....70@70&10%
Texas Star.....50&10@50&10&5%

Door—

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. & E. Mfg. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%

Electric—

Wollensak's.....20%
Bigelow & Dowse.....20%

Hand—

Light Brass.....70&10@70&10&5%
Extra Heavy.....70%
White.....70%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Miscellaneous—

Call.....45@50%
Farm Bells.....₩ ℔ 3¢&3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Molders'.....40&10@50%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....75@75&10%
Standard.....70&5@70&10%
Extra.....60&10@60&10&10%
N.Y.B.&P. Co., Carbon.....60@60&5%
N.Y.B.&P.Co., Diamond.....50@50&5%
N.Y.B.&P.Co., Para.....40@40&5%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron.60@60&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%
See also *Machines, Hoisting.*

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....80&10@80&20%
Genuine Eagle, Norway, list Oct. '84.....80&5@80&10%
Eagle, Norway, list Oct. '84.80&10@80&15
Phila. pattern, list Oct. 7, '84.....80%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890..80&10@80&25%
Bolt Ends, list Jan. 1, 1890.80&10@80&25%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wrought Square.....70&10@75%
Wr't Shutter, all Iron, Stanley's.....60&10@60&10&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%
Wr't B. K.Flush, Common.....55&10%

Stove and Plow—

Stove.....60&10@60&10&10%
Plow.....60&10&50@60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16 '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Ives' Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20%
Clark's.....33⅓&35%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Boxes, Miter.

Spilker's Excelsior, 3 in. $7.50, 4 in $8.50, 5 in. $13.00, 6 in. $15.00.....20%

Braces—

American Bit Brace and Tool Co.,
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber s.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew s,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford's..50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Davis Patent.....50&10%

Brackets—

Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting.	Inch	9	10	9x11
	Per doz.	$4.50	5.50	6.50

New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....₩ doz. $12, 50%
Queen City.....33⅓%

Buckets, Well—

Galvanized—

Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers.*

Butts—

Brass—

Wrought Brass.....80@50&10%
Cast Brass, Tiebout's.....50%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Parliament Butts.....
Mayer's Hinges.....
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips.....
} 75&5@75&10&5

Wrought Steel—

Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad.....
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.....
Indide Blind, Light.....
Loose Pin.....
} List Jan. 2, 1893, 40@40&10%

Bronzed Wrought Butts.....50@50&1 0

Cages, Bird—

Hendryx, Brass or Enameled.....50&10%
Hendryx, Wood.....40&10%

Callpers—See *Compasses.*

Calks, Toe—

Gautier, One Prong, Blunt.....5½@6¢
Burke's One Prong, Blunt.....5½@6¢
Burke's, Two Prong, Blunt.....7½@8¢
Burke's, One Prong, Sharp...6½@7¢

Can Openers—See *Openers, Can.*

Cans, Milk—

S S. & Co.: 5-gal., $3.00; 8-gal., $4 40; 10-gal., $4.75 each.....40&10

Cans, Oil—

Galvanized Blue Band, 5 gal., Tip-Top, ₩ doz. $12.00
Galvanized Blue Band, 5 gal, Faucet, ₩ doz., $8.00
Galvanized Blue Band,1 gal.,₩ doz.$2.25
Glass Oil, Friend.....₩ doz.$2.75

Caps—

Percussion—

Hicks & Goldmark's and Union Metalic Cartridge Co.₩ 1000
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....47@50¢
Musket. Waterproof, 1-10's.....50@53¢
G. D.....27@30¢
S. B. Genuine Imported.....45¢
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire. $1.60

Primers—

Berdan Primers, $1.00.....2%
B. L. Caps (Sturtevant Shells) $1 00...2%
All other Primers, $1.20.....2%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....25%

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

Rim Fire Cartridges.....50@5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed.....	Brass.....55@55&10%
Plate.....	Others....60@60&10%
Shallow Socket...	

Deep Socket.....40&10%
Martin's Patent (Phœnix).45&10@50&10%
Tucker's Patent, low list.....45%
Payson's Anti-friction.....7C@70&10%
Payson's Truck.....60@60&10%
Yale Casters, low list.....45%
Yale, Gem.....70%
Giant Truck Casters.....35%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50@50&10%
Gwinner's Common Sense.....45%
Gwinner's Hercules.....45%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised May, 1893.....60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.50	3 40	3.25

Less than cask lots, add ½¢@½¢ ₩ ℔
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12. 1892. 60@60&10%
Covert Halter.....60&2%
Cover tTraces.....35&2%
Cover tHeel Chain.....50&2%
Galvanized Pump Chain.
5 ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.75
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔.....₩ 100 ℔ $7.00
Oneida Halter Chain.....60@60&5%
Jack Chain, Iron and Brass, list July 10, 1893.....60&10%
Barnes' Reinforced Sash.....60&10¢
Barnes' Victor Sash.....65¢

Chalk—

See also Crayons.
White, case lots, ₩ gr 50¢; small lots, 52¢
Red, case lots...₩ gr 67¢; small lots, 72¢
Blue, case lots...₩ gr 75¢; mall ots 80¢

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Chalk Lines—See *Lines.*

Checks, Door—
Unity 50%

Chisels—
Socket Framing and Firmer
P. S. & W. ..... }
New Haven ..... }
Witherby ..... } 75&10@75&10&10%
Mix ..... }
Ohio Tool Co. ..... }
Douglass ..... 75@75&5%
Buck Bros 30%
Merrill ..... 60&10@60&10&5%
L. & I. J. White ..... 30@30&5%

Tanged and Miscellaneous.
Tanged Firmers ..... 50@50&10%
Butchers' ..... $4.75@$5.00 to $
Spear & Jacksons' ..... $5 to $
Buck Bros 30%
Cold Chisels, fair quality, ℔ ... 14@16¢

Chucks—
Beach Pat. ..... each, $8.00 ..... 20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury ..... each, $6.00, 30@30&5%
Syracuse, Bals Pat. 25%
Graham Patent 33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.
Victor $8.50, 25%
Combination 40%
Universal 40%
Independent 40%

Churns—
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.

Clamps—
R. I. Tool Co.'s Wrought Iron 25%
Adjustable, Cincinnati ..... 15&10%
Adjustable, Hammers ..... 15@15&5%
Adjustable, Stearn's ..... 30@30&10%
Stearn's Adjustable Cabinet and Corner ..... 30@30&10%
Cabinet, Sargent's ..... 70&10%
Carriage Makers', Sargent's ... 75@75&5%
Carriage Makers', P., S. & W Co... 40&10%
Eberhard Mfg. Co. ..... 40&5@40&10%
Warner's ..... 40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenter's, Cincinnati ..... 25&10%
Barnes' Machinists' Clamps 33⅓%

Cleavers, Butchers'—
Bradley's ..... 25@30%
L. & I. J. White ..... 20&5%
Beatty's ..... 40@40&5%
New Haven Edge Tool Co.'s 40%
P., S. & W ..... 33⅓&5@33⅓&10%
Foster Bros. 30%
Schulte, Lohoff & Co. ..... 40@40&5%

Clips—
Norway, Axle, ¼ & 5-16 ..... 55&5&5%
2d grade Norway Axle, ¼ & 5-16 ... 65&5%
Superior Axle Clips ..... 66⅔&5@70%
Norway Spring Bar Clips, 5-16 ... 80&5&5%
Wrought Iron Felloe Clips ..... ℔ 5½¢
Steel Felloe Clips ..... ℔ 5¢
Baker Axle Clips 25%

Cloth and Netting, Wire
—See *Wire, &c.*

Cockeyes 50%

Cocks Brass—
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.) ..... 60&2@60&10

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Chapman Mfg. Company, new list ... 40%
Medford Fancy Goods Co. ... 40&10@60%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list 40%
Brass, Pope & Steven's list 40%

Combs, Curry—
Fitch's ..... 50&10@50&10&10%
Rubber, per doz., $10.00 ..... 25%
American Curry Comb Co. ..... 33⅓@40%
Kohler's Magic Oscillating ... ℔ doz., $2.00
Kohler's Humane ..... ℔ doz., $1.75

Compasses, Dividers &c.
Compasses, Calipers, Dividers. 70&10@75%
Bemis & Call Co.'s
Dividers 65%
Compasses ..... 50&5%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Calipers, Double 65%
Calipers, Call's Patent Inside 55%
Excelsior 50%
Stevens & Co.'s ..... 25&10%
Starrett's
Spring Calipers and Dividers ... 25&10%
Lock Calipers and Dividers 25%
Combination Dividers 25%

Coolers, Water—
S. S. & Co.: 2-gal., $2.00; 3-gal., $2.50; 4-gal., $2.75; 6-gal., $3.40 each ... 33⅓%

Coopers' Tools—
See *Tools, Coopers'.*

Cord—

Sash—
Common ..... ℔ ℔, 8½@9¢
Patent, good quality ..... ℔ ℔, 10@11¢
White Cotton Braided, fair ... ℔ ℔, 23@24¢
Common Russia Sash ..... ℔ ℔, 12½@13¢
Patent Russia Sash ..... ℔ ℔, 13½@ 14¢
Cable Laid Italian Sash ..... ℔ ℔, 19@20¢
India Cable Laid Sash ..... ℔ ℔, 11½@12¢
Silver Lake—
A quality, White, 50¢ 25%
A quality, Drab, 55¢ 25%
B quality, White, 30¢ 10%
B quality, Drab, 35¢ 10%
Sylvan Spring, Extra Braided, White. 34¢
Sylvan Spring, Extra Braided, Drab. .39¢
Semper Idem, Braided, White ..... 26¢
Egyptian, India Hemp, Braided ..... 26¢
Massachusetts, White ..... 25¢
Samson—
Braided, White Cotton ..... ℔ ℔, 37¢
Braided, Drab Cotton ..... ℔ ℔, 42¢
Braided, Italian Hemp ..... ℔ ℔, 40¢
Braided, Linen ..... ℔ ℔, 56¢
Tate's Solid Braided—
Hercules, White ..... ℔ ℔, 25¢
Hercules, Drab ..... ℔ ℔, 30¢
Economy, Drab ..... ℔ ℔, 27¢
Economy, White ..... ℔ ℔ 22¢
Ossawan Mills—
Braided, Giant, White, ℔ ℔ 30¢ ... 20%
Braided Giant, Drab and Fancy, ℔ ℔ 35¢ 10%
Braided, Crown White, ℔ ℔, 50¢ ... 50%
Braided, Crown Drab and Fancy, ℔ ℔, 55¢ 30%

Wire Picture—
Braided or Twisted ..... 80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers Nut—
Table (H. & B. Mfg. Co) 40%
Blake's Pattern, ℔ doz., $2.00 ..... 10%
Turner & Seymour Mfg. Co. 50%
Acme.
Japanned, ℔ gro., $30 ..... 50%
Nickel Plated, ℔ gro. $30 ..... 10%

Cradles—
Grain ..... 50&2@50&5&2%

Crayons—
White Crayons, ℔ gross ..... 7@8¢
D. M. Stewart Mfg. Co.:
Metal Workers', ℔ gross, $1.75 ..... 25%
Rolling Mill, ℔ gross, 2.50 ..... 25%
Railroad, ℔ gross, 2.00 ..... 25%
Soapstone Pencils, ℔ gross, 1.00 ..... 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—
See *Combs, Curry.*

Curtain Pins—
See *Pins, Curtain.*

Cutters—

Meat—

Dixon's, ℔ doz.				40@40&5%
Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Woodruff's, ℔ doz. ..... 40@40&5%

Nos.	100	150
	$16.00	$18.00

Hale's, ℔ doz. 70%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American 35%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise 25%

Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15

Little Giant, ℔ doz. ..... 40&10@50%
Nos. 305 310 312 320 322
$35.00 $48.00 $44.00 $72.00 $68.00
Triumph No. 505, ℔ doz., $21.00.. 25@30%
Miles' Challenge, ℔ doz. ..... 45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Home No. 1, ℔ doz., $26.00 ..... 55&10%
Draw Cut, each:

Nos.	5	6	8
	$50	$75	$80 $225

Beef Shavers (Enterprise) 20%
Chadborn's Smoked Beef Cutter, ℔ doz., $66.00

Slaw and Kraut—
Tucker & Dorsey Mfg. Co.:
Slaw Cutters, 1 Knife, ℔ gross... $21.00
Slaw Cutters, 2 Knife, ℔ gross... 30.00
Kraut Cutters 40%

Tobacco
Champion ..... 20&10@30%
All Iron ..... ℔ doz., $4.25
Nashua Lock Co.'s.. ℔ doz., $18.00, 50@55%
Wilson's 55%
Sargent's ..... ℔ doz., $24.00, 55&10
Acme ..... ℔ doz., $20.00, 40%

Washer—
Smith's Pat. ... ℔ doz., $12.00, 20&10&10%
Johnson's ..... ℔ doz., $11.00, 33⅓&5
Penny's.. ℔ doz.,, Pol. $14 ; Jap'd, $16, 55%
Appleton's ..... ℔ doz., $16.00, 60&10%
Bonney's ..... 30&10%
Cincinnati ..... 25&10%

Diggers, Post Hole, &c.—
Samson, ℔ doz., $34.00 ..... 25@25&10%
Fletcher Post Hole Augers, ℔ doz., $36.00, 20@20&10%
Eureka Diggers ..... ℔ doz. $12.00@$13.00
Vaughan's Post Hole Auger, ℔ doz., $8.50@$9.50
Kohler's Little Giant ..... ℔ doz., $18.00
Kohler's Hercules ..... ℔ doz., $14.00
Kohler's Invincible ..... ℔ doz., $12.00
Kohler's New Champion ... ℔ doz., $8.00
Scheidler ..... ℔ doz., $18.00
Cronk's Post Bars, ℔ doz., $60.00, 50&5@50&10%
Gibb's Post Hole Digger ..... ℔ doz., $15.00
Gibbs' National ..... ℔ doz., $12.00
Gibbs' Columbia ..... ℔ doz., $13.00
Gibbs' Imperial ..... ℔ doz., $7.50
Shimer's Hollow Handle.. ℔ doz., $24.00, 50%
Gem, Improved ℔ doz.,. $9.00@$10.00 net

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers.
Money, ℔ doz. ..... $18@$20
Waddel's Improved, ℔ doz. $15.00

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Blacksmiths' ..... each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Breast, P. S. & W. ..... 40&10%
Breast, Wilson's ..... 30&5%
Breast, Millers Falls ..... each $3.00, 25%
Breast, Bartholomew's ... each $2.50 25&10@40%
Ratchet, Merrill's ..... 20@20&5%
Ratchet, Ingersoll's 25%
Ratchet, Parker's ..... 20@20&5%
Ratchet, Whitney's ..... 20&10%
Ratchet, Weston's ..... 20@25%
Ratchet, Moore's Triple Action... 25@30%
Ratchet, Curtis & Curtis 30%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00 ..... 20&10%
Automatic Boring Tools ..... $1.75@$1.85
Chicopee Automatic Drill ..... 20&10%
Goodell Automatic Drills ..... 40&5%

Twist Drills—
Cleveland ..... 50&10&10%
Diamond, W. & B. ..... 50&10&10%
Graham's Pat. Groove Shank. 50&10&10%
Morse ..... 50&10&10%
New Process ..... 50&10&10%
Standard ..... 50&10&10%
Syracuse (Metal list) ..... 50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Douglass Mfg. Co. ..... 20@20&10%
Disston's 50%
Buck Bros. 30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles ..... 65&10%
No. 86 ..... 70&10%
Sargent & Co.'s
No. 1, Forged Blade ..... 60&10&10%
Nos. 20, 40 and 60 ..... 66⅔&10&10%
P. S. & W 70%
Knapp & Cowles
No. 1 ..... 60&20@70%
No. 2 ..... 60&10&10@70&5%
No. 3 ..... 60&5@60&10%
Nos. 4 and 00, Acme and Ideal .. 50&5@50&10&5%
Stearns' ..... 25&10&5%
Gay & Parsons 35%
Champion ..... 25&10%
Clark's Pat. ..... 30@33⅓%
Ellrich's Socket and Ratchet.. 25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense.. ℔ doz., $6.00, 25&10%
Syracuse Screw-Driver Bits ... 30&30&5%
Screw Driver Bits ..... ℔ doz., 50@75¢
Screw Driver Bits, Parr's.. ℔ gross, $6.25
Fray's Hol. H'dle Sets... No. 3, $12.00, 45%
Cincinnati ..... 25&10%
Brace Screw Drivers ..... 25&10%
Buck Bros.' Screw Driver Bits.... 27½&5%
Goodell's Automatic 50%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
C. T. Williamson Wire Novelty Co.... 50%

Egg Beaters—See *Beaters, Egg.*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF.

	46 gr.	150 gr.	F.FF.
Kegs, ℔ ℔	4½¢	5 ¢	2½¢
½ kegs, ℔ ℔ ...	4½¢	5½¢	2¾¢
¼ kegs, ℔ ℔ ...	5 ¢	5½¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6½¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See *Ware, Hollow*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—
Door Lock.... Same dis. as Door Locks.
Brass Thread ..... 60@60&10%
Wood 25%

Expanded Metal—
List No. 5.
Lathing 10%
Fencing, Painted Sheets 20%
Netting, Painted Sheets 20%
Door Mats, Galvanized 25%
Window Guards, Paneled 15%
Tree Guards, Paneled 15%

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Mackrell's, ℔ doz., $1.00 ..... 20@20&10%
Van Sand's Screw Pat, $15 ℔ gr.. 60&10%
Van Sand's Old Pat., $15 ℔ gr.... 55&10%
Austin & Eddy No. 2008 ..... ℔ gr., $9.00
Security Gravity ..... ℔ gr., $9.00
Zimmerman's ..... 50&10%

Faucets—
Fenn's 40%
Fenn's Cork Stops 33⅓%
Star 60%
Frary's Pat. Petroleum 60%
B. & L. B. Co.
West's Lock, Open and Shut Key.. 50%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list.. 60%
Metallic Key, Leather Lined ... 60&10@60&10&10%
Cork Lined ..... 70&5@70&10%
Burnside's Red Cedar 60%
Burnside's Red Cedar, bbl. lots... 60&10%
John Sommers'
Peerless Best Block Tin Key 40%
IXL, 1st quality, Cork Lined 50%
Diamond Lock 40%
Perfection, Fla. Red Cedar (in boxes) 40%
Boss Metallic Key 50%
Reliable Cork Lined 60%
O. K. Western Pattern Cork Lined.. 50%
No Brand, Red Cedar (in bbls.).. 50&10%
Western Pattern Metal Key 40%
No Brand Metal Key 60%
Self Measuring
Enterprise, ℔ doz., $36.00 ..... 20%
Lane's ℔ doz., $36.00 ..... 25&10%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—
Derby and Cincinnati ..... 45&5%
Brewster ..... 50&5%

Files—

Domestic—
Nicholson Files, Rasps, &c. 60&10&5@60&10&10%
Nicholson (X.F.) Files 25%
Nicholson's Royal Files (Seconds) ... 75%
(extra prices on certain sizes.)
American ..... 66⅔&10@66⅔&10&5%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Arcade ..... 60&10&5@60&10&10%
Eagle ..... 60&10&10@70%
Other makers, best brands .. 60&10&5@70%
Fair brands ..... 70&10@70&10&10%
Second quality ..... 80@80&5%
Heller's Horse Rasps ..... 50&10@60%
McCaffrey's Horse Rasps ..... 50&10%
Chelsea Horse Rasps, Hand Cut... 50&10%
Arcade Horse Rasps.... 60&10@60&10&5%
Trojan Horse Rasps ..... 60&10&5%

Imported—
Butcher ..... Butcher's list, 20%
Stubs ..... Stubb's list 25@30%

Fixtures Grindstone—
Sargent's Patent ..... 70&10%
Reading Hardware Co. ..... 30&10%
P., S. & W. Co. ..... 50&10%
Moore's 55%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Hay, Manure, &c. Asso. List, 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—

Saw—
White Vermont ..... ℔ gro.. $9.00@$10.00
Red, Polished and Varnished.... ℔ doz., $1.50, 25%

Screen, Window and Door—
Porter's Pat. Window and Door Frame, 33⅓&10%
Warner's Screen Corner Irons.. 33⅓&10% 33⅓&10%
Stearns' Frames and Corners. 25@25&10%
Cortland ..... 40@40&5%
Phillips' Window Screen Frames.. 50@50&5%
Bonanza Window Screens.. 50&5@50&10%
Empire Fancy Screen Doors, ℔ doz .. $12

Freezers Ice Cream—
White Mountain ..... 60@60&5%
Granite State ..... 65@65&5%
Arctic ..... 70@70&5%
American 60%
Buffalo Champion ..... 65@65&5%
Shepard's Lightning ..... 65@65&5%
Gem 65%
Blizzard 70%
Double Action Crown 60%
Crown 60%
Star 60%
Peerless ..... 60&10%
Giant 60%
Zero 70%
Boss and Pet ..... 60&10&10%
Keystone, P., D. & Co., each, $1.50 ... 20%
Standard ..... 60@60&5%
Standard Double Action ..... 60@60&5%
Good Luck ..... 65@65&5%
Model ..... 60@60&5%
Confectioners' Machine 50%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fruit Pickers—
See *Pickers, Fruit.*

Fry Pans—See *Pans, Fry.*

Funnels—
Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro. 30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz. 25%

Furnaces, Soldering—
Burgess No. 3 Gem tin reservoir... $7.00
Burgess No. 3 Gem, Copper reservoir. $8.50
Clayton & Lambert No. 1 Fire-Pot, complete $6.00

Fuse—Dis. 12½@15%. ℔ ℔ 1000 ft
Common Hemp Fuse, for dry ground. $2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr.. 4.80
Triple Taped Fuse, for very wet gr. 5.60
Small Gutta Percha Fuse, for water 7.50
Large Gutta Percha Fuse, for water 12.00

Gates Molasses—
Stebbin's Pattern ..... 80&10@80&10&5%
Stebbin's Genuine ..... 60&10&10%
Stebbin's Tinned Ends ..... 40&10%
Lincoln's Pattern ..... 70@70&10%
Weed's ..... 20&10%
Boss, ℔ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 ..... 60&10&10%

Gauges—
Marking, Mortise, &c ..... 60&10%
Starrett's Surface, Center and Scratch, 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 20&10%
Barrett's Comb. Roller Gauge.. ℔ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale ..... ℔ doz.. $5.00
Without Scale ..... ℔ doz., $4.00
Wire, Wheeler, Madden & Co. 10%
Wire, Morse's 25%
Wire, Brown & Sharpe's ..... 10@20%
Wire, P., S. & W. Co. ..... 10&10%

Gimlets—
Nail and Spike ..... 50&10&5%
Eureka Gimlets ..... 60&10%
Diamond Gimlets ..... ℔ gr $5.00
Double Cut, Shepardson's ..... 45@45&5%
Doub e Cut, Ives' ..... 60@60&5%
Double Cut, Douglass' ..... 40&10%

Glue—
Le Page's Liquid ..... 25@25&5%
Upton's Liquid 35%
Improved Process ..... 25@25&5%
Dodd's Liquid Glue ..... 25@25&5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Fraser's ..... Keg ℔ ℔ 4¢, Pail ℔ ℔ 5¢
Fraser's, in boxes ..... ℔ gr $9.50
Dixon's Everlasting, in bxs. ℔ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting... 10-℔ pails, ea. 85¢
Lower grades, special brands ℔ gr $5.50@$7 00
Axleine, tin boxes ..... ℔ gross $12.00
English Coach, wooden boxes ..... ℔ gross $8.50
English Coach, 5-℔ tin pails. ℔ doz, $3.50
Tiger, wooden boxes ..... gross $7.00
Tiger, 5-℔ tin pails ..... ℔ doz $2.85

Grindstones—
Family, regular list 60%
Family, Cleveland Stone Co. 20%

Grindstone Fixtures
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
Sewing, Brass Fer. ℔ gr. $1.75
Pat. Sewing, Short. ℔ doz. ..... 45@50%
Pat. Sewing, Long ..... ℔ doz $1.20
Pat. Peg, Plain Top. ℔ doz. ..... 40@45%
Pat Peg Leather Top. ℔ doz 45@50%

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Halters—

Covert's Rope, Jute.....60&10&10&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ½-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....85&5&2%
Covert's Saddlery Works Halters...33⅓&%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓&%
Covert's Saddlery Works Handy Web Halters.....33⅓&%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.....
Humason & Beckley.....
Atha Tool Co.....
Verree..... } 60&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles, new list.....25&10
Peck, Stow & Wilcox.....35@40%
Sargent's.....40@40&10%

Heavy Hammers and Sledges—

3 ℔ and under...℔ ℔40¢ } 75&10@75&10
3 to 5 ℔.....℔ ℔36¢ } &5%
Over 5 ℔.....℔ ℔30¢ }
Wilkinson's Smiths.....10½@11¢℔ ℔

Handcuffs and Leg Irons

—See *Police Goods.*

Handles—

Cross-Cut Saw Handles—

Atkins', new list.....40%
Champion.....15%
Ely's Perfection.....℔ doz., $3.00
Sensible.....40%

Iron, Wrought or Cast—

Door or Thumb.

Nos	0	1	2	3	4
Per doz.	$0.90	1.00	1.08	1.85	1.50

60&10&10%
Roggin's Latches.....℔ doz 30@35¢
Bronze Iron Drop Latches..℔ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Barn Door, ℔ doz $1.40.....10&10%
Chest and Lifting.....70@70&10%

Wood—

Saw and Plane.....40&10@50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Brad Awl.....℔ gr $2.00
Hickory Firmer Chisel, ass'd. ℔ gr 4.50
Hickory Firmer Chisel, large. ℔ gr 5.00
Apple Firmer Chisel, ass'd...℔ gr 5.00
Apple Firmer Chisel, large...℔ gr 6.00
Socket Firmer Chisel, ass'd..℔ gr 3.00
Socket Framing Chisel, ass'd.℔ gr 5.00 } 40&10@50%
J. B. Smith & Co.'s Pat File.....50%
File, assorted.....℔ gr 2.75
Auger, assorted.....℔ gr 5.00 } 50%
Auger, large.....℔ gr 7.00
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....℔ set $1.25
Pat. Auger, Swan's.....℔ set $1.00
Hoe, Rake, Shovel, &c.....60@60&5%

Hangers—

Barn Door, old patterns.....70@70&5%
Barn Door, New England.....70@70&5%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Steel Track.....55%
Champion.....60&10%
Climax Anti-Friction.....55%
Zenith for Wood Track.....55%
Sterling.....50&10@60%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Kidder's.....50@50&10%
Boss.....60&10@60&10&5%
Best Anti-Friction.....60&10@60&10&5%
Duplex (Wood Track).....60&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Ideal.....50&10@50&10&5%
Terry's Solid.....50&10@60%
Terry's Shield.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Cronk's Patent, Steel Covered.....50&10%
Carrier Steel Anti-Friction.....50&10%
Richards'.....30@30&10%
Lane's New Standard.....50@50&5%
Lane's Standard.....50&5@50&10%
Lane's Parlor.....40%
Warner's Pat.....20&10&10%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Cincinnati Nos. 1, $2.25; 3, $2.50; 4, $2.50.
Paragon Nos. 5, 5½, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15. 40&10@50%
Chicago Anti-Friction.....30&10%
Star.....40&10@40&10&5%
Barry.....50%
Interstate.....50&10@60%
Pendulum, Payson's.....40@40&10%
Moody.....45%
Economy, $6.00.....50&10%
Perfection.....50&10@50&10&5%
Lundy, Steel Parlor.....40%
Matchless.....50&10%
Magic.....45&10%
Wild West.....45&10%
Moore's Elevator.....33⅓&%
Moore's Baggage Car Door.....33⅓&%
Moore's Railroad.....55%

Harness Snaps—See *Snaps.*

Hatchets—

American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's..... } 40 & 10
Mann's..... @
Peck's..... } 40 & 10
Underhill's..... &5%
Fayette R. Plumb.....
C. Hammond & Son.....
Kelly's.....
Buffalo Hammer Co.....
Sargent's & Co..... } 50 @ 50
P. S. & W. Co..... } &10%
Schulte, Lohoff & Co.....
Ten Eyck Edge Tool Co.....
Collins..... 10%

Hay and Straw Knives

See *Knives.*

Hinges—

Blind Hinges—

Parker.....75@75&10%
Huffer.....50%
Clark's Nos. 1, 3, 5, 40 and 50 80&5@80&10%
Clark's Mortise Gravity.....60%
Sargent's, Nos. 1, 3, 5, 11, 12, 13.75@75&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's.
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible...70&10&5@75%
Clark's, Lull & Porter, Nos. 0, 1, 1¼, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....℔ doz $4.20, 60@60&10%
N. E.....℔ doz $7.80, 60@60&10%
N. E. Reversible ℔ doz..$5.60, 60@60&10%
Clark's, Nos. 1 2, 3.....60&10&5%
N. Y. State.....℔ doz $4.90,60@60&10%
Automatic.....℔ doz $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts...40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's Japanned.....35%
Bommer's All other Kinds.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent Checking.....15%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem and Star.....20%
Oxford.....20%
Royal.....66⅔%
Reliable.....60%
Champion.....60%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ℔ gro., $30.....50&5%
Samson.....60@60&7½%
Wiles', No. 1, ℔ gro., $16; No. 2.....$13
Devore, No. 1.....℔ gro , $13.00
Rex.....℔ gro., $13.00
Freeport.....℔ gro., $12.00
New Idea Nos. 1 and 10...℔ gross $13.00
New Idea Dbl. Acting.....45%
Ideal No. 3.....℔ gross $10.00
Stearns' Noiseless Floor Hinge, ℔ set, $5.00.....20&10@30%

Extra 5@10% often given.

Wrought Iron Hinges—

List February 14, 1891.
Strap and T.....50&10@50&10&10%
Corrugated Strap and T.....50&10&5%
Screw Hook and Strap..... { 6 to 12 in., ℔ ℔.. 4¢ / 14 to 20 in., ℔ ℔..8½¢ / 22 to 36 in., ℔ ℔.. 3¢
Screw Hook and Eye.... { ½ in., ℔ ℔ 7½¢ / ⅝ in., ℔ ℔ 5½¢ / ¾ in., ℔ ℔ 4½¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 252 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10¢
Plate Hinges "Providence" { 8, 10 & 12 in., ℔ ℔.....5¢ / over 12 in. ℔ ℔.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat } 60&5
Am. Axe and Tool Co., S. & O. Pat } @60&10%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....6@10%

Handled—

Garden, Mortar, &c.....70@70&5&2%
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%
Magic.....℔ doz $4.00

Hog Rings and Ringers—

See *Rings and Ringers—*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow-Ware—

See *Ware, Hollow.*

Holders—

Bag—

Sprengle's Pat.....℔ doz $18....60%

Bit—

Extension.
Barber's, ℔ doz $15.00.....40@40&10%
Ives, ℔ doz $20.00.....60&5@60&10%
Diagonal.....℔ doz $24.00, 40%
Angular.....℔ doz $24.00, 40&5%

File and Tool—

Balz Pat.....℔ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—

Motley's Adj. Sash, Medium Size.....℔ doz $1.20, 40%

Hooks—

Cast Iron—

Bird Cage, Sargent's List ... } 60&10&10%
Bird Cage, Reading..... }
Clothes Line, Sargent's list
Clothes Line, Moore's.....70%
Clothes Line, Reading list 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading. 50&10@50&10&10%
Coat and Hat, Moore's.....70%

Wrought Iron—

Cotton.....℔ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg.Co....50%
Wrought Staples Hooks, &c. See Wrought Goods

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....60&10@60%
Belt.....80&15@80&20%
Atlas, Coat and Hat.....65%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Bright Wire Goods—See Wire.

Miscellaneous—

Grass,No.2, $2.00; No.3, $2.10; No. 4, $2.25
Nolin's Grass.....℔ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—

See *Shoes, Horse.*

Hose, Rubber—

Competition, Fair quality.....75@75&10%
Competition, Low Grade.....80@80&10
Standard.....70&10&70@10&5%
Extra.....60&10@60&10&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40&5@50%
N. Y. B. & P. Co., Dundee.....60@60&5%
Cotton Garden, ¾ in., coupled:
Fair Quality, ℔ ℔.....7¢
Good Quality, ℔ ℔.....8½¢

Huskers—

Blair's Adjustable.....℔ gr $8.00
Blair's Adjustable Clipper.....℔ gr 7.00
Hubbard's Solid Steel.....℔ gr 4.50

Indurated Fiber Ware—

See *Ware, Indurated Fiber.*

Irons.

Sad—

From 4 to 10, at factory....℔ 100 ℔, $2.30@$2.40
Self-Heating.....℔ doz $8.00
Self-Heating Tailors'.....℔ doz $18.00
Mrs. Potts' Sad Irons, per set:

No.	50	55	60	65
Small lots	.90	.85	1.05	.95

Crown Improved.....60&10%
Ideal Irons, new list...60&10@50&10&10%
Salamander Irons.....25%
B. B. Sad Irons, ℔ ℔.....3@3½¢
Chinese Laundry (N.E.Butt Co.).8½¢, 15%
New England.....5¢, 20@20&5%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓&%
National Self-Heating.....30%

Soldering—

Soldering Coppers.....℔ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886, 55&2%
Tinker's Dread..℔ doz $1.75; ℔ gro. $18

Pinking—

Pinking Irons, ℔ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—

Daisy.....33⅓&%
Victor.....33⅓&%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Stamped Brass Kettles.....℔ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—

Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.

Wilson's Butcher Knives, List Dec 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AA A1 Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....25@30%
Ames' Bread Knives, ℔ doz $1.50, 15@20%
Moran's Shoe and Bread.....20@20&10%
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—

Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—

Witherby..... } ...75@75&10&5%
P., S. & W..... }
Mix..... }
New Haven..... }
Merrill..... 60&10@60&10&5%
Douglass.....75&75@5%
Watrous.....15&10@25%
L & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓&%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, from jobbers....$6.50@$7.50
Wadsworth's.....40&7½@40&10%
Carter's Needle...℔ doz. $11.00@$11.50
Heath's.....℔ doz. $13.00@$13.50
Nolin's Hay.....℔ doz. $7.00@$8.00

Mincing—

Am. (2d quality), ℔ gr., 1 blade, $7 2 blades, $12; 3 blades, $18..... net
Lothrop's.....20&10%
Smith's, ℔ doz., Single, $2; Double $3 45@50%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable....℔ doz. $3.00, 33⅓&

Knobs—

Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nicke..l....$2.00@$2.25
Drawer, Porcelain... .60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885 ..40%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....℔ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladders.

Davies Extension and Single.... 20&5%

Ladies—

Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, P., S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Regular, with Guard.....℔ doz $3.50
O. K., with Guard.....℔ doz $3.75
Side Lift, with Guard.....℔ doz $4.00
Square Lift, with Guard.....℔ doz $4.25
Anti-Friction, with Guard....℔ doz $4.50
Brass Plated, Sq. Lift, Guard.℔ doz $5.50
Cop. Plated, Sq. Lift, Guard..℔ doz $5.50

Bull's Eye Police—

2¾-inch regular.....℔ doz $3.60
3-inch regular.....℔ doz $3.90
2¾-inch flash light.....℔ doz $4.00
3-inch flash light.....℔ doz $4.50

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Wollensak's:
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Class 3 and 4, Brass.....50%
Skylight Lifters.....25%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....60@60&10%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—

Cotton and Linen Fish.....50%
Chalk.....60%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ℔ gro.....25%
Mason's Linen, No. 3½, $1.50; No 4, $2.00; No 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes..Nos. 18 19 20
100 ft..... $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..℔ doz $7.50..20%
Ossawan Mills, Chalk, Twisted, 60%; Chalk, Soft Braided, 50% Chalk, Braided, 25%.

Links, Open—

Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List, March '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39..... 40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Champion Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&10%
Champion Cab. and Combin.....33⅓&%
Yale.....net prices
Romer's.....25%

Door, Locks, Latches

R. & E. Mfg. Co., list Mar.20, 1889..... } 60&10@70% Much lower net prices often made
Mallory, Wheeler & Co list July, '88..... }
Sargent & Co., List Aug. 1, '88

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Britain, Graham & Mathes, list Jan. 1890.....60&10&10%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Warner's Burglar Proof, ₩ doz. $8.00, 50%

Elevator—

Moore's.....33⅓%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list.....50&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505.....15%
A. E. Deitz.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₩ doz $9, 50&50&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Scandinavian.....90&40%
E. T. Fraim's Keystone Scandinavian,
1010 line.....90&40%
120 line.....90&25%
109 line.....65%
510 line.....70&10%
225, 610 and 209 lines.....70%
All other numbers.....50&5%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker, Barry & Co.
No. 1010 line.....90&5%
No. 41 line.....50%
No. 61 line.....60%
No. 21 line.....80%

Sash, &c.—

Clark's No. 1, $10; No. 2, $8 ₩ gr.....33⅓&%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₩ gr $4.00
Common Sense, Nickel Plated.....₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Ives' Patent.....60&10&5@60&10&10%
Fish (Liesche's pat.), No. 100, ₩ gr., $8; No. 105, ₩ gr., $10.....50%
Davis Bronze, Barnes Mfg. Co.....60%
Champion Safety list January, 1893.70&5%
Security.....70%
Giant, list Jan., 1892.....70&5%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—

See *Tools, Lumber.*

Lustro—

Four-ounce bottles.....₩ doz, $1.75; ₩ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.
Douglas		$5.50	$6.75
Snell's, Rice's Pat...	5.50	6.75	40&10&10%
Jennings'.....	5.50	6.75..	50@50&5%
Other Machines..	2.25	2 50	
Phillip's Patent with Augur.....	7.00	7.50	
Millers Falls.....		7.50	25%

Boss, Carpenters' 3.60
Boss, Ship Bldrs'. 3.85

Fluting—

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3½-inch Rolls, $2.15.....35%
Eagle, 5½-inch Rolls, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal, ₩ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25.....30%
Shepard Hand Fluter, No. 85, per doz $15.50.....40%
Shepard Hand Fluter, No. 110, ₩ doz $11.00.....40%
Shepard Hand Fluter No. 95, ₩ doz $3.00.....40%
Combined Fluter and Sad Iron. ₩ doz $15.00.....30%

Hoisting—

Moore's Hand Hoist, with Lock Brake.20%
Moore's Anti-Friction Differential Pulley Block.....20%
Moore's Rope Differential Pulley Block.....60%
Energy Mfg. Co.'s.....25%
See also *Blocks.*

Washing—

Anthony Wayne, ₩ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American.....₩ doz $36.00
Western Star ₩ doz, No. 2, $36; No. 3 $39
Weisell.....₩ doz $54.00
Fair and Square.....₩ doz $42.00

Mallets—

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks—Regular list. 60&10@60&10&5%

Measures—

Standard Fibreware, No. 1, peck ₩ dozen, $3.50; ½-peck, $3.00

Meat Cutters—

See *Cutters, Meat.*

Menders, Harness—

Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—

Box and Side, List, Jan. 1, 1888..60@60&5%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%
Waddel's New Box Mills, Ideal Brand, New List.....60%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Best Machines: 10-in., $4; 12-in., $4.50; 14-in., $5; 16-in., $5.50; 18-in., $6.
Low-Grade Machines:
10-in. $3; 12-in., $3.25 14-in., $3.50 each

Muzzles—

Safety.....₩ doz, $3.00, 25%

Nails.—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92.....85&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

	Nos. 6	7	8	9	10	
American	9¼	9¼	9¼	9¼	9¼	net
Ausable	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	.30&5%
Essex	28¢	2¢	25¢	24¢	23¢	40&10@50%
Lyra	9¼	1		9¼	9¼	net
Snowden	9½	½	9½	9½	9½	net
Standard	23¢	21¢	20¢	19¢	18¢	.35%
Vulcan	23¢	21¢	20¢	19¢	18¢	.25%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	40%
A. C.	25¢	23¢	22¢	21¢	21¢	40&10%
Maud S.	25¢	23¢	22¢	21¢	21¢	50&10&5%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&2%
Champion	25¢	23¢	22¢	21¢	20¢	10&10&10%
Capewell.	19¢	18¢	17¢	16¢	16¢	..10&5%
Anchor	23¢	21¢	20¢	19¢	18¢	.35%
Western	23¢	21¢	20¢	19¢	18¢	.50%
Empire Bronzed						.13@14 ₩ ℔

Picture—

Brass Head, Sargent's list.....60@60&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list.40&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	.5.80¢	6.50¢ off list
Cold Punched	.5.00¢	5.10¢ off list

In packages of 100 ℔, add 1-10¢ ₩ ℔ net; in packages less than 100 ℔, add ½¢ ₩ ℔, net.

Oakum—

Best or Government.....₩ ℔ 6¾@7¼¢
U. S. Navy.....₩ ℔ 5¾@6¢
Navy.....₩ ℔ 5¢@5¼¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Steel, Draper & Williams.....50%
Wilmot & Hobbs Mfg. Co., Steel Anti-Rust.....60%

Openers, Can—

Messenger's Comet.....₩ doz $3.00, 25%
American.....₩ gross $2.75@$3.00
Duplex.....₩ doz 25¢, 15@20%
Lyman's.....₩ doz $3.75, 20%
No. 4, French.....₩ doz $2.25, 55@60%
No. 5, Iron Handle.....₩ gr $6.00, 45@50%
Eureka.....₩ doz $2.50, 10%
Sardine Scissors.....₩ doz $2.75@3.00
Star.....₩ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 66⅔&70%
Excelsior, No. 1 $2.50; No. 2, $1.50.....40%
World's Best ₩ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₩ doz $3.00.....55&5%
Domestic, ₩ doz $2.00.....45%
Champion, ₩ doz $2.00.....50%
Moore's.....70%

Packing, Steam—

Rubber—

Standard, fair quality.....70@70&10%
Inferior quality.....75@80%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₩ ℔ 80¢.....25@25&5%

Miscellaneous—

American Packing.....10@11¢ ₩ ℔
Russia Packing.....14¢ ₩ ℔
Italian Packing.....13@14¢ ₩ ℔
Cotton Packing.....15@17¢ ₩ ℔
Jute.....7@8¢ ₩ ℔

Pails—

Creamery—

S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 ₩ doz.....5 ¢

Galvanized—

	Quarts	10	12	14
Hill's Light Weight, ₩ doz.	$2.75	3.00	3.25	
Hill's Heavy Weight, ₩ dz.	3.00	3.25	3.75	
Sidney Shepard & Co.	2.50	2.75	3.00	
Central Stamping Co.	2.50	2.75	3.00	
Iron Clad	2.50	2.75	3.00	
Fire Buckets	2.75	3.25	3.50	

Buckets—See Well Buckets.

Indurated Fiber Ware

Star Pails, 12 qt.....₩ doz $4.20
Milk, 14 qt.....₩ doz $5.40
Stable, 14 qu.....₩ doz $6.00
Fire Pails, deep.....₩ doz $4.80
Fire Pails, round bottom.₩ doz $5.40
} 25%

Standard Fiber Ware—

	Plain.	Deer'd
Water Pails, 12 qt., ₩ doz.	$3.15	$3.75
Dairy Pails, 14 qt., ₩ doz.	3.75	4.25
Fire Pails, No. 1, 12 qt., ₩ doz	3.75	
Fire Pails, No. 2, 14 qt., ₩ doz	4.25	
Sugar Pails	5.50	6.00
Horse Pails	4.50	
Buggy Pails	3.50	
Slop Jars (bal. trap)	7.50	8.50
Chamber Pails, 14 qt.	6.00	7.00

Pans—

Dripping—

Small sizes.....₩ ℔ 5½¢
Large sizes.....₩ ℔ 5¢
Silver & Co. (Covered).....40%

Fry—

Standard List:

No.	0	1	2	3	4
₩ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
₩ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....66⅔&%

Dust—

Steel Edge, No. 1.....₩ doz $1.75

Roasting and Baking—

Columbian, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each.....60&10%

Paper and Cloth—

Sand and Emery—

List April 19, 1886.... 50&10@50&10&10%
Sibley's Emery and Crocus Cloth.....30%

Parers—

Apple—

Advance	₩ doz $4.75
Baldwin	₩ doz 5.25
Bonanza	each 5.00
Daisy	₩ doz 4.00
Dandy	each 7.50
Eclipse	₩ doz 4.00
Eureka, 1888	each 16.00
Family Bay State	₩ doz 12.00
Favorite	₩ doz 5.00
Gold Medal	₩ doz 4.00
Ideal	₩ doz 4.00
Improved Bay State	₩ doz 27.00@30.00
Little Star	₩ doz 4.50
Monarch	₩ doz 13.50
New Lightning	₩ doz 5.50
Oriole	₩ doz 4.00
Penn	₩ doz 3.00
Perfection	₩ doz 4.00
Pomona	₩ doz 4.00
Rocking Table	₩ doz 6.00
Turn Table	₩ doz 4.50
Victor	₩ doz 13.50
Waverly	₩ doz 4.00
White Mountain	₩ doz 4.00
Reading 72	₩ doz 4.25
Reading 78	₩ doz 7.00

Potato—

White Mountain	₩ doz $4.50
Antrim Combination	₩ doz $5.50
Hoosier	₩ doz $13.50
Saratoga	₩ doz $5.50

Pencils, Soapstone—

See *Crayons.*

Pickers, Fruit—

Prize Fruit Pickers.....50%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10&5@60&10&10&5%

Picture Nails—

See *Nails, Picture.*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co.'s, $17 and $18.....60&10%
Peck, Stow & W. Co....50&10@50&10&5%

Escutcheon—

Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List April 13, 1893.

1¼ and under, Plain	57½&10%
1¼ and under, Galv.	50&10%
1½ and over, Plain	67½&10%
1½ and over, Galv.	57½&10%

Boiler Tubes, list Oct. 24, 1892.....65&10%
Casing, list Nov. 16, 1892.....52½&10%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%
Cold Drawn Seamless Steel Tubing..50%

Planes and Plane Irons—

Wood Planes—

Molding.....40&10%
Bench, First quality.....45&10%
Bench, Second quality.....50&10%
Bailey's (Stanley R. & L. Co.) .50&10%

Iron Planes

Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steers' Iron Planes.....50@50&5%
Meriden Mal. Iron Co.'s.....50@50&5%
Davis' Iron Planes.....50@50&5%
Birmingham Plane Co.....60@60&5%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....50@50&5%
Sargent's.....60@60&10%
Standard Tool Co.....50@50&5%

Plane Irons—

Butcher's.....$5.00@$5.25 to
Buck Bros.....30

Auburn Thistle.....
Ohio.....
Sandusky.....
} .30&10@30&10&10&10%
L. & I. J. White.....25%
Stanley R. & L. Co.....50&10%

Plates—

Felloe.....₩ ℔ 6¢@6¼¢

Pliers and Nippers—

Button's Patent.....60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₩ doz.....40%
Humason & Beckley Mfg. Co. 50@50&10%
Lindsay's Giant.....33⅓%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P., S. & W. Cast Steel.....50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₩ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in.....$20
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels—

Regular List.....75&10@75&10&10%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Cook's.....40&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis Inclinometers.....10&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₩ doz. No. 1, $6.00; No. 2, $9.00.....33⅓%
Silver & Co., 6-Ring, ₩ doz, $4.00; 3-Ring.....$2.00

Pokes, Animal—

Bishop s I. X. L.....₩ doz $6.00
Bishop's Monarch.....₩ doz $4.50
Bishop's Pioneer.....₩ doz $4.00
Bishop's American.....₩ doz $3.00
Eagle, Double Stale.....₩ doz $5.75
Eagle, Single Stale.....₩ doz $3.75
Buckeye, Single Stale.....₩ doz $2.75
Bolding.....₩ doz $6.00
Metallic Horse Poke.....₩ doz $6.00

Police Goods—

R. I. Tool Co., Handcuffs, $15.00 ₩ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₩ doz 10%
Tower's.....25%
Daley's Improved Handcuffs; 2 Hands, Polished, ₩ doz, $48.00; Nickeled, $57.00: 3 hands, Polished, ₩ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish—

Metal—

Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Stove—

Joseph Dixon's.....₩ gro, $6.00, 10%
Gem.....₩ gro, $4.50, 10%
Gold Medal.....₩ gro, $6.00, 25%
Lustro.....₩ gro, $4.75
Ruby.....₩ gro, $3.75
Rising Sun, 5 gro lots.....₩ gro, $5.50
Dixon's Plumbago.....₩ ℔ 8¢
Boynton's Noon Day.....₩ gro, $13.00
Parlor Pride Stove Enamel, ₩ gro,
Yates' Liquid, 2 3 5 10 gal
₩ gal...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ₩ ℔ 12½¢
Jet Black.....₩ gro $3.50
Japanese.....₩ gro $3.50
Fireside.....₩ gro $2.50
Diamond O. K. Enamel.....₩ gro $19.00
Bonnell's Liquid Stove Polish, ₩ gro $9.00
Bonnell's Paste Stove Polish, ₩ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₩ gro $6.00
Crown Paste.....₩ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ₩ ℔ 12¢
Black Flag.....₩ gro $7.20
Black Flag, 5 and 10 ℔ pails.....₩ ℔ 12¢
Black Flag, liquid, in bottles, ₩ gro $8.00
Diamond Rock Nickel Cleaner ₩ gro $10 20
Raven Liquid, 6 oz. bottles.....₩ gro $8.00
Raven Liquid, 8 oz. bottles..₩ gro $9.00
Raven Water Polish, large boxes.....₩ gro $7.20
Raven Paste in 5 lb. pails (cases of 6 pails), ₩ ℔ 10¢

Poppers, Corn—

Round or Square,
1 qt.....₩ doz $1.00; ₩ gr $8.00
1½ qt.....₩ doz $1.00; ₩ gr $9 00
2 qt.....₩ doz $1.50; ₩ gr $14.00

Post Hole and Tree Augers and Diggers—

See *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Powder—

In Canisters—

Fine Sporting, 1 ℔ each.....
Duck, 1 ℔ each.....
Rifle, 1 ℔ each.....
Rifle, ½ ℔ each.....

In Kegs—

Rifle, 25-℔ kegs.....
Rifle, 12½-℔ kegs.....
Rifle, 6¼-℔ kegs.....
Duck, 25-℔ kegs.....
Duck, 12½-℔ kegs.....
Duck, 6¼ ℔ kegs.....

For revised prices see Trade Report.

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....25%
Yenis.....₩ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....₩ doz $2.75

Pruning Hooks and Shears—See *Shears.*

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Pullers Nail—
Scranton.....₩ doz., $18.00, 33⅓%
Giant, No. 1.....₩ doz., $18.00, 10%
Giant, No. 2.....₩ doz., $15.00, 10%
Pelican.....₩ doz., $9.00, 25%
Eclipse.....₩ doz., $24.00, 40%
Economy.....₩ doz., $6.00

Pulleys—
Hot House, Awning, &c.....66⅔@70%
Japanned Screw.....60&10&10%
Brass Screw.....70%
Japanned Side.....60&10&10%
Moore's Side, Anti Friction.....50%
Moore's Ceiling or End, Anti-Friction.40%
Moore's Dumb Waiter, Anti-Friction.50%
Moore's Electric Light.....33⅓%
Japanned Clothes Line.....60&10%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5 70.....50%
Hay Fork, "F" Common and Patent Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating....60%
Hay Fork, Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00.....40%
Shade Rack.....45%
Tackle Blocks—See Blocks.
Shepard's Niagara, No. 25..₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense.....60%
Empire.....60%
Ideal, Nos. 2, 4, 10 & 15 / Acme / Star } 30% less 1¢ ₩ doz net.
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. ..₩ doz. 22¢ net.

Pumps—
Cistern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddler's or Drive, good..₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Springfield Socket..65%
Spring, good quality..₩ doz., $2.50@$2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Check.....55%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44.....55%
Tinners' Hollow Punches, P., S. & W. Co.....20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches.....20&2%
Niagara Solid Punches.....55%

Rail—
Sliding Door, Wr't Brass....₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron..₩ ft., 7¢
Sliding Door, Iron, Painted..₩ ft., 4¢, 40%
Barn Door, Light..In. ½ ⅝ ¾
Per 100 feet.....$2.00 2.50 3.10, 10%
B.D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet.....$3.15 2.70 3.25 Net
Terry's Steel Rail.....₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot.....50&2%
Carrier, double braced, Steel Rail, ₩ foot.....3½@4¢
Lundy Parlor Door, Planed Edge, ₩ ft.7¢
Moore's Steel Rail.....25&10%
Moody Steel Rail ₩ ft., 5¢.....45%

Rakes—
Cast Steel, Association g'ds..70@70&5&2%
Cast Steel, outside g'ds,.....70@70&5&2%
Malleable.....70@70&5%
Gibbs' Lawn Rake.....₩ doz., $4.90
Gibbs' Canton Lawn Rake..₩ doz., $3.75
Gibbs' Acme Lawn Rake....₩ doz., $4.75
Gibbs' Favorite Lawn Rake.₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1.....₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake.....₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless.....65%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—
J. R. Torrey Razor Co.....Net prices
Wostenholm and Butcher, $10 to £...10%
Jordan's AAA1, new list.....Net prices
Jordan's Old Faithful, new list.Net prices
Galvanic.....₩ doz., $15.00
Electric Cutlery Co.....Net prices
Campbell Cutlery Co.....60%

Razor Strops—
See *Strops, Razor.*

Registers —
Moore's Japanned.....75%
Moore's Electroplated.....75%
Moore's Bronze Finishes.....70%
Moore's Solid Bronze.....65%
Moore's Stove Pipe.....33⅓

Rings and Ringers—
Bull Rings—
Union Nut Co.....55%
Sargent's.....75&10%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list.....50@50&10%
Hog—
Top of the Hill Ringers..₩ doz $2.00
Top of the Hill Rings.....₩ doz $1.25
Hill's Improved Ringers.....₩ doz $1.25
Hill's Old Style Ringers.....₩ doz $1.12½
Hill's Tongs.....₩ doz $3.00
Hill's Rings.....₩ doz bxs $1.00
Perfect Rings.....₩ doz bxs $1.50
Perfect Ringers.....₩ doz $2.15@$2.25
Blair's Hog Ringers.....₩ doz $2.00
Blair's Hog Rings.....₩ doz 90¢@$1.00
Champion Ringers.....₩ doz $2.00
Champion Rings, Double.....₩ doz $2.25
Brown's Ringers.....₩ doz $2.00
Brown's Rings.....₩ doz $1.15@$1.25
Electric Hog Rings.....₩ doz boxes $1.50
Electric Hog Ringers.....₩ doz $2.00
Major Rings.....₩ doz $1.25
Major Ringers.....₩ doz $2.00

Rivets and Burrs—
Norway Iron, list Nov. 17, '87....60&10%
Second quality.....70%
Copper.....60@60&10%
Coppere Iron, Betina Brand.....50&5%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—
Stair, Brass.....25@30%
Stair, Black Walnut.....₩ doz 40¢

Rollers—
Barn Door, Sargent's list. ....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.... .....70%
Moore's Barn Door Stay.....60%
Thompson Mfg. Co.'s Lawn Rollers ..30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ¼¢@½¢ on large lots; terms, 1% 5 for cash.
Manila, 7-16 in. diam. and larger₩ ℔ 8½¢
Manila.....⅜ in. ₩ ℔ 9 ¢
Manila.....¼ and 5-16 in. ₩ ℔ 9½¢
Manila, Tarred Rope.....₩ ℔ 8 ¢
Manila, Hay Rope, Medium....₩ ℔ 8½¢
Sisal.....7-16 inch and larger ₩ ℔ 6¾¢
Sisal.....⅜ in. ₩ ℔ 7¼¢
Sisal.....¼ and 5-16 in. ₩ ℔ 7¾¢
Sisal, Hay Rope.....₩ ℔ 6¾¢
Sisal, Tarred Rope.....₩ ℔ 6¼¢
Sisal, Medium Lath Yarn.....₩ ℔ 6½¢
New Zealand..7-16 in. & larger ₩ ℔ 6½¢
New Zealand.....⅜ inch, ₩ ℔ 6¾¢
New Zealand..¼ and 5-16 inch, ₩ ℔ 7¼¢
New Zealand, Hay Rope.....₩ ℔ 6¾¢
New Zealand, Tarred Rope.....₩ ℔ 6 ¢
Cotton Rope.....₩ ℔ 13¼@16¢
Jute Rope.....₩ ℔ 6½@7¢

Wire—
List February, 1892. All kinds.....45%

Rules—
Boxwood.....80&10&10@80&10&10&10%
Ivory.....50&10%
Starrett's Steel Rules and Straight Edges.....25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—
See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—
Note.—Extra 5@10% often given.
Disston's Circular.....45@45&5%
Disston's Cross Cut, list Jan. 1,'93.40&10%
Disston's Hand.....25%
Woodrough & McParlin.
Hand, Panel and Rip.....25&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....30&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Atkins' Circular.....50&10%
Atkins' Cross Cuts, new list.....40%
Atkins' Mulay, Mill and Drag.....50&10%
Atkins' One-Man Saw.....40%
Atkins' Wood Saws.....40%
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip.....25@25&5%
Peace Cross Cuts, list Jan. 1,'93...45&10%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts, list Jan.1, '93.45&10%
Richardson's Hand, &c.....25@25&5%
C E. Jennings & Co.'s.....25%

Hack Saws—
Griffin's, complete.....40&10@50
Griffin's Hack Saw Blades.....40&10@50
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—
Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab Makers'$15,25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—
Hatch, Counter, No. 171, good quality, ₩ doz $18.00@$19.00
Hatch, Tea, No. 161....₩ doz $6.50@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales.....50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10
Riehle Bros.' Platform.....40%

Scale Beams—
See *Beams, Scale.*

Scissors, Fluting..... 45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%
Box, 1 Handle.....₩ doz $2.00
Box, 2 Handle.....₩ doz $3.00@$4.00
Defiance Box and Ship.....20&10%
Foot.....50&10@80%
Ship, Common.....₩ doz $3.50
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—
See *Drivers, Screw.*

Screws—
Bench and Hand—
Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....35%
Coach, Lag and Hand-Rail—
Lag, Blunt Point, list Jan. 1, 1890.....80&10@80&25%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....80&10@80&20%
Hand Rail, Sargent's.....70&10%
Hand Rail, H. & B. Mfg. Co....70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws—
Jack Screws, Millers Falls list.50@50&10%
Jack Screws, P., S. & W.....35%
Jack Screws, Sargent.....70%
Jack Screws. Stearns'.....40@40&10%
Cork—
Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Williamson's Forged Worm, Applewood Handle, ₩ doz., $6.00; Rosewood, $5.50.....40%
Detroit Cork Screw Co.....33⅓%
Machine—
Flat Head Iron.....65%
Round Head Iron.....60%
Wood—
List January 1, 1891.
Flat Head Iron.....70% / Round Head Iron.....65% / Flat Head Brass.....70% / Round Head Brass.....65% / Flat Head Bronze.....70% / Round Head, Bronze'.....65% } Extra 10& 10% often given.
Rogers' Drive Screws.....82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—
Grain.....40&5@40&10%
Grass.....40&10&50%

Scythe Snaths—
See *Snaths, Scythe.*

Sets—
Awl and Tool—
Aiken's Sets, Awls and Tools, No. 20, ₩ doz$10.00.....60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....45%
Millers Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50...70&10&5%
Nail—
Square.....₩ gr. $4.00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr. $12, 20%
Rivet—
Regular list.....70%
Saw—
Stillman's Genuine....₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $6.50.....55@55&10%
Common Lever.....₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00.....40&20%
No. 11, $16.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00...40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
Leach's..No. 0, $8.00; No. 1, $15...15@20%
Nash's.....20&10@40%
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat.45%
Bemis & Call Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Co.'s Cross Cut.....30&5%
Aiken's Genuine.....$13.00, 60@60&10%
Aiken's Imitation.....₩ doz $3.00@$3.25
Hart's Pat. Lever.....20%
Disston's Star.....25%
Leopold.....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10@50%
Avery's Saw Set and Punch.....50%
Kohler's Royal.....₩ doz $7.00
Kohler's Giant Royal.....₩ doz $12.00
Crescent.....₩ doz $3.00
Lloyd's Acme.....₩ doz $15, 40&10%
Taintor Positive.....₩ doz $18, 50%

Sharpeners, Knife—
Larkins'.
Applewood Handles...₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%

Shaves, Spoke—
Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's ₩ doz. $9.00.....25%

Shears—
American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers..₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality.....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears...75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Hatch Cutlery Co., Solid Steel Forged.60%
Davenport Cutlery Co.....60@60&10%
Clauss brand, Japanned.....70%
Clauss brand, Nickeled, same list.....60%
Galvanic 3½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co.....Net
Campbell Cutlery Co., Jap'd....75%
Nickel Plated.....65%

Tinners' Snips—
Wrt. Handles, Steel Blades..20@20&10%
Niagara Snips and Shears. ...20&10%
Cast Handles, Laid with Steel ...40%

Pruning Shears and Hooks—
Disston's Combined Pruning Hook and Saw.....₩ doz. $18.00, 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 20&10%
E.S.Lee & Co.'s Pruning Tools.50&10@70%
Pruning Shears, Henry's Pat. ₩ doz. $3.50@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₩ doz $12.00
Dunlap's Saw and Chisel, ₩ doz $8.50,30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co.....60%
Levin Pruner No. 1, $15.00 ₩ doz 40&3%
Levin Pruner No. 2, $21.00 ₩ doz.. 40&3%

Tinners', &c.—
Shears and Snips (P. S. & W.).... 20@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—
Sliding Door
M. W. Co., list July, 1888....50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction..50%
Sliding Shutter—
R. & E., list Dec. 18, 1885. 60&10&2%
Sargent's list.....70%
Reading list.....60&10&10%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list).....20&10&2%
Prize.....40&2%
Star, Club, Rival and Climax Brands.....33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge..33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax 65&2%
Shells, Loaded
Standard List, July 19, 1890.....40&10&10@40&10&10&5% 7% cash, 10 days.

Ship Tools—
L. & I. J. White.....20&5

Shoes, Horse, Mule, &
Horse—
Burden's, Perkins', Phœnix, Standard, Diamond State, Bryden's Boss and Crescent, at factory.....$4.00
Bryden's Frog Pressure, at factory .$5.00
Mule—
Add $1 ₩ keg to above prices.
Ox Wrought—
Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot—
Small lots.
Drop, up to B, 25-℔ bag....$1.45
Drop, up to B, 5-℔ bag.....35
Drop, B and larger, 25-℔ bag.....1.70
Drop, B and larger, 5-℔ bag.....40
Buck and Chilled, 25-℔ bag.....1.70
Buck and Chilled, 5-℔ bag .40
Dust Shot, 25-℔ bag.....2.00
Dust Shot 5-℔ bag.....45
In ton lots a discount of 6¢ ₩ bag (25 ℔ bags) is made, and 2½¢ for cash.

Shovels and Spades
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
Note.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&5%
Griffith's Solid C. S. R. Goods.....20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....30%
Payne Pettebone & Son.....33⅓ &5%
Remington's (Lowman's Pat.)40&10@50%
Rowland's Black Iron..50&10@50&10&5%
Rowland's Steel.....60&5@60&10%
Terra Haute Shovel & 25%

Shovels and Tongs—
Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves and Sifters—
Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co.. 50&25&20%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $21 00
Electric Light..₩ doz $1.50; ₩ gro $16 00
A. & W. Sifters.....₩ gr $15.00
Hunter's Genuine. ₩ doz $1 75, ₩ gr $16.50
Hunter's Imitation.....₩ doz $1.75; ₩ gr $15 00

Sieves, Wooden Rim—

	Iron	Plated
Mesh 18, Nested, ₩ doz....	$0.80	$1.00
Mesh 20, Nested, ₩ doz....	.95	1.10
Mesh 24, Nested, ₩ doz..	1.15	1.25

Sinks, Wrought Steel
Columbus, Painted or Unpainted... 30@30 &10%
Columbus, Galvanized and Enameled. 50@50 &10%
New Era, Painted.....40&10@ 50&5%
New Era Galvanized and Enameled.. 60&10&10@70&5%

Skeins, Thimble—
Western list.....75&5@75&10%
Columbus Wrt. Steel, Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....60%
Utica, P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—
School, by case.....40@40&10%
Large lots.....40&10&5@50%

Slaw Cutters—See *Cutters.*

Sleds Han
Tubular Steel ....₩ doz. $24@50%.00, 40 (Lots of 6 doz. 50%)

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Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.) 65%
Fitch's "Bristol" ..... 50&10%
Hotchkiss 10%
Andrews 60%
Sargent's Patent Guarded ..... 70&10&10%
German, new list ..... 40&10%
Covert ..... 50&10&5&2%
Covert, New Patent ..... 50&10&5&2%
Covert, New R. E. ..... 60&10&5&2%
Covered Spring ..... 60&10&10%
Covert's Saddlery Works' Triumph ..... 33⅓&5
John Brots Snaps ..... 75@75&5%
Kelley & Woolworth's Steel Harness ..... 50&10@60%

Snaths—

Scythe ..... 50&2@50&5&2%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₩ doz., No. 5, $8; No. 6X, $9
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list ..... 70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list ..... 70&10%
Buffalo, S. S. & Co. ..... 33⅓&2%

Silver Plated—

4 months or 5% cash 30 days:
Meriden Brit. Co., Rogers ..... 40&15%
Rogers & Hamilton ..... 40&15%
C. Rogers & Bros ..... 40&15%
Rogers & Bros ..... 40&15%
Reed & Barton ..... 40@40&5%
Wm. Rogers Mfg. Co. ..... 40, 15&5%
Simpson, Hall, Miller & Co. ..... 40, 15&5%
Holmes & Edwards Silver Co. ..... 40, 15&5%
L. Boardman & Son ..... 50&12½&5

Miscellaneous—

Holmes & Edwards Silver Co.:
No 0 of Mexican Silver ..... 50&10&5%
No 30 Silver Metal ..... 50&10&5%
No 24 German Silver ..... 50&10&5%
No 50 Nickel Silver ..... 50&5%
No 40 Nickel Silver ..... 50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal ..... 50&10&5%
18% Rogers' German Silver ..... 60&5%
22% Rogers' Nickel Silver ..... 50&5%
Rogers & Hamilton:
Steel Goods ..... 40&10%
Cimetar, Flatware ..... 40&15&5%
Cimetar, Steel Goods ..... 40&10%
Crown Hamliton, Flatware and Cutlery 30%
German Silver ..... 60@50&5%
Nickel Silver ..... 50&5@50&10&5% cash
Brittannia ..... 60@60&5%
Boardman's Nickel Silver, list July 1, 1891 ..... 60&7½&5%
Boardman's Brittannia Spoons, case lots ..... 60&5% cash

Springs—

Door—

Torrey's Rod, 39 in. ..... ₩ doz $1.20@1.2
Warner's No. 1, ₩ doz $1.50; No. 2, $3.40 ..... 55@55&10%
Gem (Coil), list April 19, 1886 ..... 20%
Star (Coil), list April 19, 1886 ..... 20&10%
Victor (Coil) ..... 60&10@60&10&5%
Champion (Coil) ..... 60&10@60&10&10%
Cowell's, No. 1, ₩ doz $18.00; No. 2, $15.00 ..... 50@50&10%
Rubber, complete, ₩ doz $4.50 ..... 55&10%
Hercules ..... 50@50&10%
Phœnix ..... 33⅓&5

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll ..... 60&10@60&10&10&10 or net prices
Cliff's Bolster Springs 25%

Squares—

Steel and Iron } ..80&10&10@80&25%
Nickel-Plated }
Try Square and T Bevels ..... 60&10&10%
Disston's Try Square and T Bevels 50%
Winterbottom's Try and Miter ..... 30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

Squeezers—

Fodder—

Blair's ..... ₩ doz $2.00
Blair's "Climax" ..... ₩ doz $1.25

Lemon—

Porcelain Lined, No. 1 .... ₩ doz $6.00 ..... 25&30%
Wood, No. 2 ..... ₩ doz $3.00, 35%
Wood, Common ..... ₩ doz $1.70@1.75
Duniap's Improved .... ₩ doz $3.75, 20%
Sammis ..No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz ..... 25&10%
Jennings' Star ..... ₩ doz $2.50
The Boss ..... ₩ doz $2.50
Dean's ..No. 1, ₩ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant ..... 50@50&5%
King ..... 40&5%
Hotchkiss Straight Flash ... ₩ doz $12.00
Silver & Co. Glass ..... ₩ gro. $9.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Barbed Blind, ½ in. and larger, ₩ ℔ 7@7½¢
Barbed Blind, ¾ in. ..... ₩ ℔ 8@8½¢
Fence Staples, Galvanized. } Same price as Brd Wire
Fence Staples, Plain. } See Brd. Rep
Grand Crossing Tack Co.'s list ..75&10%

Steelyards ..... 40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods 35%
Butterfield's Goods 35%
Lightning Screw Plate ..... 25@30%
Reece's New Screw Plates ..... 25@30%
Reversible Ratchet 30%
Gardner 25%
Green River ..... 25@30%

Stops, Bench—

Morrill's, ₩ doz, No. 1, $10.00; No. 2, $11.00 ..... 40&20%
Hotchkiss' ..... ₩ doz, $5, 10@10&10%
Weston's, No. 1, $10, No. 2, $9. 25&10&5%
McGill's, ₩ doz $8 ..... 10%
Cincinnati ..... 25&10%
Terrell's Nos. 1 and 2, ₩ doz., $8; No. 3, $3.60 ..... 30%
Millers Falls 25%
Stearns' ..... 20&10%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892 ..... 33⅓%
Cleveland Stone Co., list Nov. 1892 .. 33⅓%

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₩ ℔ .... 8¢
Sand Stone ..... 5¢ } 40 @ 40&10%
Turkey Oil Stone, 4 to 8 in ..... 80¢
Turkey Slips $2.00
Lily White Washita ..... 60¢
Rosy Red Washita ..... 60¢
Washita Stone, Extra ..... 50¢
Washita Stone, No. 1 ..... 40¢
Washita Stone, No. 2 ..... 30¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Arkansas Stone, No. 1, 3 to 5½ in., $2.80
Arkansas Stone, No. 1 5¼ to 8 in., $3.50
} 33⅓@33⅓&10%
Lake Superior ..... ₩ ℔ 13¢
Lake Superior Slips ..... ₩ ℔ 20¢

Stove Polish—

See *Polish, Stove.*

Stretchers Carpet—

Cast Steel, Polished ..... ₩ doz $2.2
Cast Iron, Steel Points ..... ₩ doz 75@80¢
Socket ..... ₩ doz $1.75
Bullard's ..... 25@25&10%

Strops, Razor—

Genuine Emerson ..... 60@60&5%
Imitation " ..₩ doz $2.00, 20&10&5%
Torrey's ..... Net prices
Badger's Belt and Com ..... ₩ doz $2.00
Lamont Combination ..... ₩ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50% Electric Cutlery Co ..... Net prices
Campbell Cutlery Co ..... Net prices

Stuffer, Sausage—

Miles' Challenge, ₩ doz $20 .... 50@50&5%
Perry .... ₩ doz, No. 1, $15.00; No. 0, $21.00 ..... 50&5@50&10%
Draw Cut No. 4, each $30.00 ..... 20%
Enterprise Mfg. Co., list Jan 17, '93 .. 25%
Silver's ..... 40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5 ..... ₩ doz $17.00
Bissell No. 8 ..... ₩ doz $20.00
Bissell, Grand ..... ₩ doz $36.00
Standard ..... ₩ doz $24.00
Domestic ..... ₩ doz $21.00
Domestic, No. 2 ..... ₩ doz $22.00
Grand Rapids ..... ₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic ..... ₩ doz $15.00
Improved Parlor Queen, Nickeled ..... ₩ doz $27.00
Japanned ..... ₩ doz $24.00
Excelsior ..... ₩ doz $22.00
Garland ..... ₩ doz $18.00
Parlor Queen ..... ₩ doz $24.00
Housewife's Delight ..... ₩ doz $15.00
Ladies' Friend ..... ₩ doz $15.00
Ladies' Friend No. 2 ..... ₩ doz $16.00
Advance ..... ₩ doz $18.00
Our Leader ..... ₩ doz $19.00
Triumph ..... ₩ doz $20.00
Supreme ..... ₩ doz $22.00
Easy..Jap'd, ₩ doz $22.00; Nickel, $24.00
Gilt Edge ..... ₩ doz $24.00
Acme ..... ₩ doz $26.00
Imperial ..... ₩ doz $26.00
Grand Republic ..... Jap'd, ₩ doz $30.00; Nickel, $33.00
Banner ..... Jap'd, ₩ doz, $22.00; Nickel, $24.00
The Star ..... ₩ doz $21.00
Reliable ..... ₩ doz $22.00
Rapid..Jap'd, ₩ doz, $22.00; Nickel, $24.00
Our Own ..... ₩ doz $27.00
Model ..... ₩ doz $27.00
Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months ..... ₩ doz $1.00
10 dozen in 6 months ..... ₩ doz $2.00
Except on L.F., when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co. 30%

Swings—

Davies Lawn 25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.
Carpet Tacks—
American, Blued 66⅔%
American, Tin'd and Cop'd 70%
Steel, Bright and Blued 66⅔%
Steel, Tinned and Coppered 70%
Swedes Iron, Blued 72½%
Swedes Iron, Tinned 75%
American Iron Tacks, Domestic 66⅔%
Swedes Iron Tacks—
S. S., Blued 66⅔%
S. S., Tinned 70%
Lanc., Blued 55%
Lanc., Tinned 60%
Gimp and Lace Tacks—
S. S., Blued 62½%
S. S., Tinned 66⅔%
Lanc., Blued 55%
Lanc., Tinned 60%
Basket and Trimmers' Tacks—
Lanc. 52½%
S. S. 55%
Hungarian Nails 60%
Common and Patent Brads 55%
Leathered Tacks 10%
Brush Tacks, S. S. 60%
Looking Glass Tacks, S. S. 35%
Picture-Frame Points, S. S. 35%
Finishing Nails 60%
Trunk and Clout Nails—
Black 65%
Tinned or Coppered 67½%
Basket Nails 60%
Chair Nails 52½%
Cigar Box Nails 45%
Tin Capped Nails 50%
} Extra discount 25&2%

Miscellaneous—

Double Point ..... 90&10@90&10&10%
Wire Carpet Nails ..... 50&10%
Claw Handle Carpet ..... ₩ gross $4.00
Bonnie Blue ..... ₩ box $1 50
Bill Nye Brad Box 4 00
Parisian Gilt Nails, cartoon 50
Home Tacks, No. 50 ₩ case (12 cartons), $36.00; No. 100, ₩ case (12 cartons), $72.00 } 50&2%
Home Nails, No. 200, ₩ case (12 cartons), $30.00; No. 400, ₩ case (12 cartons), $60 00.
Upholsterers' Nails ..... 50&10%

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list ..... 50&10%
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each ..... 50&10&5%

Tapes, Measuring—

American ..... 40@40&10%
Spring 40%
Chesterman's, Regular list ..... 25@30%

Thermometers—

Tin Case ..... 80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list ..... 50&10&5%

Tinners' Shears, &c.—

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887 ..... 70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's 20%
Barton's ..... 20@20&5%
L. & I. J. White ..... 20&5%
Albertson Mfg. Co. 25%
Beatty's 30%
Sandusky Tool Co. ..... 30@30&5%
Shaves Cincinnati Tool Co. 20%

Lumber—

Ring Peavies, "Blue Line" .. ₩ doz $20.00
Ring Peavies, Common ..... ₩ doz $18.00
Steel Socket Peavies ..... ₩ doz $21.00
Mall. Iron Socket Peavies .. ₩ doz $19.00
Cant Hooks, "blue Line" .... ₩ doz $16.00
Cant Hooks, Common Finish .. ₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish $16.00
Cant Hooks, Mall. Socket Clasp, Common Finish ..... ₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish ..... ₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish ..... ₩ doz $12.00
Hand Spikes .... ₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks ..... ₩ doz $18.00

Saw—

Atkins', new list 40%

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse ..... 40@40&5%
Oneida Pattern ..... 75@75&10%
Game, Blake's Patent ..... 40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₩ doz holes, 9@10¢
Mouse, Round Wire ..... ₩ doz $1.50 10%
Mouse, Cage, Wire ..... ₩ doz $2.50 10%
Mouse, Catch-'em-alive .. ₩ doz $2.50 15%
Mouse, Bonanza ..... ₩ doz 0.90@$1.00
Rat, Decoy ..... ₩ gr $10.00, 10%
Ideal ..... ₩ gr $10.00
Cyclone ..... ₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 75¢; in full cases, ₩ doz. 60@65¢
Hotchkiss Imp. Rat Killer ... ₩ gro $18.50
Hotchkiss New Rat Killer ... ₩ gro $16.50
Schuyler's Rat Killer ..... ₩ gro $15.00
Dandy ..... ₩ doz., $1.75
Waddel's Go Bang, ₩ gro. $12.50

Fly—

Harper, Champion or Paragon ..... ₩ doz. $1.75, ₩ gro. $16.50
Balloon, Globe or Acme ..... ₩ doz. $1.50, ₩ gro. $13.50

Triers—

Butter and Cheese 25%

Trimmers, Spoke—

Bonney's ..... ₩ doz $10.00, 50%
Stearns' ..... 20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. ..... 55&10%
Douglas' ..... ₩ doz $9.00, 20%
Cincinnati 25%

Trowels—

Lothrop's Brick and Plastering, ... 20&10&5@35%
Reed's Brick and Plastering 15%
Disston's Br'k and Plastering .. 25@25&10%
Peace's Plastering ..... 25@25&5%
Clement & Maynard's ..... 20@20&5%
Rose's Brick ..... 15@20%
Brade's Brick 25%
Worrall's Brick and Plastering 20%
Garden 70%
Cleves' Angle Trowel, ₩ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.

B. & L. Block Co.'s list 40%
Thompson Mfg. Co. 40%
Barnes' Barrel Trucks 40%
Daisy Stove Trucks, Improved pattern, ₩ doz. $18.00

Tubes. Boiler—

See Pipe.

Twine—

Flax Twine—

	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	25¢	31¢
No. 12, ¼ and ⅛ ℔ Balls	22¢	30¢
No. 18, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 24, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 36, ¼ and ⅛ ℔ Balls	18¢	28¢

No. 264 Mattrass, ¼ and ⅛ ℔ Balls, 62@65¢
Chalk Line, Cotton, ⅛ ℔ Balls ..25¢
Mason Line, Linen, ⅛ ℔ Balls .55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine) ..... 15½¢
3-Ply Hemp, 1 ℔ Balls ..... 16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls ..... 15¢@15½¢
Cotton Wrapping, 5 Balls to ℔ ..15¢@16¢
2, 3, 4 and 5 Ply Jute, ⅛ ℔ Balls 10¢
Wool ..... 6½¢@6¾¢
Paper ..... 13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz. 18¢

Vises—

Solid Box ..... 50&10@60%

Parallel—

Fisher & Norris Double Screw .. 15&10%
Stephens' ..... 25@30%
Parker's ..... 20@25%
Wilson's 55%
Howard's 40%
Bonney's 50%
Millers' Falls ..... 40@40&10%
Trenton ..... 40&5@40&10%
Merrill's ..... 15@20%
Hollands' ..... 35@40%
Sargent's ..... 70&10%
Backus and Union 40%
Double Screw Leg ..... 15&10%
Prentiss ..... 20@25%
Simpson's Adjustable 40%
Moore's 20%
Massey Quick Action ..... 20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00 .. 40&10@50%
Stearn's ..... 33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises .. 33⅓@35%
Hopkins' ..... ₩ doz $17.50, 10%
Reading ..... 40&10%
Wentworth ..... 20&10%
Economy, ₩ doz., Nos. 110, $10.00; 120, $15.00 ..... 50&10&10&5%

Miscellaneous—

Phœnix Vises ..... 33⅓&5
Phœnix Hand Vises, ... ₩ doz $3.60, 33⅓&5
Cowell Hand Vises 20%
Bauer's Pipe Vises 10%
Cincinnati ..... 25&10%
Enterprise Pipe Vises .... each $3.00, 40%
Massey Combination Pipe Vise .. 40%

Wads—Price Per M.

U.M.C. & W.R.A.—B. E., 11 up .. 68¢
U.M.C. & W.R.A.—B. E., 9&10 . 82¢
U.M.C. & W.R.A.—B. E., 8 ..... 96¢
U.M.C. & W.R.A.—B. E., 7 .... $1.10
U.M.C. & W.R.A.—P. E., 11 up 1.15
U.M.C. & W.R.A.—P. E., 9&10. 1.50
U.M.C. & W.R.A.—P. E., 8 ... 1.70
U.M.C. & W.R.A.—P. E., 7 .... 1.80
} Dis 20&2%
Eley's B. E., 11 and larger .. $1.70@$1.75
Eley's P. E., 12 to 20 ..... $3.00@$3.25

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow

Stove Hollow-Ware—
Ground ..... 60&10@60&10&10%
Unground ..... 65&10@70&5
White Enameled Ware—
Maslin Kettles ..... 70&10@75%
Boilers and Saucepans ..... 60@60&5%
Tinned Boilers and S'pans ... 60@60&5%
Rustless Hollow Ware ..... 50@50&5%
Gray Enameled Ware—
Stove 50%
Maslin Kettles ..... 60@60&10%
Boilers and Saucepans ..... 40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889 ..... 33⅓&5 } Extra 10% on many leading articles.
Ironclad Enameled Ware ..... dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch	6	7	8	9
Each	55¢	60¢	65¢	75¢

Standard Fiber

	Per Doz. Plain.	Decorated
Wash-Basins, 10¼ in.	$1.80	$2.00
Wash-Basins, 12 in.	2.00	2-50
Keelers, 11¼ in.		3.50
Cuspidors		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure	3.50	
Half-peck Measure	3.00	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₩ doz $6.00
Basins, Ringed, ₩ doz., No. 2 .2.80
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), ₩ nest $5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest $2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest $1.50
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), ₩ set. $1.20
} 25%
See also Pails.

Silver Plated, Hollo

4 mo. or 5% cash in 30 days
Reed & Barton .....
Meriden Britannia Co .....
Simpson, Hall, Miller & Co. } 40&5%
Rogers & Brother .....
Hartford Silver Plate Co. .... } 40&5&5%
William Rogers Mfg. Co.

Washers—

Size hole ..... 5-16 ⅜ ½ ⅝ to 1¼
Washers 5½ 4½ 3¼ 2¼
In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Washer Cutters—

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water*

Wedges—

Iron ..... ₩ ℔ 3¼¢@3½¢
Steel ..... ₩ ℔ 3¾¢

Weights, Sash—

Solid Eyes ..... ₩ ton, $18.00@19.00

Well Buckets Galvanized—See *Buckets, Well Galvanized.*

Wheels, Well—

8 in., $2.00; 10 in. $2 50 12 in., $2.75

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Whips

American Whip Co.: Length.	4½	5	5½	6	6½	7	7½	8 ft.
X. L. Whalebone Driving	$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone.	....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whale bone.	....	....	11.00	12.00	13.00	15.00	....	....
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors	....	....	....	6.00	....	....	....	....
Americus, 93 Pen Whip	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106	....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No. 103	....	....	3.75	4.00	....	....	....	....

Per dozen.

A large variety of cheaper grades.....50¢@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....℔ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Wire and Wire Goods—

Iron—

Market,

Br. & Ann., Nos. 0 to 18, 75&10@75&10&5%
Cop'd, Nos. 0 to 18, 75&5%
Galv., Nos. 0 to 18, 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18, 70@70&10%

Extra 5@10% often given and net prices often made on large lots.

Stone,
Br. and Ann'd,
Nos. 16 to 18 ....80%
Nos. 19 to 26 ....80&5%
Nos. 27 to 36 ....80&5%
Extra 10% often given.
Tinned Broom Wire, 18 to 21, ℔....4¾¢
Galvanized Fence .....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Ossawan Mills, An'ld and Tinned on Spools.....60&10%
Ossawan Mills, Brass and Copper on Spools.....50&10%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass 50%
Cast Steel Wire 50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported.....60@70¢ ℔
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list .....85&10@85&10&10%

Wire Cloth and Netting—

Painted Screen Cloth ℔ 100 ft.....$1.75
Galvanized Wire Netting.....75&10@75&10&5%

Wire Barb—

See Trade Report.

Wire Rope—See *Rope, Wire.*

Wrenches—

American Adjustable 40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50@50&10%
Coes' "Mechanics'".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
W. & B. Diamond.....
75&10@80%

Bemis & Call's:
Pat. Combination Bright .....40&5%
Pat. Combination Black.....40&10%
Merrick's Pattern.....45%
Brigg's Pattern.....30&10%
Cylinder or Gas Pipe.....45&5%
No. 3 Pipe 55%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....℔ doz., $4.00, 40%
Webster's Pat. Combination 25%
Boardman's.....30%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Eagle.....50&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70@70&5%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts Vise Wrench.....55&10&3%

Wringers, Clothes

Am. Wringer Co.'s list, July 1, '92..2% cash
Colby Wringer Co., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list July 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	40
Linseed, City, boiled....	..	@	43
Linseed, Western, raw.....	38	@	40
Lard, City, Extra Winter...	80	@	82
Lard, City Prime.....	78	@	80
Lard, City, Extra No. 1.....	..	@	50
Lard, City, No. 1.....	..	@	45
Lard, Western, prime.....	..	@	75
Cotton-seed, Crude, prime..	34	@	36
Cotton-seed, Crude, off grades	32	@	34
Cotton-seed, Summer Yellow, prime	39	@	40
Cotton-seed, Summer Yellow, off grades	36	@	37
Sperm, Crude	70	@	..
Sperm, Natural Spring.....	75	@	77
Sperm, Bleached Spring....	80	@	82
Sperm, Natural Winter.....	81	@	82
Sperm, Bleached Winter....	86	@	88
Whale, Crude	..	@	..
Whale, Natural Winter.....	48	@	..
Whale, Bleached Winter....	..	@	51
Whale, Extra Bleached....	..	@	52
Sea Elephant, Bleached Winter	..	@	..
Menhaden, Crude, Sound...	35	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed...	39	@	40
Menhaden, Bleached W'ter.	..	@	43
Menhaden, Extra Bleached.	..	@	46
Tallow, City, prime.....	..	@	60
Tallow, Western, prime....	..	@	55
Cocoanut, Ceylon.....	5⅛	@	5¾
Cocoanut, Cochin.....	6¼	@	6¾
Cod, Domestic.....	38	@	40
Cod, Foreign.....	42	@	45
Red Elaine.....	44	@	46
Red Saponified.....℔	4¼	@	4¾
Bank..... per gal	38	@	..
Straits	39	@	..
Olive, Italian, bbls.....	58	@	60
Neatsfoot, prime.....	75	@	80
Palm, prime, Lagos.....℔	7¾	@	8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....per gal	7	@	7½
Black, 29 gravity, 15 cold test	7½	@	8
Black, 29 gravity, summer ..	6	@	6¼
Cylinder light, filtered.....	14	@	16
Cylinder, dark, filtered.....	10	@	15
Paraffine, 23½ @ 24 gravity..	11	@	12
Paraffine, 25 gravity.....	10	@	11
Paraffine, 28 gravity.....	7½	@	8
Paraffine, red.....	9½	@	10½

Paints and Colors—

Barytes, Foreign, ℔ ton..	$22.00	@	24.00
Barytes, Amer. floated....	29.00	@	32.00
Barytes, Amer. No. 1.....	16.00	@	18.00
Barytes, Amer. No. 2.....	13.00	@	15.00
Barytes, Amer. No. 3.....	11.00	@	12.00
Blue, Celestial.....℔	6	@	8
Blue, Chinese.....	40	@	50
Blue, Prussian.....	25	@	40
Blue, Ultramarine.....	8	@	25
Brown, Spanish.....	½	@	1
Brown, Vandyke, Amer...	3	@	3½
Brown, Vandyke, English.	6	@	8
Carmine, No. 40, in bulk..	2.75	@	..
Carmine, No. 40, in boxes or barrels..	2.85	@	..
Carmine, No. 40, in ounce bottles	3.75	@	..
Chalk, in bulk.....℔ ton..	1.75	@	2.00
Chalk, in bbls..℔ 100 ℔...	33	@	40
China Clay, English.....℔ ton.	13.00	@	18.00
Cobalt Oxide, prep'd.....	9.00	@	11.00
Cobalt Oxide, black..... lots 100 ℔.	1.90	@	....
Cobalt Oxide, black..... less 100 ℔.	1.96	@	....
Green, Paris, in bulk.....	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs	10½	@	11
Green, Paris, small pack.	12	@	17
Green, Chrome, ordinary.	6	@	12
Green, Chrome, pure.....	22	@	25
Lead, Eng., B.B. white....	8½	@	10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔...	7	@	7¼
Kegs, lots 500 ℔ to 5 tons....	6½	@	6¾
Kegs, lots 5 tons to 12 tons..	6⅜	@	6⅝
Kegs, lots 12 tons and over..	6¼	@	6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price.....	..	@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.	..	@	2½
Lead, Red, bbls. and ½ bbls...	6	@	7
Lead, Red, kegs.....	6¼	@	7¼
Litharge, kegs.....	6¼	@	7¼
Litharge, bbls. and ½ bbls.....	6	@	7

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed.....	1½	@	2½
Ocher, German Washed.....	1¼	@	3
Ocher, American.....	½	@	1½
Orange Mineral, English....	8½	@	9
Orange Mineral, French.....	10	@	10½
Orange Mineral, German....	8½	@	9
Orange Mineral, American.	8¼	@	8¾
Paris White, English Cliff-stone.....	1.00	@	1.15
Paris White, American.....	65	@	75
Red, Indian, English.....	5½	@	7
Red, Indian, American.....	2	@	6½
Red, Turkey.....	9	@	14
Red, Tuscan.....	9	@	11
Red, Venetian, American.....℔ 100 ℔..	1.00	@	1.10
Red, Venetian, English.....	1.20	@	1.35
Sienna, Italian, Burnt and Powd.℔ ℔	4	@	5
Sienna, Ital., Burnt Lumps.	1½	@	3½
Sienna, Ital., Raw, Powd...	4½	@	5½
Sienna, Ital., Raw, Lumps..	1¾	@	3½
Sienna, American, Raw.....	1½	@	1¾
Sienna, American, Burnt and Powdered.....℔ ℔	1½	@	1¾
Talc, French.....	..	@	1¼
Talc, American.....	1¼	@	1½
Terra Alba, Fr'ch. ℔ 100 ℔	95	@	1.25
Terra Alba, English.....	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered.....℔ ℔	3½	@	4
Umber, Turkey Bnt. Ln.....	2¾	@	3
Umber, Turkey, Raw and Powdered.....	3¼	@	....
Umber, Turkey, R'w Lumps	2¼	@	2¾
Umber, Turkey, Bnt. Amer..	1¼	@	1½
Umber, Turkey, R'w Amer.	1¼	@	1½
Yellow, Chrome.....	10	@	25
Vermilion, American Lead.	11¼	@	12
Vermilion, Quicks'er, bulk..	53	@	..
Vermilion, Quicks'er, bags..	54	@	..
Vermilion, Quicksilver sm'r pkgs.....	62	@	..
Vermilion, English Import.	85	@	90
Vermilion, Imitation, Eng..	8	@	35
Vermilion, Trieste.....	90	@	92½
Vermilion, Chinese.....	92½	@	95
Whiting Common, ℔ 100 ℔	37½	@	42½
Whiting Gilders'.....	45	@	55
Zinc, American, dry....℔ ℔	4	@	4¾
Zinc, French, Red Seal.....	7½	@	..
Zinc, Frech, Green Seal	9	@	..
Zinc, Frech, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal....	7¼	@	..
Zinc, Antwerp, Green Seal..	7¾	@	..
Zinc, German, L. Z. O.....	6¾	@	7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¾	@	11½
lots less than one ton.....	11	@	11¾
Zinc, V. M. in Poppy Oil, Red Seal.....	..	@	..
lots of 1 ton and over.....	10	@	10½
lots of less than 1 ton.....	10¼	@	10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2 %; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort.....	25	@	30
Black, Drop, English.....	12	@	15
Black, Drop, Domestic.....	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory.....	8	@	15
Blue, Chinese.....	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramarine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	16	@	18½
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber, Raw.....	7	@	10
Umber, Burnt.....	7	@	10

Putty—

In barrels and ½ bbls.....	.01¾	@	.01¾
In tubs.....	.01¾	@	.01¾
In tin cans.....	.01½	@	.02½
In bladders..	.01¾	@	.02½

Spirits Turpentine—

In regular bbls.....	..	@	29½
In machine bbls.....	..	@	30

Glue—

Low Grade.....℔ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	22
English.....	10	@	15
Irish	12	@	..

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

NOVEMBER 15, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:
¾ to 2 in. round and square.. } ₩ lb 1.80 @ 1.90¢
1 to 6 in. x ⅝ to 1 in.... ....
Refined Iron:
¾ to 2 in. round and square. }
1 to 4 in. x ⅝ to 1½ in..... } ₩ lb 1.90 @ 2.00¢
4½ to 6 in. x ⅝ to 1 in. ....
1 to 6 in. x ¼ and 5-16..... ₩ lb 2.10 @ 2.20¢
Rods —⅝ and 11-16 round and sq. ₩ lb 2.00 @ 2.10¢
Bands —1 to 6 x 3-16 to No. 12.... ₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price. ₩ lb.... ...3.00¢
Burden's "H. B. & S." Iron, base price..... .... ₩ lb.....2.80¢
"Ulster"..... .... ₩ lb.....3.00¢
Norway Bars..... ..... 3.75 @ 4.00¢
Norway Shapes..... 4.50 @ 5.00¢

Merchant Steel from Store—

	Per lb
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2½¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

Black—

Best Refined Iron.

Nos. 14 to 20.....3 @ 3½¢
21 to 24.....3¼ @ 3⅝¢
25 to 26.....3⅜ @ 3½¢
27.....3½ @ 3⅝¢
28.....3⅝ @ 3¾¢
Common ¼¢ less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 16.....2½ @ 2⅝¢
" " " 18 to 20.....2⅝ @ 3¢
" " " 21 to 24.....3½ @ 3¼¢
" " " 25 to 26.....3⅜ @ 3⅝¢
" " " 27 to 28.....3⅝ @ 3¾¢
Best Bloom Sheets, ¼¢ extra over above prices.
Best Bloom, Galvanized, jobbing dis. 70 @ 70&5%
Ordinary Bessemer, ⅛¢ @ ¼¢ lower than above prices.

Russia, Planished, &c.

Genuine Russia, according to assortment..... ₩ lb 12¢ @ 13¢
Patent Planished..... ₩ lb A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel..... ₩ lb, 8½¢

Foreign Steel from Store—

Best Cast..... ₩ lb 15 ¢
Extra Cast..... ₩ lb 16½ @ 17 ¢
Swaged, Cast..... ₩ lb 16 ¢
Best Double Shear..... ₩ lb 15 ¢
Blister, 1st quality..... ₩ lb 12 ¢
German Steel, Best..... ₩ lb 10 ¢
2d quality..... ₩ lb 9 ¢
3d quality..... ₩ lb 8 ¢
Sheet Cast Steel, 1st quality..... ₩ lb 15 ¢
2d quality..... ₩ lb 14 ¢
3d quality..... ₩ lb 12½¢
R. Mushet's "Special"..... ₩ lb 48 ¢
" " " Annealed..... ₩ lb 75 ¢
" " "Titanic"..... ₩ lb 20 ¢
Eicken's Special No. 8..... ₩ lb 30 ¢
" Extra..... ₩ lb 15 ¢

METALS—

Tin—

	Per lb
Banca, Pigs.....	22¢ @ 22½¢
Straits, Pigs.....	21½ @ 22¢
Straits in Bars.....	22½¢ @ 23¢

Tin Plates—

Duty: 2.2¢ ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade. IC, 10 x14.. @ $6.50
" " " IC, 12 x12.. @ 6.75
" " " IC, 14 x20.. @ 6.50
" " " IC, 20 x28.. @ 13.00
" " " IX, 10 x14.. @ 8.50
" " " IX, 12 x12.. @ 8.75
" " " IX, 14 x20.. @ 8.50
" " " IX, 20 x28.. @ 17.00
" " " DC, 12½x17.. @ 6.00
" " " DX 12½x17.. @ 8.00
Allaway Grade ..... IC, 10 x14.. @ 6.00
" " ..... IC, 12 x12. @ 6.25
" " ..... IC, 14 x20.. @ 6.00
" " ..... IC, 20 x28.. @ 12.00
" " ..... IX, 10 x14.. @ 7.50
" " ..... IX, 12 x13.. @ 7.75
" " ..... IX, 14 x20.. @ 7.50
" " ..... IX, 20 x28.. @ 15.00
" " ..... DC, 12½x17. @ 5.50
" " ..... DX, 12½x17.. @ 7.00

Coke Plates—Bright—

Steel Coke. —IC, 10 x 14, 14 x 20.. $5.40 @ $5.50
10 x 20.. .. @ 8.50
20 x 28.. 11.50 @ 12.00
IX, 10 x 14, 14 x 20.. .... @ 7.00
BV Grade —IC, 10 x 14, 14 x 20.. .. @ 5.50

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC, 14 x 20..... .... @ $5.65
20 x 28..... @ 11.00
IX, 14 x 20..... .... @ 6.40
20 x 28..... .... @ 12.80
Abecarne Grade.—IC, 14 x 20... .. @ 5.55
20 x 28.... .... @ 10 75
IX 14 x 20.... .... @ 6 40
20 x 28.... .... @ 12.80

Tin Boiler Plates—

IXX, 14x 26.....112 sheets. .... @ $13.50
IXX, 14 x 28.....112 sheets..... .... @ 14.50
IXX, 14 x 31.....112 sheets .... @ 16.00

American Terne Plates.—Apollo.

IC, 14 x 20 .... $6.25
IC, 20 x 28 .... 12.50
IX, 14 x 20 .... 7.25
IX 20 x 28 .... 14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot—

Lake..... .. @ 11 ¢
Ansonia grade Arizona..... .. @ 10½¢
Ansonia grade Casting..... .. @ 10 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 35 %, according to size of order. Stubs' gauge standard.

Not wider than	Not longer than	And longer than	Weights per sq. foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	...
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	..	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅜ inch diameter and over, ₩ lb 22¢
Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per lb.
14 ounce to square foot and heavier.....	28¢
12 ounce and up to 14 ounce to square foot...	27¢
10 ounce and up to 12 ounce.....	29¢
Lighter than 10 ounce.....	32¢

Circles less than 8 inches diameter, 2¢ ₩ lb additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned..... ₩ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each..... 8¢
Tinning sheets on one side, 30 x 60 each..... 30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each..... 15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each..... 12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each..... 12¢
Tinning sheets on one side, other sizes, per square foot..... 2½¢
For tinning both sides double the above prices.

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier.	24¢ ₩ lb
14 oz.....	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

July 6, 1892. Net.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional
Brazed Brass Tubing. (To No. 20 inclusive.)
Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive.....	35¢
Plain, above 3 inch.....	45¢
Plain, 5-16 inch.....	45¢
Plain, ¼ inch.....	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch.....	$1.50
Fancy Tubing, Brass, to No. 20, inclusive.....	43¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list.....	30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 / 10	in. 10 / 12	in. 12 / 14	in. 14 / 16	in. 16 / 18	in. 18 / 20	in. 20 / 22	in. 22 / 24
To No. 20 inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24.	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26.....	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28.....	.23	.24	.2	.28	.30	.32	.34	.36
Common High Brass: Wider than and including	in. 24 / 26	in. 26 / 28	in. 28 / 30	in. 30 / 32	in. 32 / 34	in. 34 / 36	in. 36 / 38	in. 38 / 40
To No. 20, inclusive.	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26.....	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28.....	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive.....	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20.....	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22.....	$0.26	$0.28	$0.30	$0.34
No. 23.....	.28	.30	.32	.36
No. 24.....	.30	.32	.34	.38
No. 25.....	.32	.34	.36	.40
No. 26.....	.35	.37	.39	.43
No. 27.....	.38	.40	.42	.46
No. 28.....	.42	.44	.46	.51
No. 29.....	.45	.47	.49	.54
No. 30.....	.48	.50	.52	.62
No. 31.....	.51	.53	.55	.67
No. 32.....	.55	.57	.59	.73
No. 33.....	.59	.61	.63	.82
No. 34.....	.64	.66	.68	.95
No. 35.....	.70	.72	.74	1.30
No. 36.....	.76	.78	.80	1.50
No. 37.....	1.00	1.02	1.04	1.70
No. 38.....	1.30	1.32	1.34	2 00
No 39.....	2.00	2.02	2.00	3.25
No. 40.....	2.60	2.62	2.60	5.75

— % discount.
Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

	Per lb.		Per lb.
No. 5.....	49¢	No. 11.....	56¢
No. 6.....	49¢	No. 12.....	58¢
No. 7.....	49¢	No. 13.....	60¢
No. 8.....	50¢	No. 14.....	65¢
No. 9.....	52¢	No. 15.....	70¢
No. 10.....	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive..... 17¢ ₩ lb
Over 3½ to 5 inches inclusive..... 18¢ ₩ lb
Piston Rods, Finished True, Smooth and Straight.
¼ to 3½ inches inclusive..... 18¢ ₩ lb
Over 3½ to 5 inches inclusive..... 19¢ ₩ lb

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.
Western Spelter..... 4½¢@4¾¢
Bertha (pure)..... 8¢@8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.
600 lb casks..... .. 5½¢@5¾¢
Per lb..... .. 6½¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig..... 4¢@4.10
Bar..... 4½¢
Pipe, subject to discount 20%..... 6¼¢
Tin-Lined Pipe, subject to discount 20%... 15¢
Block Tin Pipe, subject to discount 20%.... 37½¢
Sheet, subject to discount 20%..... 7¢
Old Lead in exchange, 3¼¢ ₩ lb.

Solder—

½ @ ½ ..... 13½¢ @ 14½¢
No. 1..... 11¾¢ @ 12½¢
Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson..... ₩ lb 11 ¢
Hallett's .. ..10½¢

Aluminum—

Duty: 15¢ ₩ lb.

No. 2 grade metal, in ton lots..... ₩ lb .75
No. 1 (guaranteed to be 98 % pure and over), in ton lots..... ₩ lb .90
Lots less than 1 ton..... 10¢ ₩ lb additional

Old Metals—

Prices Paid in New York.

Heavy Copper.....	₩ lb 7½¢
Light and Tinned Copper	₩ lb 6½¢
Heavy Brass.....	₩ lb 5½¢
Light Brass.....	₩ lb 4½¢
Lead.....	₩ lb 3 ¢
Tea Lead.....	₩ lb 2 ¢
Zinc	₩ lb 2¾¢
No. 1 Pewter	₩ lb 1¢
No. 2 Pewter.....	₩ lb ¢
Wrought Scrap Iron.....	₩ gross ton $9.00
Heavy Cast Scrap.....	₩ gross ton 7.00
Stove Plate Scrap.....	₩ gross ton 4.50
Burnt Iron	₩ gross ton 3.00

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THE IRON AGE

THURSDAY, NOVEMBER 23, 1893.

The Smoke Nuisance in Massachusetts.

The last Legislature of Massachusetts passed a law regulating the smoke nuisance in the large cities. This law provided that in cities of over 300,000 inhabitants, after July 1 of the present year, no person should "use bituminous coal for the purpose of making steam in boilers in any building, unless the furnace in which said coal is burned is so built or equipped that at least 75 per cent. of the smoke is consumed or otherwise prevented from entering the atmosphere, the degree of suppression being determined by the quantity of such smoke emitted, as shown by the density and color of the issuing smoke and the length of time which it is visible, the maximum standard of comparison being a continuous discharge of dense, dark smoke during the time the furnace is in active operation." The penalty was fixed at not less than $10 nor more than $100 for each week during which the violation of the law should continue.

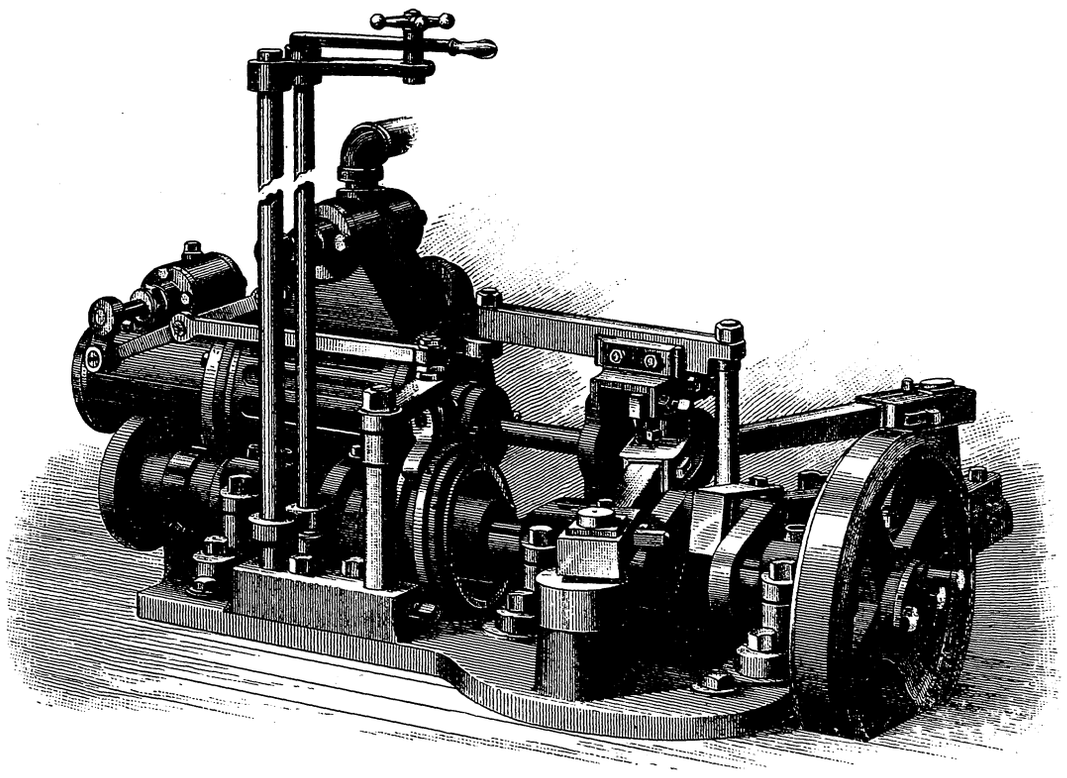
Acting under this law the Mayor of Boston named the superintendent of streets as the official to be charged with the enforcement of the act, and the latter, in order to secure some ground on which to deal with the smoke nuisance, instructed a thorough system of inquiry throughout the city. Inspectors were instructed to see every factory and other business place where bituminous coal was used. The investigation extended to a large number of items, including the time of erection of boilers, their number and size, as well as horse-power, the area of heating surface and of chimney and smoke flues, the daily amount of coal burned and the number of hours in use of boiler, summer and winter, and any devices for smoke consumption in use or contemplated. Naturally such an investigation, if properly conducted, could not be finished in one week or two weeks, and it has occupied nearly two months or more; but, as a result, a large amount of reliable information has been collected, and the superintendent will soon be in a position to deal with any manufacturer who shows no disposition to comply with the law.

Desertions from the United States Army show a large increase for the last fiscal year, and the problem is one which is said to be greatly exercising the minds of the military authorities. Meanwhile, however, enlistments have been so brisk, owing to the hard times, that more good recruits offer themselves for service than the army limit will admit.

French foreign trade showed a marked falling off for the first nine months of this year, compared with the corresponding period of 1892 and 1891, judging from the published official statistics. The imports were less by $69,888,000 than they were last year, and by $114,624,000 than in 1891. The exports were reduced to the extent of $18,048,000 when compared with those of last year, and of $24,960,000 with 1891.

A Yacht Engine of New Design.

All the main features of a yacht engine designed by C. F. Littlejohn of Bridgeport, Conn., are illustrated by the accompanying engravings. It may be said to be a wide departure from the usual forms or types of marine engines now in service. The engine is a compound tandem having a high pressure cylinder 3¾ inches in diameter, a low pressure 6 inches in diameter, and a stroke of 6 inches, and drives a propeller 30 inches in diameter, 54 inches pitch, at 170 revolutions per minute, giving a speed to the boat in which it is placed of from 7 to 8 miles per hour. Steam is supplied by a Foster serpentine steam generator built by Charles W. Foster of New Haven, Conn. The engine is placed in a boat having a length over all of 30 feet, length on water line of 25 feet and beam of 7½ feet, and draft forward of 1½ feet and aft of 3½ feet. The general arrangement of the boat and the position of the engine and boiler are clearly shown in the cross section and vertical longitudinal section, Fig. 4. The engine is about 4 feet long, 3½ feet wide at the widest part, and at no place does any part of it come above the floor of the boat.



YACHT ENGINE OF NEW DESIGN.

The main peculiarities of the engine are found in the method for transmitting power from the piston rod to the propeller shaft and in the valve gear. It will be noticed from the perspective view and from Fig. 2 (the plan) that the propeller shaft is placed parallel with and alongside of the piston rod. Power is applied to the central joint of

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a set of toggle levers by means of the sliding cross head, having a transverse slide in it to accommodate the sweep of one of the levers, which is fulcrumed to a stationary stud or pin. The outer end of the other lever is fulcrumed to a pin in an auxiliary cross head, which supplies the power to the crank by means of a connecting rod made in the usual way. This mechanism will be understood by reference to Figs. 1 and 2, showing the engine in plan and side elevation. E and F represent the high and low pressure cylinders respectively, G being the steam chest. To the piston rod I is attached the cross head J, to which the two connecting levers K L of the toggle are connected in such a way that they have a free sliding movement in the cross head, and, therefore, in no way interfere with the travel of the piston rod in a straight line. The rod K is fulcrumed to the bed A of the engine at the point shown. The other lever L of the toggle is pinned at Q to the auxiliary cross head R, which is arranged to move in the guide S. To this cross head is united the connecting rod T, which joins the crank pin D and drives the propeller shaft B in the usual way. It will be noted that all parts of the engine are mounted on the bed A, no frame of any description being employed, which fact, together with the general design and arrangement of the parts, make the engine extremely compact and of very low hight.

A notable feature in the working of the engine is the almost total absence of vibration even when running at its highest speed. This is accounted for by the fact that the heaviest reciprocating parts, the pistons and piston rod connections, move in a line parellel with the keel, the only cross vibrations being those arising from the movement of the auxiliary cross head and its connections with the crank. So far the engine has given no trouble whatever and has performed its work with absolutely no hitch. Being the first one of this design, there are naturally several points where the construction could be improved and which would add materially to the efficiency.

The valve gear is shown in the first three views, and its construction and method of operation will be understood from Figs. 5, 6 and 7, the latter drawings not being taken from this particular yacht engine, but being taken from a former construction of a vertical engine embodying the same features. The valves of both cylinders are worked by the valve gear, also the invention of Mr. Littlejohn, which consist of a grooved ring, 3, Figs. 5, 6 and 7, which revolves with the shaft and is fastened to the hub by gimbal joints or pivoted screws held in position by nut and jam nut, as clearly illustrated in Fig. 5. This ring is also fastened to the sliding collar by means of the connecting rod 2. This sliding ring can be shifted longitudinally on the shaft by means of the rod 5, thereby changing as may be desired the angle of inclination of the grooved ring. Fitted to slide in the groove of the ring is a block to which the valve rod 6 is connected. It is evident that by shifting the grooved ring to one extreme angular position the valves will be given the greatest travel. This travel will also be reduced as the ring approaches a position having its plane at right angles with the shaft, in which latter position there will, of course, be no movement of the valve. Continuing to shift the ring in the opposite direction, the valves will be given their greatest movement when the greatest angle of inclination is reached and the engine reverses its movement. In the yacht engine shown in perspective view the grooved ring is operated by means of a lever, the connecting rod of which is shown broken. A noteworthy feature of this design is its extreme sensitiveness; the slightest movement of the lever which shifts the sleeve on the shaft, and thereby alters the angle of inclination of the grooved ring, is instantly perceptible in the working of the engine.

Another adaptation of this method of moving the valves is found in the fact that the valve rods from four different valves can be connected in four different places in the grooved ring, and that each valve will have its proper movement independent of either of the others. This would permit in this engine of placing two more cylinders tandem fashion parallel with the two it

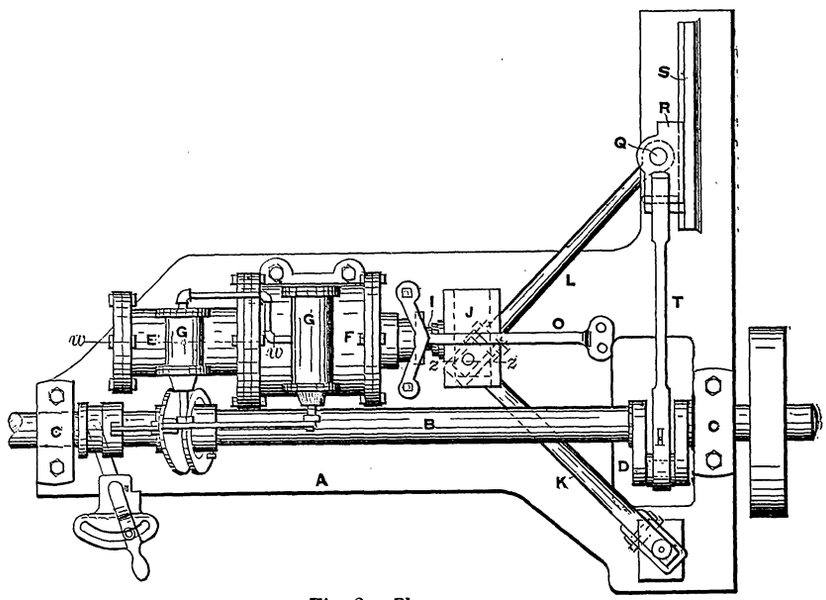


Fig. 2.—Plan.

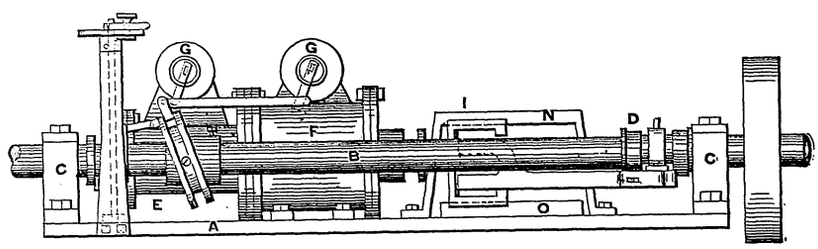


Fig. 3.—Side Elevation.

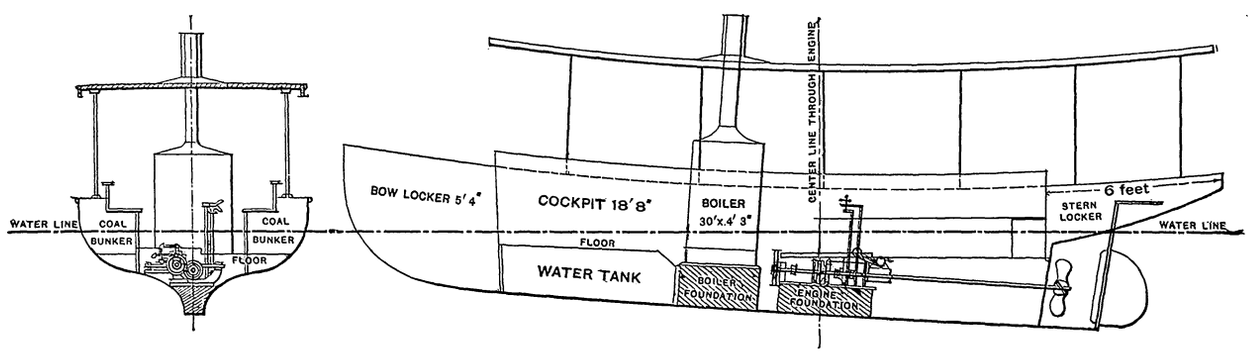


Fig. 4.—Cross and Longitudinal Section of Steam Yacht "Vena."

YACHT ENGINE OF NEW DESIGN.

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now has and operating them by means of the same valve gear. Therefore the only additional parts, in order to transform this engine into a quadruple expansion, would be in adding two more cylinders and their connections with the crank. These points, in the opinion of the inventor, will greatly reduce the cost of such engine as compared with the usual construction, and by doing away with all framing render the engine stiffer and wonderfully more compact. Adding two more cylinders to this engine in order to make it a quadruple expansion would increase its size to only 6 feet square, but would not increase the hight of 18 inches at all, so that it would be entirely below the deck of the boat and also below the water line.

It will further be seen that by slight changes in the design the engine can be adapted for manufacturing purposes, and can be made either of the vertical or horizontal type.

Electric Propulsion of Canal Boats.

The practicability of electricity as a motive power for canal boats was successfully demonstrated last Saturday on the Erie Canal. The experiment then made was the outcome of a message from Governor Flower to the New York State Legislature last winter, in which he suggested that an appropriation be made to prove whether or not canal boats could be propelled by electrical force. This suggestion was adopted by the Legislature, which appropriated $10,000 for the purpose, and the attention of inventors was invited to the matter. As a consequence the Westinghouse Company of Pittsburgh were intrusted with the work of supplying the machinery and apparatus necessary for the experiment, and it was their system that was tried last week. The trial took place at the Pittsford level of the Erie Canal, about 3 miles distant from Rochester, N. Y., the electrical power being supplied by the Rochester Railway Company, whose trolley wires run out to Brighton on the line of the canal. These were tapped on to the canal trolley wire, passing thence through the motors and up another trolley to the return wire. The canal trolley wires were stretched for nearly a mile along a portion of the canal which presents several sharp turns, and therefore gave as severe a test of the system as could be desired. An old steam canal boat was used, its engine and boiler being removed and their place taken by two Westinghouse motors of the standard street railway type, with the standard Westinghouse series multiple controller placed in the stern of the vessel, and connected with the propeller formerly operated by the steam engine. By the side of the steering wheel of the boat was placed a nickel plated switchboard similar to those used in street cars, which was designed to enable the steersman to apply or shut off electrical power as required, and so control the movement of the boat.

The arrangements for the experimental trip were made under the direction of Frank W. Hawley, vice-president of the Cataract General Electric Company of Niagara Falls, and the trial was witnessed by a number of distinguished electricians and other prominent persons from New York City, Buffalo, Rochester and other cities, as well as a large representation of State officials, who accompanied Governor Flower in the boat. At 11 a.m. on November 18 the official start was made, the Governor turning on the current. The boat moved off smoothly and steadily at an estimated speed of 3½ miles an hour, working up later to 8 miles an hour, with the apparatus operating to the entire satisfaction of those interested in the important experiment.

The desired proof being given of the practicability of the system, it now remains for the Legislature to determine as to whether it shall be generally adopted on the canals, and of this there is little doubt. It is just 64 years ago since the first canal boat went through the Erie Canal, and there has been no change in the method of propulsion, so that the employment of electricity is likely to revolutionize canal traffic. The innovation, too, is calculated, in the opinion of good judges, to immensely increase the freight traffic on the Erie Canal. This now amounts to some 3,000,000 tons annually, but with the aid of electrical motive force it could, it is believed, be increased fourfold, giving, as Governor Flower said, "new life to the commerce of States along the great lakes, and making the transportation on the Erie Canal equal to that on the Mississippi." It is intended eventually to supply the necessary electrical power from Niagara Falls, through the medium of the Cataract General Electric Company's system.

Among the distinguished persons who witnessed the experiment were George Westinghouse, Jr., Lemuel Bannister and Brayton Ives of the Westinghouse Company of Pittsburgh; Nikola Tesla, the electrician; Francis Linde Stetson, Dr. Coleman Sellers, H. B. Platt, Henry C. Brewster, Evan Thomas, Senator Parsons, John Bogart and other prominent citizens of New York and Buffalo. Nikola Tesla expressed himself as entirely pleased with the experiment, and declared that, in his opinion, "the people of the city of New York will eventually use electrical power from Niagara Falls to heat their houses and cook their meals." Mr. Westinghouse, speaking of the economy of running electrical canal boats, said: "I understand that eight men are now required to run canal boats. An electric canal boat will require two men—one to run the boat at night and one in the day. Moreover, space will be saved, for there need not be any place left for stables for the horses or mules."

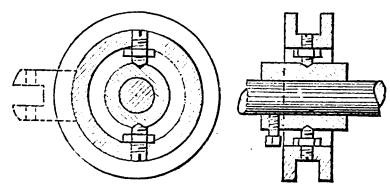


Fig. 5.—Grooved Ring Operating Valves.

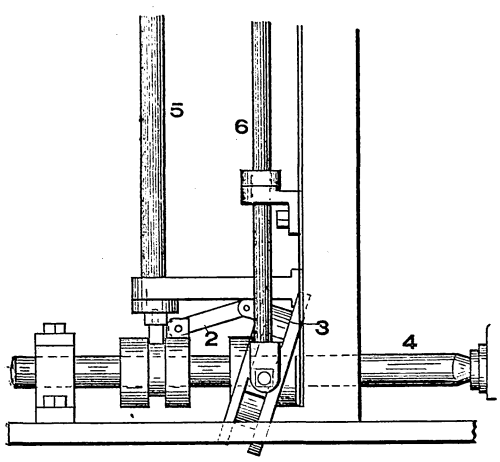


Fig. 6.—Valve Gear.

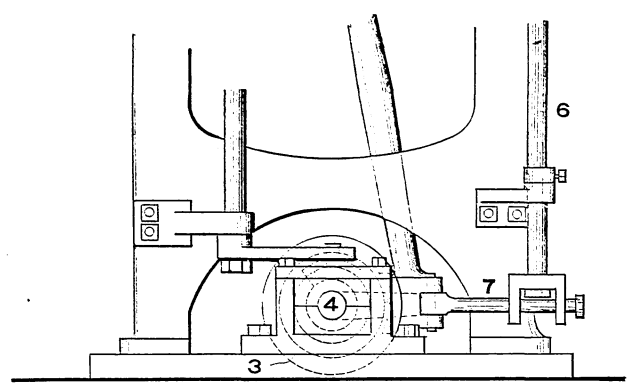


Fig. 7.—Valve Gear—View at Right Angles to Fig. 6.

YACHT ENGINE OF NEW DESIGN.

The Chattanooga *Tradesman* makes a statement which reveals how very grave was the position of some of the Southern iron makers during the recent panic. Our contemporary says: "A good deal of Southern iron is held by railroads that have taken it in payment of freights, and though this in the aggregate is not large as compared to the whole product there is enough of it to seriously interfere with the market, for it is understood the holders of this railroad stock will sell at net cost, if they cannot do better. Some 2000 tons of this surplus was sold a few weeks ago at private figures, but the price was generally understood to be about $1 a ton below furnacemen's quotations of the same brand." Unless some of the lake iron ore carriers have been forced to hold on to ore as security for freight bills there has been no other branch of the iron trade, so far as we can learn, in which the railroads control product.

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Heavy Steel Forgings.—I.*

Their Production in the United States.

BY RUSSELL W. DAVENPORT, BETHLEHEM, PA.

After dealing with the history and the development of the forging plant of the Bethlehem Iron Company, Mr. Davenport, second vice-president of the company, discussed as follows the conditions necessary and the most improved methods employed for producing uniformly reliable forgings of such quality as to offer maximum resistance to working strains.

The subject may be divided as follows:

1. The casting of ingots.
2. The conditions of shaping or forging.
3. Treatment after forging.
4. Introduction of unusual ingredients into the composition of the steel intended to give to it desirable qualities.

Casting of Ingots.

There are certain defects which are likely to occur in all steel ingots. They are of more frequent occurrence and more serious in their nature as the ingots increase in weight and dimensions. In general they are developed during the solidification and cooling of the fluid steel, and are, for the most part, caused by the great change of temperature which then takes place. They can be classified as follows :

Interior shrinkage, or "piping," caused by the outside of the ingot cooling more rapidly than the inside and producing cavities and a porous condition of metal along the central axis, or line of last cooling. These defects assume serious proportions and concentrate within conical lines in about the upper one-third of the ingot.

Blow holes, or cavities, due to the evolution of gas during cooling and solidification, which under certain conditions of melting and composition occur throughout the mass, but especially near the surface and toward the upper part of the ingot.

External or surface cracks, caused by the rapid shrinkage of outside or skin of ingot, and at times due to hydrostatic pressure of the internal and fluid portion.

Internal cracks, due to interior strains set up by too rapid cooling, and occurring most frequently in ingots of hard steel.

Segregation, which is the name given to the change which takes place in the chemical composition of a mass of steel in cooling, and is due to the liquation or concentration of certain ingredients, principally carbon, phosphorus, sulphur, and to a less degree silicon and manganese, toward the central and upper portion of the ingot, where cooling and solidification of the metal last takes place.

A number of expedients are resorted to in ordinary practice, with more or less success, for controlling and avoiding these defects, but, without doubt, the most efficient of all methods is the application of the Whithworth process of fluid compression.

At the Bethlehem Works this process is in daily use in the production of large ingots for gun, shafting and miscellaneous machine forgings, and masses of steel of great weight are thereby produced which are to a high degree sound and homogeneous, and which, when prepared by boring for hollow forging, are practically free from all defects.

Conditions of Shaping and Forging.

When a mass of steel is to be shaped or forged the first requisite is careful and uniform heating to a proper temperature. This is greatly a matter of experience and skill and requires unremitting care and attention. The next requisite, and one of the first importance, in order to obtain reliable results, is the use of forging machinery of proper design and power for the work in hand.

The presence of internal strains and defects, causing failure of many forgings, can be attributed to the shaping being done with hammers of insufficient power, and especially if the power is developed by a high velocity of impact rather than by weight of falling mass.

The pressure applied in shaping a body of steel should be sufficient in amount and of such character as to penetrate to the center and cause flowing throughout the mass. This flowing of the metal requires a certain amount of time, and therefore the requisite pressure should be maintained during a corresponding period in order to insure thorough action. The quick blow of a hammer of insufficient power is absorbed near the surface of the mass struck, and there causes a local movement or extension, and repeated blows of this description, stretching the exterior more rapidly than the interior, bring a tearing strain on the core or central portion, producing at times actual cavities, which are defects of the most dangerous kind. This action is visibly demonstrated by the ends of forgings made under the last conditions named assuming a concave or cupped form, due to the exterior drawing more rapidly than the central portion.

The conditions of forging attained by the use of the hydraulic press are evidently the reverse of those above mentioned, and are correspondingly favorable to obtaining the best results. The pressure is definite and constant and acts slowly but uniformly throughout the distance traversed by each stroke. As a result, there is ample time for the pressure to distribute itself, and if sufficient in amount it causes flowing throughout the entire section operated upon, the tendency being to squeeze out and extend the central portion even more rapidly than the exterior. A similar effect is attained, though to a less degree, by the use of a hammer developing ample power for the work to be done, especially when the power is due to a great weight falling by the force of gravity only and thus reducing the velocity of impact to a minimum. The action of the forging presses in the Bethlehem shops fully substantiates the theory as above indicated, and no forgeman can observe the actual slow but continued flowing of the metal throughout the section and the central bulging at the ends without knowing the shaping is being done under the most favorable conditions. The increase of the falling weight of the great Bethlehem hammer to 125 tons, as already mentioned, was an eminently wise step as insuring to a considerable degree conditions similar to those above described, even when forging the ingots of the great weight and section required for heavy armor plates. The thoroughness of the work done is indicated by the comparatively small number of blows required to effect the reduction in area and by the bulging convex shape of the ends of plates.

A most important factor in the use of hydraulic presses for forging is the ability to produce with them long lengths forged hollow over a mandrel, and this class of forgings is especially adaptable to marine shafting and the parts of built up guns.

In the manufacture of hollow forgings the conditions of shaping are in all respects favorable to the production of sound work of the highest quality. A hole of suitable size is bored throughout the central axis of the unforged ingot, thereby removing the portions rendered defective by segregation and piping and disclosing any interior defects that may not have been removed by boring. The bored ingot forms a hollow cylinder with walls much thinner than the cross section of the solid ingot; this condition greatly facilitates heating and practically removes the danger of internal cracking during that operation. The forging of the comparatively thin walls of the cylinder over a solid mandrel also insures thorough work and makes it possible to turn the forging out at a low and uniform heat, thus fixing a uniformly fine or amorphous grain. A solid forging, on the other hand, of the same outside diameter, would be much hotter toward the central axis than on the outside, and the gradual loss of this high internal heat will tend to coarsen the grain by crystallization and set up internal strains. In the hollow forgings any internal defects show themselves on the inner surface, while in solid forgings their presence is hidden and can only be disclosed by boring. Hollow forgings of beautiful appearance and of large variety of dimensions are daily produced under the hydraulic presses at the Bethlehem forge, and this class of work is well represented in the company's exhibit at the Chicago Exposition by several fine specimens, one of which is a shaft 20 inches outside diameter, 67 feet long, with a hole 8 inches in diameter forged through the entire length.

Treatment After Forging.

There are two processes usually employed in the treatment of steel forgings after they leave the press or hammer—viz., annealing and tempering, or hardening, or a combination of the two. To these must be added surface or case hardening, which, while heretofore frequently used in the treatment of small forgings, has recently come into prominence on a large scale in the application of the Harvey and other processes to the production of hard faced armor plate.

The primary object of annealing is to relieve internal strains set up by forging, and by rapid and irregular cooling during and after forging. In addition to this, annealing alters the molecular condition of the steel, and when applied under proper conditions has a tendency to break up crystallization and fix a finer or more nearly amorphous grain, whereby the toughness of the material is increased. The general affect of annealing, as indicated by the tensile tests of specimens, is to lower the tensile strength and elastic limit and increase the elongation and contraction of area.

Hardening or tempering of steel forgings consists in cooling them rapidly, usually by immersion in oil, from a red heat varying in degree according to conditions, and hence it is generally

* From a paper read at the first annual meeting of the Society of Naval Architects and Engineers.

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spoken of as oil tempering. The object of this treatment is, 1, to break up the irregular and more or less laminated and coarse crystalline structure produced by forging, and to fix a fine or amorphous condition of grain; and, 2, to modify the physical properties of the metal, with a view of obtaintaining the most desirable combination practicable.

The sudden cooling in oil or otherwise naturally produces strains which, unless properly guarded against and relieved, are hurtful, and under certain conditions may be so great as to cause actual rupture. To avoid this latter danger, precautions both as to shape and composition are necessary; but of first importance is the removal, when possible, of the metal along axial lines before tempering, so as to effect internal as well as external cooling. This must often be done by machining, but it is evident that forging hollow furnishes a product especially well adapted to tempering. Annealing is resorted to after tempering, 1, to relieve strains, and, 2, to soften the metal to a degree required to obtain the physical qualities aimed at. The effect of this double treatment—tempering and annealing—as indicated by tensile tests, is in general to increase the elastic limit relatively to the tensile strength and, when the hardness is "drawn" by annealing, to increase materially the elongation and especially the contraction of area.

Treatment by tempering has been applied in the manufacture of steel gun forgings and armor plates for a number of years with highly satisfactory results, and the great amount of testing, by breaking specimens cut from full sized prolongations of the actual forgings after treatment, required in gun steel and armor plate specifications, had provided such a mass of information bearing upon the effect of this treatment on various grades of steel as to enable the manufacturer to obtain with great precision certain specified qualities in tempered material. Comparatively little has been as yet done toward the treatment by tempering of marine shafting and engine forgings; but it is believed that with the growing importance of decreasing the weight and increasing the strength of such forgings, a large field for improvement is open in this direction to the marine engineer.

Introduction of Unusual Ingredients.

The introduction into steel of ingredients other than those usually present, for the purpose of imparting to the metal desirable physical qualities, is a subject which has called forth much experimental work and study.

Results of practical value have been obtained with chromium, tungsten, manganese (in more than usual quantities), aluminum and nickel, and some experiments have been made with copper.

Chromium and tungsten, in moderate amounts, are for the most part used in high carbon crucible steels, to which they impart special hardening properties found useful for cutting tools. Chrome and tungsten steels, especially the former, have also of recent years been brought into prominence by their successful application to the manufacture of armor piercing projectiles, and a considerable amount of chrome steel is now produced in open hearth furnaces.

Manganese, when introduced in considerable quantities, say from 3 to 15 per cent., imparts to steel remarkable toughness, together with such great hardness as to render machining impracticable, and its useful application is therefore limited.

Aluminum in small quantities acts in a remarkable manner to increase the fluidity of steel when cast, and prevents the formation of blow holes during solidification, and has consequently found wide use in the production of solid steel castings.

The introduction of nickel into steel, while only of recent development, has been found to impart to the metal highly desirable qualities, and as this alloy, containing definite proportions of nickel, can be successfully and uniformly produced by the open hearth process, it is especially applicable to the classes of large forgings now under consideration. The physical properties of the alloys of nickel and steel were first brought to general public notice in an admirable paper by James Riley of Glasgow published in the *Journal of the Iron and Steel Institute*, Vol. I, 1889.

Experiments in the use of nickel steel for armor plates were soon after undertaken by the Creusot Works, and were so successful that during the winter of 1890 Schneider & Co. were ready to submit a plate of nickel steel for public trial. The probable superiority of nickel steel for armor had been early brought to the attention of the Navy Department, and in 1890 Secretary Tracy authorized the purchase from the Creusot Company of two experimental 10½-inch plates, one of simple and one of nickel steel. A Cammel compound plate of same dimensions was also procured, and in September of the same year the famous comparative trial of the three plates above named took place at the Annapolis Proving Ground. As is well known, the nickel steel proved superior to the others, especially on account of its freedom from cracks. As a result of this trial, nickel steel was adopted for the armor of the navy. The production of nickel steel was undertaken by the two firms having contracts for armor—viz., the Bethlehem Iron Company and the Carnegie Steel Company, Limited—and within a year after the above mentioned trial successful results were obtained. Since then nickel steel armor plates have been regularly produced in large quantities.

The physical properties of nickel steel vary greatly, according to the amount of nickel contained. A steel containing about 3½ per cent. of nickel has, up to the present time, been generally used for armor plate, and much information as to its qualities has been obtained. In general, the presence of this amount of nickel (3½ per cent.) increases the hardness—*i. e.*, the tensile strength and elastic limit—without causing a corresponding reduction in elongation and contraction; and the elastic limit is also increased relatively to the tensile strength. These properties indicate toughness.

The presence of this amount of nickel appears also to hinder crystallization after forging and favors a finely granular or amorphous condition. It also renders the steel more susceptible to the effects of tempering, and it is in tempered steel that the improved qualities are most apparent. As shown by the ballistic tests of armor plate, the presence of nickel materially increases resistance to shock, and, in short, in all respects improves the physical qualities of mild steel.

From the above it is evident that the use of nickel steel should not be confined to armor plate, and that a wide field of application is open to it in the fabrication of gun and marine engine forgings, as well as many other products.

In conclusion, it may be of interest to summarize, from a metallurgical point of view, the present status of the manufacture of the three classes of steel forgings under consideration, and to indicate the lines in which improvements can be made.

American Society of Mechanical Engineers.

The next convention of this society will be held at the home of the society, 12 West Thirty-first street, New York, December 4 to 8. At the first session, Monday evening, the president, Eckley B. Coxe, will welcome the members and deliver his presidential address. There will be no sessions during the afternoons; members can then visit the following places:

Morgan & Quintard Iron Works; North River Iron Works; Pond Machine Tool Works; Stevens Institute of Technology; Columbia College, School of Arts, Law, Mines; Columbia College, School of Medicine (College of Physicians and Surgeons); Pratt Institute; Washington Bridge; Shipyards and Works, S. L. Moore & Sons Company; Metropolitan Museum of Art; Museum of Natural History; East River Gas Works; Ball & Wood Engine Company; Power Houses, Broadway Cable Road; Power House, 125th street Cable Road.

The following papers will be presented:

A. K. Mansfield, "The Buckeye Engine Valve Gear."

R. H. Thurston, "The Maximum Contemporary Economy of the High Pressure Triple Expansion Engine."

Geo. A. Morison, "Expansion Bearings for Bridge Superstructures."

Barton Cruikshank, "A Device for Drill Jigs"

Fred'k A. Scheffler, "A Curve Delineator."

Fred. W. Taylor, "Notes on Belting."

R. C. Carpenter, "Some Experiments on the Effects of Water Hammer."

R. C. Carpenter, "Constants for Correcting Indicator Springs which have been Calibrated Cold."

W. S. Aldrich, "The Use of the Indicator in Dynamometric Testing."

R. C. Carpenter, "A New Form of Prony Brake."

D. S. Jacobus, "A Comparison of Mean Effective Pressures of Simultaneous Cards taken by Different Indicators."

H. L. Gantt, "Recent Progress in the Manufacture of Steel Castings."

Wm. A. Pike, "Steam Piping and the Efficiency of Steam Plants."

Chas. H. Manning, "A Method of Manufacture of Large Steam Pipes."

Jas. B. Stanwood, "Strength of Rim Joints in Flyband Wheels."

R. C. Carpenter, "Experimental Determination of the Effect of Water in Steam on the Economy of the Steam Engine."

F. A. Scheffler, "Test of a Boiler Using Grates with a Small Percentage of Openings."

Wm. A. Rogers, "The Cumulative Errors of a Graduated Scale."

Wm. H. Francis, "A Modern Disinfecting Plant."

W. S. Crane, "Crucible Furnace Using Petroleum."

David Guelbaum, "Theory of Direct Acting Steam Pumps"

The project of cutting a ship canal between Chesapeake Bay and the Delaware River has recently been revived.

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The Bailey Air Pump.

From the recent report of Geo. W. Melville, Engineer in Chief of the Bureau of Steam Engineering, United States Navy, we take the following account of a test made of this pump, which was designed by Passed Assistant Engineer Frank H. Bailey, United States Navy, at present attached to the Bureau of Steam Engineering, for the purpose of securing a pump which would be very small and light, and at the same time efficient at very high speeds, so that it might be attached directly to the main engine in the case of steam launches, torpedo boats, and other small fast-running engines.

The essential idea in the pump is to have no foot valves and to have delivery valves, *a o*, which cover the whole end of the cylinder, thus insuring complete discharge of the contents of the pump at the end of the stroke without much effort being required.

The pump which was used for the experiment was adapted to fit a launch engine with cylinders 3½ and 7 inches by 5 inches stoke, and for that reason the shape of the pump is somewhat different in details from pumps designed with a new engine. The details of the pump are shown on the annexed drawings. It will be seen that the diameter of the pump is 2 inches and the stroke 1¼ inches.

The piston *d* has a width of 1 inch, and is so designed with reference to the length of the cylinder that when at the end of the stroke it just passes the opening *b* for the admission of air and water from the condenser. After traveling a short distance on the return stroke this suction opening is shut off and remains so until the other end of the piston has passed it, the contents already received being driven before the piston until near the end of the stroke, when the discharge valve is lifted and the contents expelled.

The suction opening consists of a port cut in the shell of the cylinder all the way round except for the bridges necessary to hold the two halves together. The discharge valves in this case were $\frac{1}{16}$-inch thick, of composition, held in place by light springs and guided so as to insure their seating evenly.

The pump was driven by means of a beam with connection to the low pressure cross head of the engine.

Four trials were made. The first, with the boat tied to the wharf and in still water; the second, with the boat under way and under normal working conditions. Both of these trials were made with the propeller attached to the shaft. In order to secure a higher number of revolutions than was possible with the screw connected, it was then removed and the third trial was made with the boat alongside the dock and the water around the boat at rest. The fourth trial was made with the boat moored in a current of about 2 knots an hour.

The condenser was of the keel pattern, consisting of a copper pipe running from the condenser discharge on one side around to the air pump on the other, and, of course, when the boat was secured to the wharf the circulation of the water past it was absolutely *nil* in the case of disconnected propeller, while with the propeller connected it was very small.

The results of the tests are shown in the following table, and it is to be noted that at as high a speed as 1000 revolutions per minute, and with the poor flow of refrigerating water, due simply to the current in which the boat was moored, the vacuum was still 21 inches. It will also be noted that, under normal conditions, with the propeller in place and the boat driven through the water, the vacuum was 25 inches at as much as 250 revolutions.

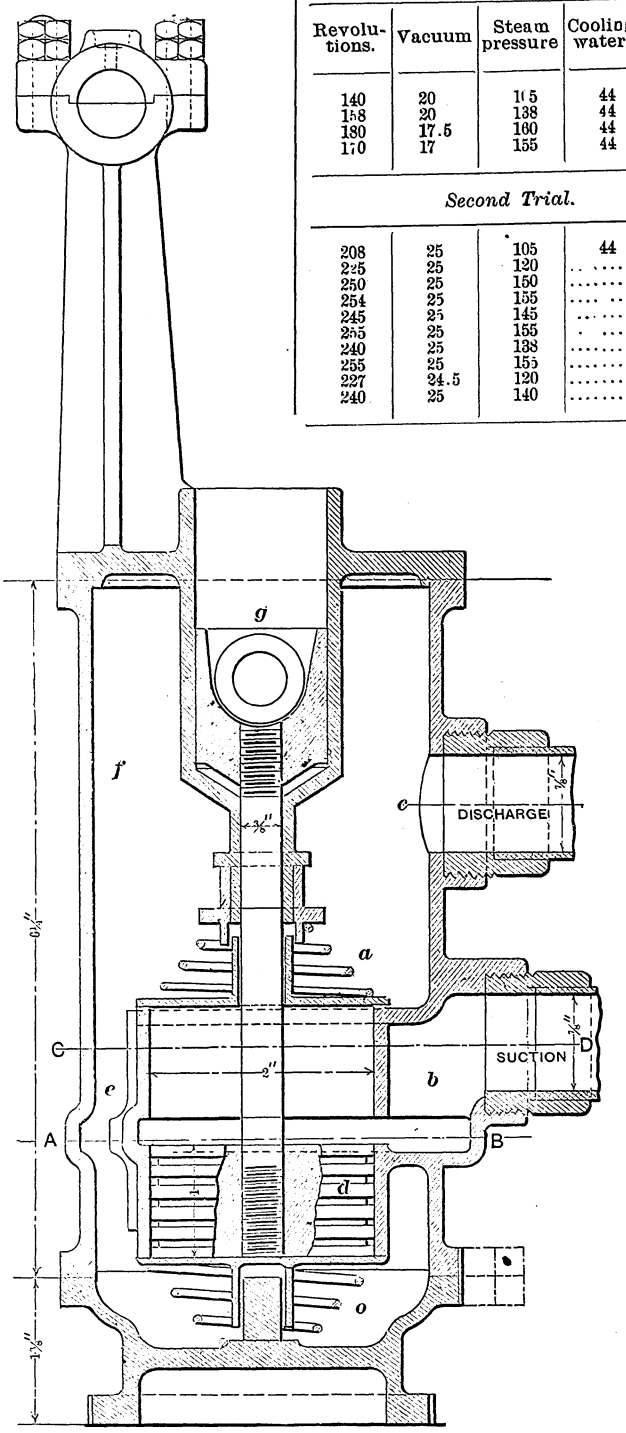


Fig. 1.

THE BAILEY AIR PUMP.

The pump ran quietly and without any jar or thump, and on examination after the trials were finished the valves, springs and pistons were found in good condition.

The pump in question was designed simply for experimental purposes, and there was, therefore, but a single one. In ordinary work the pumps will be in pairs, inasmuch as it might happen, if a single pump were used, that the main engine might stop in such position that the suction opening would be closed and the condenser might fill with water, due to the use of the "bleeder." To obviate this the pumps are arranged in pairs, with the cranks or eccentrics driving them at right angles, and the suction openings of such a size that it will be impossible, in any position, for both suctions to be closed.

First Trial.

Revolutions.	Vacuum	Steam pressure	Cooling water.	Feed water.
140	20	105	44	90
158	20	138	44	122
180	17.5	160	44	135
170	17	155	44	140

Second Trial.

208	25	105	44	50
225	25	120	.....	52
250	25	150	.....	60
254	25	155	.....	61
245	25	145	.....	60
255	25	155	.....	60
240	25	138	.....	56
255	25	155	.....	61
227	24.5	120	.....	54
240	25	140	.....	68

Third Trial.

585	22	155	50	68
638	22	155	50	70
720	22	155	50	100
790	15	155	50	138
840	15	155	50	120

Fourth Trial.

680	22	110	44	62
855	22	130	44	110
900	21	140	44	110
1,000	21	140	44	112

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The Naval Architects.

Inaugural Session of the Society of Naval Architects and Marine Engineers.

The first annual meeting of the Society of Naval Architects and Marine Engineers was held in the rooms of the American Society of Mechanical Engineers on the 16th and 17th insts., with C. A. Griscom, president of the International Navigation Company, in the chair. The president in his welcoming address said: "It seems to me to be significant that our society should be called into existence coincident with the construction of our new national navy, showing that the appropriations made by Congress for a series of cruisers and battle ships not only bears an influence to our flag, but tends to stimulate throughout the land an interest in maritime affairs without which no nation can be truly great. The national sentiment which is now producing a new navy cannot overlook the axiom that a navy cannot be maintained without a merchant marine to sustain it. That the art of shipbuilding has not expired with you is shown by the magnificent types designed and constructed for the trade of our coast. Nothing can be more significant than the fact that you were always able, when necessary, to build a better naval cruiser than the last, and a better yacht to defend the "America's" cup. As I am one who believes the cup is here to stay, so I believe also that your architects and engineers and mechanics will show that the skill still remains with you not only to cope with the highest talent of any country, but also to keep in advance of it."

Francis T. Bowles, chairman of the Executive Committee, then presented a report showing the society to be in a flourishing condition, both in regard to its membership and finances. It had 4 life members, 4 life associates, 260 active members, 165 associates and 2 juniors, making a total of 435; the total receipts, $5403; total expenditures, $767, leaving a surplus in the treasury of $4636.

The officers elected for the ensuing year were:

President, Clement A. Griscom of Philadelphia, president International Navigation Company.

First vice president, Theodore D. Wilson of Washington, ex-Chief Constructor, U. S. N.

Vice-presidents, Chas. H. Cramp of Philadelphia, president Wm. Cramp & Sons' Ship and Engine Building Company; George W. Melville of Washington, D. C., Engineer-in-Chief, U. S. N.; Geo. W. Quintard of New York, president Quintard Iron Works; Irving M. Scott of San Francisco, vice-president and general manager Union Iron Works; Francis A. Walker of Boston, president Massachusetts Institute of Technology; Wm. H. Webb of New York, naval architect (retired); Charles H. Loring of Brooklyn, ex Engineer-in-Chief, U. S. N.; Philip Hichborn of Washington, Chief Constructor, U. S. N.; R. W. Meade, Commodore, U. S. N.

Secretary and treasurer, Washington L. Capps of Washington, Assistant Naval Constructor, U. S. N.

Among those present at the meeting were the following: R. W. Davenport, vice-president Bethlehem Iron Company, South Bethlehem, Pa.; Charles E. Emory, New York; G. A. Cormack, secretary Corinthian Yacht Club; W. M. McFarland, Bureau Steam Engineering, U. S. N., Washington; Col. E. A. Stevens, president Hoboken Ferries, Hoboken, N. J.; Francis T. Bowles, Naval Constructor, U. S. N., Norfolk, Va.; J. F. Holloway, 145 Broadway, New York: Wm. Gardner, 1 Broadway, New York; C. D. Mosher, 1 Broadway, New York; Col. H. G. Prout, editor *Railroad Gazette;* M. N. Forney, editor *American Engineer and Railroad Journal;* Charles Kirchhoff, editor *The Iron Age;* M. N Baker, associate editor *Engineering News;* S. D. V. Burr, mechanical editor *The Iron Age;* Prof. J. E. Denton, Stevens Institute, Hoboken, N. J.; Prof. W. F. Durand, Cornell University, Ithaca, N. Y.; S. Dana Greene, General Electric Company, New York; Jas. T. Boyd, general manager George F. Blake Mfg. Company, New York; C. H. Haswell, New York; H. B. Roelker, New York; A. A. Henderson, Chief Engineer, U. S. N.; A. P. Niblack, Lieutenant, U. S. N.; J. J. Woodward, Naval Constructor, U. S. N.; A. H. Raynal, superintendent S. L. Moore & Sons Co., Elizabeth, N. J.; Prof. C. H. Peabody, Massachusetts Institute Technology, Boston; F. M. Wheeler, Wheeler Condenser & Engineering Company, New York.

The first paper presented was by Charles H. Cramp, president of the Wm. Cramp & Sons' Ship & Engine Building Company, on

The Evolution of the Atlantic Greyhound.

The author stated that for general purposes of historical accuracy it was sufficient to say that the first real "send off" in the great modern steamship race was given by the Inman Company in 1869-70 by the "City of Brussels," which broke the record by a passage of 7 days 22 hours and 3 minutes, being the first to get within the eight-day limit. She was 390 feet long between perpendiculars, 40 feet 4 inches beam, and registered 3090 tons gross, her displacement at 26 feet draft being 6900 tons. Her engines were simple, direct acting, with two 90-inch cylinders of 54 inch stroke, and with steam at 30 pounds she developed 3020 indicated horse-power and realized an average speed of 14.53 knots in her best trip. The White Star people then built the "Oceanic," which was of 3808 tons, 420 feet long, 40 9 feet beam and depth of 23.4 feet. She was powered with a pair of compound engines having four cylinders, two high pressures of 29 and two low pressures of 78 inches diameter, on the tandem plan, with a 60-inch stroke, and carried usually 66 pounds of steam. The distinguishing feature of the "Oceanic" was her extraordinary proportion of length to beam, and her ratio of 10¼ to 1 in that respect was considered a remarkable venture on the part of her builders. The same company then brought out the "Adriatic" and "Celtic" of 3886 tons, 417 feet long, 41 feet beam, and propelled by 4-inch cylinder compound engines. The former lowered the record to 7 days 16 hours and 26 minutes.

While these enterprises of the White Star Line were in progress a movement was started on this side of the ocean which at first bid fair to permanently enlist American capital and spirit in an effort to regain the position of a maritime commercial power which had been lost through the war. This resulted in the formation of the American Steamship Company and the construction by the Cramp Company of four steamships known as the "Carolina," "Illinois," "Pennsylvania" and "Ohio," which were commissioned in 1872-73. They made eight day trips, and for a time attracted their share of the transatlantic traffic, but succumbed at length to the competition of their subsidized British

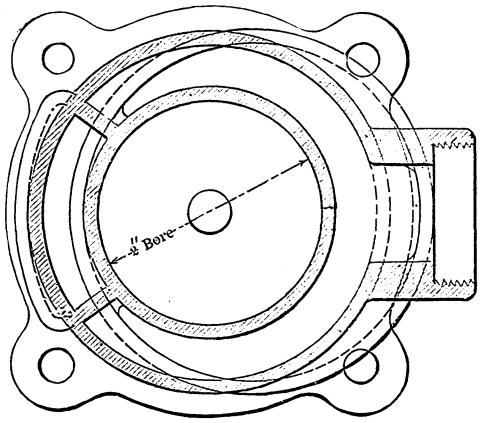


Fig. 2.—Section on C D of Fig. 1.

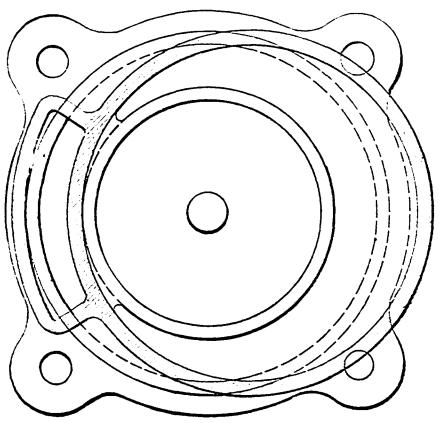


Fig. 3.—Section on A B of Fig. 1.

THE BAILEY AIR PUMP.

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rivals and ultimately passed under the control of the International Navigation Company, by whom they have been considered worth re equipment with new triple expansion engines after 20 years of continuous service. These ships, though not so large or so high powered as some contemporary vessels, embodied the best shipbuilding practice of their date as to material and workmanship, and are still creditable specimens of American shipbuilding skill 20 years ago, as well as of first-rate efficiency in their classes.

The "City of Berlin" was contracted for by the Inman Company in 1873. She was distinguished by having the greatest proportion of length to breadth thus far attained—namely, 11 to 1. In other respects the "Berlin" was the finest ship of her time, and she brought the record down to 7 days 15 hours and 28 minutes. Then followed the "Germanic" and "Britannic" of the White Star Line, which brought the record down to 7 days 6 hours and 52 minutes. These ships held the pennant from 1874 to 1879. The "Arizona" of the Guion Line then entered the race and made a record of 7 days 3 hours and 38 minutes, which she held during 1879–80. Her principal dimensions are 450 x 45.4 x 35.7 feet, and she is powered with three-cylinder compound engines, having one 62-inch high and two 90-inch low pressure cylinders, 66-inch stroke, and, with steam at 90 pounds, developed 6640 indicated horse-power.

Next came the "Alaska" and "City of Rome," between which the contest was fierce. Trip after trip they sped over the ocean "neck and neck," as horsemen say, the average difference between their records being but a few minutes. Finally, however, the "Rome" got down to 6 days and 18 hours, which beat the "Alaska's" best by 37 minutes, and then the "Rome" hoisted the banner in her turn. The "Rome" was the largest ship of her day, excepting, of course, the "Great Eastern;" at all events the largest single screw ship up to her date. Her dimensions are 560 x 52 x 37 feet, her gross tennage 8144 and her maximum horse-power 11,500 indicated.

The "America" of the National Line then made a record of 6 days 14 hours and 16 minutes, and was followed by the "Oregon" of the Guion Line with 6 days 9 hours and 22 minutes. The "Oregon's" engines were three-cylinder compound of the highest working pressure attempted up to that time. Her high pressure cylinder was 70 inches and her two lows 104 inches, with 72-inch stroke, and, carrying steam at 110 pounds, she developed 13,200 horse-power, by far the most massive and powerful engines built at that date. The "Umbria" and "Etruria" of the Cunard Line then brought the record to 6 days even, and held it during 1884–89. It was evident that in them the possibilities of single screw propulsion had been exhausted, and owners and builders who meditated an advance beyond them had to contemplate twin screws.

During the years 1885, 1886 and 1887 there was much activity on the part of the French and Germans. The latter brought out the "Aller" of the North German Lloyds in 1885, the "Saale" and "Trave" in 1886 and the "Lahn" in 1887. These were British ships built at Fairfield. They were all single screw vessels, but they had the distinction of introducing the triple expansion engine in transatlantic propulsion. The "Fürst Bismarck" is chiefly remarkably as being the most important commercial ship ever built in Germany, and as a result of the policy adopted by the German Emperor to encourage home shipbuilding by making marked discriminations in favor of such ships as compared with those built abroad. Her dimensions are 502½ x 57½ x 38 and tonnage 8874. Her engines are triple, with cylinders 43 5/16, 66 5/16 and 106 5/16, having a stroke of 63 inches. She developed 16,800 indicated horse-power as a mean of six days on the trip which gave her for a brief period the Southampton record.

We have now to consider the latest types, the "New York" and "Paris," the "Majestic" and "Teutonic," and the "Campania" and "Lucania." These ships are so well known and have been so recently and minutely described that it is not necessary to reproduce their details, and I will pass at once to another, and perhaps more interesting phase of my subject, but before passing on, it should be mentioned that to the International Navigation Company in procuring the building of the "New York" and "Paris" belongs the credit of inaugurating the evolution from single to twin screws in passenger ships, and of first offering to the public steamships so subdivided as to be unsinkable with three compartments flooded and with no water-tight doors near or under the water line.

The author criticised the principal fad of the great English builders who have an aversion to statical stability; a repugnance to metacentric hight. As one of their standard authorities remarked in a recent paper, "a ship will roll; you cannot help that. Therefore the problem is to make her period as long and her motion as easy as possible."

The author believed that any design which contemplates the carriage of water ballast (or other dead weight not cargo or coal) as an inseparable condition of stability under any circumstances is radically defective and should be condemned.

Under such a system no advantage can be taken of decreased draft caused by consumption of coal or absence of cargo, but the ship must always be kept down to a load draft in order to stand up.

The proposition that you must carry 1000 or 2000 tons of dead weight in water ballast when you happen to be short of cargo or run down in coal is one that I cannot really discuss with patience when it is possible to build the ship on lines that will make her stand alone without detriment to any other desirable quality, and with vast improvement to her most important characteristic, that of safety at all times and in all conditions.

After briefly considering the increase of size as an element in the development of speed, the author made the following remarks on the two ships his company are building for the International Navigation Company: Length on load water line, 536 feet; length over all, 554 feet; extreme breadth, 63 feet; molded depth, 42 feet; gross register, about 11,000 tons; first cabin capacity, 320 passengers; second cabin capacity, 200 passengers; third cabin capacity, 900 passengers.

Their propulsion will be by twin screws, actuated by two quadruple expansion engines on four cranks, which, with steam at 200 pounds, will probably develop about 20,000 collective indicated horse-power. To support the outboard shaft bearings the hull is built out in a horizontal web to a steel frame having both bosses cast in one piece and weighing about 68,000 pounds. The after deadwood is cut away and the keel slopes up so that the shoe meets the boss frame at the after end. It will be observed that these ships are considerably larger than the "New York" and "Paris," or about half way between them and the "Campania" class. I will not venture a prediction as to their probable performance, but I will guarantee them to be perfectly safe, comfortable and economical ships.

They are to be followed closely by other ships, which I will not now describe, except to say that they will not shrink from any comparison or competition.

The paper by James T. Boyd, general manager of the George F. Blake Mfg. Company, criticised the present inspection laws for machinery and boilers, and presented suggestions as to their improvement. The pay is at present too small, and an increase should be graded somewhat according to the localities, but not with any such difference as now exists. The samples received for tests are generally the only material seen by the inspectors until work is completed and ready for certificate No visits are made to the works during construction; the only knowledge the inspectors have of the boiler work is the description given on affidavit, submitted with samples, and occasionally by a blue print of the boiler drawing. Proper inspection should include the examination of the work at different stages, and allowances should be made where good workmanship is shown and deductions where work is poor.

The author was of opinion that the number of inspectors should be increased, especially in those districts where vessels are built and engined. There are no rules to govern an inspector in regard to machinery. Concerning tests of boiler plates, it is stated that the elastic limit should be determined in all tests for tensile strength, and a percentage of this limit should be used in the formulæ for strength of shells in place of a percentage of the ultimate strength. The author was of opinion that a complete revision of the rules should be made.

Coal Bunkers and Coaling Ship

was the title of a paper by Lieut. A. P. Niblack, U. S N., who presented an array of facts showing that the vessels of the navy could not be coaled rapidly because of the disposition of bunkers and lack of adequate facilities. The following table shows the capacity of the bunkers of some of the ships of the navy and the time required to fill and trim them:

	Total coal capacity. Tons.	Time required to fill bunkers. Hours.
Atlanta	490	33
Chicago	824	28
Charleston	758	26
Yorktown	380	24
Baltimore	1,145	60
San Francisco	628	33
Newark	800	28

As a remedy the author proposed that in cruising ships the bunkers below the protective deck be extended the breadth of the ship, but be divided in two by a fore and aft bulkhead amidships. A pair of bunkers, starboard and port, would thus take up all the space vertically between the protective deck and the inner bottom, and, longitudinally, between the athwartship water tight bulkheads. It is proposed that one pair be forward of the fire room and another between the en-

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gine and fire rooms; or, in case there are two fire rooms, as is usual, and it is desired to add a third pair of bunkers, then between the two fire rooms. From their large size they would admit of rapid coaling, and from their position would be a great protection from raking fire either forward or aft. The paper then described and illustrated the appliances necessary for handling the coal.

A most valuable paper, profusely illustrated, on

Steel Ships of the United States Navy,

was prepared by Theodore D. Wilson, ex-Chief Constructor, U. S. N. He first described the principal features of the steel ships of the navy whose construction had been undertaken since 1883, and pointed out the differences and the reasons for the changes. Since the above date 43 vessels, of a total displacement of 180,478 tons, and two torpedo boats, have been added to or are being completed for the naval service.

In the class of torpedo gunboats, however, absolutely nothing has been accomplished; and when the marked development which this class of vessels has received in all foreign services is considered in connection with the great military value that may be given to these small and comparatively inexpensive vessels, their total absence from our fleet is greatly to be regretted. It is true that the construction of one vessel of this class has been authorized, but as the appropriation was insufficient, nothing has been done. The number of vessels of different types which have been built, when compared with those added to foreign services, show that we have a satisfactory proportion of cruising gunboats, but in battle ships and topedo boats we are weak. With the material resources now available there is no longer any limitation to the results that may be accomplished other than that which the wisdom of Congress and the Executive may place upon the naval designer through the limitation of cost.

In conclusion the writer said:

"It is impossible to conclude this brief summary of the work accomplished toward the construction of a modern fleet without referring especially to the manner in which the private shipyards of the country have contributed to the success of the results obtained. When it is remembered that all but four of the new steel ships have been built by contract, the aid rendered the country by private shipbuilders will be appreciated, and higher praise to the thoroughness of their work cannot be given than is implied by the simple statement of fact that in no case has the contract speed of any vessel failed to be obtained on trial."

A paper on the "Comparative Performances of American and Foreign Freighting Ships," by W. W. Bates, late Commissioner of Navigation, United States Treasury Department, showed the superiority of both the iron and wooden boat of American construction in every particular. "Thoughts on the Design of New York Ferryboats" was the subject treated by Col. Edwin A. Stevens, president of the Hoboken Ferries. He mentioned the characteristics a ferryboat should possess, and then described the main features of the screw ferryboats and their peculiar adaptability to the service. Other papers presented were as follows: "The Influence of Speed and Weight of Machinery on the Determination of the Other Elements of Design of Steam Vessels," by J. J. O'Neill, 'naval architect and marine engineer;' "The Wetted Surface of Ships," by D. W. Taylor, Naval Constructor, U. S. N.; "On the Law of Frictional Resistance," by Prof. W. F. Durand, Cornell University, and "Notes on the Machinery of the New Vessels of the United States Navy," by Engineer in-Chief Geo. W. Melville.

Notes on the Imataca Iron Ore Range.

BY S. NORTON, HOKENDAUQUA, PA.

In order to call the attention of the furnace companies at the present time to a new iron ore range a person must be anything but a pessimist in his views in regard to the iron and steel business. The greater number of large and high grade ore bodies of the United States that are suitable for making steel are located around the shore of Lake Superior. We have, on the east of the Alleghenies, the Chateaugay, which by concentrating is without doubt the purest iron ore in our market. The cost is all that can be said against it. The Benson is a deposit of inexhaustible magnitude, but the ore must be concentrated. The same can be said of the Cranberry range. Port Henry and Crown Point are also able to produce a considerable quantity of Bessemer ore. There is also a quantity of carbonate iron ore of a good Bessemer grade in the Hudson River Valley. But none of these ores will work alone, neither will they together make a good working mixture; therefore it is necessary to bring ore from other parts to complete the mixtures.

There are only two points from which this ore can be derived; either it must come from the Lake Superior regions or from foreign lands. While it is possible, and not only possible but necessary, for Eastern furnaces making foundry iron to use Lake Superior ores with the cheap magnetic ores of local mines, when they come to the Bessemer steel business they have no cheap local ore to lower the cost of their mixtures in order to compete with Western steel manufacturers, who have fuel at a low cost and ore costing less by the amount of the freight. It becomes necessary for the Eastern furnaces to either find some cheaper ore or to give up the field to their Western brethren. Providence has kindly placed at their doors an iron ore range that is second to none on this earth.

Situated 54 miles from the mouth of the Orinoco and on a small arm of the same, and not more than 1500 feet from where vessels drawing 18 feet of water can come within 20 feet of the shore, sheltered from winds and in fresh water, is the Eastern end of an iron ore range that is only waiting for the hand of man to open it up. The quality of the ore is of the best. Enough of the ore has been shipped and used at Troy and Scranton to establish the quality of the ore. This ore was taken from what has since been found to be the small end of the deposit.

Explorations carried on to the west, or parallel to the Orinoco River, show that as the hight of the hills increases the size of the ore bodies increases also, until at places the outcrop is from 100 feet to 300 feet wide; and as these explorations now extend over about 6 miles and each succeeding test trench to the westward shows more and more ore, and as we know that the ore is to be found at a point 35 miles beyond, we have, I think, good reasons to believe that there is at least 35 miles of an ore range. There are on the north slope of the hills, as far as I have been, thousands of tons of ore which have been worked down from the disintregrated vein matter. So that if I should do as many others do in describing the range, I would say that the outcrop was from 500 to 1000 feet wide. Still, this ore could be easily and cheaply won by any person who had ever seen how the brown hematites of Lehigh County, Pa., are prepared. As to the navigation of the Orinoco there is not the slightest trouble. We came out of the river in the night and the lowest water we found was 22 feet. In all the mining regions I never saw a place where a beginning could be made at so low a cost; in fact, the location is a perfectly ideal one, the only possible objection that can be made is that this great body of iron ore is on the Orinoco and not on the Delaware River. The whole region is a perfect wilderness and there are no restrictions in regard to importation of labor of any and all classes and no royalty, taxes or duty on anything to be used in carrying on the mining work. The concession requests the company to do the policing, and this I consider one of the most valuable considerations, as it practically gives the mining company the government of its own property.

There is also covered by the concession the trade of the Orinoco River. This by proper work could be made of great value, as the Orinoco River is navigable for 1200 miles, and this whole region is open for American trade, and would give return cargoes to vessels engaged in the transportation of the iron ore.

The Imataca iron ore range is very similar to the Cuban, and with these two regions open and furnaces and steel works at Norfolk and in reach of cheap coke, the United States could bid defiance to the world in cost and quality of pig iron and steel. There is no good reason, judging from the cost of mining in the Lake Superior regions of this same class of work, why this ore cannot be mined and placed on board vessel for 50 cents per ton. Transportation should not be more than $1.50 per ton to the United States, as this would be more than the actual cost of the same class of work on our great lakes, and there would be this great advantage, that vessels could be employed the whole year and not lose the winter either in transportation or in carrying large stocks of ore; $300,000 would be ample capital to open up the range to ship 15,000 to 20,000 tons per month, and $1,500,000 would open up the mining and build vessels, and also open up the trade on the Orinoco River.

In working this body of ore it should be done by importing cheap Spanish, Italian or Coolie labor, as the conditions of the steel and iron business in this country make it necessary that they have cheap ore. To do this there must necessarily be used as miners the lowest priced labor that it is possible to procure. Coolie labor will be able to stand the climate and can live on rice and fish, with no expense for buildings, since only a roof is needed to keep off the rain. As the ore will for years be all mined in the open this class of labor will be the best.

The vessels used in transporting the ore should be sailed under the Swedish flag and manned by men of that nation. The wages of these would be less than one-half of what is paid for the same class by our lake steamers. This fact, coupled with the fact that steamers

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could be employed the whole year instead of seven months, would, at a rate based on what has been paid from Two Harbors to Buffalo during the past summer, bring the cost of freight down to less than 90 cents per ton from Imataca to New York or Philadelphia. As we all expect the duty to be taken off, I see no reason why it is not possible with these facts before us to deliver ore at a price that steel can be made in the East.

Of a necessity there must be low wages at furnaces and mills in this country, but we must have iron and steel, and if we have to meet the world in the open market we must expect to pay less rather than more for the same work. "You cannot eat your cake and keep it too." These things must come or we must close our mills and furnaces and let others who will work for less do our work while we take a rest.

To the parties who have the necessary money and push there is not a better field. For a comparatively small amount of money there is a field for Yankee push and daring that must in the near future bring a rich harvest.

There is no iron made in Venezuela to my knowledge and there is no coal that is being worked. All the necessary materials are at hand at Imataca to make charcoal iron. There are thousands of acres of hard wood timber which can all be reached by water transportation on the hundred arms and inlets of the Orinoco, so that there are right here the ore and fuel with which cheap labor should make cheap charcoal pig iron.

There are also thousands of acres of the best sugar and coffee lands in the world, that are to be had by simply going in and possessing the land. All that is required is money and labor to make this one of the greatest wealth producing spots. I append analyses of Imataca ore:

Analyses of Imataca Iron Ore Taken from Points on the Range Over a Distance of 5 Miles.

	Fe.	Phos.	Mang.	Lime.	S.	Si.
1...	64.34	0.043	0.089	1.88	0.005	1.55
2 ..	66.67	0.0327	0.069	3.28	0.011	0.70
3...	67.06	0.056	0.085	2.61	0.023	0.53
4...	65.38	0.064	0.231	3.38	0.009	0.86

The Lyons Exhibition.

The main building for the international exhibition to be held next year at Lyons, France, will be a remarkable structure. From a description given in *Le Génie Civil* it appears that the building will consist of two practically distinct parts, a central dome like structure and a circular gallery running entirely round it. The dome will be 361 feet in diameter and formed by 16 parabolic half arches. These will be hinged at the bottom and each connected at the top to a circular crown. Each arch will act independently of the others. The roofs of the surrounding gallery will be carried by a peculiar form of a cantilever truss. The total weight of each main arch is stated to be 30.3 tons, and each roof truss of the galleries weighs 44 tons. The total weight of the iron work in the building will be about 2500 tons, and the area covered 9.4 acres, a trifle more than the annex to the Transportation Building at the Columbian Exposition.

The Chicago foundries whose owners failed during the summer have in but few cases been reorganized and put in operation. The F. E. Roberts Company are still in the hands of an assignee and the works are closed. The Chicago Foundry Company have not resumed. The Chicago Iron Works are standing idle, with little hope of resumption by the old management. Turner & Dickinson's foundry is operated by a receiver, but the creditors are considering a plan of settlement, which may be accepted, restoring the property to the old firm. The Bouton Foundry Company, under an assignee, have finished up contracts on hand at the time of the failure and the works will be closed until a reorganization, now being considered, can be effected. The W. H. Chenoweth Company have arranged terms of settlement and will shortly resume control of their works. The Eureka Foundry of Wiltshire & Graf will be operated hereafter by Kolben Johnson, who formerly ran it.

Management of Men and Manufacturing Industries.

FIRST PAPER.

Elements for Consideration in Locating Manufacturing Enterprises.

BY THOS. D. WEST.

It very often becomes a serious question with contemplated enterprises where to locate their works. They are often solicited to settle here and there, and shown advantages until their heads fairly swim with bewilderment. And having themselves no definite reasons why they could not settle as well in one place as another, it is no wonder they are "all at sea," and the one giving them the most wind carries them to anchorage.

No enterprise should choose a location without being able to have a chart upon which they could knowingly write the advantages and disadvantages of any place which might be brought to their notice for consideration. To have logical reasons for locating there, and not at some other point, is one of the first essentials to giving confidence in sailing onward to success, and not becoming weak-kneed at the first squall that blows adversity; for those engaging in any new enterprise can make up their minds that they will have to weather many a storm before they can reach, by experience and good financial steering, an open port in which they can be secure from foundering.

No two enterprises can be said to require the same conditions to exist in choosing localities. What might be an advantage to one would be a disadvantage to another. There is much more in being able to foresee what elements should exist than there is in seeing what do. Often the most experienced are deceived in their first conceptions and opinions. After getting started or having the plant in operation they find that they had jumped too quick at conclusions and had not taken sufficient time for investigation and study of prevailing conditions and elements which would rise, interfere, injure and be detrimental to their business.

Before treating this subject further the writer will endeavor to classify as far as he can the different conditions and elements that generally should be weighed by experience and judgment before contemplated enterprises are located. The first and in many cases the most important is: Good opportunity for procuring labor and knowledge concerning the character and training of the people where labor is expected to be obtained.

2. The advantages a locality may afford in the transportation of the concern's imports and exports.

3. Protection to life and property.

4. Cost of living and taxation.

5. The sphere there is for the enlargement of a plant.

This first proposition, that of procuring good labor in a new field, has often proved adverse to conceptions when labor came to be practically tested. Every industry has its own characteristic elements that demand from man an endurance and tax upon physical powers peculiar to and different from what some other line may call for. We find that one industry calls for spasmodic efforts of man. Another for constant steady labor—not one minute should they be idle. Then again we find industries calling for accuracy and neatness, while others require neither of such qualifications.

Still further on we see industries requiring men to withstand offensive odors and injurious dusts. Then we have those necessitating man to be standing or sitting in one position all day long. Also such as require him to endure all kinds of weather; and again we find him being required to withstand oppressive heat and flaming fires. It is often remarkable how men can be found "standing up to work" day after day that from observation or a short trial would by many be thought unbearable.

The lesson to be learned by study of the demands made upon a man's endurance in our different callings is that he can do most anything if only schooled and trained to it, but the trouble begins when we are required to do some labor foreign to what our endurance by actual experience has been trained to withstand. Of course, we have men that can conform readily to almost any kind of labor. As soon as they find some new muscles or sensibilities being made to pain or suffer they don't think they are going to die immediately. But men that will stick to labor that aches until their muscles become used to the work are scarce and far between. Any enterprise looking for a location should investigate very thoroughly the training men have had in the vicinity from which they expect chiefly to obtain their labor. For if they start in a vicinity where the schooling in endurance of labor differs radically from that which their industry demands, they can make up their minds to having much trouble and financial loss before they can procure and educate labor to profitably operate their plants. Heretofore this is a factor that has not had the attention it should have had. It has had, if the truth were only known, as much to do with strikes and failures in business as some other elements that might be mentioned. Every observing manager who has "knocked around" much will, I think, agree with the writer in saying that in changing localities he would be often deeply impressed how the little technicality and customs one place would think just right would at once cause dissention in some other locality. Therefore, to the interest of labor as well as capital it behooves the latter to use good reasoning in judging of labor in selecting its location and in the disciplining of it when first starting operations.

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The Advantages a Locality May Afford in the Transportation of Imports and Exports

Means for any enterprise to figure out as far as possible what it would cost for freight or cartage of any raw materials or products it might require coming to its plant, and what it would cost to ship their finished product to contemplated customers. With enterprises intending to do a national business, the latter becomes a very important factor, for long railroad freights are a costly item, and all care in locating should be taken in figuring to avoid long hauls in freights to customers or their own plant, for ofttimes the imports or raw materials an enterprise may use in the manufacture of its product might cost more to be conveyed or shipped to its plant than its product would be to contemplated customers, and, other things being equal, it may often be much more advantageous to be located near to the section for obtaining the raw material than to the customers using the finished product.

Where a question of freights in imports or exports would be the most essential to be considered in locating, a good plan is to lay out a map, encircle by a mark the sections from which the raw materials are expected and trade to be catered for, and then locate nearest to the sections thought to be most advantageous in saving cost of freights.

Protection to Life and Property.

Manufacturing buildings going up at the present day are, as a general thing, being constructed as much fire proof as possible, and many buildings are all iron or brick and iron, and their owners care little for fire protection or insurance. If this can be done, it is certainly the wisest plan to adopt. But where it cannot be and fire protection is required, such should not be looked into after the buildings are up, as is the case many times. Enterprises locating within city limits are, as a general thing, fairly protected; but outside of such, and in villages and so forth, the protection against fire is generally very poor, and new enterprises should endeavor if at all possible to construct fire proof buildings. Another point which might be well to hint at is the question of floods. It is always well to figure to be high and dry. Protection to life is an element not to be overlooked, for all business must feel that it will be protected against ruffianism, drunkenness and theft. In cities aid can very soon be had to repel attacks or insults of this character, but in small towns, villages, and so forth, a man is generally left to defend himself, for the protection that may exist is generally so meager and out of sight it rarely can be found when wanted.

Cost of Living and Taxation.

These factors are also very essential to be investigated. If food, clothes and house rent are dear, a firm can safely figure that wages will be higher than in places where living is cheaper. As a general thing house rent is much cheaper in the smaller places and oftentimes food, but for clothes the cost is much less in the large towns and cities than in villages, and so forth. Taken as a whole the wage earner can live much cheaper in small towns, and so forth, than in large cities, and during business depressions is better taken care of when out of work in the small than in the large places, for the supply dealers are confined to a small territory for trade, and as what is one man's business is generally everybody's business, the dealer fears the ill will of one man might seriously hurt his business. Hence he will let him have credit to a larger extent than could be obtained in a large city and take his chance for pay when the man returns to work. In regard to taxation little is to be said other than upon general principle, and that is, taxation is found much lighter in small than in large places.

Enlargements of Plants.

While this is a point that would be thought to be minor and sure to be provided for, yet it is astonishing the lack of foresight manifested by many firms in locating a plant. For had they at all figured on such, thousands of dollars could often have been saved by their locating in some other locality or building different. A new enterprise, in planning their works, should look ahead and figure so that if any enlargement is necessary after they get started half of their building will not have to be torn down to obtain what they desire. The condition can be but rare that would not permit original plans to be made of the largest plant that might be necessary, and in starting in only build as much of it as will assure sufficient room for a moderate business; and then, when a growing trade would demand more room, it can be constructed without destroying present building or causing a loss of time to manufacture.

The Advantages and Disadvantages of City and Village.

It would not be doing justice to say either one was the best for any contemplated enterprises. To decide such a question can only be done by taking into consideration the various elements herein cited, and if more points are found favorable to the village let it be accepted, but if the points are in favor of the city, why then let it have the preference. Each has its advantages and disadvantages, and if logical reasoning is only used a firm will not be misguided in their choice. A few elements yet exist that might be well discussed in regard to procuring labor in the city and village. In the village labor will be found much more characteristic in having established customs and habits than in cities, and any new industry that might call for characteristic elements different than those found in the locality in which, for other reasons, they would like to locate, they can make up their mind that if they start in they will have much trouble and expense before they get their labor to the proficiency they would desire. In a large city the lines of habit and custom are not so clearly drawn, and there is a large body of labor to draw from, so that a firm can much quicker obtain the characteristic element they need to best suit their requirements of manufacture, and, of course, in the matter of obtaining supplies for repairs, and so forth, and chances for communication with the outer world by mail, wire or telephone, the city has many advantages over the village. In starting any enterprise every possible advantage should be taken. To be well located means that half the battle to win success is fought. Too much care and judgment cannot be exercised in choosing a locality, and if the reconnoiter, in starting out, will but keep in the files of his memory the factors, characteristic requirements for labor, transportation, protection to life and property, cost of living, and taxation and accommodation obtainable in matter of supplies, mail, telephone and telegraph, he cannot make any very serious mistake in selecting a locality which in after years experience will surely have proved to be a good locality.

The Tariff Bill.

(From our Special Correspondent.)

WASHINGTON, D. C., November 22, 1893.

The draft of the new tariff bill on purely revenue lines is before the majority of the Committee on Ways and Means. The Sub-Committee on Customs, consisting of Wilson, Bynum, Breckenridge, Stevens and Tarsney, has concluded its portion of the work, subject to revision.

It is now proposed to lay the bill before the minority on next Friday, if possible, in order to give them the full ten days required by the resolution authorizing the bill, when completed, to be handed to the clerk of the House for printing. The majority are by no means in accord on the customs provisions and are worse divided on sugar and income tax.

Notwithstanding the protests from influential quarters, coal and iron ore have been placed upon the free list. Pig iron and scrap iron are reduced to $\frac{2}{10}$ cent per pound instead of $\frac{3}{10}$. Throughout the metal schedule the rates are below those of the act of 1883, and range from 25 to 40 per cent. lower than the existing rate. Railway bars of iron or steel or in part of iron and steel and T-rails and punched iron or steel flat rails, under the law of 1883 at $\frac{9}{10}$ and $\frac{8}{10}$ cent per pound, had a reduction in the act of 1890 to $\frac{6}{10}$ cent per pound. It is now proposed to further reduce them to $\frac{4}{10}$ cent per pound. All iron or steel sheets or plates, &c., coated with tin, &c., are placed at 1 instead of $2\frac{2}{10}$ cents a pound.

The cardinal principle of the bill as prepared is revenue only, and therefore for the encouragement of importations to the utmost extent without reference to the interests of home manufacturers or wage workers.

It does not seem possible that such a measure can even pass the House. It will certainly meet with decided opposition in that body. In the Senate 11 Democrats voted against a less objectionable bill on a former occasion, and a sufficient number, it is claimed, can be relied upon to prevent too radical legislation now.

The rough draft which has been prepared is, however, still subject to modification.

An international exhibition of foods, showing the means of provisioning armies, means of communication, saving of life, &c., combined with a special sportsman exhibition, will be held in Vienna from April 20 to June 10, 1894. The latter feature will embrace sporting goods of all kinds. Further particulars can be obtained on application to the Exhibition Office, Austellung's Amt, Minoxitenplatz 4, Vienna, Austria.

Continued inactivity in the iron mines of the Gogebic range has brought great suffering on the people of that section. No less than 20,000 persons are said to be reduced to the verge of starvation, and relief measures have been started for their benefit.

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The "Columbia"

That the latest of our cruisers should be of such phenomenal speed and also so felicitously named is gratifying to every American whose patriotism is normal. The mere contemplation of the fact that both ship and machinery are wholly of domestic material and make, and that the design and workmanship are unexcelled, if not unrivaled, the world over, should make our people proud and our steel makers glad, for in this vessel there is a greater percentage of steel used than in any previous American ship of great power. With this material it has been possible to so proportion the parts as to produce a remarkably light and beautiful set of engines, and which scarcely appear to be of half the power they actually are to the eyes of those who are used to seeing the massive framings of cast iron usual to marine work.

The adoption of forged steel front columns and single housings, in lieu of the clumsier looking double housings, is the most striking feature of the design with the possible exception of the slender steel bed plates, which contrast so strongly with the greatly heavier iron castings of the ordinary construction.

Full descriptions of these engines have been repeatedly published, and it is only necessary here to give such brief details as may interest metal workers and designers; and as each of the three sets of engines is identical in every respect, what is said of one applies to all.

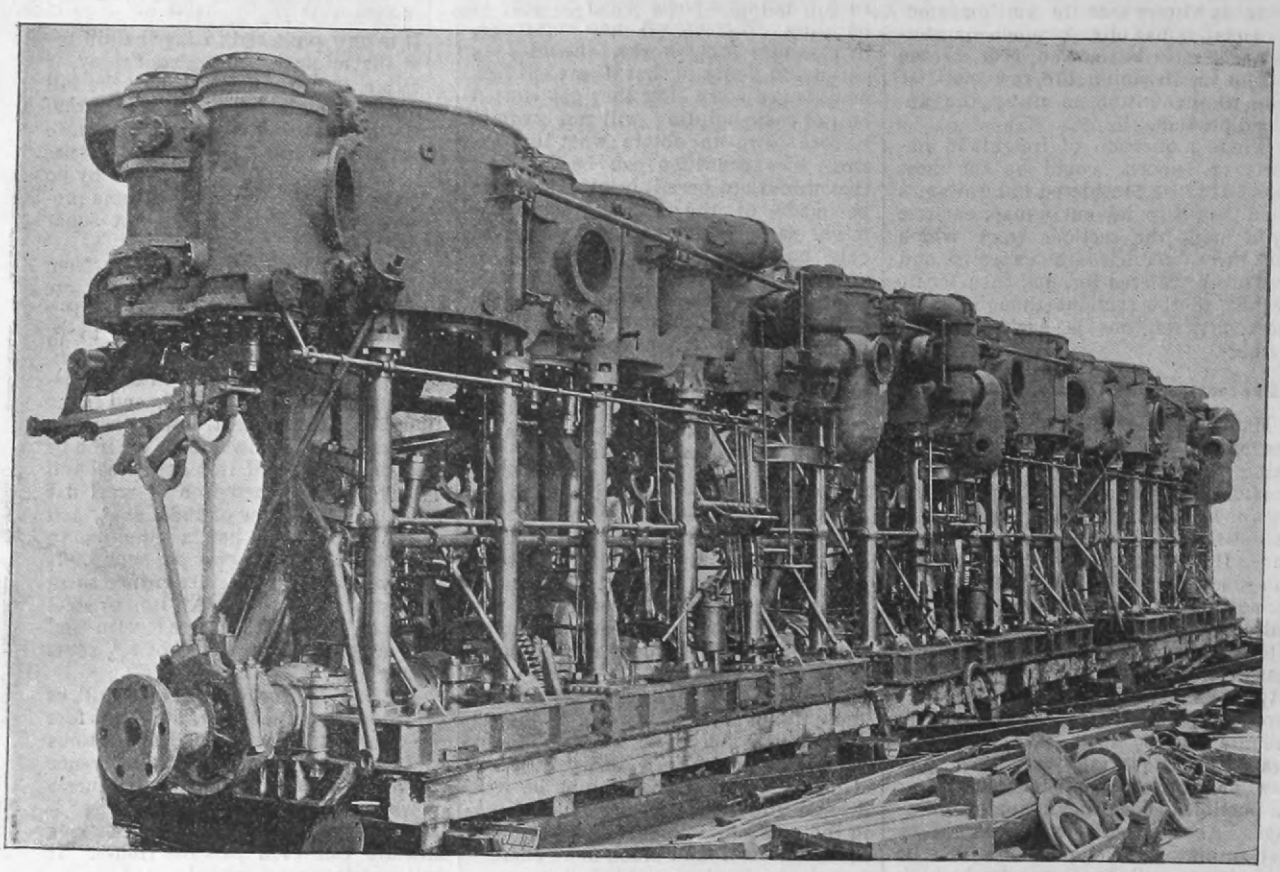
The diameters are 42, 59 and 92 inches for the high, intermediate and low pressure cylinders respectively, and the common stroke is 42 inches, the piston speed being about 950 feet per minute.

The intermediate and low pressure cylinders are steam jacketed. The pistons are of cast steel and conical. All main valves are of the piston type. The reversing gear is of the bar link type. The shafting is hollow steel (forged), 16 inches diameter, with an axial hole 6 inches in diameter. The crank pins are 17 inches diameter and 21 inches long. The connecting rods are 7 feet from center of cross head to center of crank pin, and weigh, with brasses and caps, 6500 pounds each. The main cross head guides are entirely on the back housing, the backing guides being bolted to the main guides and overlapping the sides of the cross head slippers. The latter are of manganese bronze. The screw propellers also are of this metal, and have a pitch of 21 feet 6 inches, the center screw being 14 feet in diameter, while the two side screws are 15 feet.

The main steam pipes are of lap welded steel, 20 inches in diameter and ⅜ inch thick.

There are eight main double ended boilers, made of steel throughout. Their shells are over 1¼ inches thick and have a diameter of 15 feet 6 inches and a length of 18 feet. Their average weight being about 70 tons each, empty, as shown in the view here presented, while with contained water and necessary fittings their total weight is about 1000 tons, or more than half the weight of the entire machinery, in which, of course, they are included. One of the most important features is the sufficiency of these boilers, they being capable of producing, without any great forcing, more steam than the engines can use, thus insuring protracted efficiency, as the general decrease in speed of ships after years of service results from boiler deterioration and lack of steam producing power.

The view of the engines here given is from a photograph taken when erected in the shops.



ENGINES OF THE "COLUMBIA."

Official Trial of the "Columbia."

The wonderful speed made by the "Columbia" in her official trial last Saturday is received with pleasure throughout the entire country. That she would exceed the 21 knots an hour called for by the terms of the contract was expected by all; that she would maintain an average speed of 22.81 knots an hour and thereby earn for her builders the sum of $350,000 was at least hoped for; but that she would in a spurt of 7¾ knots attain a speed of 25.31 knots per hour was unexpected even by those most familiar with the design.

The trial was made off Cape Ann, the course being marked by Government vessels. The cruiser ran north and then turned and came back over the same course. The following table gives the speed and time between each station:

The Run North.

Station vessels.	Distance in nautical miles.	Elapsed time. M.	S.	Speed in knots.
"Dolphin".....	0.00	..	..	.....
"Irwana".....	2.37	6	18	22.65
"Kearsarge".....	6.66	18	04	22.11
"Leyden".....	6.66	17	18	23.10
"Fern".....	6.4	18	16	23.55
"Narkeeta".....	6 4	17	16	22.22
"Fortune".....	7.74	21	36	21.53
"Vesuvius".....	7.74	18	18	25.31

Elapsed time, 1 hour 55 minutes 7 seconds to cover a distance of 43.97 miles, giving an average of 22.92 knots for one-half the course.

The Run South.

"Vesuvius".....	0.00	..	..	.. ..
"Fortune".....	7.74	18	45	24.77
"Narkeeta".....	7.74	22	00	21.11
"Fern".....	6.4	17	45	21.64
"Leyden".....	6.4	16	11	23.77
"Kearsarge".....	6 66	17	24	22.96
"Irwana".....	6.66	17	53	22.71
"Dolphin".....	2.37	6	17	22.70

Elapsed time, 1 hour 56 minutes and 17 seconds to cover a distance of 43.97 miles, giving an average of 22.7 knots. Run north, 22 92 knots. Run south, 22.70 knots Average for both runs, 22.81 knots.

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That the "Columbia" will be able to capture any vessel now afloat she may desire to, and that she will be able to assume any desired position—fight or keep at a distance, according to the strength of her opponent—appear to be conclusively proved by her trial.

Changes in the Scale.

The second convention of the Amalgamated Association held in Pittsburgh this year met in that city on Thursday morning, the 16th inst., the session closing on Friday night at midnight. About 125 delegates from different sections of the country were in attendance, and some material reductions in the wage scale for 1893–94 were made. As already noted, this is the first time in its history that the Amalgamated Association has met in regular conference twice in the same year, but owing to the unsettled condition of the labor market and also to the fact that the mill owners in the Mahoning Valley and other points in Western Ohio had arranged a scale with the National Union of Iron and Steel Workers, a rival labor organization, thus ignoring the Amalgamated Association, it was deemed advisable to hold another convention, and, if possible, make such changes in the scale as would induce the manufacturers to sign it and continue to recognize the Amalgamated Association. After the delegates had formally assembled, President M. M. Garland made a lengthy statement, in which was set forth the reasons for calling the delegates together for the second time within a year. Three committees were then appointed to represent the different departments of the scale in which it was proposed to make changes. One of these committees was to consider the request of the Valley manufacturers for a reduction in the price of boiling from $5 to $4.50 per ton, another to represent the finishing departments of the scale and the third to act upon the request of the members of the Association of Iron and Steel Sheet Manufacturers for a reduction of 10 per cent. in the sheet scale. At the Friday session it was decided to make no changes in the scale in convention, but instead, these three committees were given full power to act. After the disposal of some routine business the convention adjourned.

On Saturday the Committee on the Boiling Scale met the Valley manufacturers in conference in Youngstown, and after two sessions lasting some hours each, the request of the manufacturers for a $4.50 boiling rate was compromised and $4.75 as the price of boiling was adopted, with the usual advance of 10 cents per ton for every advance of $\frac{1}{10}$ cent per pound in the selling price of iron. The base of the scale was also changed from 2 cents to $1\frac{1}{2}$ cents, but it should be here noted that the scale is in force only until April 1, 1894, and in the meantime the question of making the scale a perpetual one will be submitted to the sub lodges of the Amalgamated Association for consideration. In case it should be decided by the lodges to have the scale a perpetual one, only to be changed by three months' notice from either side, then it is likely that the base price of boiling will remain at $1\frac{1}{2}$ cents. If the decision is against the perpetual scale then it is probable that the base price will be changed back to 2 cents. In the foot notes following the boiling scale, paragraphs 7, 9 and 12 were changed to read as follows:

7. For cast iron swarth worked on cinder bottom the price per ton shall be $4.50.

9. For wrought iron turnings, worked on cinder bottom, $3.09 per ton; the price for working turnings to advance and decline in the same proportion as the boiler's scale.

12. For all light scrap worked alone in a boiling furnace the same price, ($3.09) shall be paid as that for working wrought iron turnings; this to cover hoop No. 19 and lighter, wire No. 5 and lighter, sheet, and what is known as Norway scrap; this scrap to be cut from eight (8) to ten (10) inches in length for charging.

Immediately after the settlement of the boiling scale had been effected the finishing departments were taken up, and it was finally decided to adopt the scale of the National Union of Iron and Steel Workers signed by some of the Valley mills two weeks before. This scale in full is as follows:

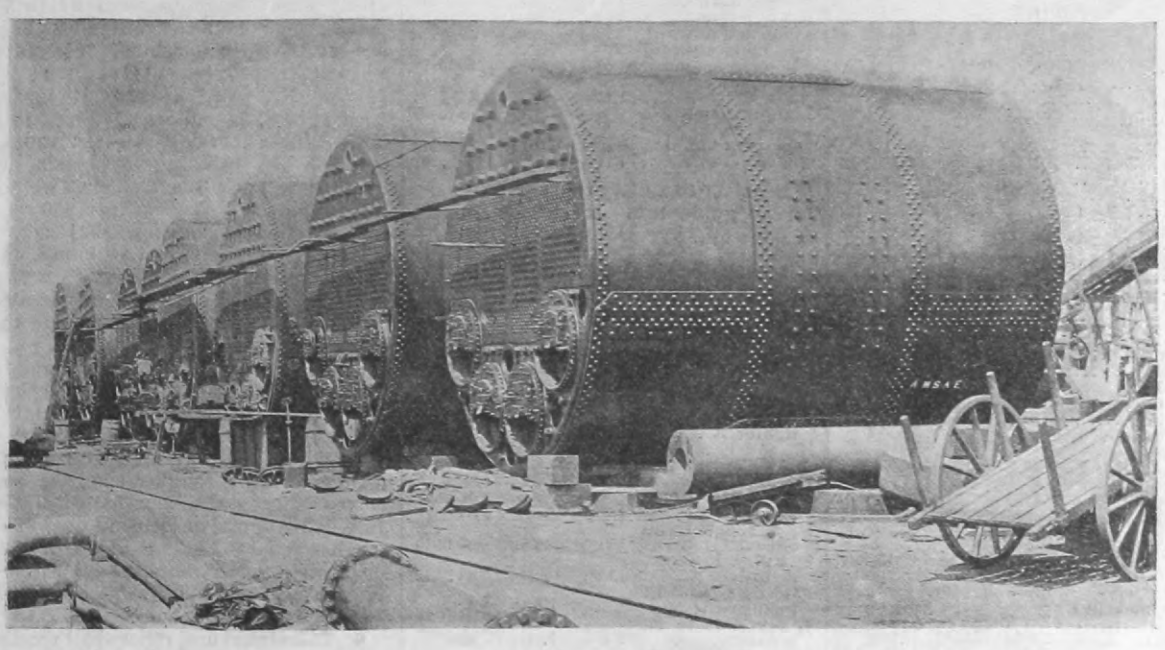
Bar and Nail Plate Mills.

Western Iron Association card rates. Bar iron.	Bar rolling and heating, 2240 per ton.
1 5-10 cents	$0.56¾
1 6-10 cents	.58
1 7-10 cents	.59¼
1 8-10 cents	.60½
1 9-10 cents	.61¾
2 cents	.63

1. All sizes below $1\frac{1}{2}$ x $\frac{1}{2}$ inch flats, 1 inch rounds and $\frac{7}{8}$-inch squares when worked on a bar mill to be paid for at guide mill prices. One inch rounds when worked by hand on a bar mill shall be paid for at guide mill prices.

2. All sizes below $1\frac{1}{2}$ x $\frac{1}{2}$ inch flats, 1 inch rounds and $\frac{7}{8}$-inch squares when worked on a 12-inch mill to be paid for at guide mill prices. One inch rounds when worked by hand on a 12-inch mill shall be paid for at guide mill prices.

3. Catching on a bar mill shall be five-eighths of the price paid for rolling on a bar mill.



BOILERS OF THE "COLUMBIA."

4. Heating nail plate to be the same price as bar mill heating.

5. Heaters on 12-inch mill to receive bar mill prices, to be paid by the company.

6. On all bar mills working bar or skelp iron one man's help shall be furnished by the firm on piles of 150 pounds and over, and an additional man for 250 pounds to shove under at the rolls on all passes. This shall not apply to mills now giving extra help.

Guide, 10-Inch, Hoop and Cotton Tie Mills.

It is agreed that the base price at a $1\frac{5}{10}$ cents Western Iron Association's card shall be the straight $1.17½ per ton for rolling, 58¾ cents for heating, and 29⅜ cents each for roughing and catching iron or steel on a guide, 10-inch, hoop or cotton tie mill, with 2 per cent. additional for each $\frac{1}{10}$ advance on said card from $1\frac{5}{10}$ to $2\frac{5}{10}$ cents card, and for each $\frac{1}{10}$ advance or decline above the $2\frac{5}{10}$ cents card 3 per cent. shall be added or deducted, as the case may be. The roller, heaters, roughers and catchers shall each be paid by the company. It is understood, however, that

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this arrangement shall in no way detract from the authority of the roller in controling all hands on mill, including hiring and discharging, and, as heretofore, the roller shall be held responsible for the work done.

Sizes.	Roller.	Heater.	Rougher and catcher.
Rounds and squares:			
3-16	$3.84¾	$1.92⅜	$0.96 3-16
7-32	3.09	1.54½	.77¼
¼	2.39	1.19½	.59¾
9-32	2.08½	1.04¼	.52⅛
5-16	1.78¼	.89⅛	.44 9-16
⅜ and 7-16	1.41¾	.70⅞	.35 7-16
15 32	1.35¾	.67⅞	.33 15-26
½ and 9-16	1.29½	.64¾	.32⅜
⅝ and up	1.17½	.58¾	.29⅜
Oval:			
½ and 9-16 x 3-16	2.39	1.19½	.59¾
⅜ and 7-16	2.14¾	1.07⅜	.53 11-16
½ and 9-16	1.66	.83	.41½
⅝ x ⅛	3.44½	1.72⅛	.86⅛
⅝	1.41¾	.70⅞	.35 7-16
¾ and up	1.17½	.58¾	.29⅜
Half oval:			
⅜	3.60½	1.80¼	.90⅛
½	2.14¾	1.07⅜	.53 11-16
⅝	1.66	.83	.41½
¾	1.41¾	.70⅞	.35 7 16
⅞	1.17½	.58¾	.29⅜
Half round:			
5-16	3.84¾	1 92⅜	.96 3-16
⅜	3.60½	1.80¼	.90⅛
⅝	1.66	.83	.41½
¾	1.41¾	.70⅞	.35 7-16

Nut Iron.

Sizes.	Roller.	Heater.	Rougher and catcher.
5-16 x ¼	$2 39	$1.19½	$0.59¾
23-64 x ¼	2.39	1.19½	.59¾
27-64 x ⅛ and 1-16	5.06¼	2.53⅛	1.26 9-16
⅜ x ⅛ and 1-16	5.06¼	2.53⅛	1.26 9-16
27-64 x 9-64	4.05	2.02½	1.01¼
⅜ x ¼ to 3-16	2 14¾	1.07⅜	.53 11-16
7-16 x ¼	2 14¾	1.07⅜	.53 11-16
15-32 x ¼	1.90¼	.95⅛	.47 9-16
½ x ¼ (2-high rolls)	1.90¼	.95⅛	.47 9-16
17-32 x ¼ (2-high rolls)	1.84¼	.92⅛	.46 1-16
9-16 x ¼ (2-high rolls)	1 78¼	.89⅛	.44 9-16
19-32 x ¼ (2-high rolls)	1.72	.86	.46
⅝ x 5-16 (2-high rolls)	1.54	.77	.38½
11-16 x 5-16 (2-high rolls)	1.54	.77	.38½
13-16 x ⅜ (2-high rolls)	1.35¼	.67⅝	.33 15-16
21-32 x 3-16	1.60	.78	.39
23-32 x 3-16	1.47¾	.73⅞	.36 15-16
¾ x ⅝ to 3-16	1.41¾	.70⅞	.35 7-16
25-32 x 3-16	1.35¾	.67⅞	.33 13-16
13-16 x 3-16	1.35¾	.67⅞	.33 15 16
⅞ x 3-16 to ¾	1.29½	.64¾	.32⅜
15-16 x 3-16	1.23½	.61¾	.30⅞
On 3-high grooved rolls:			
½ to ⅝ x 3-16 to ⅜	1 66	.83	.41½
9-16 x ¼	1.66	.83	.41½
1 x 3-16 and up	1.17½	.58¾	.29⅜

Channel Iron.

Sizes.	Roller.	Heater.	Rougher and catcher.
2 inches and upward	$1.17½	$0.58¾	$0.29⅜
1½ to ⅞	1.23½	.64¾	.32⅜
1 inch	1.41¾	.70⅞	.35 7-16
⅞ x ⅜	1.54	.77	.38½
⅞ x 5-16	2.02½	1.01¼	.50⅝
⅝ x 5-16	3.84¾	1.92⅜	.96 3-16
¾ x 5-16	3.11¾	1.55⅞	.77 15-16
⅝ x ⅜	1.66	.83	.41½
¾ x ⅜	1.41¾	.70⅞	.35 7-16

All channel, No. 10 and lighter, shall be paid for at hoop prices.

"T" Iron.

Sizes.	Roller.	Heater.	Rougher and catcher.
1½ and upward	$1.29¼	$0.64¼	$0.32⅜
1¼	1 66	.83	.41½
1⅛	1.90¼	.95⅛	.47 9-16
1 inch	2.14¾	1.07⅜	.53 11-16
⅞	2.75½	1 37¾	.68⅞
1 x ¾	2.75½	1.37¾	.68⅞
1¼ x ⅛ Y steel	1.66	.83	.41½

1. Y-steel, 10 per cent. extra for cut lengths.

2. That any tees of unequal size should be classed thus, 1 x ¾ shall be classed as ⅞ tees.

Angles.

Sizes.	Roller.	Heater.	Rougher and catcher.
1½ and upward and 1¼ x 3-16	$1.17½	$0.58¾	$0.29⅜
1¼ x 3-16, two-high roll	1.21½	.60¾	.30⅜
1⅛ x 3-16	1.47¾	.73⅞	.36 15-16
1 x ⅛	1.66	.83	.41½
⅞ x ⅛	1.90¼	.95⅛	.47 9 16
¾ x ⅛	2.39	1.19½	.59¾
⅝ x ⅛	2.75½	1.37¾	.68⅞

1. All angles under ⅛ in thickness, 10 per cent. advance on above prices.

2. All angles of unequal sides shall be divided; for instance, 1¼ x 1 inch shall be classed with 1⅛ angle.

Clip and Wagon Strap.

Sizes.	Roller.	Heater.	Rougher and catcher.
⅝	$1.29½	$0.64⅜	$0.32⅝
9-16	1.41¾	.70⅞	.35 7-16
½	1.54	.77	.38½
7-16	1.66	.83	.41½
⅜	2.39	1.19½	.59¾
5-16	2.87¼	1.43½	.71¾
¼	3.60	1.80	1.80

Hame Iron.

Sizes.	Roller.	Heater.	Rougher and catcher.
⅝ x No. 10 and lighter	$3.84¾	$1.92¼	$0.96⅛
¾ x No. 10 and lighter	3.11¾	1.55⅞	.77 15-16
⅞ x No. 10 and lighter	2.39	1.19½	.59¾
Bands rolled specially for bundling	2.39	1.19½	.59¾

Ten-Inch Mill.

Sizes.	Roller.	Heater.	Rougher and catcher.
½ and 9-16 rounds and squares	$1.29½	$0.64¾	$0 32⅜
⅝ and upward, rounds & squares	1.17½	.58¾	.29⅜
⅝ ovals	1.41¾	.70⅞	.35 7-16
¾ ovals and upward	1.17½	.58¾	.29⅜
¼ x ⅝ to 3-16	1.4 ¾	.70⅞	.35 7-16
⅞ x ¾ to 3-16	1.29½	.63¾	.32⅜
1 inch and upward	1.17½	.58¾	.29⅜
1¾ and upward hoop by ⅛	1.35¾	.67⅞	.38 15-16
2¼ and upward to No. 15	1.17½	.58¾	.29⅜
Lighter than No. 15	1.35¾	.67⅞	.38 15-16
Bands rolled specially for bundling	2.39	1.19½	.59¾
Billets	1.17½	.58⅝	.29⅜

Billets 9-16 and lighter shall be paid for at guide mill prices and no percentage off,

Hoop and Cotton Tie Mills.

Sizes.	Roller.	Heater.	Rougher and catcher.
2¼ and upward to No. 15	$1.17½	$0.58¾	$0.29¾
Lighter than No. 15	1 3 ¾	.67⅞	.33 15-16
1¾ milk can hoops	1.66	.83	.41½
1¾ No. 10 and lighter	1.35¾	.67⅞	.33 15-16
1½ and 1⅜, No. 10 and lighter	1.41¾	.77⅞	.35 7-16
1⅜ ratchet iron	1.54	.77	.38½
1¼ and 1½, No. 10 and lighter	1.66	.83	.41½
1 x Nos. 10 to 12, inclusive	1.71¾	.85⅞	.42 15-16
⅞ x Nos. 10 to 12, inclusive	1.91¼	.95⅝	.47 13-16
13-16 x Nos. 10 to 12, inclusive	2.20½	1.10¼	.55⅛
¾ x Nos. 10 to 12, inclusive	2.49½	1.24¾	.62⅜
11-16 x Nos. 10 to 12, inclusive	2.61¼	1.30⅝	.65 5-16
⅝ x Nos. 10 to 12, inclusive	2.88½	1.44¼	.72⅛
9-16 x Nos. 10 to 12, inclusive	3.25	1.62½	.81¼
⅛ x Nos. 10 to 12, inclusive	3.79¾	1.89⅞	.94 15-16
⅜ x Nos. 10 to 12, inclusive	5.46¾	2.73⅜	1.36 11-16
Clips	1.41¾	.70⅞	.35 7-16
Slats	1.66	.83	.41½
Finger	1 41¾	.70⅞	.35 7 16
Cotton tie	1.66	.83	.41½
1 x No. 13 and lighter	2 14¾	1.07⅜	.53 11-16
⅞ x No. 13 and lighter	2.38	1.19½	.59¾
¾ x No. 13 and lighter	3 11¾	1.55⅞	.77 15-16
⅝ x No. 13 and lighter	3.84¾	1.92⅜	.96 3-16
13-16 x No. 13 and lighter	2.75½	1.37¾	.68⅞
11-16 x No. 13 and lighter	3.48¼	1.74⅛	.87 1-16
9-16 x No. 13 and lighter	4.33¼	2 16⅝	1 08 5-16
⅛ x No. 13 and lighter	5.06¼	2.53⅛	1.26 9-16
⅜ x No. 13 and lighter	7.29	3.64½	1.82¼

All half ovals below regular gauge, one-quarter the thickness of its width, shall be paid for as follows, the same to advance and decline as per regular sale:

Sizes.	Roller.	Heater.	Rougher and catcher.
⅜	$4.45½	$2.22¾	$1.11⅜
½	4 25¼	2.12⅝	1.06 5-16
⅝	3.44½	1.72⅛	.86 1-16
¾	2.39	1.19½	.59¾
⅞	2.02½	1 01¼	.50⅝

NOTES.

1. The price for rolling cotton ties out of muck billets and 1¼-inch and lighter soft steel billets shall be $1.36 per ton, heating 68 cents per ton, roughing and catching, each 34 cents per ton. But when so using muck billets during the three summer months—June, July and August—the company shall pay heater's helper at the cotton tie furnace, and an extra rougher and catcher at the cotton tie rolls; that is, one man at the rolls who shall assist both rougher and catcher.

2. All sizes made from a regular 2-inch and lighter reworked billet made from all muck iron; and on all products except cotton ties made from 1¼ and lighter soft steel billets, 20 cents per ton for rolling, 10 cents for heating, 5 cents per ton for roughing and catching less than the above prices.

3. For cut hoops, No. 10 and lighter, the following extras shall be paid: Rolling, 12 cents; heating, 6 cents; roughing, 3 cents, and catching, 3 cents per ton.

4. Lightning rod, $\frac{9}{16}$ and No. 5, or all sizes weighing from 62 to 70 pounds per 250 feet, rolling, $2.82½; heating, $1.14¼; roughing, 70⅝ cents, and catching, 70⅝ cents per ton; 11/32, 23/32 and No. 4, or all sizes weighing from 71 to 85 pounds per 250 feet, rolling, $2 02½; heating, $1.04¼; roughing, 51⅝ and catching, 58⅛ cents per ton; ⅝ Nos. 2 and 3, and all sizes weighing 86 pounds and over per 250 feet, rolling, $1 84½; heating, 92¼ cents; roughing, 46⅛ cents, and catching, 46⅛ cents per ton.

5. Any smaller sizes not enumerated in the 10-inch scale shall be paid the same as guide mill prices.

6. The prices paid for making odd sizes not enumerated in the scale shall be the mean between the next higher and lower prices.

7. Where a mill averages over $25.92 per day a third rougher shall be employed during the months of June, July and August on demand of roller, rougher and catcher. Said extra man shall assist both rougher and catcher and shall be paid half by roller and half by rougher and catcher.

8. The night turn roller shall receive two-fifths of the roller's wages on said night turn.

The settlement of the wage scale of the Valley mills was the cause of much rejoicing among the citizens of Youngstown, as the mills there have done nothing for more than four months and as a consequence business of all kinds was in desperate straits. Some of the mills started up to partial capacity on Monday morning, the 20th inst., and others will resume during this week. During the long idleness the various plants were completely overhauled and additions made to equipment, and as a consequence the mills are in excellent shape for a long run.

The committee appointed to represent the sheet mills met the Executive Committee of the Association of Iron and Steel Sheet Manufacturers in Pittsburgh on Monday, the 20th inst.

These two committees were in session at the headquarters of the Association of Iron and Steel Sheet Manufacturers in the *Times* Building, Pittsburgh, from about 2 p.m. on Monday until after midnight, without a settlement being reached. The manufacturers insisted upon a straight reduction of 10 per cent., while the concessions offered by the workmen amounted to 7½ per cent. The

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different sides of the case were exhaustively argued by the respective sides, but without result. Present indications point to a struggle between a number of the sheet manufacturers and the Amalganated Association. On the authority of Secretary John Jarrett it can be stated that an agreement has been entered into and signed by the sheet manufacturers in which they bind themselves not to accept orders for future delivery, and in all probability a number of the mills will be closed down at an early date, and when operations are resumed it will be with non-union labor. Three concerns have adopted this course and are now operating their plants with non-union men. These are the Apollo Iron & Steel Company of Pittsburgh, Kirkpatrick & Co., also of Pittsburgh, whose mills are located at Leechburg, Pa., and Britton Iron & Steel Company of Cleveland, Ohio. In case the workmen desire to have another conference with the manufacturers it will be granted by them, but it is stated that under no circumstances will the manufacturers ask for another meeting with the Conference Committee representing the Amalgamated Association.

PERSONAL.

B. J. Arnold, formerly with the General Electric Company, and consulting engineer of the Columbian Intramural Railway Company, has opened an office as consulting and constructing electrical engineer at The Rookery, Chicago.

After seven years of successful service as the superintendent of the Pullman Iron & Steel Company, Pullman, Ill., Samuel Job tendered his resignation, which is to take effect at once.

C. McKinney, recently of the Maryland Steel Company, Sparrow's Point, Md., has been appointed general manager of the rail mill department of the Lackawanna Iron & Steel Company, Scranton, Pa. Henry Wehrum of Scranton was made general superintendent.

J. D. Carey, president of the National Union of Iron and Steel Workers, has taken the position of heater at the plant of the Mahoning Valley Iron Company, Youngstown, Ohio.

The general state of trade throughout Ohio shows considerable improvement during the past ten days, but the change is not so great as anticipated by those whose view of the situation was taken from a sentimental point. Manufacturers in all branches of the iron and steel trade are feeling easier, orders and inquiries are more numerous, and some new enterprises are projected. If the improvement in business becomes permanent these enterprises may soon become realities. The fact that the wages scale has been settled for rolling mills and that sheet mill workmen have gracefully accepted the 10 per cent. reduction is a subject of much talk and favorable comment. While these settlements only affect certain localities directly, it is generally felt that the success which has attended the negotiations between employers and workmen will have a beneficial effect on all manufacturing industries.

Swedish magnetite ore, 60 per cent., has been sold, delivered, at Dortmund, Germany, at 16.50 marks, equal to $4.10 per gross ton.

THE WEEK.

The curious spectacle of an entire city being sold for debt was seen in West Virginia last week, when Kanawha City, a town founded several years ago to rival Charleston, was put up at auction in 3000 lots.

Unemployed workmen are flocking from the small towns and country districts into the large cities, hoping to get work. As in most of the cities it is a difficult matter to provide for their own unemployed, this fact is naturally a cause for complaint. New Orleans, Pittsburgh and Indianapolis are among the cities suffering from this invasion.

The first shipment of cotton direct from Charleston, S. C., to Liverpool and Bremen was made recently, when two large steamships sailed from the first named port with over 17,000 bales, the largest cargoes ever shipped from Charleston. These steamers are to run regularly during the cotton season.

The cost of insurance against accidents to workmen in Switzerland, as provided by a recent law, is to be borne as follows: Half by the employers, a quarter by the State and a quarter by the workmen.

Japan is to have a National Industrial Exhibition in 1895, to be divided into seven sections, namely: Industry; art and art industry; agriculture and horticulture; marine products; education and science; mining and metallurgy, and machinery.

The passenger transportation record of the Illinois Central Railroad Company during the six months of the World's Fair reaches the unprecedented total of 19,342,684 persons carried on their lines.

The longest iron railway bridge on the European Continent was opened last week across the river Vistula, between Forden in Prussian Poland and Culmsee in Germany. It is 1450 yards long and cost 8,000,000 marks.

England's prolonged coal strike has at last been settled. This end was accomplished at a conference arranged by the Government between the mine owners and miners. Over 350,000 men resumed work on Monday at the old rates, which will continue in force until February, when a board of conciliation will be formed to arrange a final settlement of pending questions. Great suffering has resulted from the strike, the loss by which is estimated to amount to $150,000,000.

"El Cid," late of the Morgan line, purchased by the Brazilian Government and fitted out as a war vessel, sailed from New York under her new name, the "Nictheroy," on Monday. She took on board the former steam yachts "Javelin" and "Feiseen," now turned into torpedo boats, and a large supply of torpedoes and ammunition. The steamship "Britannia," also purchased by Brazil, is taking in her supplies and will follow as soon as her heavy armament is received. Rumor has it that the insurgent Admiral, Mello, is making preparations to intercept the vessels.

W. H. Preece, the famous English electrician, remarked during his recent visit to this country that one of the things that struck him most forcibly was the number of very young men that were coming to the front in the various branches of electrical effort. This impression might well be intensified by a recent announcement that the control of the entire electric system of the town of Bloomfield, N. J., has been placed in the hands of a juvenile electrician named Perry, whose years number just 15. This electrical prodigy has, it is said, invented a model electrical car possessing points of merit, and he is at work on other experimental lines in the same field.

The winter railroad schedules, which went into effect on November 18, are marked by the discontinuance of the Chicago fliers, and the practical adoption by all the trunk lines of 26 hours as the standard running time between New York and the metropolis of the West.

By the use of the improved dock equipment at the ports of the Lake Superior region, the expense of handling the iron ores has of late been remarkably reduced, as well as the time occupied in loading and unloading. Where the expense of putting the ore into the holds of vessels was estimated at from 10 to 15 cents per ton, with the apparatus in use at some of the docks this ore is now lifted from the vessel, carried back 350 feet, and dumped, at a total cost, including all expenses, of from ¾ cent to 1¼ cents per ton. With 21 men in the hold of a vessel carrying 2000 tons of iron ore, the entire cargo has been stocked in 17 hours.

Postmaster-General Bissell is considing a scheme by which the Government may hereafter do its own printing of postage stamps, and probably of postal cards and postal notes. The Superintendent of the Bureau of Engraving and Printing has been instructed to submit a formal bid together with a statement of the facilities of the Department for doing the work.

Active preparations are being made for the canal conference to be held in New York City on December 5.

Negotiations are reported to be on foot, backed by the Russian Government, with the view of ending the competition between the Russian and American petroleum interests, and forming a great international trust. The recent cutting of prices is said to have led up to the proposal, which is made by the Russian dealers. The alleged scheme is that Russian oil producers shall control the Eastern, European and Asian markets, while America shall hold England and Western Europe.

At a recent meeting of the New York Board of Fire Underwriters a resolution was adopted authorizing the president of the board to address a communication to the Governor of the State of New York, calling his attention to the enormous increase of fire waste of late years, due largely, in the opinion of the underwriters, to the improper wiring of buildings for electric lights and power, asking his influence to secure legislation which shall require that no person shall be permitted to wire buildings for electric light and power purposes who has not been duly licensed as competent to perform the task by some Board of Control competent to test the qualifications of applicants, as is now the case in connection with engineers having charge of boilers.

The large turbine wheels for the Niagara Falls Electric Company's system are now ready to be put in the pits, into which the water will be introduced in about two weeks' time. The dynamos, which are being built by the Westinghouse Company, will not, however, be ready until the spring.

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The Iron Age

New York, Thursday, November 23, 1893.

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RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Pig Iron Production

The recovery in the iron trade will have to be very rapid indeed if the prophecies of our statisticians are to be fulfilled. In times like these we are apt to forget the exuberant visions in which men have indulged when business skies were unclouded. In 1890 particularly the outlook seemed to favor a long continuance of prosperous condition. Trade was very active and production in almost every line was at its maximum, but prices were not booming and business seemed to be on a remarkably substantial basis. What more could be asked than full employment for all the facilities of commerce and manufactures, with reasonable prices on all kinds of merchandise and reasonable profits to all concerned? Looking back, it seems to have been an ideal year. Prices were high as compared with those which have ruled since then, it is true, but it must be remembered that we have passed through a period of abnormally low prices of late, and those of 1890 were by no means excessive for this country. It was, however, a year in which to take a roseate view of the future and to make calculations of further expansion in production to meet the enormous demand, which seemed almost insatiable. When a famous Boston statistician turned his attention to the tremendous possibilities of the American iron trade, and as a result of exhaustive research and most rigid examination of prevailing conditions said that the product of pig iron in the United States in the year 1900 would be about 42,000,000 tons, there were others who even surpassed him in this ecstatic view of the future and thought it might run up to 45,000,000 tons.

In the calculations which were made at that time there was no allowance by any one for a period of severe reaction, but all estimates of future production were based on a sort of law of accelerating demand which seemed to have manifested itself for a sufficient duration of time to be accepted as established. In the last decade our pig iron production jumped most marvelously, trebling itself from 1879 to 1890, and placing this country in advance of all other countries in the world in the output of iron. It was no wonder that the future looked big with possibilities. A rate of progress had been shown for a long stretch of more than ten years with hardly a break, which seemed destined to continue. Had the reaction of this year been then foretold, it would have been so greatly at variance with the manifest destiny of the iron trade of this country that the prophet or seer would have been treated with the most scornful contempt. Having produced over 9,000,000 tons in 1890, by this time we should be producing at the rate of 12,000,000 tons this year, if the law of accelerating demand were really in force. Instead of that we shall probably make something over 7,000,000 tons, or less than the output of 1889. Being thus thrown back four years in our triumphant progress, it will take probably a year or two to catch up to our standing in 1890 to 1892. From that time to 1900 there would be the most wonderful activity ever shown on this earth to realize the prophecies to which reference has been made.

The more this matter of forecasting the production of pig iron is examined the more remarkable does the prescience of Hon. Abram S. Hewitt appear. In 1856, in an address before the American Geographical and Statistical Society, he put the pig iron production of the world at 14,000,000 tons in 1875 and 28,000,000 tons in 1895. As nearly as can be ascertained, his prediction for 1875 came within a few hundred thousand tons, which is wonderfully close considering that in 1856, when the forecast was made, the world's annual production had only attained 7,000,000 tons. According to statistics collected by James M. Swank, the world's production of pig iron in 1890 was a little in excess of 27,000,000 tons. The reaction since then, and the recovery to be expected, will probably bring the output in 1895 very close to Mr. Hewitt's figures. In 1890, in an address before the American Institute of Mining Engineers, he estimated that the world's output in 1900 would be 35,000,000 tons, of which the United States must supply 45 per cent., or say 15,750,000 tons. Should even this be a correct estimate of the expansion of the trade by 1900, the closing years of this century will be marked by very great activity and a reaction from the present depression must soon make itself strikingly manifest.

Engineer-in-Chief Melville in a report to the Secretary of the Navy, dated October 15, 1890, gave the reasons for the adoption of three screws in the "Columbia." He said that it was extremely improbable that shafting of the great size necessary to transmit this enormous power (21,000 horse) to twin screws could be obtained in this country, either in reasonable time or with any guarantee as to its strength. Therefore it was decided by the bureau to depart from the usual practice and divide the power into three parts. A further consideration in favor of three screws was that either propeller could be disconnected from its engine and left free to revolve, thus retarding the speed of the ship but very slightly when she is propelled by two engines. In moderate cruising only one engine would be necessary and this could be driven at its most economical speed. It was estimated that one screw would drive the ship at the rate of 15 knots and two at the rate of 18 to 19 knots.

The Steel Rail Situation

From the chaos into which the steel rail trade was plunged for a brief period has arisen a new organization, which has rectified the cardinal error of the association whose life ends with this year. That error, it is frankly conceded, lay in the failure of the combination to follow downward in price with the declining market of raw material. As we stated in our recent review of the history of the old association, the price ruling when it was formed was fair alike to producer and consumer. Public expression of that fact was given repeatedly by representatives of the latter, and by the excellent technical papers which represent that interest.

We have pointed out that starvation prices are in the long run as dangerous to the best interests of the consumer as they are destructive to the weaker producer and crippling to the stronger makers. The selling prices named lately simply meant the abandonment of rail making by some of the concerns, and threatened to render the producing capacity inadequate in future periods of a suddenly expanded demand.

The war begun during the past few weeks promised to crowd down values to unprecedented figures, and sundry writers jumped at the conclusion that it would not stop until an assumed cost had been reached. A good deal of wisdom was aired as to what figure represented that cost, Pittsburgh reaping the distinction of being the victim of these calculators with the price of billets as the basis. Aside from the circumstance that pretty wild guessing was indulged in, the fact was ignored that conditions are very different in other parts of the country.

We understand that the arrangement entered into during the past week is that the mills of the Maryland Steel Company and the Pennsylvania Steel Company have been leased by the other concerns, to be held in reserve until the demand makes it necessary to draw upon their capacity. The mills are now quoting $24, f.o.b. This, it will be observed, is an adaquate concession to ruling circumstances so far as the price of raw material is concerned. It allows all the mills a moderate profit, considering that they are only partially employed, and is entirely fair to the railroads, who get their material cheaper than ever.

So far as the general iron trade is concerned this announcement will be received with some satisfaction, since it promises to give tone to the soft steel market, through the stoppage of operations at the Maryland works. We have heard rolling mill owners of national reputation assert that they would rather pay producers of soft

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steel billets a price representing a living profit than have the trade in the demoralized condition in which it has been for some time past.

A Heavy Drop in Molders' Wages

The Western foundry trade has been badly demoralized by the dearth of business since last spring. It will be remembered that but a short time before the financial panic, yet with indications of commercial congestion plainly visible, the molders undertook to force an advance in wages. The stove molders, wiser than their brethren in other lines, receded from this position, but the machinery molders and workmen in jobbing foundries went ahead, contrary to the advice of disinterested persons. The foundrymen who were caught with partly filled contracts, or those whose financial condition would not permit them to shut down, yielded to the molders' demands, although in the majority of the foundries affected the employers made a successful resistance. Probably the condition of the foundry business during the summer might not have been any better if this fight over wages had not occurred. The depression in trade was due to other and more general influences. But bitter reflections must nevertheless come to the leaders now when they see to what straits their followers have been reduced. At a time when they might have been earning very fair wages they chose to be idle. Since then they have been forced into more prolonged idleness by the total lack of employment. Work is now being resumed in the foundries in a half hearted fashion, and those workmen are esteemed lucky who are able to get partial employment at low wages. It seems like a cruel punishment on men who were not satisfied when they were fairly remunerated, but demanded "more." Instances are known in which molders who were successful last spring in establishing a minimum of $2.75 per day are now working for $1.25, and are glad to get even that. This is not in some hamlet where living is cheap and wages are never very high, but in the city of Chicago. The class of work done by them is not such as requires a high order of skill, it is true, but the drop in the earnings in this line has been very great to occur within nine months. It will take a long time, we fear, for matters in this branch of business to work up to their old level of prosperity for both employers and employed.

Last year about 1,250,000 tons of cotton seed were crushed in the United States, from which were extracted 1,000,000 barrels of oil. A Southern journal shows where the bulk of this product goes, as follows: Chicago pork packers buy 300,000 barrels, most of which is made into lard. Maine sardine packers use 20,000 barrels. Between 50,000 and 100,000 barrels are consumed by various soap makers. Between 200,000 and 300,000 barrels go to Europe, where it is made into "butter."

Washington News.

(From our Special Correspondent.)

WASHINGTON, D. C., November 21, 1893.

The tariff, Hawaii, silver and other problems of state are forgotten for the moment in the exuberance of national pride in Government circles over the triumphs of American nautical skill achieved in the cruiser "Columbia." The acknowledged hero in this peaceful conquest on warlike lines is Commander George W. Melville, Engineer-in-Chief of the United States Navy. The acknowledgment of the fact is the telegrams of congratulation from naval and marine engine experts in the United States, England, France, Germany and Russia, and naval officers and departmental officials, and attaches of foreign embassies and legations at the American capital. Commodore Melville was promenading back and forth in his spacious official apartment, as is his wont when not indicting professional or official papers at his desk. He is a man without frills. Speaking of the "Columbia," "the modern gem of the ocean," the commodore said in his usual quiet way: "Her engines were designed for 21 knots, with a surety of 22 knots, a possibility of 22¼ knots and an outside speed of 22½ knots. They have exceeded even these liberal judgments of the calculations. The whole run of the 'Columbia' over her whole course as telegraphed to the department was 22.85 knots. In my opinion 25 knots was a mistake.

"The speed attained by our warship exceeds that of the ocean greyhounds the 'Campania' and 'Lucania,' built in England by the Fairfield Engine Building Company. They have made 22 knots for the whole trip. Therefore the 'Columbia' is the fastest ship in the world to-day, merchant or naval.

"The phenomenal burst of speed, 25 knots, accredited to the 'Columbia' over the short distance, 8 knots between buoys, must have been due to buoys shifting or drifting.

"I had an intimation from her experimental trip that she could make 23 knots over the whole course, but it was necessary on the official trial to slow down engines on account or foaming water, probably from grease or dirt in the boilers.

"Ten blowers drive into each fireroom, really a large air tight box in which the boilers are placed, 20,000 cubic feet of air.

"The triple screw had been tried by Italy, Germany and France. The French ship 'Dupuy de Lome' was particularly important, as for two years she has been trying to run off her steam trial. At last accounts they intended to remove her boilers. The German ship 'Kaiserin Augusta,' 6000 tons, with her three screws, made a maximum of 20 knots, and was considered fairly successful, but she has not the reserve of power to in any way approach the speed of the 'Columbia.' The Italian ships are small. The three screws on both these ships are on the same horizontal plane.

"The advantage claimed by the Bureau of Steam Engineering Navy Department is that the position of the three screws are not on the same plane in any direction. In the first place, the two side screws are spread from forward to aft, giving room for the screws to work in solid water and avoid the friction of the hull. They are also placed as far forward of the center screw as the formation of the hull will permit. The center screw is placed lower down and inclined downward from forward to aft.

"Yes, I realize it was a bold stroke, but I was convinced that by a proper distribution of the screws it would be a success. The venture was made in the face of many persons in authority and the engineering world, and I presume if it had not been a success I would have met the common fate; but the application has been a success in efficiency and economically.

"The engines are our type of triple vertical overhead expansion. Two screws with the same power should produce the same results if it could be applied. A large ship is easier to drive, horse-power per ton, than a small one. The 'Columbia' is 7000 tons.

"The engines of the 'Columbia' were designed wholly in the bureau, but the Cramps deserve the highest praise for accuracy of workmanship. They deserve their premium, whether $350,000 or $400,000, if they get 23 knots.

"Yes, I think the limit has about been reached. The speed can be increased if that alone is required, but a man of war must be a compromise. Too much speed detracts from her other qualities. Such ships must be designed as fighting machines and for celerity of handling in close quarters or entering harbors."

Chief Naval Constructor Hichborn said: "The question of speed, of course, is a problem of steam engineering, but the building of a hull which will produce the best results from a given amount of power and stand the enormous strain belongs to construction. In the designing of the 'Columbia' it was known beforehand that the very highest rate of speed attainable consistent with the purposes of the ship were desired, therefore all the calculations were pointed that way. It was the aim to avoid all useless weights and to apply increased strength where strength was required to meet the great forces to be encountered under a high rate of speed. The lines were also laid with a view to speed. The 'Columbia's' hull went through the ordeal magnificently and comes out without a strain. The 'Campania,' the ocean greyhound, as she is called, a British built ship, when driven 22 knots an hour on her trial, was so torn and strained that she had to be sent back to the contractors, and her designers, I understand, were dismissed. The 'Columbia's' hull will be a model for the study of our foreign friends, and Melville, with his machinery, got out of the lines all the speed there was in them."

OBITUARY.

ALBERT TRACY CONVERSE.

Albert Tracy Converse, a resident of Norwich, Conn., and one of its best known and most respected citizens, died on the 16th inst. at his residence in that city, of pneumonia. Previous to 1840 he conducted an iron foundry known as the Phœnix Foundry, when he went to California, where he made the first casting ever made in San Francisco. There he was appointed United States Lighterman, having charge of transportation to the Custom House of all the dutiable goods discharged from foreign ships at anchor in the harbor. In 1856 Mr. Converse became a partner in the Arcade Malleable Iron Company

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of Worcester, Mass., and after his establishment at Norwich in the hardware and iron business in 1860 he carried on large business interests in the former city. He was in his seventy-first year.

JOHN P. CHATILLON.

John P. Chatillon, of John Chatillon & Sons, scale makers, who, it will be remembered, left New York in search of health November 17, 1892, on the "Fuerst Bismarck" for Naples, died in Paris Friday, November 17 last, in his forty-ninth year, of Bright's disease, just a year from the time he left here. His body will arrive in this city by the steamer "La Bourgogne," leaving Havre November 25. The funeral service will be held in St. Ann's Church in East Twelfth street, New York, due notice of which will be given. A more extended reference to Mr. Chatillon will be given in these columns later.

GEORGE SELDEN.

George Selden of the Erie City Iron Works, Erie, Pa., is dead. He was born at Lynn, Conn., served in the East India trade, was among the successful forty-niners, and in the late fifties engaged with Col. John H. Bliss and others in the Erie City Iron Works.

FRANK F. CLEVELAND.

Frank F. Cleveland, secretary and treasurer of the Erie, Pa., Engine Works and president of the Union Iron Works, died on the 20th inst. after a lingering illness. He went to Erie when a lad, and from a bank clerk engaged in the engine building business, in which he was very successful. Two years ago he was poisoned by inhaling fumes during the burning of his residence and he never recovered from its effects.

MANUFACTURING.

Iron and Steel.

Work on the new Bessemer plant now under construction by the Ohio Steel Company, at Youngstown, Ohio, is progressing favorably, 300 men being employed at the present time. Much of the machinery has arrived, and the work of putting it in position will be pushed without delay. The foundations of the two large engines are also nearly completed.

The Fox Furnace Company were organized at Columbia, Ohio, last week, with a capital stock of $35,000. The incorporators are F. B. Fox, Aldin Guilford, Thomas E. Henry, E. C. Fox and Chas. H. Henry, all of Cleveland, Ohio.

It is probable that the mill of the Wilkes Rolling Mill Company, at Sharon, Pa., which has been idle four months, will start up within a few days.

The Catasauqua Mfg. Company, Catasauqua, Pa., have started up two of their mills.

The Ashland Coal & Iron Company, Ashland, Ky., have reduced the wages of their furnacemen from 10 to 20 per cent. The cut was accepted.

King & Andrews Company, 218 North Union street, Chicago, have added to their foundry a plant for the manufacture of semi-steel by the McDowell process. This department is known as the Semi-Steel Company. They have contracts with the Standard Oil Company, Wheeler & Tappen and the North Chicago Street Railway Company. The department operated as the Semi Steel Company will manufacture semi-steel, ferro aluminum, bronze and anti-acid castings. The company have issued a circular covering these specialties and noting their qualities and uses.

The Carpenter Steel Company of Reading have paid a dividend of 1½ per cent.

It is announced that the Irondale Rolling Mill, recently burned at Anderson, Ind., will be rebuilt at Middletown, Ind., providing a bonus of $50,000, 8 acres of land for a site and a gas well is given.

The puddling department of the Passaic Rolling Mill, at Paterson, N. J., which closed down some time since, has resumed operations.

Potts Brothers Iron Company, Limited, Pottstown, Pa., have started their rolling mill after a stoppage of three months.

At New Haven, Conn., the New Haven Rolling Mill has started up with a full force after an idle summer, and a noticeable improvement has also taken place in the business of other industrial establishments of that place. The city presents a more businesslike appearance than for many months past.

The Columbia Rolling Mill Company, at Columbia, Pa., have reduced the price paid for puddling to $3 per ton and other work in proportion. The company state that this action was necessary in order to compete with mills paying $2.50 and $2.75 for puddling.

The entire plant of the West Hamburg, Pa., Rolling Mill has been dismantled.

The Malleable Iron Works, at Chattanooga, Tenn., which recently went into receivers' hands, will be kept in operation and there will be no reduction in the force of workmen. One of the receivers states that the concern is a paying one, and the appointment of receivers was only due to a temporary embarrassment.

A press dispatch from Anderson, Ind., dated November 16, says that William Chambers, superintendent of the Anderson Steel Casting Company, has brought suit in the Circuit Court asking for the appointment of a receiver. The capital stock of the company is $50,000, with liabilities amounting to $20,000.

The schedules of Frank L. Froment, iron and steel commission merchant, at 446 West street, New York, show direct liabilities, $90,464; contingent liabilities, $26,126; nominal assets, $103,403; actual assets, $40,644. The principal creditors are A. & P. Roberts, Philadelphia, $36,237; Mary E. Bacon, Boston, $10.000; Thames Iron Works, Norwich, Conn., $5432; William Clark's Son & Co., Pittsburgh, $4405; Susquehanna Iron Company, Columbia, Pa., $6320; Columbia Iron Company, Columbia, Pa., $2716; Lebanon Rolling Mills, $2500.

In open hearth mill No. 2 at the Homestead Steel Works, Homestead, Pa., two new open hearth steel furnaces are being constructed. It is stated that the hot metal route which has been in operation for some time carrying hot metal from the Edgar Thomson blast furnace at Bessemer to the Homestead Steel Works has not been as successful as anticipated by the firm and will be abandoned. Considerable money was spent in building it, and now that it has been decided to abandon it, it is not improbable that the long deferred question of building additional blast furnaces either at Duquesne or Homestead will again be considered by the firm.

The James P. Witherow Company, engineers and contractors, of Pittsburgh, whose works are located at New Castle, Pa., will shortly start up this plant, which has been idle for two or three months. It is stated that the firm have secured sufficient orders to warrant a partial resumption of operations.

We are advised that the report in circulation at Pittsburgh last week to the effect that the Carnegie Steel Company, Limited, had purchased the Lower Union Mills of the Oliver Iron & Steel Company in Allegheny, Pa., is without foundation.

At the Homestead Steel Works, at Homestead, Pa., 1500 horse-power Babcock & Wilcox water tube boilers are being installed, also 500 horse-power of the same type of boilers at Lucy Furnaces, Pittsburgh.

The plans of the reorganization of the West Superior Iron & Steel Company, at West Superior, Wis., are said to call for an expenditure of $1,500,000. The proposed additions include an open hearth furnace, blast furnace and coke ovens.

Lawrence Furnace of the Lawrence Furnace Company, at Ironton, Ohio, which has been idle for some time, has again resumed operations.

The Malleable Iron Works, at West Troy, N. Y., which have only been running one furnace during the past two months, started another furnace November 16, to be followed soon by another.

Extensive improvements and additions will be made to the plant of the Pomeroy Rolling Mill, Pomeroy, Ohio, owned and operated by the Union Iron & Steel Company of Youngstown, Ohio. Lately a railroad has been built into Pomeroy, and it is claimed the prospects of this plant running full time in the future are considerably improved in consequence.

It is stated that Vesuvius Furnace of the Ironton Coal & Iron Company, at Ironton, Ohio, which has been idle for some months, will be started up about the first of the year.

The plant of the Oil City Tube Company, at Oil City, Pa., has gone on full time, giving employment to about 300 men.

An effort is being made to interest the citizens of Trenton, Mo., in the erection of a rolling mill. There is an abundance of coal in that vicinity, scrap iron can be had cheap, and the projector of the enterprise, whose name is I. L. Morris, thinks it is a good location for the manufacture of sheet iron or tin plate. The prominent business men of Trenton have been strongly impressed by the facts presented for their consideration.

The Morewood Company, manufacturers of tin plate, at Gas City, Ind., are represented in Chicago by Saunders, Fielding & Bond, Room 419 Ashland Block, corner of Clark and Randolph streets. The company are now making several brands of bright and roofing plate, but have been hampered hitherto by the deficient supply of black plates. They started their tinning pots first, and have been purchasing plates in Pittsburgh, as well as importing from Great Britain, but in a very short time they will have an independent source of supply in their own rolling mills, which are now completed at Gas City and will be run slowly until the machinery is found to be in proper condition for regular work.

Corporate articles have been filed with the county recorder at Des Moines, Iowa, by the Mexican National Iron & Steel Company, with capital stock of $3,000,000. Richard Honey is president, J. R. Barcroft, vice-president; James McCaughan, secretary, and Thomas Phillips, treasurer. The other incorporators are A. A. Robinson, J. H. Hampson and J. G. Rounds. The company have leases upon 40,000 acres of land near Durango, and own numerous mines and the furnaces and rolling mills which were formerly owned by the Durango Steel & Iron Company, and which it is intended shall be put in operation.

The Andrews Bros. Company of Youngstown, Ohio, have resumed operations in all departments and are now supplying the trade with iron and steel bars, bands and hoops to 16 gauge inclusive, and light sheets, together with Haselton, Scotch and Haselton strong pig iron. During the long shut down the rolling mills were thoroughly repaired and improvements were also introduced which will enable the company to serve the interests of their patrons even better than before. John McLauchlan is Western manager, at 59 Dearborn street, Chicago.

The Whitaker Iron Company, at Wheeling, W. Va., manufacturers of black and galvanized sheet iron, advise us that the plant will be rebuilt on a larger scale as soon as the insurance has been adjusted.

Last week one lap weld furnace in the plant of the Duquesne Tube Works Company, at Duquesne, Pa., was put in operation, giving employment to about 150 men. This week it is expected that one butt weld furnace will be started up, giving employment to a large number of additional men. This firm have quite a number of orders on hand for boiler tubes, of which they make a specialty, and expect to keep their plant in operation throughout the winter, though not to full capacity.

Wallace, Banfield & Co., Limited, operating the Irondale Rolling Mills, at Irondale, Ohio, manufacturers of tin and terne plate, are operating their entire plant to its utmost capacity, three turns of eight hours each being the rule. The firm have met with gratifying success since they embarked in the manufacture of tin and terne plate, and have had a ready sale for their product right along as fast as it could be turned out. They are running on orders only, and find it necessary to operate their plant as noted above in order to keep pace with the demands made upon them by the trade for their plate.

This week two sheet mills at the plant of the Ætna-Standard Iron & Steel Company, Bridgeport, Ohio, will be laid off, and other departments will be closed down unless an agreement is reached with the Amalgamated Association on the wage scale governing sheet mills.

The night turn at the Beaver Falls Mills, Beaver Falls, Pa., has been discharged.

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This turn was engaged in filling orders for shipment, and these orders running short the services of the men were no longer required.

A portion of the plant of the American Tube & Iron Company, at Youngstown, Ohio, which has been entirely closed down for some months, was put in operation last week. Should business continue to improve other departments of the plant will be started up.

The 18-inch train at the Albany Iron Works, Troy, N. Y., was put in operation November 16. The Belgian and 14-inch trains are also running, giving employment to more men than have been on duty at the big plant for many months.

The Hamilton Iron & Steel Company, Limited, have just been organized at Hamilton, Ont., Canada, with a capital stock of $1,000,000, divided into 10,000 shares of $100 each. The objects of the company are to mine, operate blast furnaces and steel works. The city of Hamilton has donated the company a suitable furnace site, on which they intend to build, and have, in fact, already commenced on the foundations a furnace, 18 x 75 feet, of the very latest type, including compound cross condensing engine, hot blast stoves of the Gordon-Cowper-Whitwell patents, and all the latest improvements of a first-class furnace plant, expecting to make at least 200 tons per day. They will use Connellsville coke, but all the ores will be native, which are found in Ontario, the promoters state, in great abundance, suitable for both the manufacture of foundry and Bessemer pig. Later on the company intend to build a steel plant in connection with the blast furnace for the manufacture of steel in all shapes for the market. New York and Hamilton and Toronto parties are interested in the project, the officers being Wm. Foster, Jr., president, New York; John H. Tildon, vice-president, Hamilton, Ont.; J. J. Morehouse, treasurer and general manager, New York, and H. M. Curtis, secretary, New York.

The works of the H. M. Myers Company, located at Beaver Falls, Pa., manufacturers of shovels, spades, scoops and drain tools, which have been closed down for several months on account of the severe business depression, will resume operations to nearly full capacity about December 1 next. Indications are that prices of shovels and other similar goods will be somewhat lower this year than last season. Notwithstanding this, however, the above firm propose to maintain the high standard of excellence in finish and quality of their goods.

The Carpenter Steel Company, Reading, Pa., have sufficient Government contracts on hand for steel armor piercing projectiles to keep their plant in operation to full capacity well into the future. Some additions to equipment have recently been made by this concern, included in which is a large steam hammer.

William Kemp and James Keenan, the receivers for the Troy (N. Y.) Steel & Iron Company, have sent out circulars inviting interested parties to submit bids for the plant, which they now intend to dispose of, if possible. The bids will be received and opened December 13, but it is possible that the sale will not be consummated at that time, as the circular is mainly to obtain an idea as to whether a suitable price can be obtained.

There is a project on foot to build a rolling mill for making iron and steel sheets at a point on the Missouri River near Clinton, Iowa.

Ninety tons of black and galvanized sheets are kept out of the market each day in consequence of the recent destruction by fire of the plants of the Irondale Steel & Iron Company, Anderson, Ind., and the Whittaker Iron Company, Wheeling, W. Va.

A company has been formed and active steps taken toward the erection of a sheet mill plant near Saltsburg, Pa., to consist of four light mills. A. Gourley, superintendent of P. H. Laufman's sheet mills, at Apollo, Pa., is the leading spirit in the enterprise.

During October there were 3609 names on the pay rolls of the Pennsylvania Steel Company, at Steelton, Pa. On Saturday, November 18, $58,500 were paid to the employees of this concern for two weeks' wages.

The fourth sheet mill of the Cambridge Iron & Steel Company, Cambridge, Ohio, was put into operation last week. This mill had been idle many weeks in consequence of dullness in the market. Revival of trade in galvanized sheets caused its resurrection. This company now have two galvanizing pots running steadily.

It is stated that a movement is on foot for the transfer of the interest of the Pottstown Iron Company, Pottstown, Pa., from the receiver's hands to the old firm. The basis of settlement will be that the creditors will receive one-half of the money in 5 per cent. bonds and the other half in preferred stock. It is stated that a paper is now being circulated among the creditors for their signatures to the above agreement and February 1 is set as the time for the transfer to be made.

The Edgar Thomson Steel Works, at Bessemer, Pa., has been closed down and the reason given for the suspension of work at this time is that it is desired to make the usual annual repairs.

Machinery.

The Scott Foundry & Machine Company, Reading, Pa., have secured an order from the Wm. Cramp & Son, Ship Building & Engine Company of Philadelphia for eight massive plates weighing 35,000 pounds each for the compound triple expansion marine engines to be used on the two new ocean liners now building for the American Steamship Company.

H. K. Porter & Co. of Pittsburgh, builders of light locomotives, will shortly commence the erection of a new brick machine shop 72 x 135 feet in size and two stories high. A new office building to cost $5000 will also be built by this firm.

The Biggs Boiler Company of Akron, Ohio, make a specialty of the manufacture of steam boilers and rotary bleachers. This firm have secured some fair sized orders recently and report the outlook for the future as much improved.

The Spicer Mfg. Company, New Philadelphia, Ohio, recently shipped two carloads of nail machinery to the Superior Barb Wire Company, Dekalb, Ill., consisting of nail cleaning barrels of 25 keg capacity, saw dust separators, sheet iron hoppers, counter shafts and nail trucks.

The new roll turning shop under construction for some time by the Leechburg Foundry & Machine Company of Pittsburgh has been completed. This shop is equipped with roll turning lathes of modern design and large enough to turn the largest rolls used. This firm have recently awarded a contract to the Buffalo Forge Company, Buffalo, N. Y., for a 100-inch fan to heat the shop with hot air. The same firm have also placed an order with the Lodge & Davis Machine Tool Company of Cincinnati, Ohio, for one of their large radial drill presses.

The New Doty Mfg. Company, makers of punching and shearing machines, Janesville, Wis., have kept their shops running continuously during the last few months, but with a reduced force and on shorter time. The improvements which the company contemplated making to their plant have been postponed until better times.

The Bates Machine Company of Joliet, Ill., have made a very creditable record this year. Not a day was lost on account of the financial stringency or the depression in business. Their working force was reduced to some extent, but not very seriously. Their output for the year will average an engine a week, ranging from 75 to 1500 horse-power, besides other work. They have recently furnished a number of electric street railroads with engines, the demand from that class of trade having been the heaviest.

The Bridgeport Crucible Company, Bridgeport, Conn, whose plant was destroyed by fire a short time since, will rebuild at once. The company have been doing a prosperous business and should they rebuild a larger plant will be constructed than the one destroyed.

Dean-Whiting Elevator Company, 140 Union street, Worcester, Mass., have recently purchased the stock, tools, &c., of the Worcester Hydraulic Mfg. Company and will carry on the business of manufacturing hydraulic elevators and dumb waiters, in connection with their former lines. Seven of these hydraulic dumb waiters have been shipped to the insane asylum at Northampton, Mass.

The Coventry Machinist Company, Coventry, England, have closed up their offices in Chicago and Boston and in the spring will open a general office in New York.

Application has been made to Justice McLennan of the Supreme Court, Syracuse, N. Y., by Edward Nottingham, attorney for the Phœnix Foundry & Machine Company, for the appointment of a receiver for the affairs of that concern. The motion for a dissolution was a surprise, but was decided upon by the Board of Directors. A. Caldwell Belden was made receiver. All debts will be paid in full and the company will wind up their business. The capital stock of the concern is $60,000. The assets are set down at $239,031, the actual liabilities at $167,248 and contingent liabilities at $26,680. The Phœnix Foundry & Machine Company were organized in the spring of 1881, succeeding the firm of Cobb, Herrick & Co., who carried on the same business at the same place. The plant was very complete. The company manufactured engines and boilers. Alvin J. Belden managed the business. All of the property will be closed out.

Batt, Bonnell & Thompson of 34 Dey street, New York, have been appointed agents for New York State for the Philadelphia Drop Forge Company, makers of drop forgings in iron, steel, copper and aluminum.

The Eady & Maddox Machine Works have been incorporated at West Point, Ga., with a capital of $15,000, by T. J. Eady and J. H. Maddox of that place.

The foundry and machine shops of A. G. Morris have been started at Harrisburg, Pa.

The Belknap Motor Company, Portland, Maine, have recently secured an order for a 500-light dynamo and plant for the Vermont State Insane Asylum, at Waterbury, Vt.

Among recently authorized corporations in Illinois are the following: Northern Illinois Coal Company, Chicago; capital stock, $100,000; incorporators, H. E. Bell, Albert Phalen and W. E. Waite. Owens Brass & Copper Works, Chicago; capital stock, $10,000; incorporators, Nathan C. Moore, William B. McIlvane, Max Baird. Southwestern Construction Company, at East St. Louis; capital stock, $100,000; incorporators, Adiel Sherwood, Charles Voyce and Joseph P. O'Connor. The Challenge Machinery Company, at Chicago; capital stock, $30,000; incorporators, Walter Birdsall, Theodore Johnson and W. D. Latimer.

Pedrick & Ayer of Philadelphia report that they are now in operation, running 10¼ hours per day, with about half the regular force at work. They find that orders for railroad tools are coming fast enough to warrant running continuously. The firm are now under the management of James M. Hibbs, as assignee, pending the formation of a new company of which Mr. Pedrick will be one of the largest stockholders, Mr Ayer going out and Mr. Pedrick managing the mechanical part of the business, as heretofore.

P. Pryibil, whose machine shops on West Forty First street, New York, were recently burned, has taken out a building permit for a five story brick structure, to cost $20,000.

Hardware.

Bucher & Gibbs Plow Company, Canton, Ohio, have resumed operations in nearly all departments at an average reduction of 20 per cent. in the wages of employees. About 400 men have been given employment.

The employees of Reynolds & Co., New Haven, Conn., who have for some time been working three days a week, have begun to work four days a week at seven hours a day.

The Howe Scale Company, Rutland, Vt., have commenced to run 7½ hours a day and six days a week.

The plant of the McDonald Mfg. Company, manufacturers of tinware, Montreal, P. Q., was damaged by fire on the 8th inst. The loss foots up $40,000, on which there is an insurance of $27,000.

The Chicago Emery Wheel Company, Chicago, have filled a certificate of an increase in capital stock from $10,000 to $50,000.

The implement manufactory of Selby, Starr & Co., Peoria, Ill., has resumed operations. They have started up with a reduced force of men, but the management expect to be under full headway in a short time.

All the handle finishers employed by Landers, Frary & Clark, New Britain, Conn., have resumed work. They have been out for four months.

On the evening of the 15th inst. there was a slight fire in the office of the Pennsylvania Bolt & Nut Works, Lebanon, Pa.,

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but it was fortunately extinguished before damage of any account occurred. It is supposed that the fire originated from the steam pipes.

The Eagle Lock Company's works, at Terryville, Conn., are now running five days a week instead of four days, as heretofore.

Andrew Terry & Co., Terryville, Conn., are running five days per week.

C. S. Weber & Co., 415 Broadway, New York, sole agents for the American Wire Glass Mfg. Company, Tacony, Pa., have just closed two large contracts for wire glass. One contract calls for 6000 square feet of ¼-inch thick wire glass, to be used as a roof for the New York Post Office. Geo. Bickelhoupt is furnishing the skylight work. Another large contract calls for 1700 square feet of ¼-inch thick wire glass, for two of the largest skylights ever designed or used in New York. They were designed by Architect Stephen D. Hatch, and the contract for the work was awarded to Geo. Hayes, the expert on fire proof construction.

R. G. Surbridge, formerly president of the Surbridge Mfg. Company, Hagerstown, Md., manufacturers of cycles, has acquired the entire interest of all the other stockholders in the company, and is now handling it as an individual business. They are making some changes in and additions to their plant, and their capacity for the coming season will be largely increased.

The Consolidated Lamp & Glass Company, Pittsburgh, Pa., have just closed negotiations with the Fostoria Shade & Lamp Company, Fostoria, Ohio, for the purchase of their plant and business. Arrangements have also been made for the purchase of the business of the Wallace & McAfee Company, Limited, Pittsburgh.

The Cortland, N. Y. screen factory is putting in a new 200 horse-power Harris & Corliss engine similar to the one used in the Cortland Wagon Company's plant.

The works of the Youngstown Carriage & Wagon Company, at Youngstown, Ohio, which have been running to half capacity or less for several weeks, will go on full capacity about December 1, giving employment to a large number of additional men.

It is stated that some Eastern capitalists have acquired possession of the old hob nail works at Bridgewater, Pa., and will establish a plant there for the manufacture of tin and terne plate.

J. P. Turner, 40 and 49 Cortlandt street, New York, who puts up lightning rods of all kinds, also weather vanes, bannerets, finials, &c., says he has no cause for complaint as regards trade. He is busy at present with a dozen houses in a North River town, and will commence on a large hospital in Elizabeth, N. J., at once, in addition to other work in hand. Among some satisfactory contracts just finished he mentions the lightning rod equipment for the two power houses and tall chimneys of the Third Avenue Cable Road in this city, Edison Building in Newark and a cathedral in Jersey City, N. J.

The Hatch Cutlery Company of South Milwaukee, Wis., have filed an amendment to their articles of incorporation, adding $100,000 to their capital stock, the latter to be preferred stock, upon which a dividend of 7 per cent. per annum is to be paid out of the first net earnings of the company, such dividends to be cumulative.

The Woodman-Cook Company, successors to Stevens, Woodman & Co., Portland, Maine, have since last January, when the change in firm style took place, nearly doubled their facilities for manufacturing. They advise us that although the season has been a dull one they have been running constantly with the exception of two weeks in July, and have been running evenings since September 1 endeavoring to keep up with their orders. They are employing about 30 skilled workmen. They are manufacturing britannia ware to some extent, but their business is mostly in silver plated ware. They do not issue a catalogue, but sell mostly from photographs or samples. A department of the plant is devoted to the repairing and replating of damaged, defaced or otherwise injured plated ware.

J. W. Fiske, 39-41 Park place, New York, has recently manufactured for the Hotel Waldorf a number of iron vases to contain flowers, shrubs, &c., to be placed around the building just inside the street walks. They have been made from special designs, and are not to be sold to any other hotel in this city. The vase represents an acorn cut in two horizontally, this emblem being a portion of the Astor coat of arms. The acorn rests on the rustic stump of an oak tree. It is also made with a square base to set low.

The plant of the Century Cycle Mfg. Company, successors to the Standard Mfg. Company, Indianapolis, Ind., is now in operation and they are turning out some of their Arrow wheels preparatory to the spring trade. The Arrow is referred to as a strictly high grade machine.

Bennett Mfg. Company, 19 Pearl street, Boston, Mass., manufacturers of the Bennett sash fast, advise us that their fast is meeting with favor. To supply the demand the company are about to enlarge their plant and capital.

Shoenberger & Co., Juniata Iron & Steel Works, Pittsburgh, Pa., are meeting with a gratifying demand for their various brands of steel horseshoes, their sales in this direction showing constant increase. During the past three or four months this firm have operated their horseshoe department to full capacity, shipping the product about as fast as made. A pamphlet recently issued by this firm contains interesting information regarding steel horseshoes.

The Pittsburgh Plate Glass Company have released all of their employees at Ford City, Pa., from payment of house rent during the months that the works were idle. Although it had been previously decided to retain a month's rent from the monthly wages until all should be paid, as was done when the last pay was made, the firm have reversed their decision to correspond with the above.

Miscellaneous.

The Southern Pacific Railroad Company will build a new cotton shed at New Orleans, 120 feet wide and 350 feet long. They have placed the contract with the Berlin Iron Bridge Company of East Berlin, Conn. The building will be entirely of iron, the sides being made with the Wilson patent rolling shutters.

It is stated that the Watsontown Car Works, Watsontown, Pa., may be removed to Williamsport.

The prospects are that the plant of the Gilbert Car Mfg. Company of Green Island, N. Y., will continue to run regularly. It is understood that the creditors will be asked to assign their claims to the committee appointed and let them run the plant until the debts are paid, rather than to sell the plant at much less than its value.

The Commodore Mining Company, with a capital of $100,000, were granted a charter of incorporation last week. The principal offices of the new concern will be located at Cleveland and the company propose to lease mines, mine ore, ship and sell it and to own cars and vessels for its transportation. The incorporators are James Corrigan, Franklin T. Ives, Stenveson Burke, Ernest T. Laydon and Price McKinney, all of Cleveland, Ohio.

Two blocks of the oxide department of the Lehigh Zinc & Iron Company, at South Bethlehem, Pa., have started up after being idle for several weeks.

The Bullard Foundry, at Poughkeepsie, N. Y., has been destroyed by fire.

The Baldwin Locomotive Works, Philadelphia, have started up on full time to complete a number of engines, work on which was suspended during the recent stringency, and which the company have lately been instructed to complete. While the present limited force will not be increased, the men will work 60 hours per week instead of 32.

The tin plate department of the Niedringhaus plant, at St. Louis, Mo., which has been shut down for some time owing to a break in the machinery, has resumed. Between 700 and 800 men were given employment in this department of the works.

A dispatch from Joliet, Ill., says that the plant of the Windsor Wire & Spring Company has been seized by the Sheriff to satisfy a claim of $15,103.

The Wharton Switch Works, at Jenkintown, Pa., have, for the first time in the career of the concern, been compelled to shut down in every department owing to the lack of orders.

The Brooke Locomotive Works of Dunkirk, N. Y., are employing only about 100 men, as against a force of 1300 men during prosperous times. The shut down is not occasioned from lack of orders, it is said, so much as from inability to secure ready money for finished work. There are but few manufacturing concerns in Dunkirk in operation, and the streets are thronged with idle men, who are without any hopes whatever of securing work through the winter.

It is stated that the Holland Radiator Company of Bremen, Ind., have erected a branch works at Avonmore, Pa., some 40 miles from Pittsburgh.

The Lebanon Mfg. Company, Lebanon, Pa., who have given steady employment to their workmen throughout the season, at present have but 20 cars to build, and as these will be completed in three days it is almost certain that from 150 to 175 men will be added to the army of Lebanon's unemployed.

On Monday, the 20th inst., the Bucher & Gibbs Plow Company, Canton, Ohio, manufacturers of chilled and combination hand and sulky plows, resumed operations in all departments at an average reduction of 20 per cent. in the wages of employees. This resumption of operations puts only a part of the force of the above firm to work at present, the basis of earnings being from $2 to $3 per day.

The new and extensive plant of the Union Car Company, at Depew, N. Y., affords a striking example of the suddenness with which this enterprising suburb of Buffalo has sprung into existence. Although only begun in May last the company's works, occupying a tract of 50 acres and covering nearly 300,000 feet of ground, are already nearly completed and ready for operation. Briefly considered the works comprise the following group of buildings: Wood working shop, 100 x 400 feet, with a wing 80 x 120 feet, designed as a planing mill; the blacksmith or iron department, 100 x 400 feet; truck shop, 100 x 120 feet; power house, 60 x 150 feet, containing a Hamilton Corliss engine of 1000 horse-power; two erecting shops, 130 x 340 feet each, with a capacity of 50 cars each; two paint shops, also 130 x 340 feet each, with a capacity of 75 cars; the wheel and axle shop, 30 x 300 feet, the pattern shop being situated on the second floor, and the car wheel foundry, 125 x 400 feet, with a capacity of nearly 400 wheels a day. It is understood that the company will start up their works as soon as there is any demand for cars, beginning with a small force and gradually increasing their capacity as required.

The Cost of Mesaba Ore —A good deal of figuring is going on on the cost of putting down Mesaba ore at Cleveland and other lower lake ports We understand that at the large mines the cost of delivering the ore into cars, including stripping, &c., is from 25 to 30 cents per ton. The royalty ranges from 50 to 65 cents. The freight to Duluth is 80 cents, the only item in which there is some chance for reduction. The freight from Duluth to Cleveland has been as low as 95 cents to $1. Under the most favorable circumstances, therefore, the cost of delivering the ore would be $2 50 to $2.75 per ton, or for 60 to 65 per cent. ore 4 16 to 4 59 cents per unit. Since none of the mines of the other ranges can come near these figures, and since the Mesaba cannot supply more than a moderate share of the whole demand, it is utterly useless to expect that values as low as $2.75 for ore can become general next season. It is reported that the Rockefeller interest has control of about 300,000 tons of ore for next year's delivery at $2.05 per ton. This could, of course, be used quite effectively to keep prices low, and so dishearten the owners of other mines that their control would pass into the hands of the Standard Oil interests.

The Sheet Mill Scale.—The latest advices indicate that a settlement has been reached between the Amalgamated Association and the Western sheet iron manufacturers. A proposition was accepted to continue the weighers' and catchers' wages at $2 25 per day, the rollers assuming the 10 per cent. reduction. The scale will be signed.

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TRADE REPORT

The event of the week has been the sudden cessation of war among the Steel Rail mills, through the completion of an arrangement by which the Illinois, Carnegie, Cambria, Bethlehem and Lackawanna mills lease the Rail making plants of the Maryland and Pennsylvania Steel companies. We understand that the former will be closed down with the exception of the Marine department, and that the latter will cease making standard sections, a business from which it has practically withdrawn for some time. The price of Rails is now $24 at Eastern mills and $25 at Western works, for delivery during the year 1894.

Whether the railroads will enter the market at that figure may be regarded as doubtful, since they will probably hold that they have nothing to lose by delay. So far as the Steel trade generally is concerned these latest developments will probably prevent the improvement in the demand for Pig and Ore which it was expected would follow war prices for Rails. On the other hand, it is believed that the stoppage of the Maryland plant may have some effect on the Eastern Billet market, since the company in question were at times heavy producers of Soft Steel.

On the whole, reports from the different markets are not encouraging. The blows of Pittsburgh competition are being felt in all sections. Bessemer Pig there is weaker and Steel Billets are again showing a declining tendency. There are indications that suitable terms would fetch very low prices.

The expected adjustment of prices for Finished Material on the basis of the low prices for Soft Steel has come, and figures which were mentioned under the strictest pledge of secresy some weeks since are now openly spoken of in the trade.

Pittsburgh concerns are making what is practically a clean sweep in Eastern markets. They are underbidding in a way which leaves rolling mills east of the Allegheny Mountains hopelessly out of the race. It almost looks as though their future existence depends upon the grace of the Smoky City. At present prices for raw materials and present rates of labor the mills of Pittsburgh and its allied districts can put down Rolled Iron and Steel in Eastern markets below the cost of production of Eastern mills. That fact has been proven during the past few months. The only consolation is that the Western works are unable to supply the whole demand in times of ordinary business activity.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, November 21, 1893.

The situation in the Iron and Steel trades as compared with that of, say, one month ago can be stated in a few words: The volume of business is larger, prices are weak and lower. The increased demand is pretty general all along the line, and the further decline in prices also applies to nearly all kinds of Raw and Finished Material. There is no denying the fact that there is little prospect of prices getting better until after the first of the year, and it is somewhat doubtful if there will be much improvement in this direction before spring. Commencing with Pig Iron, it can be said that Bessemer is weaker than one week ago. Billets are also a little easier and $17.25, Pittsburgh, would be readily accepted. Structural Material is in slow demand, with prices a shade weaker. Plates are fairly active, with competition as keen as ever and prices somewhat demoralized. In other lines there is little change to note, with the exception that Wire Nails are in active demand. Coke is also in better demand, owing to the blowing in of a number of stacks in the Pittsburgh and Mahoning and Shenango Valley districts. Interesting rumors have been afloat here for the past few days concerning a new deal to be made by the Rail makers Gossip has it that a new agreement has been fixed up, and that the control of two Eastern mills has been secured, and that one or both of these will be closed down for an indefinite period. It is also claimed that a new price has been fixed, said to be $24 or $25 at maker's mill, with chances favoring the first named figure. Confirmation of the above could not be secured, but it is claimed that the deal, as outlined above, has been practically closed.

Pig Iron.—While there is a little more metal moving, the condition of the market is far from being a satisfactory one to makers. As is well known, there are large stocks of Iron on hand here and in the Mahoning Valley as well, and with the recent increase in production it will take just so much longer to clean this stock up. One prominent concern in this city is said to have about 100,000 tons of Bessemer on hand, while others have from 20,000 to 40,000 tons. There is considerable pressure to sell Pig Iron, and as a consequence prices are somewhat easier, $11.25, Pittsburgh, for Bessemer having been slightly shaded on some recent transactions. While the market is undeniably weaker, makers claim that the price cannot well go much lower, for the reason that it takes the very best furnace practice to make Bessemer even at our quoted prices. Where a furnace is using a full ton of Coke to a ton of Iron, and is paying market prices for it, and using Ore bought early in the season, it would seem that the claim of the furnace owners that cost price has about been reached is not far from being correct. Gray Forge is in a little better demand, with prices ruling at about $10.50, Pittsburgh. We quote as follows:

Neutral Gray Forge	$10.50 @	.....	cash
All-Ore Mill	10.50 @	10.75	"
Bessemer	11.10 @	11.25	"
No. 1 Foundry	12.50 @	13.00	"
No. 2 Foundry	11.50 @	12.00	"

We note a sale of 1000 tons of Bessemer for December at $11.15, Pittsburgh, and 1500 tons for November and December at $11.10, Pittsburgh. Also 1000 tons of Gray Forge for December at $10.50, Pittsburgh. It is said that some deals are involving a large tonnage of Bessemer, and that some of them may be closed this week.

Billets.—Considerable Steel is changing hands, with prices slightly weaker, although no marked decline has taken place. Buyers are now endeavoring to couple Steel for January, February and March of next year with December Steel, but in only a few instances have they been successful. When a buyer is prepared to place a fair sized order for Steel, with prices and terms of payment satisfactory to maker, it is possible that it would be accepted and deliveries made into the first quarter of the year. However, this is exceptional, as some makers absolutely refuse to sell a pound of Steel at ruling prices for delivery after January 1. They argue that there is greater probability of Steel bringing better figures after January 1 than there is of it selling lower at that time than it is to-day. Prices depend altogether on size of order and terms of delivery. For ordinary business we quote $17.25 @ $17.50, at maker's mill. For desirable business our lower quotation could probably be shaded to a slight extent. We note such a sale, being 3000 tons for close delivery at a price equal to $17.10 at maker's mill. Also a sale of 1000 tons for delivery before January 1, at a price equal to about $17.35, at maker's mill.

Ferromanganese.—We quote at $52.50, delivered at buyer's mill, for domestic.

Steel Rails.—The local mill has closed down, and it is announced will undergo repairs. The Light Rail department continues in operation on double turn. Reports are afloat concerning a new agreement among the Rail makers, and if these prove to be true much of the uncertainty now surrounding the Rail situation will be cleared up.

Plates.—There is a better demand, but prices are again a peg lower. A recent sale of Tank Steel made here is said to have been at a price considerably under our lower quotation. We quote as follows: Tank, 1.35¢ @ 1.45¢; Shell, 1.55¢ @ 1.60¢; Flange, 1.65¢ @ 1.75¢; Fire Box, medium quality, 2.50¢ @ 3¢, best quality, 3.50¢ @ 4¢.

Muck Bars.—A fair amount of Muck Iron is being sold, although the demand is much restricted owing to the low price of Steel. We quote best grades Muck Bars at $20.75 @ $21.25, delivered at buyer's mill. We note a sale of 500 tons at $21.10, delivered.

Structural Material.—The building season is practically over, and as a consequence Beams are in light demand. There is a fair amount of bridge material selling, but mills are not pushed by any means. For ordinary lots we quote as follows: Beams up to 15 inches, 1.50¢ @ 1.60¢; Angles and Universal Plates, 1.50¢ @ 1.60¢; Tees, 1.75¢. For desirable orders the above prices could probably be shaded. It is stated that the new wage scale to become operative at the Homestead Steel Works on and after January 1, 1894, carries with it material reductions in wages, especially of high priced labor.

Bars.—The Valley mills have arranged a wage scale with the Amalgamated Association, and a number of them have already started up some departments. The basis of the settlement is $4.75 for puddling, while in the finishing departments the same concessions were granted by the Amalga-

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mated Association as were contained in the wage scale of the National Union of Iron and Steel Workers, signed about two weeks ago by a number of the Valley mills. The mills in the Pittsburgh district who signed the Amalgamated Association scale, which was based on $5 ℔ ton for boiling, will, of course, participate in all the reductions granted to the Valley mills. The market on Bars is slightly weaker, probably occasioned by the fact that the Valley mills are again becoming producers. We quote Steel Bars at 1.35¢ @ 1.40¢, with Bar Iron extras. For desirable orders our lower quotation would probably be shaded. In the Valley, mills are holding Bars at 1.30¢, half extras.

Merchant Steel.—Mills report only a fair demand, with prices somewhat lower for desirable orders. We quote Open Hearth Spring Steel at 1 90¢ @ 2¢; Bessemer Machinery, 1.55¢ @ 1.60¢; Toe Calk Steel, 2¢; Tool Steel, from 5½¢ upward, according to quality.

Wire Nails.—The demand for Wire Nails continues active, some very large shipments having been made recently by Pittsburgh mills and those further west. Notwithstanding the active demand prices show no improvement, and we continue to quote at $1.25 in carload lots at mill. As stated last week, this price would be slightly shaded by some mills for round lots. The demand for Cut Nails is also very satisfactory and $1 at mill, with the usual averages, is being maintained.

Barb Wire.—There is no improvement in demand, and we continue to quote Four-Point Galvanized at $2.20 @ $2.25 in carload lots at mill, with the usual advances for less than carload lots. We quote Plain Wire at $1.50, for Nos. 6 to 9, in carload lots.

Pipes and Tubes.—We are advised that there is a slightly better demand for Pipes and Tubes, and the outlook for further improvement in this direction is promising. At the plant of the American Tube & Iron Company, at Middletown, Pa., the lap weld department is on full and the butt weld department to half capacity. The plant of this firm at Youngstown, Ohio, is also being operated to about half capacity. The plant of the Duquesne Tube Works Company is also in operation to nearly full capacity, with good prospects of this being kept up through the winter months.

Skelp Iron.—There is a slightly better demand for Skelp Iron, and we quote Grooved at 1.37½¢ @ 1.50¢, and Sheared at 1.50¢ @ 1.60¢, according to order.

Coke.—There is a slightly better demand for Furnace Coke, particularly from the Pittsburgh and Valley districts. The shipments to Eastern points also show a slight increase. For the week ending November 11 there were 6485 ovens in the Connellsville region in blast, and 11,005 idle, with a total estimated production for the week of 57,755 tons. Compared with the previous week this was a net gain of 525 active ovens and an increase in production of 2475 tons. Prices show no improvement, and we continue to quote Furnace Coke at $1.10 per ton, f.o.b. cars, in region, while Foundry Coke is ruling at $1.50 to dealers and 1.65 to consumers. It is stated that one or two operators in the region have recently shaded our quotations on Foundry Coke to slight extent.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., November 21, 1893.

Certain movements have been made in various branches of the Iron and Steel trades which indicate that the extreme point of depression has been reached, if not actually passed. There is no absolute improvement in prices, neither is there any very decided increase in the demand, yet the feeling is becoming more confident every day. A curious feature in this connection is that prices of Finished Material have reached not only unprecedented, but startlingly low figures. It is currently reported and generally believed that Pittsburgh mills have taken orders for Plates subject to very stringent requirements at a good deal less than 1.35¢, delivered. There is hardly a pretense of getting more than 1.45¢ to 1.50¢ for any good sized lot, while those who made the inquiries claim to have beaten the inside figure so far that local mills had no chance whatever. Low water mark must certainly have been reached in Finished Material, even if the price (said to be 1.2¢) was f.o.b., instead of delivered. The most important event of the week, however, is the new deal among the Steel Rail companies, by which prices for 1894 are definitely fixed at $24, f.o.b., or $25, tidewater. There will be no deviation from these figures, and, as the control will be closer than under any former agreement, there can be no misunderstanding as to the price of Rails during the period mentioned. The next strong feature is the gradual development of a feeling that Pig Iron has seen its lowest figures. Taken as a whole, therefore, there is an intuitive belief that the beginning of 1894, and possibly before the close of 1893, the trend of the market will be the reverse of what it has been during the past two or three years. There is nothing definite in sight beyond what is above mentioned, and nothing to warrant the expectation of any decidedly aggressive movement, but a gradual return to normal conditions seems to be pretty well assured.

Pig Iron.—No material change can be noted in this interest, unless it be that sellers appear to have better control of the market. Good buyers can get all the Iron they want at last week's prices for reasonably early deliveries, but for long dates sellers either quote slightly higher figures or postpone acceptance of bids that have been made to them. They may yet decide to accept the offers; but be that as it may, holders are clearly not as demoralized as they were some time ago, or they would accept almost any offer that they could get. The movement may be a little premature, but there is a strong impression that the ultimate outcome will be a rising market. For the present quotations for Philadelphia deliveries may be given as follows:

No. 1 Foundry	$13.75 @ $14.25
No. 2 Foundry	13.00 @ 13.25
Standard Gray Forge	12.00 @ 12.50
Ordinary Gray Forge	11.50 @ 11.75

Steel Billets.—Very little business has been done in this vicinity, as consumers were not inclined to place orders except for such small lots as they are likely to require during the balance of the year. Asking prices are $20 @ $20.25, delivered, with a chance that considerably better could be done on firm offers for good sized lots. It is not clear what effect the new arrangement among the Rail mills will have on the Billet trade, but most likely it will not affect it at all. Since writing the above we are advised of a sale of 1000 tons at less than $19 50, delivered to near by mill.

Finished Material. — The demand has been somewhat heavier, and nearly all the mills are doing better than at any time since July, but, as already noted, the business is done at terribly demoralized prices. It is difficult to account for such wanton slaughter, but when certain of the Pittsburgh mills want business they offer to take it at prices and on terms which leave no alternative to their competitors but to stand aside and let it go West. This applies not only to Plates and Sheets, but to every class of rolling mill material. On such a market it is impossible to quote prices with any degree of exactness, but for small lots asking prices are about as follows:

Grooved Skelp, delivered	1.45¢	@	1.50¢
Best Refined Bars	1.45¢	@	1.55¢
At interior points	1.35¢	@	1.40¢
Tank Steel	1.45¢	@	1.55¢
Heavy Plates	1.50¢	@	1.60¢
Shell	1.60¢	@	1.75¢
Flange	1.90¢	@	2.00¢
Angles	1.60¢	@	1.70¢
Beams and Channels	1.75¢	@	1.90¢

Old Material.—There is so little change that the reports of several preceding weeks might almost be repeated verbatim. Asking prices are about as follows, with a fair amount of business, chiefly at inside figures:

No. 1 Wrought Scrap, delivered	$12.00	@	$13.00
Machinery Cast, delivered	10.00	@	11.00
Heavy Steel Scrap, delivered	12.00	@	13.00
Old Iron Rails, delivered	14.00	@	14.50
Old Street Rails, delivered	15.50	@	16.00
Wrought Turnings, delivered	10.00	@	11.00
Cast Borings, delivered	6.00	@	7.00
No. 2 Light Scrap	6.00	@	7.00

Chicago.

(*By Telegraph.*)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, November 22, 1893.

The market here remains in an unsatisfactory condition. Any improvement recently noted seems to have been only spasmodic. An increased demand is followed by a relapse into dullness, and a slight firmness in price seems to be immediately followed by decided weakness. The whole machinery of trade is in bad shape, and now and then seems to slip a cog or two. The past week has been dull in all lines.

Pig Iron.—The drop in Southern freight rates has disappointed all interested, as it brought no improvement in the volume of business. Consumers are only purchasing according to their necessities, and few are inclined to anticipate their requirements to any extent, even if the bait of lower prices is held out. The sellers of both Southern and local Coke report the week very quiet. The only business of any consequence seems to be in Ohio Softeners and Lake Superior Charcoal. The demand for Ohio Soft Irons has made marked improvement within the last few weeks, but this is evidently owing to the scarcity of local brands of Soft Iron, which for a long while has occupied the local field to the exclusion almost entirely of Ohio brands. The Charcoal Iron market is irregular. Some makers are getting mere anxious to sell and transactions which have recently come to light are on a somewhat lower basis. Bankrupt stocks are still being offered, and

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these tend to depress the market. Quotations are now as follows for cash:

Lake Superior Charcoal	$15.50 @	$16.00
Local Coke Foundry, No. 1	13.50 @	14.00
Local Coke Foundry, No. 2	12.75 @	13.00
Local Coke Foundry, No. 3	12.25 @	12.75
Local Scotch	14.00 @	14.50
Ohio Strong Softeners No. 1	15.50 @	16.00
Southern Silvery, No. 1	@	14.25
Southern Silvery, No. 2	@	13.75
Southern Coke, No. 2	11.85 @	12.10
Southern Coke, No. 3	11.10 @	11.35
Southern, No. 1, Soft	11.85 @	12.10
Southern, No. 2, Soft	11.10 @	11.35
Tennessee Charcoal, No. 1	16.00 @	16.50
Southern Gray Forge	10.60 @	10.85
Alabama Car Wheel	18.25 @	18.50
Jackson County Silvery	16.50 @	17.00
Other Ohio Silvery	15.00 @	15.50

Bars.—Trade in Bar Iron and Bar Steel is of a better character than in almost any other line. The demand is general, showing that manufacturing consumers are again at work. There are now few concerns using Bars that are entirely shut down. Even the car works are getting more business, although the orders are seldom for more than 100 cars. Bars are irregular, owing to the efforts made by local mills to control as much business as possible and prevent outside manufacturers from capturing trade which is regarded as belonging here. Prices in this way range from 1.35¢ to 1.45¢, Chicago, half extras, depending upon the location of the mill. The Valley mills appear to be standing at 1.30¢ at mill, and are getting some business at this rate. Soft Steel Bars are the subject of considerable competition, with prices ranging from 1.45¢ to 1.55¢, Chicago, according to the character of the order. Jobbers report a better demand from store, but prices are not so firmly held, and while the usual quotations are 1.60¢ @ 1.70¢ for Bar Iron and 1.65¢ @ 1 75¢ for Soft Steel, these rates are shaded according to circumstances.

Structural Material.—Business in this line is quiet, with no change in prices. Quotations are as follows, Chicago delivery: Beams, 1.65¢ @ 1.75¢; Tees, 1.90¢ @ 2¢; Angles and Universal Plates, 1.60¢ @ 1.65¢. Small lots are sold from stock at an advance of 10¢ @ 15¢ ℔ 100 above those prices.

Plates.—Dealers report a better trade this month than last. Consumers have begun to anticipate their wants to some extent, but their purchases are not of large quantities. Mill orders are scarce. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.62½¢ @ 1.70¢; Shell Steel, 1.82½¢@1.90¢; Flange Steel, 2.2½¢ @ 2.10¢; Fire Box, 2.75¢ @ 5¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2.25¢ @ 2.40¢; Tank Steel, 2.10¢ @ 2.20¢; Shell Steel, 2 20¢ @ 2.40¢; Flange Steel, 2.50¢ @ 2.65¢; Boiler Tubes, 70 and 5 % off.

Sheets.—Trade is quiet, as the present period is now between seasons and not much is being done in mill orders. Prices continue at about 2.75¢, Chicago, for No. 27 Common, and 75 % off for Juniata Galvanized, mill shipment. Small lots from stock are selling at 2.90¢ @ 3¢ for No. 27 Common, and 70 % @ 70 % and 7½ % for Juniata Galvanized. Sheet Copper is quoted at 35 % off in large lots and 30 % off in small lots.

Merchant Steel.—Nothing of any special moment has transpired in this line. The demand is moderately fair and prices are unchanged. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel, 1.90¢ @ 2¢; Ordinary Bessemer Machinery, 1 60¢ @ 1.65¢; Ordinary Bessemer Tire, 1.55¢ @ 1.6 ¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Billets.—The Joliet works opened on Monday after an idleness of 11 months. No large inquiries are in the market for Steel Billets and quotations continue at $19.25 @ $19.50, Joliet.

Rails and Track Supplies.—Railroads are not asking quotations on Steel Rails and it is expected that they will not be in the market until some time next month. Prices here are expected to be $25 for standard Rails, as the result of the agreement reached at the meeting of the manufacturers held last week in New York City, but the announcement is not made officially. Almost nothing is doing in Fastenings, and quotations are nominally continued at 1.50¢ @ 1.60¢ for Splice Bars; 2.55¢ @ 2 60 ¢ for Track Bolts with Hexagon Nuts, and 1.90¢ @ 1.95¢ for Spikes.

Old Rails and Car Wheels.—A sale of Old Iron Rails is reported at a shade under $14, Chicago. The sale was made by a dealer, which indicates that low values on this class of material are now recognized. Railroad companies are also more easy in their views, and some of them have offered Rails within the past week at $14. Old Steel Rails are selling at $7.50 @ $10, according to length. A considerable movement has taken place in Old Car Wheels, but entirely of a speculative character. Railroads have sold large quantities at prices varying from $9.50 to $10, but in no case do consumers appear to have taken hold.

Scrap.—The movement in Old Material has been fair. Quotations are maintained at old figures: No. 1 Forge, $10; No. 1 Mill, $8; Sheet Iron, $4.50; Pipes and Flues, $8; Axles, $16; Horseshoes, $11; Fish Plates, $12; Spikes and Bolts, $10; Cast Borings, $4.50; Wrought Turnings, $6.50; Axle Turnings, $8; Heavy Cast, $9 50; Stove Plate, $7.75; Malleable Cast, $8; Mixed Steel, $7, gross ton; Leaf Steel, $14 50.

Metals.—A little more is doing in Lake Copper, with the price unchanged at 10⅜¢ for carload lots. Inquiries for casting brands are somewhat better, and quotations are asked for future deliveries. Standard brands continue to be quoted at 9¾¢. Spelter is reported in better condition. Owing to the large exports now being made, producers are quoting on a basis of 3 65¢, Chicago. Pig Lead has been sold to the extent of some 600 tons, and prices are steadily maintained at 3.30¢ @ 3.35¢, according to quantity.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, November 22, 1893.

The volume of business in Pig Iron has been comparatively small during the week. The Iron Pipe works, having previously supplied their wants for a long time, have not been in the market and consumers did not want much, but stove works and agricultural works have bought to a fair extent, and although their orders seldom reached 1000 tons in any one instance, yet in the aggregate they were larger than usual of late, but no better prices were realized. In fact, the tone of the market is easier, for purchases are being made for the first half of next year at the same rates as current for spot delivery. No. 1 Foundry is especially weak, there being little demand for that grade, and sales have been made as low as $9.50 ℔ ton, f.o.b. Birmingham. The other grades are well sustained, there being a fair demand for No. 2 Foundry and for Gray Forge. The trade contends that the outlook, from a statistical point of view, is more favorable and that there should be an early improvement in prices, but as long as buyers can supply their wants at the current low rates they pay little attention to sentimental views. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$12.25 @	$12.50
Southern Coke, No. 2	10.75 @	11.00
Southern Coke, No. 3	10.25 @	10.50
Ohio Soft Stone Coal, No. 1	15.50 @	16.00
Ohio Soft Stone Coal, No. 2	14.50 @	14.75
Lake Superior Coke, No. 1	15.00 @	15.25
Lake Superior Coke, No. 2	14.00 @	14.25
Hanging Rock Charcoal, No. 1	18.50 @	19.00
Hanging Rock Charcoal, No. 2	17.50 @	18.00
Tennessee Charcoal, No. 1	14.00 @	14.25
Tennessee Charcoal, No. 2	13.00 @	13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @	18.00
Lake Superior Car Wheel and Malleable	17.00 @	17.25

Forge.

Gray Forge	9.75 @	10.00
Mottled Coke	9.50 @	9.75

St. Louis.

(By Telegraph.)

Office of *The Iron Age*, Bank of Commerce Building, ST. LOUIS, November 22, 1893.

Pig Iron.—The improvement noted in our last report continues, and inquiries are beginning to result in some business. Consumers in nearly all lines report a steady trade in small lots, which in the aggregate makes a good showing. There is less pressure to sell, as the furnaces now in blast appear able to take care of themselves, and are apparently not compelled to sell their product to keep going. A steady trade is anticipated from now until after the holidays, when a revival is confidently expected. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	$13.25 @	$13.50
Southern Coke, No. 2 Foundry	11.50 @	11.75
Southern Coke, No. 3 Foundry	10.75 @	11.00
Southern Gray Forge	10.25 @	11.50
Southern Car Wheel	17.25 @	18.25
Lake Superior Car Wheel	16.50 @	17.00
Ohio Softeners	16.00 @	16.50

Bar Iron—Jobbers continue to report an active demand at 1.75¢ from store. Mills are not running very full and competition is brisk to secure trade. Some low prices have been made to a few special users of Iron, which, while very low, hardly constitute the market. Mills quote 1 45¢ for carload lots, half extras, f.o.b. cars East St. Louis.

Barb Wire.—The demand for Barb Wire continues to be of good volume and prices are unchanged. Mills quote Painted in carload lots at $2 @ $2.05 and Galvanized at $2.40 @ $2.45. Jobbers ask $2.10 @ $2.15 for Painted, with 40¢ ℔ hundredweight additional for Galvanized.

Wire Nails.—A fair demand is reported for Wire Nails, but prices do not seem to stiffen much. Mills quote $1.40 in carload lots to jobbers. Smaller lots are quoted at $1.45 @ $1.55, according to quantity.

Rails and Track Supplies.—There is a good trade in Track Supplies at unchanged prices, as follows: Splice Bars, 1.65¢ @ 1.70¢; Spikes, 2¢ @ 2.05¢; Bolts, Square Nuts, 2.50¢; with Hexagon Nuts, 2 60¢. Old Rails are of-

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fered at $14, but buyers are scarce. Steel Rails are in a mixed condition, and all sorts of prices are current. A sale is reported of 4000 tons to the Jacksonville and Southeastern Railroad at a price less than $21, f.o.b. Pittsburgh. Locally trade is dull, and $23 @ $24 50 seems to be the selling price.

Pig Lead.—This metal is in an unsettled condition. A sale is reported of 300 tons made to-day at 3.20¢, but offerings late to-day at 3.17½¢ did not find buyers. There is a weak undertone to the market, which will doubtless soon make itself felt in prices.

Spelter.—There is no change to report in Spelter. Offerings are made at 3.40¢, but sales are limited to carload quantities, even the largest buyers refusing to buy heavily at to-day's prices.

Metal Market.

Copper.—Regarding the alleged late sales of Ingot by the Calumet & Hecla Company, no official information is imparted, but facts came out from outside sources going to show that about 5,000,000 lb were disposed of to exporters and that the price was 9¾¢ ℔ lb. Rumor has it that sales have also been made to home consumers at similar price, with deliveries running up to March 1, if not further ahead, and that some business has been done at 10¢. The latter price is now bid for round lots and most sellers have advanced their limits to about 10¼¢. In this connection it is interesting to note that bids on the Metal Exchange of as high as 10.15¢ were made for December and 10.25¢ for January and February delivery, with some indication that prominent interests have a reason to place values on a higher plane. While there would thus appear to be something in the nature of substantial firmness to the market for Lake Superior product, the cheaper varieties of Copper merely hold their own in price and meet with only ordinary sales. Electrolytic may be secured at 9½¢ @ 9¾¢, and common casting stock at 9¼¢ @ 9⅝¢, according to brand and quantity.

Pig Tin.—Prices have been moved a little higher, or to 20.65¢ @ 20.70¢ for present or next month delivery. Comparatively little Tin has changed hands in a speculative way, however, and regular consumptive movement is believed to have been below the average for the season. The turn for the better in prices, as a matter of fact, has the appearance of being what may be termed a nicely timed natural reaction, engineered by some few prominent operators, with nothing more substantial behind the manoeuver than the fact that this market is still a good deal below the level of Europe. "Short" interest in the speculative branch of the market here seems to have been pretty well eliminated, and the outside holdings are believed to be comparatively small.

Pig Lead—Sales have been reported here to the extent of about 750 tons common domestic for delivery during the balance of the year. Some lots went at 3.40¢ for November, but the greater portion of the business was in December delivery at 3.42½¢ @ 3.45¢. At this writing the offering is moderate, and while consumers manifest extreme indifference, the demand from other quarters, along with more or less reserved offering, serves to keep the market quite firm in tone.

Spelter.—The purchases of this metal have been confined chiefly to single carloads at about 3.70¢ for ordinary Western brands deliverable here during the next six weeks. In volume the business was moderate and the demand was very tame. It is stated, however, that very few smelters will take orders at current prices, stating that their probable output for the balance of the year is closely sold up and that present prices leave no margin of profit. Hence 3.80¢ is asked for January and later deliveries, although moderate quantities have been closed out for earlier delivery at the price above quoted.

Antimony.—Business has been of ordinary character, yet fair all told and sufficient to hold prices steady at 9⅝¢ @ 9¾¢ for Hallet's and 10⅛¢ @ 10¼¢ for Cookson's.

Tin Plate.—There has been some improvement in the demand for ordinary Cokes for future delivery, and enough sellers acceded to buyers' terms to bring about a fairly good volume of business. Interest in futures is tamer than usual at this season of the year, however, and, with spot dealings on strictly perfunctory lines, the market shows no improvement it tone. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $5.30; J. B. grade, do., $5.35; Bessemer full weight, $5.35; light weights, $4.95 for 100 lb, $4.85 for 95 lb, $4.70 @ $4.75 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60; Siemens Steel, IC basis, $5.65; IX basis, $6.75 @ $7. Charcoals—Melyn grade, IC, $6.37½ @ $6.50; Crosses, $8; Allaway grade, IC, $5.60; Crosses, $6.75; Grange grade, IC, $5.75; Crosses, $6.85. Charcoal Ternes—Worcester, 14 x 20, scarce; do., 20 x 28, $11.35; M. F., 14 x 20, $7.50; do., 20 x 28, $14.75; Dean grade, 14 x 20, $5.35; do., 20 x 28, $10.50 @ $10.60; D. R. D. grade, 14 x 20, $5.15; do., 20 x 28, $10.10; Alyn, 14 x 20, $5.32½ @ $5.35; do., 20 x 28, $10.40; Wasters—S. T. P. grade, 14 x 20, $4.75; do., 20 x 28, $9; Abercarne grade, 14 x 20, $4.60; do., 20 x 28, $8.87½.

The monthly production of Copper in the United States since July, 1892, has been as follows, the first column giving the aggregate returns from the reporting mines, which include the principal Lake, Montana and Arizona producers; the second being the metal from pyrites and from a number of smaller outside sources, being estimated:

American Product.

1892.	Reporting mines. Gross tons.	Outside sources. Gross tons.	Total. Gross tons
July	9,294	924	10,218
August	10,807	870	11,677
September.	9,710	994	10,704
October	9,668	1,289	10,957
November.	9,888	1,036	10,924
December.	9,872	1,174	11,046
Total six months	59,239	6,287	65,526
1893.			
January	9,187	989	10,176
February	8,213	1,042	9,245
March	9,065	1,321	10,386
April	11,775	1,042	12,817
May	12,706	1,042	13,748
June	11,524	1,042	12,566
Total six months	62,470	6,478	68,938
1893.			
July	11,049	1,042	12,091
August	11,745	1,042	12,787
September.	11,750	1,042	12,792
October	11,503	1,042	12,545

The product of the foreign reporting mines and the United States exports were as follows:

1892.	Foreign reporting mines. Gross tons.	1892.	United States exports. Gross tons.
July	6,358	July	3,450
August	6,868	August	1,545
September	5,478	September	1,458
October	6,476	October	3,144
November	6,789	November	3,897
December	7,666	December	4,486
Total six months	39,655	Total six months	17,980
1893.		1893.	
January	5,736	January	3,171
February	6,762	February	1,815
March	6,896	March	2,334
April	6,913	April	3,450
May	6,806	May	4,482
June	7,935	June	5,109
Total six months	41,048	Total six months	20,361
1893.		1893.	
July	6,095	July	7,181
August	7,057	August	9,127
September	6 303	September	16,131
October	7,081	October	11,478

New York.

Office of *The Iron Age*, 96-102 Reade street, New York, November 22, 1893.

Pig Iron.—As indicating that low prices for Pig Iron are attracting attention in distant quarters, the fact is cited that an English house has bought 5000 tons of Alabama Coke warrants at the reported price of $7.50 for No. 3, equivalent to $7.25 at furnace. Consumers are showing but little interest in the market, although bargains keep cropping up. We quote: Northern brands, $14 @ $15 for No. 1; $13 @ $14.25 for No. 2; $12.25 @ $12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, $13 @ $14 for No. 1; $12 @ $13 for No. 2; $11.50 @ $12.25 for No. 3; $11.75 @ $12.25 for No. 2 Soft, and $12.25 @ $12.50 for No. 1 Soft. Gray Forge is $11.25 @ $12.

Spiegeleisen and Ferromanganese.—In the absence of business we quote: Foreign Spiegeleisen, 10 % @ 12 %, $21.50 @ $22, and 20 %, $25.50 @ $26, on cars, Jersey City, and Ferromanganese, $55 @ $55.50.

Billets and Rods.—There are indications that the requirements of the largest consumers have been covered for some time to come by a Pittsburgh mill at a very low price. Although Foreign Billets are being offered very cheap, buyers do not take hold. We quote nominally: Domestic Billets, $20.25 @ $22.50, and foreign Billets, $28 @ $28.50, tidewater; domestic Wire Rods, $28 @ $29, and foreign Rods, $39.50 @ $40, tidewater.

Steel Rails.—We refer elsewhere to the new arrangement which has been perfected by the Rail mills, which promises to hold the market steady for along time to come. During the brief period during which low offerings were being made very little business in the aggregate was done. Probably 25,000 tons would cover the whole. It is hardly to be expected that buyers will take hold until the present situation is thoroughly understood. The price now named is $24 at Eastern mills and $25 at Western mills for 1894 delivery.

Track Material.—We quote as follows for small lots: Spikes, 1.75¢ @ 1.90¢; Fish Plates, 1.35¢ @ 1.50¢; Track Bolts, Square Nuts, 2.20¢ @ 2.40¢, and Hexagon Nuts, 2.40¢ @ 2.50¢, delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—The market is practically bare of orders of any consequence. The prices at which

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recent work has been taken are reported to have been exceptionally low. There has been some movement in Bars, some of the dealers buying for stock. Something has been done in Hoops. We quote nominally: Beams up to 15 inch, 1.70¢ @ 2¢; 20-inch, 2¢ @ 2.25¢, for round lots; Angles, 1.65¢ @ 1.80¢; Universal Mill Plates, 1.60¢ @ 1.75¢; Tees, 2¢ @ 2.15¢; Channels, 1.70¢ @ 2¢. on dock. Steel Plates are 1.55¢ @ 1.70¢ for Tank; 1.75¢ @ 1.90¢ for Shell; 2¢ @ 2.15¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.50¢ @ 1.9¢, on dock, and Common, 1.40¢ @ 1.50¢; Soft Steel Bars are 1.50¢ @ 1.70¢; Scrap Axles are quotable at 1.70¢ @ 2¢, delivered; Steel Axles, 1.70¢ @ 1.90¢, and Links and Pins, 1.70¢ @ 1.80¢; Steel Hoops, 1.75¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ ℔ 45-lb bundle, at mill.

Old Material.—We note sales during the past week of 500 tons of special make Old Iron Rails at $12.50, and in the aggregate 1000 tons of Old Steel Rails at $8 @ $9, according to delivery. The supply of this class of material is exceptionally heavy. No. 1 Scrap Iron has been offered at $9 @ $10. The demand is very light. Old Car Wheels are very difficult of sale.

Financial.

Business conditions during the week have shown a continuance of improvement, which, although not as rapid as some persons expected or hoped for, is yet sufficiently decided. The effects of the severe financial depression of the summer are, naturally, still being keenly felt in many quarters, and serve to operate against anything beyond a very gradual recuperation. In general business circles, nevertheless, a decidedly more healthy and hopeful tone prevails; and all indications continue to be as favorable as could reasonably be expected. An improvement in the industries of the country is manifest from late trade reports which mention, almost uniformly, a very material increase in the number of mills and factories resuming work, as compared with those shutting down, or restricting operations. Western iron and steel mills and Eastern textile factories in particular make a favorable showing in that respect for the week, some of the largest producing concerns being reperted as resuming after prolonged shut downs. In general, however, industries are proceeding on unusually conservative lines, awaiting the general revival of demand from consumers. The present is naturally the quiet season of the year in most lines of business, and it is unlikely, save in the case of some special industries, that much new enterprise will develop until after the January settlements are made. Uncertainty as to the outcome of tariff legislation, too, is an important factor in the industrial situation. Numbers of new enterprises will be held in check until it is certain what will be done in this field; and buying all over the country will be confined to little more than absolute requirements, until producers and consumers know the new conditions to which they will have to adjust themselves.

A favorable feature of the week are the reports of improvement in collections. November payments are on all hands said to be far more satisfactory than was expected. Monetary difficulties are rapidly disappearing. Yet the accumulation of vast sums of surplus reserves by the banks at all the principal money centers is evidence of a lack of enterprise and speculation, with consequent stagnation in business. The receipts of currency by the New York banks from interior points continue extremely heavy and have served to pile up the already enormous reserve held by them to unprecedented proportions. Last Saturday's bank statement showed a further gain in cash of nearly $10,000,000, bringing the surplus reserve up to $65,500,000 above legal requirements. This is the largest ever known and is specially remarkable for the rapidity with which it has been accumulated. The greatest sum ever held hitherto was $64,000,000 in 1885, but that took 12 months to attain its magnitude after the panic of May, 1884, whereas the present accumulation of reserve has taken but three months. The unfavorable feature of the bank statement was a decrease of $1,253,200 in the volume of loans. As this condition cannot have been brought about by any unwillingness on the part of the banks to invest their superfluous funds in such profitable investment, it furnishes unquestionable evidence of the existing stagnation in trade and speculation. The following are the comparative statements of November 11 and November 18.

	November 11.	November 18.	Differences.
Loans...	$402,986,000	$401,732,800	Dec. $1,253,200
Specie...	98,644,900	99,924,300	Inc.. 1,279,400
Legal tend.	73,118,800	81,717,200	Inc.. 8,598,400
Deposits.	455,739,900	464,684,100	Inc. 8,944,200
Circulation...	14,356,300	14,076,600	Dec. 279,700

The following shows the relation between the total reserve and the total deposits at the respective dates:

			Increase.
Specie.....	$98,644,900	$99,924,300	$1,279,400
Legal tenders.	73,118,800	81,717,200	8,598,400
Reserve....	$171,763,700	$181,641,500	$9,877,800
Reserve required against deposits.	113,934,975	116,171,025	2,236,050
Surplus..	$57,828,725	$65,470,475	$7,641,750

Money continues extremely easy. In the call loan market rates have ranged from 1% to 2 %, averaging 1½ %, with but small demand from borrowers. The supply of time loans is so far ahead of demand that borrowers can almost dictate their own terms. Accommodation can be gotten on choice securities for almost any period for 3 %, while more than 4 % is seldom asked for any other securities or periods. There is a scarcity of commercial paper, for which the inquiry is much in excess of offerings. City institutions are said to be in the market competing for good paper, every acceptable note offered finding ready sale. Choice indorsed receivables are about 4 % @ 4½ %, and other bills 5 % @ 5½ %. There are said to be large offerings of loans on New York real estate at 5 %.

Business on the Stock Exchange has not attracted much outside interest during the week. The public still hold off and the market remains a purely "professional" one. It is, however, showing a steadier and more satisfactory feeling, and the market is getting into good shape for legitimate investment business so soon as the public is ready for it. The stock market toward the end last week showed a narrow volume of dealings, closing with some degree of firmness all along the line. The leading feature of Friday's business was a sharp fall in Reading shares and bonds, with active dealings in that stock. The movement was brought about by rumors of an unsatisfactory statement by the expert accountant who has been examining the books of the corporation. It was intimated that from $10,000,000 to $18,000,000 would be required to place the company on a secure basis. Later intelligence has not, however, confirmed the report. At the close of Saturday's business few stocks showed more than a fractional change. On Monday it was thought that the strike on the Lehigh Company's lines would have an unfavorable effect on the market. This was not, however, the case, although the company's stock fell several points on the Philadelphia Exchange. The market that day was somewhat dull and uncertain. Rumors of tariff revision served to weaken a number of industrial issues; and National Cordage broke sharply on unfavorable rumors reflective the reorganization of that combination. Tuesday saw a marked increase of activity and higher prices for both stocks and bonds. Sugar, which represented a third of the dealings, advanced over 4 points. National Cordage recovered on the publication of the reorganization scheme. All the granger stocks were strong, and some active. The rumored reorganization of the Union Pacific on a satisfactory basis served to tone that stock; and the general market closed strong at the highest prices of the day. London has been a larger buyer this week. The following list exhibits the extreme fluctuations of the stocks named during the week, with closing quotations on November 22 ·

	Highest.	Lowest.	Closing, Nov. 22.
Am. Sugar Ref.....	96¾	91⅛	95⅛
Atchison, T. & S. Fé....	20⅛	19	19¾
Balt. & Ohio.....	71	69¾	70¼
Chicago Gas.....	65	61	64
Chic., B. & Q.....	81⅝	78⅛	80¾
Chic., Mil. & St. Paul...	65⅛	62½	65⅜
Chic., Rock Isl. & Pac..	69⅝	66	68¾
Del. & Hudson.....	137½	130½	136¾
Del., Lack & Western...	170	166½	169½
Gen. Electric.....	42	35½	35⅝
Lake Shore.....	128⅛	127	128⅛
Louisville & Nashville...	49⅛	47⅛	49⅛
Manhattan.....	129	125	129
Missouri Pacific.....	26½	24	26¼
National Lead, Common.	27½	26⅜	27½
New Jersey Central.....	116¾	115	115
New York Central.....	103	101⅛	103
N. Y., L. E. & Western.	15	13⅝	14⅞
Northern Pacific, Pfd. .	22¾	21⅛	22¾
Philadelphia & Reading..	22¾	19½	20⅝
Richmond & West Pt., Terml.....	3¼	3	3⅜
St. Paul & Omaha.....	37¾	36⅛	37¾
Union Pacific.....	19¾	17⅛	19¼
Western Union.....	90	85⅛	89⅝

Government bonds have been strong and higher for the 4s. Latest quotations were as follows:

	Bid.	Asked.
2s, 1891, registered.....	91½	.....
4s, registered.....	112½	113¼
4s, coupon.....	112½	113¼

The great plethora of money has induced considerable investment business in first-class railway bonds. Transactions in the general bond market have been much larger the last few days than for some time, and prices have hardened considerable under the active and urgent demand. The revival of interest has, indeed, been quite remarkable, and the business well distributed over the whole list of issues.

Sterling exchange has been strong, with a very moderate supply of commercial bills and a good demand from remitters. Posted rates were advanced toward the close of last week, and, except for a slight weakening on Monday, the advance has been maintained. As there will, however, be important shipments of bonds to London this week, the chances are that exchange will again be lower in the immediate future. Actual business was done on Wednesday at

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$4.82¼ @ $4.83 for 60 days; $4.85½ @ $4.85¾ for demand; $4.85½ @ $4.86 for cables, and $4.82 for commercial. Domestic exchange on New York is quoted as follows: New Orleans, commercial 50 discount, bank par; Charleston, buying $\frac{1}{16}$ discount, selling $\frac{1}{16}$ premium; San Francisco, sight 5, telegraph 10 premium; Savannah, buying par; selling ⅛ premium; Chicago, 75 premium; St. Louis, 90 premium.

Bar silver is quoted in London at 32¼ pence ℔ ounce and in New York at 70⅓¢. Heavy shipments of the metal have been made from this port during the week. It is shown that one result of the suspension of silver purchases by the Government will be a large contribution to our foreign trade. The 54,000,000 ounces taken by the Treasury each year, valued at 70¢ ℔ ounce, should swell the annual exports to the extent of $37,800,000 and give increased ability to command gold from Europe as needed.

The weekly railway statements of earnings for November show some encouraging signs. Several lines exhibit an increase of receipts over 1892, and it is believed that, especially with the Vanderbilt lines, the net earnings for the entire current year will show a gain over those of last year, while it is said that some companies will be prepared to declare larger dividends. A number of Western managers, now in New York City, give encouraging forecasts of the transportation outlook for their lines.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, November 22, 1893.

The market for Pig Tin has been irregular and weak, with sales recorded at as low as £74. 17/6 for prompt delivery of Straits under the influence of free selling by importers and dealers. From this point there was a reaction of 12/6, due chiefly to covering of "short" accounts and some stimulus to buying by the improvement in the silver market, together with the announcement of smaller Straits shipments during the first half of the month. At the close the market was quiet, with Straits quoted at £75. 7/6 for prompt delivery and £76 for three months' futures.

Copper prices have undergone hardly any change and dealings have been small. Outside speculation has been very light, apart from some purchases for American account, chiefly from tired holders. Consumers are very indifferent buyers and the majority claim to be carrying very large stocks. Supply on the spot increased 300 tons during the first half of the month. The visible supply in Europe increased 297 tons during the same period. Furnace material has been rather difficult to sell and prices are easier, although not quoted lower. The turn in the coal trade dispute has had no effect thus far upon the metal markets. Late quotations on Merchant Bars were £42. 5/ for prompts and £42. 15/ for three months' futures. Best selected English, about £45. 15/ @ £46.

Tin Plate business has been dull, and the situation of the market is unchanged. Prices are rather weak throughout. Black Plate is also quiet. Finished Bessemer is offered now at £8 in Swansea. Liverpool quotations for Plates are as follows:

IC Charcoal, Alloway grade.....12/6 @ 13/
IC Bessemer Steel, Coke finish. ...11/3 @ 11/6
IC Siemens " " " .....11/6 @ 11/9
IC Coke, B. V. grade, 14 x 20.....11/3 @ 11/6
Charcoal Terne, Dean grade.....11/ @ 11/3

Pig Lead has met with rather slow sale, and the market is easier at £9. 12/6 for Soft Spanish.

Spelter has been in very fair demand and the market is quite firm at £17. 2/6 for ordinary Silesian.

Steel mills at Barrow have resumed work, owing to better orders for some lines of goods. There is no improvement in prices or demand, however, and prices continue unsettled in the face of some improvement in warrant Iron prices. Last dealings in warrants were at 42/8 @ 42/9 for Scotch, 34/7½ for Cleveland, and 44/6 for Hematite.

Cairene Houses.

The foundation walls, to the hight of the first floor, are cased externally, and often internally, with the soft calcareous stone of the neighboring mountain. The surface of the stone, when newly cut, is of a light yellowish hue, but its color soon darkens. The alternate courses of the front are sometimes colored red and white, particularly in large houses, as is the case with most mosques. The superstructure, the front of which generally projects about 2 feet, and is supported by corbels or piers, is of brick and often plastered. The bricks are burnt, and of a dull red color. The mortar is generally of mud in the proportion of one-half, with a fourth part of lime, and the remaining part of the ashes of straw and rubbish. Hence the unplastered walls of brick are of a dirty color, as if the bricks were unburnt. The roof is flat and covered with a coat of plaster.

The door of a private house in Cairo is often ornamented; the compartment in which is the inscription, and the other similarly shaped compartments, are painted red, bordered with white; the rest of the surface of the door is painted green. The inscription, "He" (*i. e.*, God) "is the excellent Creator, the everlasting," is seen on many doors, but is far from being general; it is usually painted in black or white characters. Few doors but those of large houses are painted. They generally have an iron knocker and a wooden lock, and there is usually a mounting stone by the side.

WINDOWS.

The ground floor apartments next the street have small wooden grated windows placed sufficiently high to render it impossible for any person passing by in the street, even on horseback, to see through them. The windows of the upper apartments generally project 1½ feet or more, and are mostly formed of turned wooden lattice work, which is so close that it shuts out much of the light and sun and screens the inmates of the house from the view of persons without, while at the same time it admits the air. They are generally of unpainted wood, but some few are partially painted red and green and some are entirely painted. A window of this kind is called a "róshan," or more commonly, a "meshrebuyeh," which latter word has another application, which will be mentioned below. Sometimes a window of the kind above described has a little meshrebuyeh, which somewhat resembles a róshan in miniature, projecting from the front or from each side. In this, in order to be exposed to a current of air, are placed porous earthen bottles, which are used for cooling water by evaporation. Hence the name ol "meshrebuyeh," which signifies "a place for drink" or "for drinking." The projecting window has a flat one of lattice work or a grating of wood or of colored glass immediately above it. This upper window, if of lattice work, is often of a more fanciful construction than the other, exhibiting a representation of a basin with a ewer above it, or the figure of a lion, or the name of Allah, or the words "God is my hope," &c. Some projecting windows are wholly constructed of boards and a few have frames of glass in the sides. In the better houses also the windows of lattice work are now generally furnished with frames of glass in the inside, which in the winter are wholly closed, for a penetrating cold is felt in Egypt when the thermometer is below 60° F. The windows of inferior houses are mostly of a different kind, being even with the exterior surface of the wall. The upper part is of wooden lattice work or grating, and the lower closed by hanging shutters, but many of these have a little meshrebuyeh for the water bottles projecting from the lower part.

HIGHT OF HOUSES.

The houses in general are two or three stories high, and almost every house that is sufficiently large incloses an open, unpaved court, called a "hósh," which is entered by a passage that is constructed with one or two turnings, for the purpose of preventing passengers in the street from seeing into it. In this passage, just within the door, there is a long stone seat, called "mastab'ah," built against the back or side wall, for the porter and other servants. In the court is a well of slightly brackish water, which filters through the soil from the Nile, and on its most shaded sides are commonly two water jars which are daily replenished with water of the Nile brought from the river in skins. The principal apartments look into the court, and their exterior walls (those which are of brick) are plastered and whitewashed. There are several doors, which are entered from the court. One of these is called "bab elharum" (the door of the harem); it is the entrance of the stairs which lead to the apartments appropriated exclusively to the women and their master and his children.

ACCORDING to one of the London architectual papers the new spire for the historical cathedral of Bern is nearly completed, after having been in the hands of the architect, Professor Beyer of Ulm, since 1889, and costing the enthusiastic subscribers to the building fund about £14,000 ($70,000). The committee of the "Münster-bau-Verein," in whose hands all questions of renovation and completion rest, has lately published its annual record of progress on the works, and, according to this report, as soon as the spire is finished the whole of the building is to be thoroughly overhauled and repaired, the proposed extra outlay for these improvements being estimated at £20,000 (about $100,000). This sum will, however, only cover the cost of such work as must be necessarily done if the building is to be preserved; a complete restoration, with an improvement of the immediate surroundings, requiring another £40,000 (about $200,000). That a comparatively small town like Bern should voluntarily subscribe so much for the spire and necessary repairs is so creditable to them that they might well spare the doubtful luxury of a restoration.

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HARDWARE.

Condition of Trade.

AS the latter part of November usually witnesses a diminution in the volume of trade it is not a matter of surprise that at the present time there is no increase in business. It is, however, a matter of congratulation that there is little, if any, falling off, trade being characterized by a fair activity in view of all the circumstances. There is certainly a better feeling prevalent and more confidence in the early resumption of a normal activity. The policy pursued by merchants of limiting their purchases to early requirements is still adhered to, and with perhaps nearly as much conservatism as during the past few months. Stock orders are given sparingly, but dealers are purchasing frequently with a view to completing their assortments, being content, however, in nearly all cases to carry less goods than usual. Prices are without important change, the market being fairly steady with the exception of some staple goods, such as Nails and Wire, in which there is a perceptible downward tendency. The financial condition continues to improve, and it is pleasant to note that comparatively few failures are reported. There was some apprehension a few months ago that the condition of business and the financial stringency would result in a good many failures in the trade, and perhaps among retail merchants, but fortunately these fears have not been realized, and with the lapse of time there is less to apprehend in this regard.

Chicago.

(*By Telegraph.*)

Shelf Hardware jobbers report business to have improved a little during the past week, owing to the prevalence of cold weather throughout the Northwest, but it is still much under the normal volume. Merchants are fairly well stocked now on seasonable goods, and their orders are only small and evidently to cover sudden calls. Importers of Tin Plates represent their trade interfered with to an increasing extent by domestic Tin Plates, which are not only offered at lower prices, but on which better terms are given than customary in the importation of such goods. The movement is confined to small lots, but there is a fairly steady trade, in business of that character. Heavy Hardware jobbers are having a better demand in their line, not only in Iron and Steel, but also in winter goods. Material for bob sleds and other seasonable articles has been moving much more freely during the last ten days than at any previous time this fall. Collections are quite fair.

St. Louis.

(*By Telegraph.*)

There is a steady flow of orders, which while in themselves small in the aggregate made a good business. Country merchants are buying more liberally, and as money is becoming more plentiful daily, credits are not so closely watched as heretofore. Holiday goods are just now selling pretty freely, and notwithstanding the financial stringency prevailing during the past six months a good holiday trade is anticipated by all dealers. Prices do not improve to any extent, except that manufacturers do not appear so anxious to dispose of their product as they were two months since. Barb Wire is firm, while Wire and Cut Nails are weak. Heavy Hardware is moving freely, and in the line of machinists' and railway material an active trade is noted.

Notes on Prices.

Wire Nails.—The downward tendency in the prices of Wire Nails, which has been perceptible for some time, still continues, and on round lots at mill the market is represented by the quotation of $1.15 to $1.20. Some of the mills are holding to the latter figure, but there is little difficulty in placing attractive orders at the lower price named. In view of the desire of manufacturers to book orders and the active competition which prevails among them, relatively low prices are made on comparatively small lots, and a good proportion of the business consists of orders from the smaller jobbers and large retailers. The volume of business is only fair, but most of the mills are kept moderately busy. Small lots from store in New York are quoted at $1.55 to $1.60.

Chicago, by Telegraph.—Business in Wire Nails is moderately active outside of Chicago, but not so much has been done in the city during the past week. Manufacturers are trying to hold the market at $1.30 to $1.32½, Chicago. But these prices have been shaded by some of their competitors, who seem to possess special facilities in low transportation rates. Jobbers quote small lots from stock at $1.45 to $1.50.

Cut Nails.—The Cut Nail market shows but little change during the past few weeks, the volume of business remaining moderate and prices pretty evenly maintained on a basis of 95 cents for carload lots at mill. This quotation is not, however, rigidly adhered to and prices have reached a point where some of the mills are not netting over 90 cents. The market in the West seems to be on the whole in a better condition than in the East and prices are more firmly maintained. In view of the unsettled condition of business some of the mills are not in operation, but there is on the whole a larger production of Nails at the present time than for some months. Small lots from store in New York are quoted at $1.20.

Chicago, by Telegraph.—A continued good movement is reported in Cut Steel Nails, the best trade being, as heretofore, with points in the Southwest, now accessible by very low rates. These rates will run until early in December, and meantime the merchants of that section are stocking up heavily. Very good sales are also being made in the Western section of the country, especially in localities which can be reached by water from Wheeling. Prices on factory lots now run from $1.15 to $1.20, Chicago, according to the character of the order. Small lots from stock are selling at $1.30.

Barb Wire.—The demand for Barb Wire continues only moderate and the market is described as sluggish. Quotations are somewhat irregular and are represented by $2.15 to $2.20 for carload lots of Four-Point Galvanized at mill, the former figure being more readily obtainable than a week ago.

Chicago, by Telegraph. — Trade in Barb Wire has not shown any increase since last report, but the demand seems to be fairly steady within the contracted lines that have prevailed for so long. The demoralization in prices reported in other parts of the country has not yet reached this locality, probably because the orders coming up are not large enough to make it an object to cut prices in order to capture trade. The center of disturbance recently seems to have been in the South. Prices on factory lots of ordinary Galvanized Wire continue at about $2.40; carload lots of Glidden, Waukegan and Baker Perfect are selling at $2.50. Small lots from stock continue to be quoted at $2.55, but jobbers are doing but little in consequence of the increasing efforts of manufacturers to take the retail trade.

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Market Wire.—The market on Plain Wire is suffering with other lines and lower quotations are developed. The greater part of the business is done at net prices instead of list and discount, and figures are being quoted which are lower than ever before. The decline in the price of the raw material contributes largely to this result, as does also the active competition between producers.

Cordage.—The Cordage market is quiet and the demand light. Prices, in sympathy with lower quotations on Hemp, have recently been tending downward, and are now quotably lower than a few weeks ago. It is reported that pure Manila Rope has been sold recently and is still obtainable at 7½ cents per pound. Sisal also has touched 5¼ cents a pound, and in round lots is also obtainable at this price. The market is thus represented by the following prices for large lots, f.o.b. factory or New York, the prices given being subject to a discount of 1½ per cent. for cash:

	Per pound. Cents.
Manila, 7-16 in. diam. and larger	7½
" ⅜ in.	8
" ¼ and 5-16 in.	8½
" Tarred Rope	7
" Hay Rope, Medium	7½
Sisal, 7-16 in. and larger	5¼
" ⅜ in.	5¾
" ¼ and 5-16 in.	6¼
" Hay Rope	5¼
" Tarred Rope	4¾
" Medium Lath Yarn	5
New Zealand, 7-16 in. and larger	5¼
" ⅜ in.	5½
" ¼ and 5-16 in.	6
" Hay Rope	5¼
" Tarred Rope	4¾

Ventilating Sash Lock and Fastener.—Bourke's Improved Ventilating Sash Lock and Fastener, manufactured by the Bourke Mfg. Company, Youngstown, Ohio, and illustrated in *The Iron Age*, November 9, 1893, is sold at from 40 to 45 per cent. discount from the following list:

	Per gross.
Genuine Bronze Metal	$60.00
Malleable Iron, Brass Finish	40.00
Malleable Iron, Oxidized	40.00
Malleable Iron, Amber Bronze	25.00

Glass.—During the past week the Plate Glass Manufacturers' Association having the central selling agency at Pittsburgh was dissolved, and the selling agency was abolished. The association was formed a year ago, with a capital of $10,000,000, and included the following concerns: The Diamond Company, with works at Ellwood and Kokomo, Ind.; the De Pauw Works, the Pittsburgh Plate Glass Company, having factories at Creighton, Ford City and Tarentum; the Charleroi Plate Glass Works, the Butler Works, and the Howard Company of Duquesne. The official information concerning the dissolution of the association is as follows: "The association was formed for one year, and the time for which it was formed having expired, owing to the financial situation of the country and the light demand for Plate Glass and foreign competition, the manufacturers decided not to continue the association longer. Therefore, its headquarters in Pittsburgh will be closed on and after this day." It is reported that the Diamond Plate Glass Works, Kokomo, Ind., have resumed operations on half capacity, employing 400 men. Window Glass factories continue to start up, the present capacity being equal to 785 pots, as against 182 pots reported in our issue November 2. The demand is not brisk, and it is reported that card rates have been shaded very materially, especially where money was necessary for factories to meet obligations. At the present time there appear to be no available quotations on any kind of Glass which would hold good under all circumstances.

Export Notes.

Opp & Grundy have formed a partnership for the purpose of representing American manufacturers in the markets of the English colonies of South Africa, Australia (including Tasmania) and New Zealand. They will also have a branch in London, England. They will occupy the premises at 15–25 Whitehall street, recently possessed by R. H. Dana Company, with whom both were connected as individuals for five years. We are informed that they have already taken over a large number of the concerns with which the old concern did business. A. M. Grundy, the junior, was from 1879 to 1888 employed successively by W. H. Crossman & Bro. and Arkell & Douglas. As soon after next January as possible he will go to London, England, for the purpose of establishing their concern there, and then to South Africa and Australia. He has had three years' experience in Australia in this line of trade with the importing houses of those countries.

F. Porter Thayer, who has recently been made export manager for Aultman, Miller & Co., Akron, Ohio, manufacturers of Mowers, Binders and Binding Twine, expects his new duties will keep him abroad almost continuously. He will also represent P. P. Mast & Co., Springfield, Ohio, makers of Grain Drills and Cultivators, and devote himself exclusively to the export trade. He will leave here by the "Teutonic," November 22, for River Plate ports, in South America, via England. From Uruguay and Argentina he will go overland to Chili and return to New York about April 1 by way of Panama. After that his plan now is to go to London, Russia, Roumania and Bulgaria in Europe, and within the year to the colonies in South Africa. His former position in New York will be filled by his son, Charles F. Thayer, who has been made Eastern manager for home trade, with headquarters as heretofore at 18 Warren street, New York.

THE UNION CYCLE MFG. COMPANY have moved their offices from Highlandville, Mass., to 239 Columbus avenue, Boston, Mass.

Improved Methods.

REYNOLDS & CO., New Haven, Conn., are now introducing an improved system of boxing and labeling Set, Cap and Machine Screws of their own manufacture. The principal features of the plan consist in putting all goods in a standard package of 50; in packing them in neat, strong, double boxes covered with light colored manila paper, and in marking them with printed labels on different colored papers, so that the different kinds of Screws may be distinguished by different colors. Thus Iron V-thread Screws are put up with green labels, U. S. thread Screws with



Green Label.



Yellow Lable.

Reynolds & Co.'s Lables.

yellow labels, &c. The accompanying cuts represent the styles of labels used, which will commend themselves, because of the clearness with which the diameter and length of the Screw is given, and the distinctness with which the kind of Screw is shown. The company issue a large sheet, upon which are shown 16 labels handsomely printed in colors, in the center of which is a labeled box in colors. The colored labels on the sheet show Iron Cap Screws made with V threads in round, square, hexagon, button and flat heads; U. S. thread in the same assortment of heads, also with oval and cupped points, and V-thread Steel Set Screws with oval and cupped points. This will be recognized by the Hardware trade as an improvement over old methods, and as an advantage in lessening labor and avoiding errors in getting out goods.

BARNEY & BERRY, Springfield, Mass., and 114 Chambers street, New York, in their advertisement in this issue relating to their Ice and Roller Skates allude to the award granted them at the World's Fair and the fact that their Skates are for sale by the leading jobbers of Hardware and Sporting Goods.

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Benjamin Stiles Brown.

BENJAMIN STILES BROWN, manufacturer and capitalist, Columbus, Ohio, a son of Henry and Harriet Brown, was born in Southbury, New Haven County, Conn., February 22, 1824. He spent his early boyhood on his father's farm and attending the district school. Later on he went to Litchfield, Conn., to finish his scholastic education. In the spring of 1845, when 21 years of age, he started out in life as a cattle speculator, and traversed the States of Ohio, Indiana and Illinois in pursuit of his vocation, and for six years was a successful trader. In December, 1851, he located in Columbus, Ohio, as a permanent resident and commenced the manufacture of Agricultural Implements, and was at the time of his death president of the Brown, Hinman & Huntington Company, who manufacture Farming and Garden Tools, which are shipped to all parts of the American Continent and to Europe.

Mr. Brown was an excellent illustration of the amount and variety of business in which one man may be engaged, and that, too, with success and thoroughness. He was president of the Door, Sash & Lumber Company, the Ohio Furniture Company, the Commercial National Bank; also director of the Columbus Machine Company and the Ohio Pipe Company, all of the city of Columbus. He was also president of the Austin, Tomlinson & Webster Mfg. Company and the Withington & Cooley Mfg. Company of Jackson, Mich. Also president of the Iowa Farming Tool Company of Fort Madison, Iowa, and a director of the Kelley Nail & Iron Company of Ironton, Ohio, the Cleveland, Columbus, Cincinnati & St. Louis Railway Company and the Geneva Tool Company of Geneva, Ohio.

Mr. Brown was married December 19, 1877, to Miss Emma, the daughter of the late distinguished botanist. William Starling Sullivant. In religious faith Mr. Brown was a Presbyterian, and in political faith a Republican. He was a man whose life had been full of business enterprise and activity, crowned with success. To him was due a very large share of the credit for the great progress in manufactures that his adopted city of Columbus has made.

A man of the highest integrity and strictest honor, where best known he was most admired. He was the living exponent of the sterling virtues of the Pilgrim Fathers, from whom he was a descendant. Calm, cool and collected, quick to discern and decide, he executed his manifold business cares with dispatch and accuracy, and his death will be recognized as that of one of the country's best known and most successful manufacturers.



BENJAMIN S. BROWN.

The Well-Informed Clerk.

WM. H. MAHER.

A FIRM in an enterprising town in New York lately advertised for a clerk to take charge of their grocery department, and among the qualifications necessary was this:

"One who has taste for reading the trade journals with a view to being well informed."

It would seem as if every merchant and every clerk would be only too glad to avail himself of every help in the way of education, and particularly so in the direct line of his business or employment.

One source of information is the trade journal, wherein are gathered items regarding the goods handled in the special branch of trade to which the journal is devoted, discussions upon trade matters, suggestions as to trade points, drawn from the experience of others, and gossip as to the world of business.

It matters not how thoroughly one is posted as to his own trade and locality, there is never an issue of his trade journal that will not contain that which he can read with interest as well as profit. If this is true of the merchant how much more generally it will apply to clerks!

It is the one encouraging feature to the ambitious young poor man of the present that his competitors in the ranks are so superficial, so anxious to shine to-day, and so antagonistic to hard work. A large number, a large proportion are "graduates" of a school system that teaches a smattering of everything from drawing to Greek, and teaches nothing thoroughly. The "graduate" has a fine sense of his own ability and importance and rests upon this. His place in "society" is of much greater importance to him than his position in the store, and so much of his time is taken up with his social duties he has no hours to spare for reading either trade journals or anything else.

There is usually in the same store a young man who is too insignificant to have a place in "society." His mind is too warped to enjoy the small gossip that occupies the mouths of his more expansive companions, and his business occupies his thoughts during all his waking hours. He is the one clerk who sees the weekly trade journal; not infrequently he digests its contents better than does his employer. He thinks over the things he reads and assimilates them — makes them his own, and in due course of time is referred to by all around him for this or that bit of information.

As a salesman he is able to explain in an intelligent manner why things are thus and so. Buyers see that he knows his business and they like to trade with him.

When goods are called for that are not kept in stock, or may never have been kept in stock, he knows about them, can show where they are weak or strong, and can advise with his employer as to whether it would be wise to add them to the stock or not.

His greater knowledge of everything about the goods helps him to remember prices better, and he is hourly consulted by his associates about points in which they are uncertain. Whatever changes are made in the force he is sure of his place until the day comes when he has a store of his own or is given an interest in the firm.

It is not the brilliant fellow that succeeds. When he does he is the exception. It is the plodding man, who is thorough, careful, intelligent.

When I was a salesman on the road and, upon entering a store, saw the trade journal unopened, circulars and price-lists unread, I always knew I might ask good prices with safety. On the contrary, where I saw the trade paper open at the desk I felt my way carefully to discover what prices I might get.

To-day the trade journal has a much more distinctive field than it had 20

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years ago; it is less a mere price-list and more an intelligent friend. No merchant can afford to discard its help, and no clerk should miss the opportunity of going to the school that it conducts for his benefit. But this article is not written to increase the circulation of trade journals; it is to emphasize the benefit of being a well informed clerk. Trade journals are one medium through which he can inform himself, and they ought to induce him to try further fields of reading.

One of the best salesmen that I ever met was one who always carried an educational book in his gripsack; when he had to wait for a delayed train or had an hour to spare at the hotel he had his book in his hand.

I found him a pleasant companion and so did his customers. He was respected and liked by all who knew him, and deserved the success that came to him later. He was a well-informed man; interested in everything worth a man's thought, with no time to waste over billiards or barrooms or worse things.

One of the high salaried men that called on me from New York had the faculty of picking up the latest story and repeating it to perfection. He was equal to many men on the stage. But if I asked for specific information about an article in his line he could not give it; he had the sample and there was the price; he could tell a good story and was free in paying for refreshments, if you would have them, but beyond this he had nothing.

I was not surprised when his employer told me that he would be allowed to resign at the end of the year. Said he: "He sells less each trip. Everybody likes him and speaks well of him, but each time they see him they buy less of him."

I thought I understood the reason. Stories are good in their way; cigars and wine influence some, but, after all, men think, "business is business," and they want to buy of a man who understand his goods from A to Z.

It is for this reason that merchants are looking around either for well-informed clerks, or for those of such frame of mind that they will inform themselves as they grow in business. If the desire is there the rest will follow.

Twenty-five years ago a young man worked in a stove store next door to me. He worked hard, too, for he had to run stoves out and in, black stoves, set them up, and do anything and everything needed to be done. Shops in those days kept open till 8 o'clock every evening, and were opened early in the morning. But this young man found time to study up everything connected with stoves and tin. By and by, with a very few hundred dollars and some credit, he opened a shop to make tin cans, and to-day he is at the head of the largest factory of this kind in all the world.

He read and studied "with a view to being well informed," just as the New York advertisement wants a young man to do, and his information became valuable capital.

The young man of to-day should take courage and press on in the same direction. Well-informed men are needed, always will be needed, and will always get to the top.—*Trade.*

Trade Items.

THE J. E. FORSEE COMPANY, Room 203, 411 Olive street, St. Louis, Mo., have established themselves as manufacturers' agents, having already secured a good line of accounts. Among them are the Pullman Sash Balance Company, the Rockford Bit Company, the Maryland Tack Company, the Chillicothe Mfg. Company and the U. S. Crayon Company. J. E. Forsee was the buyer for the Wyeth Hardware & Mfg. Company of St. Joseph, Mo., and has a wide acquaintance among the Hardwaremen of the entire country.

HENRY DISSTON & SONS, Philadelphia, in their advertising space are calling attention to their Improved Saw Clamp and Filing Guide, an article especially designed to assist those not skilled in the art of saw filing to file a saw correctly.

PADDOCK & KLEINE, 107 Chambers street, New York, are presenting a handsome and useful desk accessory in which a Calendar and Clock are combined. A leather covered frame 5¼ x 8 inches in size, ¼ inch thick, is supported in an inclined position by a rest at the back. In the upper left hand corner is a clock with a 2-inch face. An opening 3½ x 4 inches takes up a large portion of the remaining room on the face of the frame, and is supplied with monthly calendars, which slide in from the end of the frame. Above the opening is the name and address of the concern, and below are the words: "Wagon and Carriage Wood Work, Hardware and Trimmings for Export," and appropriate illustrations of Wheels. The gilt lettering on the leather, the date cards printed in red and black, the neat appearance of the whole affair, together with the friendly ticking of the little timepiece, are at once pleasing to the recipient. Though intended for 1894, they have been prepared thus early to avoid the annual flood of calendars.

T. H. SPEDDY, Worcester Block, Portland, Ore, has recently been East visiting the parties for whom he is representative, among others. Mr. Speddy is the manager of the Pacific Coast business of a number of Eastern manufacturers, and his line includes general Hardware, Carriage and Saddlery goods.

ANNOUNCEMENT is made by Robley & Brundage, 142 Chambers street, New York that their partnership was dissolved on November 13, by mutual consent. Partnership debts and obligations have been assumed by James H. Rooley, who will continue the business at the former address.

BOAS BROS., 233-235 Greenwich street, have ceased to sell their Adamant Enameled Ware on joint agreement with Lalance & Grosjean Mfg. Company and St. Louis Stamping Company. This line of goods is of German manufacture.

IN RECOGNITION of a prosperous year's business, Carter & Huckins, Hardware merchants, Oberlin, Ohio, tendered a banquet to their employees and a few invited friends on the evening of the 8th inst. Nineteen persons, fourteen of whom are in the firm's employ, sat down to an excellent supper. After the supper D. C. Foote, the head clerk of the firm, in a neat speech tendered the thanks of those present to Messrs. Carter and Huckins for the bountiful repast, and testified to the high esteem in which these gentlemen are held by their employees. Mr. Huckins and Mr. Carter responded in complimentary terms, in the course of which reference was made to the confidence which the firm had ever reposed in their employees. The evening's proceedings, which had been of an exceedingly happy character, were brought to a close by a few appropriate remarks from the Mayor of Oberlin.

THE ADVERTISEMENT of J. Frank Greene & Co., 276 Water street, New York, in this issue, requests the trade to write for estimates on Leather Parts, such as Straps, Washers, &c., which they are furnishing. They advise us that by economy in cutting by reason of making a great variety of shapes and by the use of improved appliances they are able to furnish any shape or article in leather cheaper than a manufacturer can make it himself.

THE READING HARDWARE COMPANY, who for some time have been seeking more commodious quarters than those now occupied by them at 79 Reade street, have leased the premises 96-98 Reade street, in this city, for a term of years, and expect to occupy them on or about February 1 next. They have secured the street floor, basement and sub-basement, and will fit up the place in modern style, thus securing excellent facilities for handling business, showing goods and samples, &c.

IT WILL BE OBSERVED that the Putnam Nail Company, in their advertisement in this issue relating to their Horse Nails, refer especially to the award of the World's Columbian Exposition, giving the wording of the diploma granted them.

CHARLES C. STELLE of 81 Fifth avenue, Brooklyn, N. Y., has lately succeeded to the old established Sap Spout business of C. C. Post of Burlington, Vt., and has removed the business to the above address in Brooklyn. The Spouts are well and favorably known to the trade, a feature in their construction being the patent air trap for excluding the air, and, as a result, preventing the sap from freezing and drying up. By conducting the business in Brooklyn goods can be shipped more quickly and at less expense than formerly. It is Mr. Stelle's intention to maintain the high stardard which these goods have obtained, and to merit the confidence of the trade, both old and new. The Sap Spouts are particularly referred to in his advertisement in this issue.

JAMES MANN & SONS, Buffalo, N. Y., as per their announcement on another page, are offering Heavy Strap Hinges, 6, 8 and 10 inch, at a discount of 50 and 10 and 10 and 10 and 10 per cent.

THE BONNETTE ARC LAWN SPRINKLER COMPANY, Bay City, Mich., have appointed John H. Graham & Co., 113 Chambers street, New York. as their general agents for the sale of their Arc and Hustler Lawn Sprinklers.

Mexican Tariff.

THE Bureau of American Republics has received information of certain modifications in the existing customs tariff of Mexico which are of interest to importers. The Government has issued a law requiring importers on and after January 1, 1894, to pay, by way of municipal duty, 1¼ per cent. on and in addition to the regular import duties. This is equivalent to an augmentation of the present duties by 1¼ per cent.

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Arrangement of Stores.

S. H. BERRY HARDWARE COMPANY.

THE S. H. BERRY HARDWARE COMPANY, Dover, N. J., who started business in a small way about 18 years ago, have recently erected a handsome building, and arranged it for the needs of their increasing trade. The building, interior views of which are shown in the accompanying cuts, is 35 x 67 feet in size, of Amboy buff brick with red sandstone trimmings, the water shed being of Morris County granite. The hight of the four stories is as follows: First, 12½ feet; second, 11 feet; third, 10 feet; fourth 9 feet. The first, second and third stories are used for the business. As shown by the ground plan, Fig. 801, the first floor is divided into two rooms, the corner one, 20 x 65 feet, being used by the firm. All the rooms above the first floor are the full width of the building. A counter runs along in front of the shelving on the right of the entrance to the window near the elevator. A Morse freight elevator runs from the basement to the fourth floor, and can be worked by either water motor or electricity. Doors open from the elevator shaft on the first floor to the sidewalk, and as the ground slopes back from the front of the building a wagon can back up and load or unload goods from or into the elevator. The elevator openings at each floor are provided with automatic scuttles or doors for safety; also to prevent fire from rushing up the elevator shaft. The entire building is heated by steam and lighted by electricity, and the office is connected with each floor by speaking tubes. Each floor is supplied with city water. The cost of the structure, not including the ground, was from $10,000 to $12,000.

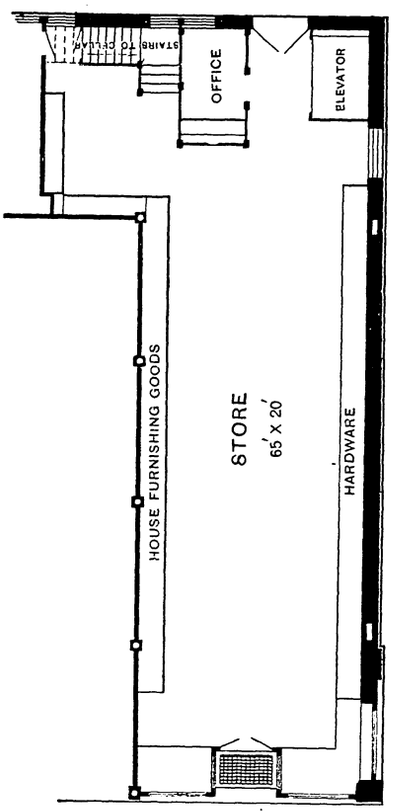


Fig. 801.—First Floor Plan, S. H. Berry Hardware Co.

SHOW WINDOWS AND SHELVING.

At the right of the entrance is the show window, as appears in Fig. 802.

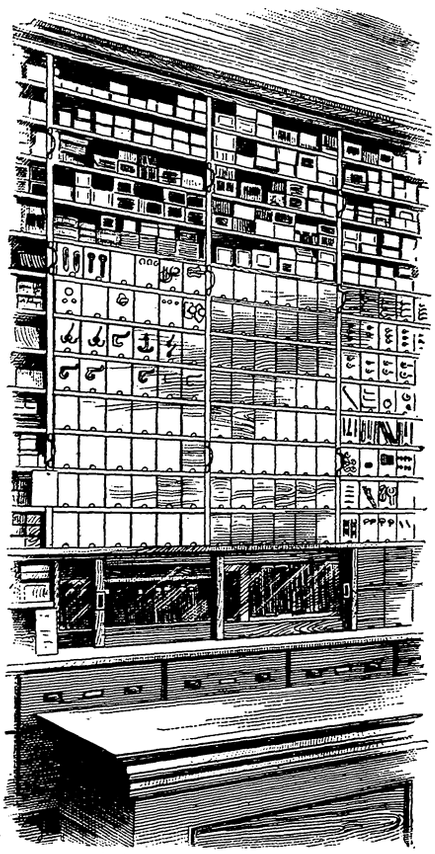


Fig. 803.—Counter and Shelving.



Fig. 804.—Wall Case and Hand Saws.

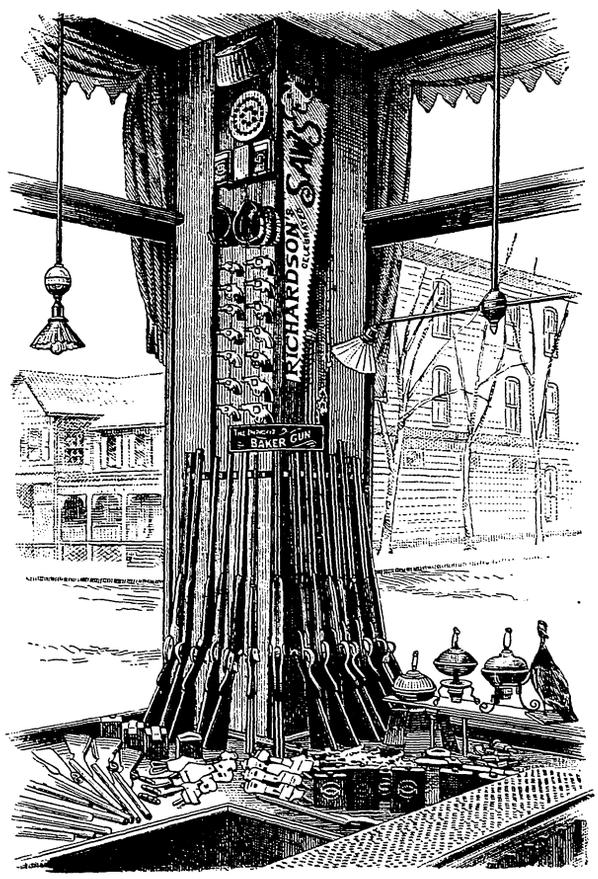


Fig. 802.—Show Window.

The view being from the inside of the store. The window being on the corner gives ample room for an elaborate

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display of goods. The show window on the opposite side of the entrance is devoted to House Furnishing Goods, and a tier of shelves on the wall for the display of Tea and Coffee Pots, and similar goods. The fixtures on this floor are of ash, finished in natural wood. Along the right hand side of the room are shelving and counters, a portion of which are shown in Fig. 803. The shelves run to the ceiling, the lower portion being built in the form of steps, as shown in Fig. 804. with brass handles on the partitions to assist in reaching the boxes and the goods above. There are 400 wood boxes or drawers in the shelving, made interchangeable in size, the boxes measuring 4, 5 and 7 inches across their fronts. The boxes are provided with Franklin Brass Company's No. 254 pulls, the goods being sampled above. The company first intended lettering the drawers instead of sampling them, but found samples much more simple. and more productive of business. Customers can see such goods as they want, and can be served much more expeditiously, especially when there is a rush of customers, or when short handed. Stacy bins, of which there are 38, are used for Nails, and open to the back side of the counters. Table Cutlery is kept in the shelving case, behind sliding glass doors, provided with flush brass pulls, as shown in Fig. 803. The case is high enough to allow standing the original boxes on end, upon which the Knives and Forks are sampled.

An ingenious arrangement is shown in Fig. 804 for keeping the stock of Hand Saws in the original boxes, this being in the end of the shelving near the elevator. False fronts are substituted for the last tier of drawers under the ledge, and the Saw boxes are accommodated on shelves open at the end. It is found, however, that the limited space provided for these goods is not sufficient for their stock, otherwise it is a very satisfactory arrangement. The wall case above, with sash to raise, is devoted to Planes on shelves and to a display of Saws of various kinds, hung on pegs above.

THE OFFICE.

The office in the rear is commodious and is inclosed with paneled wood work and glass. A standing desk for bookkeeper faces the storeroom, the rest of the space being devoted to a roll top desk and a safe. It is the intention to elevate the entire office about 3 feet, so as to bring it on a level with the platform of the stairs. This arrangement will give a better view of the store and will also provide room underneath the office for Handles and goods of unusual length. A small brass rod hung horizontally in screw eyes at each end provides a place for hanging Chains ; the rod is placed on the stairway at the foot of the stairs.

LAG SCREWS, WASHERS, ETC.

The shelving represented in Fig. 805 is located in the corner of the L at the left hand side of the store. The counter in front is supplied with Stacy Nail bins. and the traveling ladders were furnished by the Coburn Trolley Track Mfg. Company. The bins at the end of the counter are devoted to Lag Screws, Machine Bolts, Washers, Strap and T Hinges, &c. The bins extend to the floor, though not so shown in the cut. Full packages of Tire and Carriage Bolts, Glue, cans of Carriage Varnish, Carriage Paint, Nail bins, drawers, &c., occupy the shelving behind the counter.

HOUSE FURNISHING GOODS.

In front of the shelving devoted to House Furnishing Goods on this side of the store, and near the corner just described, are Dayton cases on square bases, standing on the floor, holding the retail stock of Tire and Carriage Bolts, Wood Screws, flat and round-head Brass Screws, Morse Drills, &c. Some of these cases were made to order, of special size to accommodate the line of goods carried.

The shelving for House Furnishing Goods, which extends along this side of the store, is shown in Fig. 806, there being no counters on this side. Under the ledge the goods on the shelves are protected by doors sliding on two tracks. The two wall cases extend nearly to the show window, and are provided with glass sash to raise. In these cases are kept Carvers, Brass Tea Kettles, Spoons, Scissors, Tea and Coffee Pots and other high grade goods.

In the shelving to the right of the wall cases, the shelf immediately above the ledge is narrower than the shelves above, thus giving a better view and more easy access to Long Handle Spoons, Dippers, Ladles and the kitchen utensils belonging to the line lying on the ledge. The shelving is without partitions, being supported by light turned standards at the front.

The wall space between the wall cases and the show window is used for sampling goods. In front of this, leaving sufficient room for a passageway to the show window, is the buyer's

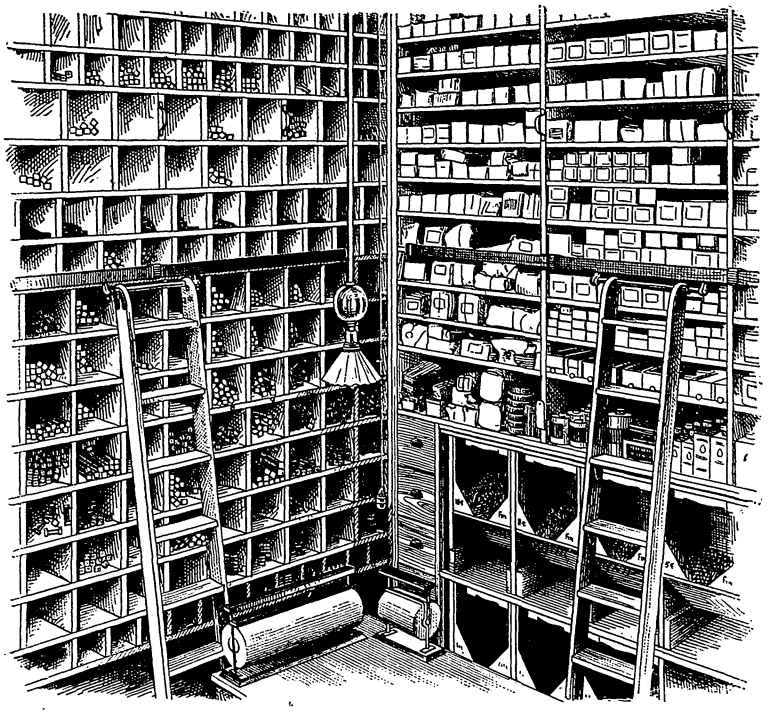


Fig. 805.—*An Interesting Corner.*



Fig. 806.—*House Furnishings and Cupboards.*

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desk. This has a roll top and is conveniently situated near the door, so that the buyer can welcome customers and see that they are properly waited upon.

SECOND FLOOR.

The treads of the steps going to the second story have strips of stair rubber; the paneled door above and the stairway are finished to correspond with the other wood work in the room below. On the second floor racks are provided for Spokes, Shafts, Oars and Glass. Wheels, Boys' Express Wagons, Sleds, Shovels, Enameled Duck and Carriage Trimmings are also kept here. Along one side of the wall is shelving for surplus stock of shelf goods. A Weather Strip rack, arranged similar to a rack for Bar Iron, is on this floor. The rack is 8 feet long by about 3 feet wide and 5 feet high, and is mounted on casters so as to be moved about. The wooden Weather Strip is put in and taken from the various apartments from the ends.

THIRD FLOOR.

On the third floor are kept Rims, Wheelbarrows, Carriage Bodies, Corn Shellers, Cutting Boxes, Cider Mills and other goods of this character.

BASEMENT.

In the basement are assembled all blacksmiths' goods. A rack, with 245 compartments, is devoted to Bar Iron and Steel. Forty-one bins are provided for Horseshoes, the stock carried including steel, snow, toe weight, side weight, light, medium and Mule Shoes. Tuyere Irons, Anvils, Sledges and other goods found here make it possible to accommodate a blacksmith with almost anything in his line. Hubs are kept on swinging shelves in a cool and dark part of the basement; Rope is also kept here as the most appropriate place. Near the front of the basement, convenient to the coal, is a Dunning steam heater, which supplies the entire building with warmth. Stone steps leading down from the sidewalk provide a way for entering or leaving the basement without going through the store, and a chute is used for sliding down kegs of Nails, Horseshoes, &c. A number of sheets of No. 12 Iron fastened to the floor at the end of the chute prevent heavy goods breaking up the floor as they descend.

The store is well lighted, and taken as a whole is very thoroughly provided with conveniences and labor saving devices.

Price-Lists, Circulars, &c.

PITTSBURGH BRASS COMPANY, Pittsburgh, Pa., and 36 Park place, New York: illustrated catalogue and price-list of Piano, Banquet, Vase, Table and Bracket Lamps. The book is divided into several sections, each class of goods by itself, to facilitate choosing what is wanted. There are a number of metal and onyx Tables, both with Lamps and without. Also an assortment of Shades and Shade Holders for Piano and Banquet Lamps, together with decorated Glass Shades for Table and Hand Lamps.

GRAND RAPIDS HAND SCREW COMPANY, Grand Rapids, Mich.: Factory Furnishings. An 1893-94 catalogue illustrates, with descriptions and prices, patent Hand Screws, Case and Glue Clamps, Cabinet Makers' Benches, Carvers' Benchers, Factory Trucks, Saw Tables, &c.

THE BOURKE MFG. COMPANY, Youngstown, Ohio: Ventilating Sash Lock and Fastener, Diagonal Sash Lock and Fastener, Nonpareil Window Cleaner, Extension Handle Socket, Excelsior Bar Cleaner and Floor Scrubber and Dryer. A catalogue illustrates these goods, with descriptions and list prices.

JOHN ROBBINS MFG. COMPANY, 58 Kneeland street, Boston, Mass.: Badges, Medals, Plates and Checks. A catalogue gives 40 pages of illustrations of Badges and Medals, including aid and athletic Badges; Badges for army corps, bicycle and boys' clubs, for policemen, constables, detectives, firemen; fire alarm box Tags, sporting Medals, &c. These goods are made in solid gold, silver or nickel, and special designs are furnished when desired.

B. STAUBACH, 236 Greenwich street, New York: Butchers' and Packers' Machinery, Tools and Fixtures, Engines, Presses and general supplies; Meat Cutters in great variety, Meat Mixers, Stuffers, Knives, Saws, Scales and Balances, Blocks, Counters, Racks, Trucks and Cleavers, together with a large assortment of miscellaneous goods used by dealers in food products. A feature of the book is a number of lists on many of the goods so arranged, both by the dozen and single article, as to be available as a selling price as between the retailer and his customer. This permits of the book being shown with cuts and descriptive matter where goods are not in stock.

AMERICAN NET & TWINE COMPANY, 34 Commercial street, Boston, Mass., and 199 Fulton street, New York: Cotton and linen Fish Nettings and Twines. Their large sized catalogue of 60 pages illustrates the process of Net manufacture, and shows the use to which different kinds of Nets are put. Among these are Menhaden Purse Seines, Snell Traps, Weirs, Salmon Traps, Salmon Gill Nets, Inland Seines, Minnow Seines, Trammel Nets, Fyke Nets, Cast Nets, &c. Something like 100 different kinds of articles are included in the catalogue, of which prices of the various styles and sizes are given.

THE UNION HARDWARE COMPANY, Torrington, Conn., and 95 Chambers street, New York: Ice Skates. An illustrated price-list shows their Lock Lever Skate in various finishes, Lock Lever Union Extension Skates, Ladies' Lock Lever Skate, Ladies' Lock Lever Union Extension Skate, Ladies' Wood Top Skates, Donoghue Racing Skate, Union Skate Sharpener, &c.

THE BUCKLIN CAN FILLING COMPANY, 233 East Hamburg street, Baltimore, Md.: Automatic Can Filler. The machine is intended for filling cans with tomatoes, and has a stated capacity of 4000 cans per hour. It is explained that the filling is done with little or no waste, and that the machine fills, tops and wipes the cans. The company, formerly of Keyport, N. J., have secured works in Baltimore, where all correspondence should be addressed.

PENNSYLVANIA BOLT & NUT COMPANY, Lebanon, Pa.: 1894 catalogue relating to hot and cold punched square and hexagon Nuts, Machine, Carriage and Track Bolts, gimlet pointed Coach Screws and Lag Screws, bolt ends and Turn Buckles, solid die Boiler and Bridge Rivets, wrought and cast Washers, Rods for bridges and buildings, Arch Bars, Body Bolsters and Car Forgings, refined Bar Iron. The catalogue, which is handsomely printed and well arranged, gives illustrations, descriptions and list prices of this line of goods. Many of the price-lists are accompanied by tables of weights, special sizes, number to the pound and other valuable information arranged in a convenient and comprehensive manner. An extensive telegraph code is given near the back of the book, preceded by a telegraph code index. The work will prove a valuable one for those interested in this line of goods.

J. W. FISKE, 39 and 41 Park place, New York: Ornamental Iron, Brass, Bronze and Zinc work. An illustrated catalogue supplements a former edition calling attention to an extensive line of artistic Wrought Iron, Brass and Bronze work for use in public buildings, parks, institutions, private residences, stores, stables, &c. It is particularly designed for architects, contractors, builders and those having to do with choosing materials of this character. The assortment is a very complete one and ranges from goods of moderate cost to those of elaborate and expensive designs. Among the leading articles may be mentioned Grilles, Transoms, basement and cellar Window Guards, Gates for a multitude of purposes, Newel Posts, with and without Lamps, Vestibule Door Grilles, Sheet Iron Doors, &c. The house is also continually executing orders for work made according to special designs. In the catalogue each plate has a separate number to avoid confusion in identifying any particular article. There has lately been issued an illustrated supplement and price-list of Copper Weather Vanes, Bannerets, &c., which contains designs not heretofore shown. Among these is one designated as Nancy Hanks, with pneumatic tire sulky, a Hackney stallion, made specially for the Dacotah Flats, Horse over Hurdle, Steam Fire Engine, Locomotive and Tender, &c. Attention is called to the fact that all these goods are made of copper and gilded with pure gold leaf.

It Is Reported—

That the Hardware store of H. Watson, Jonesboro, Ark., was entered by burglars recently and three double barreled breech loading Shot Guns carried off.

That on the 7th inst. fire broke out in the Hardware store of William Hunton, Granger, Texas, and entirely consumed the stock and building. The stock was valued at $1600, with insurance for $1000. Loss on building, $500; no insurance. The origin of the fire is unknown.

That almost the entire business part of the town of Latham in Butler County, Kan., was destroyed by fire on the morning of the 6th inst. Among the heaviest losers by the fire were the Winfield Hardware Company.

That Mason & Dale's Hardware store was considerably damaged by smoke and water in a fire at Bowmanville, Man., on the 6th inst.

That E. N. Falke has opened a new Hardware store at 811 Monroe street, Toledo, Ohio.

That burglars broke into C. M. Jones' Hardware store, at Ripley, N. Y., on the 8th inst., and carried off Revolvers, Knives and Razors to the amount of $150.

That in a fire at Memphis, Tenn., on the 13th inst., the stock of the Schmalzried Hardware Company suffered to the extent of $35,000. The insurance is $28,000.

That in a fire in the Phœnix Block, Concord, N. H., on the 11th inst., the

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stock of Hardware of Thompson & Hoague was damaged, mainly by water, to the extent of $15,000. The firm have opened a retail store in their wholesale establishment on Depot square, and will conduct the business there for the present.

That Arnold & Whitmore have entered the Hardware and Implement business at Ludlow, Ill.

That the store of C. Schnepff, Elkport, Iowa, was recently damaged by fire.

That G. W. Weston is closing out his Hardware business at North Branch, Mich.

That F. D. Woodworth, dealer in Hardware, Stoves, &c., Onondaga, Mich., has sold out to J. H. Strong.

That the Rockford Hardware Company, Rockford, Mich., have dissolved.

That R. Edmunds & Son, Warren, Pa., are out of business. They have been succeeded by T. O. Slater.

That the firm of Heacock & Durfee, Gloversville, N. Y., dealers in Hardware, have dissolved. Mr. Heacock will continue the business alone.

That Hamilton Welton is intending to enter the Hardware and Implement business at Paragon, Ind.

That Edward Thomas has purchased a half interest in the Hardware store of Herbert A. Wolcott, Carthage, Mo., and hereafter the firm name will be H. A. Wolcott & Co.

That A. A. Suppigar, of the firm of Kreige & Suppigar, Hardware dealers, Edwardsville, Mo., has sold his interest in the firm to J. C. McKitrick.

That C. W. McMahon has sold his interest in the Hardware business at Center Junction, Iowa, to his partner, Herbert Mackrill.

That H. Stonebrook and Theodore Thome have opened a Hardware store at Nashville, Ohio.

That the firm of Hancock & Boyes, Hardware merchants, Emerado, N. D., have dissolved.

Death of C. A. S. Fraser.

THE TRADE will learn with sincere regret of the death of C. A. S. Fraser at Los Angeles, Cal., November 9, of consumption, aged about 41 years. Of a genial and companionable nature he readily made friends. Starting in business with Pugsley & Chapman he went with the Hart, Bliven & Mead Mfg. Co. in 1870. Rising through all the departments, he became successively city and stock buyer and then represented the company on the road. In 1878 he connected himself with Woodburn Sarven Wheel Company, Cincinnati, Ohio, and afterward with Hibbard, Spencer, Bartlett & Co. and the National Saw Company. He is referred to in very kindly terms, indicating the regard in which he was held. Permanent interment will be made in Greenwood Cemetery, in the family plot.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

In this line there is something of the unpleasant experience that has been common in most branches of business since the early part of the autumn season. Pressure of circumstances has forced competition in various departments and practically wrecked price-lists. The combined corroders, for example, have to contend with a growing antagonism from outsiders and more than ordinary effort on the part of manufacturers of cheaper pigments to push the sale of their goods. Along with this is more or less irregularity in prices of American Oxide Zinc and a revised official list showing about ¼¢ ℔ reduction from the old one. Then some other base mateaials are being urged with a persistency indicative of inclination on the part of producers and importers to cut their stocks down as low as possible before the end of the year. Hence a generally weakish undercurrent and hardly anything more than routine trade except such transactions as may be facilitated by the force of exceedingly low prices.

White Lead.—Reports as to aggressive spirit on the part of "outside" corroders and manufacturers of quick process Lead continue and enough facts come out to show that those reports are not without foundation. In fact, the appearances are that the minority interest is gradually becoming more influential and that the combined corroders may find it expedient to issue a new list or acknowledge that the one in existence is purely "nominal." As matters stand, some of the outside producers are offering dry White Lead at 5¢ less a commission, or more than ¼¢ below the minimum rate quoted by the combine. Similar irregularities exist in quotations for Lead in Oil where large quantities may be involved, while jobbers still adapt prices to circumstances with the small trade. To all appearances the market is more ragged now than it has been at any time since the leading corroders consolidated. Business is slow and the demand strictly commonplace.

Zincs.—The announcement is made of a reduction of ½¢ in manufacturers' prices of American Oxide, bringing the range down to 3¾¢ @ 4½¢, according to quality and quantity, with the usual rebates to large buyers. Care has been taken to give the impression that manufacturers are working harmoniously and that there is no really aggressive competition, but facts indicate that the productive capacity is not only excessive but large enough to strain old combinations of manufacturers. In other words, it looks very much like a free and open market, with more than a bare chance that purchases on strict cash terms could be made at some concession from the prices generally quoted. Foreign brands are also selling at irregular prices, although no change in regular lists have been announced thus far.

Red Lead and Litharge.—The movement in Red Lead has been slow and seemingly low prices on foreign stock, to arrive, seem to possess little or no attraction at the present time. The old list for American brands is still quoted, but few if any sales are making at those figures. Litharge has met with rather slow sale, the large consumers being careful in their purchases, while the jobbing trade has bought in a hand to mouth way only. Prices are rather weak, but show no radical change.

Orange Mineral.—Foreign brands are not urged for sale in any remarkable degree, but there is enough effort to keep prices somewhat unsettled and slightly in buyers' favor. The volume of business is moderate, and the demand seems to be slower, if anything, than usual at this season of the year.

Colors, &c.—There is not the least new feature in the market for Dry or Oil Colors. For all staple lines not under control of combinations prices are extremely variable, and some that are supposed to be thus controlled are let out occasionally at cut prices. Meanwhile sales are slow and chiefly of hand to mouth character. Oil Colors, drawing the line at a few specialties, are in about the same position. With ready mixed Paints it is the old story of as many prices as there are varieties.

Miscellaneous.—Block Chalk has undergone no change in price, and the market remains in a languid condition. Whiting finds slower sale, but the business passing is chiefly at former prices. Barytes and the general line of Clays realize about former prices, but sell rather slowly.

Oils and Turpentine.

There have been no really new developments in the market for Animal and Vegetable Oils, drawing the line at Linseed Oil, which is momentarily affected by a sharp rise in the cost of raw material. Lard and Cotton Seed Oils have continued to depreciate in value, chiefly because of indifferent buying. Other goods have just about held their own in price and met with fair sale in routine way. Speculation seems to be at a standstill, export interest is tame and home trade buying is of strictly perfunctory character.

Linseed Oil.—A quite sharp rise in cost of raw material has caused some modification of selling pressure by out of town crushers and at this writing it seemed doubtful that either State or Western brands could be secured at less than 38¢. In fact, bids of 38¢ for deliveries during the first quarter of 1894 were said to have been turned down. City crushers have thus had better opportunity to push their product, but the outlet was narrow, as usual at this season of the year, and only routine sales have been effected. City Oil, made from American seed, brings 40¢ for raw.

Cotton Seed Oils.—Under the influence of lower prices for Lard and inferior Greases the market for Cotton Oils has ruled rather weak. The lower level of prices has failed to stimulate either export or home trade purchases, and the market is therefore not only weak, but rather dull. Prime crude has been sold at from 36¢ down to 30¢; Summer Yellow at from 41¢ down to 38¢, and other varieties at corresponding prices.

Lard Oil.—Pressers in this city and vicinity are gauging their product as closely as possible to current sales. The latter, however, have been quite below calculations, and there is enough surplus to have a weakening influence upon prices. Prime city went at 75¢ @ 76¢ in wholesale quantities, and the lower grades are offered at corresponding prices. The movement has been slow, and the demand at present is tame.

Fish Oils.—There has been no movement in the crude Menhaden, Sperm or Whale Oils and sellers' figures stand just about as they were a week ago. The manufactured products have met with merely jobbing sale, chiefly at former prices. Cod Oils steady in price, but quiet.

Miscellaneous. — Common Olive Oil in barrels has met with somewhat freer sale. Spot parcels brought 60¢ upward and future shipments still command about 55¢. There is no speculative movement at present. Cocoanut Oils are a shade firmer, since late low prices have led to cleaning up of weak holdings. Prices, however, show no radical change. Red Oils and Neatsfoot Oil sell in moderate quantity only, but realize former prices.

Spirits Turpentine.—Prices have remained almost stationary during the week. The range was 30¢ @ 30¼¢ for regular and 30¼¢ @ 30½¢ for machine barrels. Business has been fair in volume, but of strictly routine character.

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Lane's Sliding Door Latch.

The sliding door latch herewith shown is put on the market by Lane Brothers, Poughkeepsie, N. Y., for whom John H. Graham & Co., 113 Chambers street, New York, are agents. All exposed parts of the latch are made of steel, and one pattern is designed for all doors, there being no rights and lefts. The latch is constructed to operate equally well when placed on either end or either side of the door, also whether the door be made to slide outside or inside the building. The door pull is set in flush on the partition side as in Fig. 1, and is also utilized for raising the latch, no other device being required. While this article is designed chiefly as a latch, yet it can be conveniently locked with any ordinary padlock, and when so locked, it is stated, there are no exposed bolts or screws that can be removed from the outside. The point is made that consequently the door cannot be opened except by destruction of the wood work. The latch is designed for use on sliding doors of carriage houses, stables, warehouses, barns, &c., as the general introduction of improved anti-friction door hangers has created a demand for a latch adapted to the purpose.

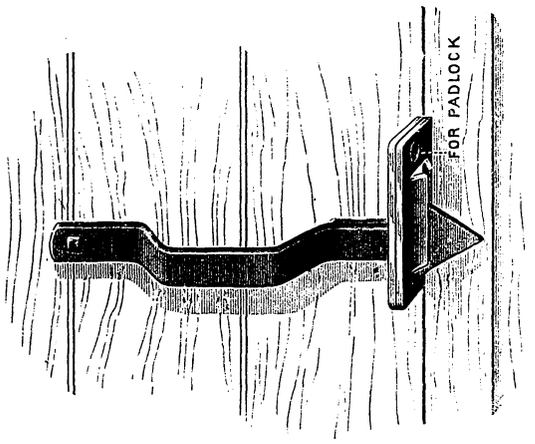


Fig. 1.—Showing Holes for Padlock.

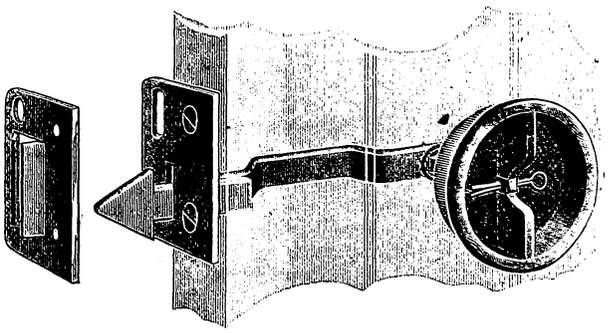
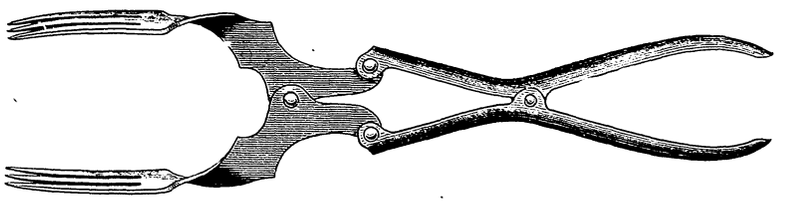


Fig. 2.—Lane's Sliding Door Latch.

The Marvelous Duplex Serving Fork.

The duplex serving fork shown herewith is introduced by the Duplex Fork Company, Fremont, Ohio. The fork is described as being made of the finest steel, triple plated, and, it is stated, will wear for years if properly taken care of. The fork, it is stated, is always open and ready for use, and the slightest pressure can be felt. The fork is designed for serving salads, vegetables, meat, &c. As a carving fork it holds the meat without puncturing or tearing it. Similar forks are made for kitchen use, designed for taking meats, vegetables or anything hot from the oven. Sugar or pickle tongs are made on the same principle for table use, in serving sugar, or pickles from jars or cans. This tongs is carved and plated. These goods are sold in sets consisting of kitchen fork, serving and carving fork, as illustrated, and pickle tongs, or any of the three can be purchased separately.

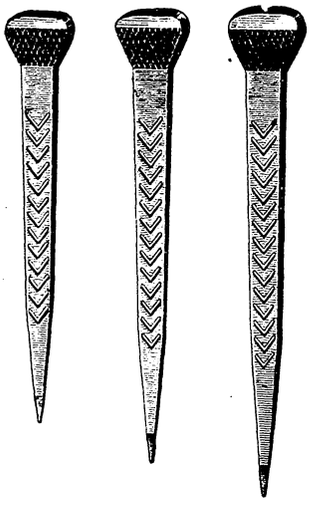


The Marvelous Duplex Serving Fork.

European governments are co-operating in vigorous efforts to suppress the anarchism which has been rampant of late, particularly in Spain and France.

Capewell Corrugated Horse Nails.

The accompanying cuts represent corrugated horse nails offered by the Capewell Horse Nail Company, Hartford, Conn. The nails have straight ridges on the surface, which are referred to as not obstructing their passage through the hoof, and are designed to give a secure hold without the necessity of clinching. It is pointed out that a hoof presents a better appearance when the nails are not clinched, and that the operation of clinching is frequently painful and attended with difficulty and danger on colts and restive animals. The manufacturers state that the corrugated nails have been found by practical test to hold a shoe as securely and as long as a clinched nail. These nails are made in all sizes.



Capewell Corrugated Horse Nails.

Toledo Wheelbarrow Wheel.

The improved wheelbarrow wheel herewith illustrated is offered by G. W. Thomas & Co., proprietors of the Toledo Wheelbarrow Works, Toledo, Ohio. A ⅝-inch round spoke is used, which is cast in the hub, as in Fig. 1. The spoke passes through the tire in a wedge shape, as shown in the sectional cut, Fig. 2. It is claimed that by this arrangement twice the strength of the

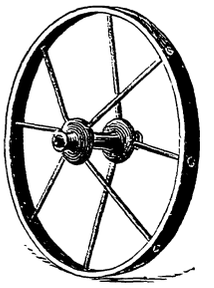


Fig. 1.—Toledo Wheelbarrow Wheel.

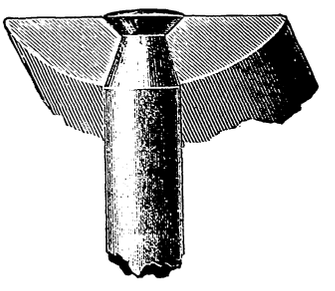


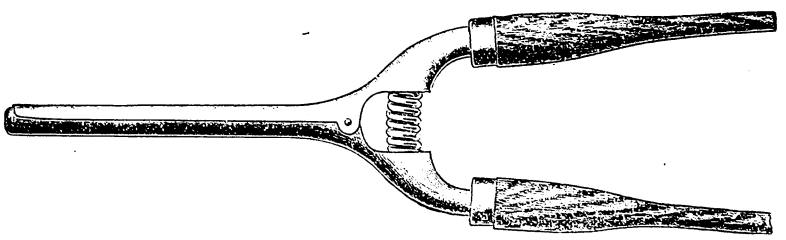
Fig. 2.—Shape of Spoke in Tire.

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spoke is obtained, as in dumping the barrow the spoke cannot push through or pull out. These wheels are warranted by the makers to give satisfaction and are placed on all barrows when steel wheels are ordered.

Aluminum Hair Curlers.

Gibbs Mfg. Company, Canton, Ohio, are introducing curling irons of aluminum, as herewith shown. The manufacturers claim for the curling irons that they will not rust or tarnish by use, that they may be kept bright by



Aluminum Hair Curlers.

simply wiping after using, that they heat in half the time that iron or steel curlers will, that they retain the heat longer, and that they are only one-third as heavy. The curlers are made in three sizes—Nos. 3, 4 and 5.

Steel Fire Proof Security Box.

The Sidway Mfg. Company, 32-40 South Jefferson street, Chicago, are placing on the market the steel fire

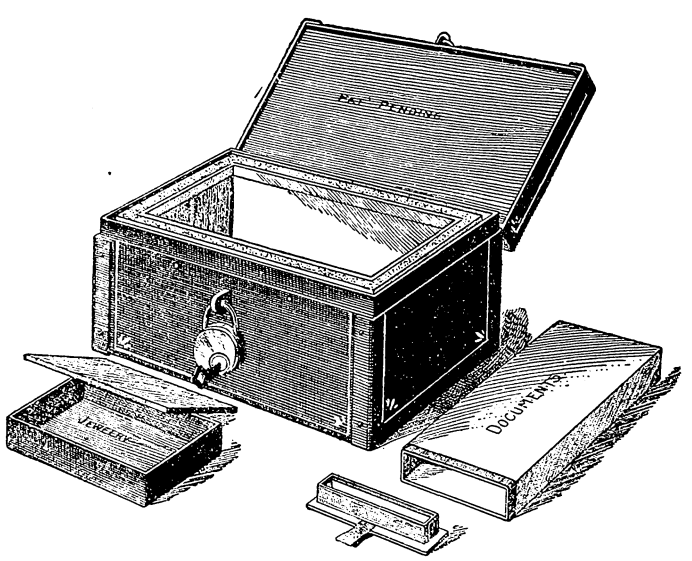


Fig. 1.—Steel Fire Proof Security Box.

proof security box shown in Fig. 1. The box is made of $\frac{1}{16}$ inch cold rolled pickled steel plates in three sizes, the inside one being $11\frac{1}{8}$ inches long by $6\frac{1}{8}$

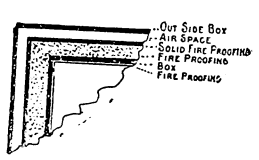


Fig. 2.—Sectional View of the Box.

inches wide and $5\frac{7}{8}$ inches high; while the outside one is 7 inches longer and properly proportioned in other directions. These plates are securely riveted together, rendering a space inside measuring 9 inches in length, 4 inches wide and 4 inches high, the space between the inner and outer boxes being filled with fire proofing, as is shown in Fig. 2. The interior is furnished with two boxes—one for jewelry and the other for documents. The first is made of galvanized iron, lined with fire proofing, while the document case is covered with the same material. The interior is properly lined with soft plush felt.

The outside of the box is handsomely japanned and striped with steel and brass trimmings, nickel plated. The entire box weighs $11\frac{1}{2}$ pounds, and is designed for those who desire a keep-safe for valuable papers in the house. We are advised that the box has been subjected to a white heat for a half hour without the contents being affected, not even taking the polish off of brass.

Columbian Sash Lock.

The Columbian Sash & Door Lock Company, Wauseon, Ohio, are putting the sash lock on the market as herewith shown. Fig. 1 represents the lock when fastened on the sash and locked. Fig. 2 shows the lock more in detail and the position of the parts when unlocked. The lever is held when disengaged, as in Fig. 2, by a spring in an upright position, so as to render injury to the lower sash impossible when the sash is carelessly moved up or down. The end of the lever where it engages the keeper fastened to the lower sash is hooked so that when the lever is pressed down the upper and lower sash are drawn together and centered. It is explained by the manufacturers that this action forces the upper sash up and the lower sash down, locking them three ways with one motion of the lever, making them as tight and secure as in a vise, anti-rattle and burglar proof. The notched piece at the back of the lock is held by a spring in a forward position

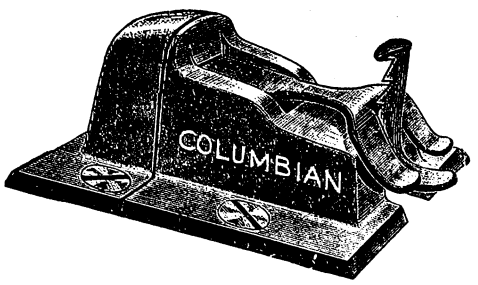


Fig. 1.—Columbian Sash Lock.

to lock the lever when pressed down as in Fig. 1. Upon pressing the notched piece down the lever is released and the window unlocked. The point is made that the lock is very simple in operation and is strong. The cuts also rep-

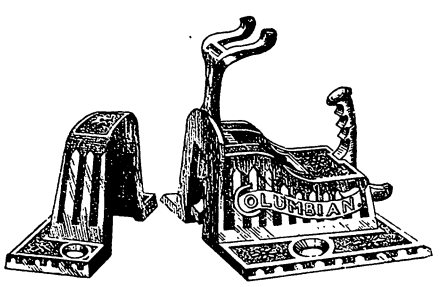


Fig. 2.—Columbian Sash Lock Open.

resent the two styles in which the lock is made, which are furnished in iron bronzed, nickeled, malleable iron in a variety of finishes and in real bronze metal.

Iron Clad Salamander Ware.

Iron Clad Mfg. Company, 22 Cliff street, New York, are putting Sala-



Fig. 1.—Iron Clad Salamander Cook Pot.

mander ware on the market, as illustrated herewith. The body of the ware is

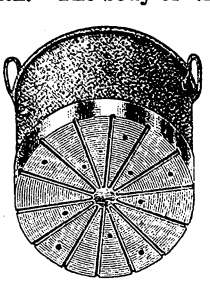


Fig. 2.—Second Bottom of Pure Copper.

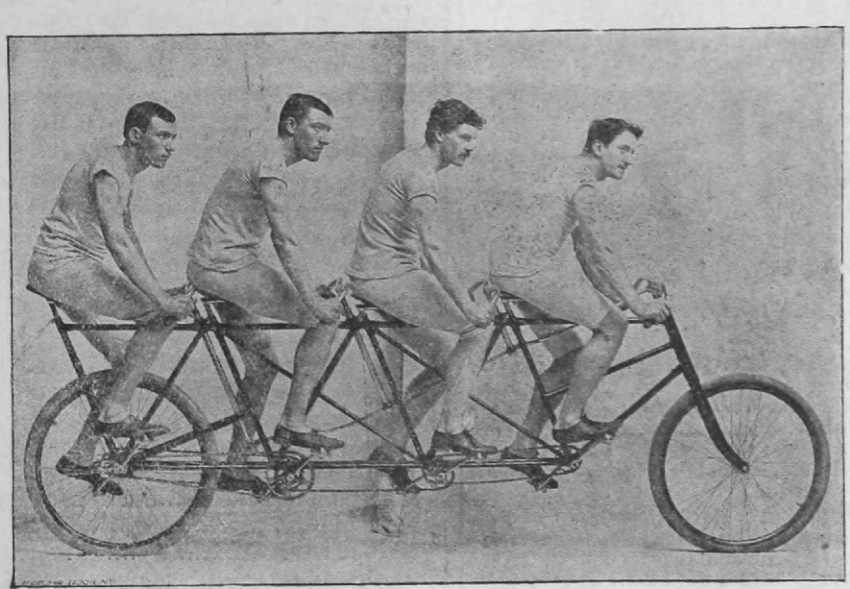
made of steel, seamless, and is covered with Iron Clad enamel, as in Fig. 1. In addition to this, each utensil has a

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second bottom, as in Fig. 2, seamless, made, it is claimed, of the best quality of copper. The second bottom is perforated and ridged, and is permanently attached to the article, so that an air chamber is formed, to permit a free circulation of air, and to prevent the contents from burning or scorching. The makers claim that this ware can be used in direct contact with the fire without injury to the vessel or contents. In addition to the cooking pot shown in Fig. 1, saucepans and saucepots are made of this ware, all in ½, 1, 2, 3, 4 and 6 quart sizes.

Stearns' Quadruplet Pace Maker.

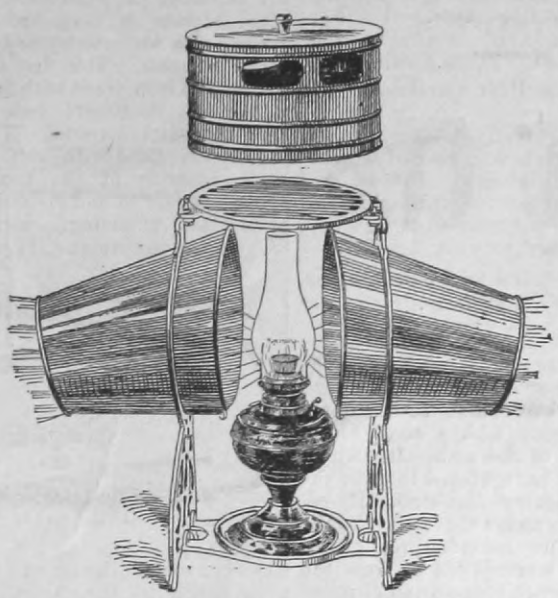
The cut here shown represents the quadruplet built by E. C. Stearns & Co., Syracuse, N. Y., and which accompanied John S. Johnson on his Stearns wheel as pace maker at Independence, Iowa, in recent races. The quadruplet was mounted by the following riders, reading from the left: John H. Gardner, C. A. Benjamin, John Wilkinson and William Van Wagoner, the racing team of the Syracuse Athletic Association. We are advised that this quadruplet is the second one ever built in this country, and is considerably lighter than the first one. It is geared to 80 inches. The rake of the head is designed to insure accuracy and ease of steering, and the principle upon which the frame is constructed is such as to give the greatest amount of strength consistent with lightness. The tread is very narrow. Wooden rims are used on the wheels, and as the combined weight of the riders amounts to about 750 pounds, the wheel, driven at a high rate of speed in pace making, is referred to as affording an excellent test of the strength of wooden rims.



Stearns' Quadruplet Pace Maker.

The Climax Lamp Stove.

Clarence M. Kemp, 101 North Frederick street, Baltimore, Md., has just placed upon the market a lamp stove of novel construction, intended for heating, lighting and cooking purposes. The illustration which we present shows the general arrangement of parts and the method of operation. Simply removing the top or heating drum discloses a large grate, which can be used for boiling, baking, roasting, heating flat irons, &c. The manufacturer states that the frame work is sufficiently strong to sustain a weight of over 100 pounds, and that the device can be set on the floor or on a table, as may be most convenient. From an inspection of the cut it will be seen that the position of the lamp is such that it can be instantly removed without disturbing other portions of the stove. Mr. Kemp states that this stove does all that any other lamp or oil stove will do, and in addition warms the feet, as it throws the heat to the floor.



The Climax Lamp Stove.

The Beardsley Door Check.

The Beardsley & Monat Mfg. Company, 234 Lake street, Chicago, have recently introduced the Beardsley door check, of which the accompanying illustration presents a front view. The check is screwed to the bottom of the door. Pushing in the button near the top of the check releases the plunger bolt, which is forced downward by a heavy spring, projecting a rubber foot from the casing against the floor, and thus, it is stated, holding the door instantly and firmly. When the door is to be moved, the bolt is raised by the thumb piece at the top of the check and retained again in the casing by a lock. The device is designed to do away with bricks and wooden blocks, and to prevent the slamming of doors or breaking of glass. The manufacturers claim that the check prevents doors sagging and pulling out of hinges, and that it will keep a door either partly or wholly open.



The Beardsley Door Check.

M. A. Briggs advise us that he has severed his connection with the Hardware firm of W. H. Briggs & Sons of Valdosta, Ga., and is open to an engagement in any line of Hardware.

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Ideal Storm Sash and Window Screen Fastener.

C. H. Congdon, 643 St. Anthony avenue, St. Paul, Minn., is introducing the storm sash and window screen fastener herewith illustrated. The fasteners are made of malleable iron, finished in japan. When putting them

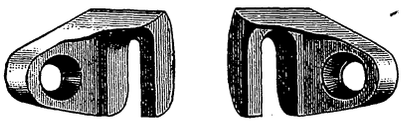


Fig. 1.—Ideal Storm Sash and Window Screen Fastener.

in place the fastener is pivoted to the stop by means of a small 1-inch screw. The open end slot is first turned down into engagement with a screw head upon the face of the sash, after which the screw can be tightened to draw the sash tightly against the stop. By reversing the operation the sash may be removed. The manufacturer claims that as the fastener is put on from the inside, it is easy to operate and obviates the use of a ladder; that it secures the sash tightly, keeping out the cold; that it does not disfigure the building; that the fasteners and screws need not be

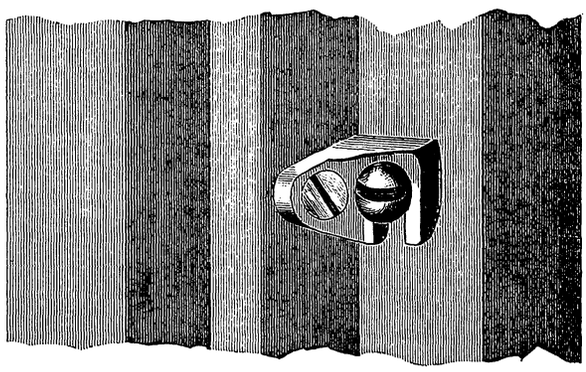


Fig. 2.—Fastener Applied from the Inside.

removed, and that the same fasteners may be used for window screens.

Ætna Curling Iron Heater.

Nicol & Co., 55 West Washington street, Chicago, offer the Ætna curling iron heater, cuts of which are shown herewith. The frame work fits snugly over the neck of the burner, thus bring-

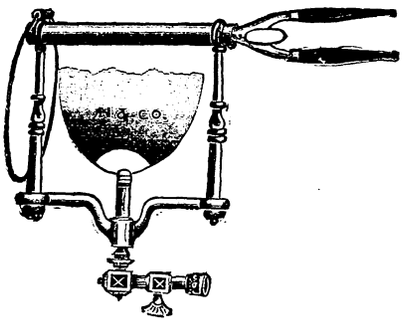


Fig. 1.—Ætna Curling Iron Heater.

ing the nickel plated case, which holds the curling iron proper, directly over the flame, thus obviating blistered or black fingers, or singed hair. Fig. 2 shows the Ætna with wire attachment for heating liquids. This is referred to

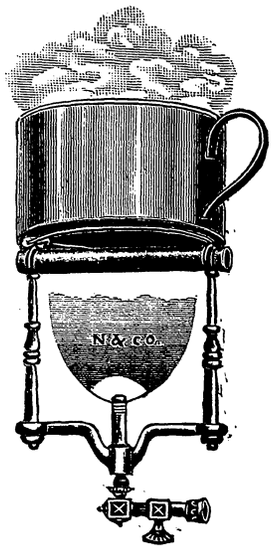


Fig. 2.—Ætna Heater with Wire Attachment.

as a convenient device and as contributing much to the desirability of the heater.

H. A. Earsy & Co., 280 State street, Boston, Mass.: Brushes. A price-list recently issued of the goods manufactured by the company includes Paint, Varnish, Wall, Kalsomine, Whitewash, Artist, Paper Hangers and Liners', Brushes; Sash Tools, Lettering Pencils, &c. Each of these lines of Brushes is listed in great variety.

Bennett Mfg. Company, 19 Pearl street, Boston, Mass.: The Bennett Sash Fast. A circular price-list illustrates and describes the Fast. It is claimed, among other advantages, that the Fast draws the upper sash up, or pushes the lower down, from a distace of almost 1 inch; that it draws the sashes firmly together; that it cannot be opened from the outside, and that if the sashes cannot be brought into place because of swelling of the wood, or ice, or any other obstacle, top or bottom, the window can still be securely locked. The manufacturers state that they have recently changed the style of the Fast somewhat and also increased the weight, thus improving it in several respects.

Chandler Pump Company, Cedar Rapids, Iowa: Pumps. Their revised illustrated catalogue and price-list shows Lift and Force Pumps, both single and double acting, Iron Pumps for hand and windmill purposes, Cistern and House Force Pumps containing the Haight patent valve, Iron Pipe, Well Casing Brass Goods, Fittings, Tools, &c.

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Current Hardware Prices.

NOVEMBER 22, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range 'of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓@33⅓&10%
Excelsior....₩ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Am. Wrought, Horse shoe brand.11@11½¢
Armitage's Mouse Hole.....10½@11¢
Eagle Anvils, ₩ ℔ 9¢.....15@15&5%
Moore & Barnes Mfg. Co.....33⅓%
S. & H., machine finished...10½¢@11½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Peter Wright's.....11@11½%

Anvil Vise and Drill—

Allen Anvil and Vise $3.00.....40&10%
Cheney Anvil and Vise.....25%
Millers Falls Co., $18.00.....20%
Star.....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—

Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....50%
Common Augers and Bits.....70@70&10%
Cincinnati Bell-Hangers' Bits.....30&10
Forstner Pat. Auger Bits.....15%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
C. E. Jennings & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set 32½ quarters, No. 5, $5; No. 30, $3.50.25%
Russell Jennings' Augers and Bits.25&10%
Lewis' Patent Single twist.....45%
L'Hommedieu Car Bits.....15&10%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
Snell's Bits.....60&5%

Bit Stock Drills—

Cleveland.....50&10&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Steer's, No. 1, $26; No. 2, $18.....35@40%
Stearn's No. 2, $48.....20%
Swan's.....40%

Gimlet Bits—

Bee.....25@25&5%
Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25....40&10%
Double Cut:
Shepardson's.....45@45&10%
Ct. Valley Mfg. Co.....30&10%
Hartwell's.....₩ gro., $10.00..40&10%
Douglass'.....40&10%
Ives.....60@60&10%

Hollow Augers—

Bonney's Adjustable, ₩ doz $48.....50%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%
Douglass'.....33⅓@33⅓&10%
French, Swift & Co. (Beecher).....33⅓@33⅓&10%
Ives'.....33⅓@33⅓&10%
Ives' Expansive, each $4.50.....50&5%
Stearns'.....20&10%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Snell's.....25@25&10%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%
Watrous'.....25@25&10%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@ 1.40
Awls, Handled Brad....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00	$7.50
First qual., other brands	6.50 / 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1.....3¼¢@4¢; 4½¢@5¢
Nos. 7 to 14.....70%
Nos. 15 to 28.....47½%
Nos. 19 to 22.....70%
Concord Axles, loose collar.....4½¢@5¢
Concord Axles, solid collar.....5¢@6¢
} 3% cash

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz.	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10¼-in., $1.80; 12-inch, $2.00; 13¼-inch, $2.50; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Dover.....₩ doz $1.00@$1.20
Dover (Standard Co.).....₩ doz $1.00
Duplex (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.).....₩ doz. $3.50
Easy (H. & R. Mfg. Co.).....₩ gro. $9.00
Improved Acme (H. & R. Mfg. Co.).....₩ gro $12.00
Silver & Co.....₩ doz $2.50
Spiral.....₩ gro $4.25 @ $4.50
Triple (H. & R. Mfg. Co.).....₩ gro $16.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Dodge, Genuine Kentucky.....70@70&10%
Kentucky Durham.....70&10%
Kentucky, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Texas Star.....50&10@50&10&5%
Western, Sargent's list.....70&10%

Door—

Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Gong, Abbe's.....33⅓&10%
Gong, Barton's.....40&10@50%
Gong, Yankee.....45&10%
Lever, R. & E. Mfg. Co.'s.....50&10&2%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated.....net
Lever, Taylor's Japanned.....25&10%
Pull, Brook's.....50&10&2%

Electric—

Rigelow & Dowse.....20%
Wollensak's.....20%

Hand—

Extra Heavy.....70%
Light Brass.....70&10@70&10&5%
Silver Chime.....33⅓&10%
White.....70%
Globe Cone's Patent).....25&10@35%

Miscellaneous—

Call.....45@50%
Farm Bells.....₩ ℔ 3¢&3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Hand Bellows.....40&10@50%
Molders'.....40&10@50%

Belting, Rubber—

Common Standard.....75@75&10%
Extra.....60&10@60&10&10%
Standard.....70&5@70&10%
N.Y.B.&P. Co., Carbon.....60@60&5%
N.Y.B.&P.Co., Diamond.....50@50&5%
N.Y.B.&P.Co., Para.....40@40&5%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters..15%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron.60@60&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%
See also *Machines, Hoisting.*

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....80&10@80&20%
Genuine Eagle, Norway, list Oct. '84.....80&5@80&10%
Eagle, Norway, list Oct. '84.80&10@80&15
Phila. pattern, list Oct. 7, '84.....80%
R.B.&W., old list.....70%
Bolt Ends, list Jan. 1, 1890.80&10@80&25%
Machine, list Jan. 1, 1890..80&10@80&25%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Cast Iron Shutter Bolts.....70&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wr't B. K. Flush, Common.....55&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Shutter, all Iron, Stanley's.....60&10@60&10&10%
Wrought Square.....70&10@75%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%

Stove and Plow—

Plow.....60&10&5@60&10&10%
Stove.....60&10@60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
American Screw Company:
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16 '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Clark's.....33⅓@35%
Enterprise Mfg. Co.....20%
Ives' Tap Borers.....33⅓&5%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Boxes, Miter.

Spilker's Excelsior, 3 in. $7.50, 4 in $8 50, 5 in. $13.00, 6 in. $15.00.....20%

Braces—

American Bit Brace and Tool Co.,
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber's.....50&10%
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Davis Patent.....50&10%
Fray's Genuine Spofford's...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414.....50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15

Brackets—

Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting. } Inch..... 9 10 9x11
Per doz...$4.50 5.50 6.50
Morgan Odorless.....₩ doz. $12, 50%
New Haven.....50%
Queen City.....33⅓%
Wire Goods Co.....65&10%

Buckets, Well—

Galvanized—

Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00
Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers.*

Butts—

Brass—

Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%
Cast Brass, Tiebout's.....50%
Wrought Brass.....80@30&10%

Cast Iron—

Fast Joint, Broad.....50&10@60%
Fast Joint, Narrow.....50&10&5@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Loose Pin, Acorns.....75&5@
Loose Pin, Acorns, Japanned...75&10
Loose Pin, Acorns, Japanned, Plated Tips.....&5
Mayer's Hinges.....
Parliament Butts.....

Wrought Steel—

Fast Joint, Broad.....
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Inside Blind, Light.....
Inside Blind, Regular.....
Loose Joint, Broad.....
Loose Pin.....
Table Butts, Back Flaps, &c...
Bronzed Wrought Butts.....50@50&10%

List Jan. 2, 1893, 40@40&10%

Cages, Bird—

Hendryx, Brass or Enameled.....50&10%
Hendryx, Wood.....40&10%

Calipers—See *Compasses.*

Calks, Toe—

Burke's, One Prong, Blunt.....5½@6¢
Burke's, One Prong, Sharp.....6½@7¢
Burke's, Two Prong, Blunt.....7½@8¢
Gautier, One Prong, Blunt.....5½@6¢

Can Openers—See *Openers, Can.*

Cans, Milk—

S. S. & Co.: 5-gal., $3.00; 8-gal., $4 40; 10-gal., $4.75 each.....40&10

Cans, Oil—

Galvanized Blue Band, 1 gal., ₩ doz. $2.25
Galvanized Blue Band, 5 gal., Tip-Top, ₩ doz, $12.00
Galvanized Blue Band, 5 gal, Faucet, ₩ doz., $8.00
Glass Oil, Friend.....₩ doz. $2.75

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co.....₩ 1000
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire $1 60
E. B. Grnd. Edge, Cent. Fire, 1-10's.....47@50¢
E. B. Trimmed Edge, 1-10's.....47@50¢
F. L. Waterproof, 1-10's.....35@37¢
G. D.....27@30¢
Musket. Waterproof. 1-10's.....50@53¢
S. B. Genuine Imported.....45¢

Primers—

Berdan Primers, $1.00.....2%
B. L. Caps (Sturtevant Shells) $1 00....2%
All other Primers, $1.20.....2%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....25%

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

B. B. Caps, Con. Ball, Swgd., $2.00.....2%
B. B. Caps, Round Ball, $1.75.....2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Cent. Fire, Military and Sporting.....15&5&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Primed Shells and Bullets.....15&5&2%
Rim Fire Cartridges.....15&5&2%
Rim Fire Military.....15&2%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed.....} Brass.....55@55&10%
Plate.....} Others....60@60&10%
Shallow Socket...
Deep Socket.....40&10%
Giant Truck Casters.....35%
Gwinner's Common Sense.....45%
Gwinner's Hercules.....45%
Martin's Patent (Phœnix).45&10@50&10%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Socket Truck Casters.....50@50&10%
Stationary Truck Casters.....50&10%
Tucker's Patent, low list.....45%
Yale Casters, low list.....45%
Yale, Gem.....70%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised May, 1893.....60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.50	3.40	3.25

Less than cask lots, add ¼¢@½¢ ₩ ℔
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12, 1892. 60@60&10%
Covert Halter.....60&2%
Covert Heel Chain.....50&2%
Covert Traces.....35&2%
Barnes' Reinforced Sash.....60&10¢
Barnes' Victor Sash.....65¢
Galvanized Pump Chain.
5 ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.75
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔.....₩ 100 ℔ $7.00
Jack Chain, Iron and Brass, list July 10, 1893.....60&10%
Oneida Halter Chain.....60@60&5%

Chalk—

See also Crayons.
Blue, case lots...₩ gr 75¢; small lots 80¢
Red, case lots...₩ gr 67¢; small lots, 72¢
White, case lots.₩ gr 50¢; small lots, 52¢

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Chalk Lines—See *Lines.*

Checks, Door—
Unity 50%

Chisels—
Socket Framing and Firmer
P. S. & W. }
New Haven }
Witherby } 75&10@75&10&10%
Mix }
Ohio Tool Co. }
Douglass ..... 75@75&5%
Buck Bros 30%
Merrill ..... 60&10@60&10&5%
L. & I. J. White ..... 30@30&5%

Tanged and Miscellaneous.
Tanged Firmers ..... 50@50&10%
Butchers' ..... $4.75@$5.00 to £
Spear & Jacksons' ..... $5 to £
Buck Bros 30%
Cold Chisels, fair quality, ℔ ... 14@16¢

Chucks—
Beach Pat. ..... each, $8.00 ..... 20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury ..... each, $6.00, 30@30&5%
Syracuse, Balz Pat. 25%
Graham Patent 33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.
Victor $8.50, 25%
Combination 40%
Universal 40%
Independent 40%

Churns—
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.

Clamps—
R. I. Tool Co.'s Wrought Iron 25%
Adjustable, Cincinnati ..... 15&10%
Adjustable, Hammers ..... 15@15&5%
Adjustable, Stearn's ..... 30@30&10%
Stearn's Adjustable Cabinet and Corner ..... 30@30&10%
Cabinet, Sargent's ..... 70&10%
Carriage Makers', Sargent's .. 75@75&5%
Carriage Makers', P., S. & W Co ... 40&10%
Eberhard Mfg. Co. ..... 40&5@40&10%
Warner's ..... 40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenter's, Cincinnati ..... 25&10%
Barnes' Machinists' Clamps 33⅓%

Cleavers, Butchers'—
Bradley's ..... 25@30%
L. & I. J. White ..... 20&5%
Beatty's ..... 40@40&5%
New Haven Edge Tool Co.'s 40%
P., S. & W ..... 33⅓&5@33⅓&5@30%
Foster Bros. 30%
Schulte, Lohoff & Co. ..... 40@40&5%

Clips—
Norway, Axle, ¼ & 5-16 ..... 55&5&5%
2d grade Norway Axle, ¼ & 5-16 ... 65&5%
Superior Axle Clips ..... 60⅔&5@70%
Norway Spring Bar Clips, 5-16 .. 60&5&5%
Wrought Iron Felloe Clips ..... ℔ 5½¢
Steel Felloe Clips ..... ℔ 5¢
Baker Axle Clips 25%

Cloth and Netting, Wire
—See *Wire, &c.*

Cockeyes 50%

Cocks Brass—
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.) .. ....60&2@60&10

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Chapman Mfg. Company, new list ... 40%
Medford Fancy Goods Co. ... 40&10@50%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list 40%
Brass, Pope & Steven's list 40%

Combs, Curry—
Fitch's ..... 50&10@50&10&10%
Rubber, per doz., $10.00 ..... 25%
American Curry Comb Co. ..... 33⅓&40%
Kohler's Magic Oscillating .. ℔ doz., $2.00
Kohler's Humane ..... ℔ doz., $1.75

Compasses, Dividers &c.
Compasses, Calipers, Dividers. 70&10@75%
Bemis & Call Co.'s
Dividers 65%
Compasses ..... 50&5%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Calipers, Double 65%
Calipers, Call's Patent Inside 55%
Excelsior 50%
Stevens & Co.'s ..... 25&10%
Starrett's
Spring Calipers and Dividers ... 25&10%
Lock Calipers and Dividers 25%
Combination Dividers 25%

Coolers, Water—
S. S. & Co.: 2-gal., $2.00; 3-gal., $2.50; 4-gal., $2.75; 6-gal., $3.40 each 33⅓%

Coopers' Tools—
See *Tools, Coopers'.*

Cord—

Sash—
Common ..... ℔ lb., 8½@9¢
Patent, good quality ..... ℔ lb., 10@11¢
White Cotton Braided, fair ... ℔ lb., 23@24¢
Common Russia Sash ..... ℔ lb., 12½@18¢
Patent Russia Sash ..... ℔ lb., 13½@ 14¢
Cable Laid Italian Sash ..... ℔ lb., 10@20¢
India Cable Laid Sash .... ℔ lb., 11½@12¢
Silver Lake—
A quality, White, 50¢ 25%
A quality, Drab, 55¢ 25%
B quality, White, 30¢ 10%
B quality, Drab, 35¢ 10%
Sylvan Spring, Extra Braided, White. 34¢
Sylvan Spring, Extra Braided, Drab. 30¢
Semper Idem, Braided, White ..... 26¢
Egyptian, India Hemp, Braided ..... 26¢
Massachusetts, White ..... 25¢
Samson—
Braided, White Cotton ..... ℔ lb., 37¢
Braided, Drab Cotton ..... ℔ lb., 42¢
Braided, Italian Hemp ..... ℔ lb., 40¢
Braided, Linen ..... ℔ lb., 56¢
Tate's Solid Braided—
Hercules, White ..... ℔ lb., 25¢
Hercules, Drab ..... ℔ lb., 30¢
Economy, Drab ..... ℔ lb., 27¢
Economy, White ..... ℔ lb 22¢
Ossawan Mills—
Braided, Giant, White, ℔ lb 30¢ 20%
Braided, Giant, Drab and Fancy, ℔ lb 35¢ 10%
Braided, Crown White, ℔ lb., 50¢ ... 50%
Braided, Crown Drab and Fancy, ℔ lb., 55¢ 30%

Wire Picture—
Braided or Twisted ..... 80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers Nut—
Table (H. & B. Mfg. Co) 40%
Blake's Pattern, ℔ doz., $2.00 ..... 10%
Turner & Seymour Mfg. Co. 50%
Acme.
Japanned, ℔ gro., $30 ..... 50%
Nickel Plated, ℔ gro. $30 ..... 10%

Cradles—
Grain ..... 50&2@50&5&2%

Crayons—
White Crayons, ℔ gross ..... 7@8¢
D. M. Stewart Mfg. Co.:
Metal Workers', ℔ gross, $1.75 ..... 25%
Rolling Mill, ℔ gross, 2.50 ..... 25%
Railroad, ℔ gross, 2.00 ..... 25%
Soapstone Pencils, ℔ gross, 1.00 ..... 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—
See *Combs, Curry.*

Curtain Pins—
See *Pins, Curtain.*

Cutters—

Meat—
Dixon's, ℔ doz. ..... 40@40&5%
Nos. 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Woodruff's, ℔ doz. ..... 40@40&5%
Nos. 100 150
$15.00 $18.00
Hale's, ℔ doz. 70%
Nos. 11 12 13
$27.00 $33.00 $45.00
American 35%
Nos. ..... 1 2 3 4 B 5
Each $5 $7 $10 $25 $50 $60
Enterprise 25%
Nos. 10 12 22 32 42
Each $3 $2.50 $4 $6 $15
Little Giant, ℔ doz. ..... 40&10@50%
Nos. 305 310 312 320 322
$35.00 $48.00 $44.00 $72.00 $68.00
Triumph No. 505, ℔ doz., $21.00 .. 25@30%
Miles' Challenge, ℔ doz. ..... 45@45&10%
Nos. 1 2 3
$22.00 $30.00 $40.00
Home No. 1, ℔ doz., $26.00 ..... 55&10%
Draw Cut, each:
Nos. 5 2 6 8
$50 $75 $80 $225 ..... 20@25%
Beef Shavers (Enterprise) 20%
Chadborn's Smoked Beef Cutter, ℔ doz., $66.00

Slaw and Kraut—
Tucker & Dorsey Mfg. Co.:
Slaw Cutters, 1 Knife, ℔ gross ... $21.00
Slaw Cutters, 2 Knife, ℔ gross ... 30.00
Kraut Cutters 40%

Tobacco
Champion ..... 20&10@30%
All Iron ..... ℔ doz., $4.25
Nashua Lock Co.'s .. ℔ doz., $18.00, 50@55%
Wilson's 55%
Sargent's ..... ℔ doz., $24.00, 55&10
Acme ..... ℔ doz., $20.00, 40%

Washer—
Smith's Pat. ... ℔ doz., $12.00, 20&10&10%
Johnson's ..... ℔ doz., $11.00, 33⅓%
Penny's .. ℔ doz.,, Poi. $14 ; Jap'd, $16, 55%
Appleton's ..... ℔ doz., $16.00, 60&10%
Bonney's ..... 30&10%
Cincinnati ..... 25&10%

Diggers, Post Hole, &c.—
Samson, ℔ doz., $34.00 ..... 25@25&10%
Fletcher Post Hole Augers, ℔ doz., $36.00, 20@20&10%
Eureka Diggers ..... ℔ doz. $12.00@$13.00
Vaughan's Post Hole Auger, ℔ doz., $8.50@$9.50
Kohler's Little Giant ..... ℔ doz., $18.00
Kohler's Hercules ..... ℔ doz., $14.00
Kohler's Invincible ..... ℔ doz., $12.00
Kohler's New Champion .... ℔ doz., $8.00
Scheidler ..... ℔ doz., $18.00
Cronk's Post Bars, ℔ doz., $60.00, 50&5@50&10%
Gibb's Post Hole Digger .... ℔ doz., $15.00
Gibbs' National ..... ℔ doz., $12.00
Gibbs' Columbia ..... ℔ doz., $13.00
Gibbs' Imperial ..... ℔ doz., $7.50
Shimer's Hollow Handle .. ℔ doz., $24.00, 50%
Gem, Improved ℔ doz.,. $9.00@$10.00 net

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers.
Money, ℔ doz. ..... $18@$20
Waddel's Improved, ℔ doz. $15.00

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Blacksmiths' ..... each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Breast, P. S. & W. ..... 40&10%
Breast, Wilson's ..... 30&5%
Breast, Millers Falls ..... each $3.00, 25%
Breast, Bartholomew's .... each $2.50 25&10@40%
Ratchet, Merrill's ..... 20@20&5%
Ratchet, Ingersoll's 25%
Ratchet, Parker's ..... 20@20&5%
Ratchet, Whitney's ..... 20&10%
Ratchet, Weston's ..... 20@25%
Ratchet, Moore's Triple Action .... 25@30%
Ratchet, Curtis & Curtis 30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00 ..... 20&10%
Automatic Boring Tools ..... $1.75@$1.85
Chicopee Automatic Drill ..... 20&10%
Goodell Automatic Drills ..... 40&5%

Twist Drills—
Cleveland ..... 50&10&10%
Diamond, W. & B. ..... 50&10&10%
Graham's Pat. Groove Shank. 50&10&10%
Morse ..... 50&10&10%
New Process ..... 50&10&10%
Standard ..... 50&10&10%
Syracuse (Metal list) ..... 50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Douglass Mfg. Co. ..... 20@20&10%
Disston's 50%
Buck Bros. 30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles ..... 65&10%
No. 86 ..... 70&10%
Sargent & Co.'s
No. 1, Forged Blade ..... 60&10&10%
Nos. 20, 40 and 60 ..... 66⅔&10&10%
P. S. & W 70%
Knapp & Cowles
No. 1 ..... 60&20@70%
No. 2 ..... 60&10&10@70&5%
No. 3 ..... 60&5@60&10%
Nos. 4 and 00, Acme and Ideal ... 50&5@50&10&5%
Stearns' ..... 25&10&5%
Gay & Parsons 35%
Champion ..... 25&10%
Clark's Pat. ..... 30@33⅓%
Ellrich's Socket and Ratchet .. 25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense .. ℔ doz., $6.00, 25&10%
Syracuse Screw-Driver Bits ..... 30&30&5%
Screw Driver Bits ..... ℔ doz., 50@75¢
Screw Driver Bits, Parr's .. ℔ gross, $6.25
Fray's Hol. Handle Sets ... No. 3, $12.00, 45%
Cincinnati ..... 25&10%
Brace Screw Drivers ..... 25&10%
Buck Bros.' Screw Driver Bits .... 27½&5%
Goodell's Automatic 50%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
C. T. Williamson Wire Novelty Co. 50%

Egg Beaters—See *Beaters, Egg*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF.

	46 gr.	150 gr.	F, FF.
Kegs, ℔ lb.	4½¢	5 ¢	2½¢
½ kegs, ℔ lb.	4¾¢	5¼¢	2¾¢
¼ kegs, ℔ lb.	5 ¢	5½¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6¼¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See *Ware, Hollow*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—
Door Lock .... Same dis. as Door Locks.
Brass Thread ..... 60@60&10%
Wood 25%

Expanded Metal—
List No. 5.
Lathing 10%
Fencing, Painted Sheets 20%
Netting, Painted Sheets 20%
Door Mats, Galvanized 25%
Window Guards, Paneled 15%
Tree Guards, Paneled 15%

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Mackrell's, ℔ doz., $1.00 ..... 20@20&10%
Van Sand's Screw Pat, $15 ℔ gr. .. 60&10%
Van Sand's Old Pat., $15 ℔ gr. .... 55&10%
Austin & Eddy No. 2008 ..... ℔ gr., $9.00
Security Gravity ..... ℔ gr., $9.00
Zimmerman's ..... 50&10%

Faucets—
Fenn's 40%
Fenn's Cork Stops 33⅓%
Star 60%
Frary's Pat. Petroleum 60%
B. & L. B. Co.
West's Lock, Open and Shut Key ... 50%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list .. 60%
Metallic Key, Leather Lined .... 60&10@60&10&10%
Cork Lined ..... 70&5@70&10%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots .... 50&10%
John Sommers'
Peerless Best Block Tin Key 40%
IXL, 1st quality, Cork Lined 50%
Diamond Lock 40%
Perfection, Fla. Red Cedar (in boxes) 40%
Boss Metallic Key 50%
Reliable Cork Lined 60%
O. K. Western Pattern Cork Lined .. 50%
No Brand, Red Cedar (in bbls.) .. 50&10%
Western Pattern Metal Key 40%
No Brand Metal Key 60%
Self Measuring
Enterprise, ℔ doz., $36.00 ..... 20%
Lane's ℔ doz., $36.00 .... 25&10%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—
Derby and Cincinnati ..... 45&5%
Brewster ..... 50&5%

Files—

Domestic—
Nicholson Files, Rasps, &c. 60&10&5@60&10&10%
Nicholson (X.F.) Files 25%
Nicholson's Royal Files (Seconds) .. 75% (extra prices on certain sizes.)
American ..... 66⅔&10@66⅔&10&5%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Arcade ..... 60&10&5@60&10&10%
Eagle ..... 60&10&10@70%
Other makers, best brands .. 60&10&5@70%
Fair brands ..... 70&10@70&10&10%
Second quality ..... 80@80&5%
Heller's Horse Rasps ..... 50&10@60%
McCaffrey's Horse Rasps ..... 50&10%
Chelsea Horse Rasps, Hand Cut ... 50&10%
Arcade Horse Rasps ..... 60&10@60&10&5%
Trojan Horse Rasps ..... 60&10&5%

Imported—
Butcher ..... Butcher's list, 20%
Stubs ..... Stubb's list 75&30%

Fixtures Grindstone—
Sargent's Patent ..... 70&10%
Reading Hardware Co. ..... 30&10%
P., S. & W. Co. ..... 50&10%
Moore's 55%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Hay, Manure, &c. Asso. List, 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—

Saw—
White Vermont ..... ℔ gro.. $9.00@$10.00
Red, Polished and Varnished .... ℔ doz., $1.50, 25%

Screen, Window and Door—
Porter's Pat. Window and Door Frame, 33⅓&10%
Warner's Screen Corner Irons .. 33⅓&10&10%
Stearns' Frames and Corners. 25@25&10%
Cortland ..... 40@40&5%
Phillips' Window Screen Frames .. 50@50&5%
Bonanza Window Screens .. 50&5@50&10%
Empire Fancy Screen Doors, ℔ doz .. $12

Freezers Ice Cream—
White Mountain ..... 60@60&5%
Granite State ..... 65@65&5%
Arctic ..... 70@70&5%
American 60%
Buffalo Champion ..... 65@65&5%
Shepard's Lightning ..... 65@65&5%
Gem 65%
Blizzard 70%
Double Action Crown 60%
Crown 60%
Star 60%
Peerless ..... 60&10%
Giant 60%
Zero 70%
Boss and Pet ..... 60&10&10&10%
Keystone, P., D. & Co., each, $1.50 .. 20%
Standard ..... 60@60&5%
Standard Double Action ..... 60@60&5%
Good Luck ..... 65@65&5%
Model ..... 60@60&5%
Confectioners' Machine 50%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fruit Pickers—
See *Pickers, Fruit.*

Fry Pans—See *Pans, Fry.*

Funnels—
Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro. 30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz. 25%

Furnaces, Soldering—
Burgess No. 3 Gem tin reservoir $7.00
Burgess No. 3 Gem, Copper reservoir. $8.50
Clayton & Lambert No. 1 Fire-Pot, complete $6.00

Fuse—Dis. 10@2% cash. ℔ lb 1000 ft
Common Hemp Fuse, for dry ground. $2.80
Common Cotton Fuse, for dry ground 3.00
Single Taped Fuse, for wet ground.. 4.75
Double Taped Fuse, for very wet gr.. 5.60
Triple Taped Fuse, for very wet gr.. 6.40
Small Gutta Percha Fuse, for water. 10 00
Large Gutta Percha Fuse, for water. 15.00

Gates Molasses—
Stebbin's Pattern ..... 80&10@80&10&5%
Stebbin's Genuine ..... 60&10&10%
Stebbin's Tinned Ends ..... 40&10%
Lincoln's Pattern ..... 70@70&10%
Weed's ..... 20&10%
Boss, ℔ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 ..... 60&10&10%

Gauges—
Marking, Mortise, &c. ..... 60&10%
Starrett's Surface, Center and Scratch, 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 20&10%
Barrett's Comb. Roller Gauge ..... ℔ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale ..... ℔ doz.. $5.00
Without Scale ..... ℔ doz., $4.00
Wire, Wheeler, Madden & Co. 10%
Wire, Morse's 25%
Wire, Brown & Sharpe's ..... 10@20%
Wire, P., S. & W. Co. ..... 10&10%

Gimlets—
Nail and Spike ..... 50&10&5%
Eureka Gimlets ..... 60&10%
Diamond Gimlets ..... ℔ gr $5.00
Double Cut, Shepardson's ..... 45@45&5%
Doub e Cut, Ives' ..... 60@60&5%
Double Cut, Douglass' ..... 40&10%

Glue—
Le Page's Liquid ..... 25@25&5%
Upton's Liquid 35%
Improved Process ..... 25@25&5%
Dodd's Liquid Glue ..... 25@25&5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Fraser's ..... Keg ℔ lb 4¢, Pail ℔ lb 5¢
Fraser's, in boxes ..... ℔ gr $9.50
Dixon's Everlasting, in bxs. ℔ doz 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting ... 10-lb pails, ea. 85¢
Lower grades, special brands. ℔ gr $5.50@$7.00
Axleine, tin boxes ..... ℔ gross $12.00
English Coach, wooden boxes ..... ℔ gross $8.50
English Coach, 5-lb tin pails. ℔ doz, $3.50
Tiger, wooden boxes ..... ℔ gross $7.00
Tiger, 5-lb tin pails ..... ℔ doz $2.85

Grindstones—
Family, regular list 60%
Family, Cleveland Stone Co. 20%

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
Sewing, Brass Fer. ℔ gr. $1.75
Pat. Sewing, Short. ℔ doz. ..... 45@50%
Pat. Sewing, Long ..... ℔ doz $1.20
Pat. Peg, Plain Top. ℔ doz. ..... 40@45%
Pat Per Leather Top. ℔ doz 45@50%

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Halters—
Covert's Rope, Jute.....60&10&10&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ½-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....85&5&2%
Covert's Saddlery Works Halters...33⅓&%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓&%
Covert's Saddlery Works Handy Web Halters.....33⅓&%

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.....
Humason & Beckley.....
Atha Tool Co.....
Verree.....
....50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles, new list.....25&10
Peck, Stow & Wilcox.....35@40%
Sargent's.....40@40&10%

Heavy Hammers and Sledges—
3 ℔ and under...℔ 40¢ } 75&10@75&10
3 to 5 ℔.....℔ 36¢ } &5%
Over 5 ℔.....℔ 30¢ }
Wilkinson's Smiths.....10½¢@11¢℔ ℔

Handcuffs and Leg Irons
—See *Police Goods.*

Handles—
Cross-Cut Saw Handles—
Atkins', new list.....40%
Champion.....15%
Ely's Perfection.....℔ doz., $3.00
Sensible.....40%

Iron, Wrought or Cast—
Door or Thumb.

Nos	0	1	2	3	4
Per doz.	$0.90	1.00	1.08	1.35	1.50

60&10&10%
Roggin's Latches.....℔ doz 30¢@35¢
Bronze Iron Drop Latches..℔ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Barn Door, ℔ doz $1.40.....10&10%
Chest and Lifting.....70@70&10%

Wood—
Saw and Plane.....40&10@50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Brad Awl.....℔ gr $2.00
Hickory Firmer Chisel, ass'd. ℔ gr 4.50
Hickory Firmer Chisel, large. ℔ gr 5.00
Apple Firmer Chisel, ass'd...℔ gr 5.00
Apple Firmer Chisel, large...℔ gr 6.00
Socket Firmer Chisel, ass'd. ℔ gr 3.00
Socket Framing Chisel, ass'd. ℔ gr 5.00
J. B. Smith & Co.'s Pat File.....50%
File, assorted.....℔ gr 2.75
Auger, assorted.....℔ gr 5.00
Auger, large.....℔ gr 7.00
.....50%
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....℔ set $1.25
Pat. Auger, Swan's.....℔ set $1.00
Hoe, Rake, Shovel, &c.....60@60&5%

Hangers—
Barn Door, old patterns.....70@70&5%
Barn Door, New England.....70@70&5%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Steel Track.....55%
Champion.....60&10%
Climax Anti-Friction.....55%
Zenith for Wood Track.....55%
Sterling.....50&10@60%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Kidder's.....50@50&10%
Boss.....60&10@60&10&5%
Best Anti-Friction.....60&10@60&10&5%
Duplex (Wood Track).....60&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Ideal.....50&10@50&10&5%
Terry's Solid.....50&10@60%
Terry's Shield.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Cronk's Patent, Steel Covered.....50&10%
Carrier Steel Anti-Friction.....50&10%
Richards'.....30@30&10%
Lane's New Standard.....50@50&5%
Lane's Standard.....50&5@50&10%
Lane's Parlor.....40%
Warner's Pat.....20&10&10%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Cincinnati Nos. 1, $2.25; 3, $2.50; 4, $2.50.
Paragon Nos. 5, 5½, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15.....40&10&50%
Chicago Anti-Friction.....30&10%
Star.....40&10@40&10&5%
Barry.....50%
Interstate.....50&10@60%
Pendulum, Payson's.....40@40&10%
Moody.....45%
Economy, $6.00.....50&10%
Perfection.....50&10@50&10&5%
Lundy, Steel Parlor.....40%
Matchless.....50&10%
Magic.....45&10%
Wild West.....45&10%
Moore's Elevator.....33⅓%
Moore's Baggage Car Door.....33⅓%
Moore's Railroad.....55%

Harness Snaps—See *Snaps.*

Hatchets—
American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's.....
Mann's.....
Peck's.....
Underhill's.....
} 40 & 10 @ 40 & 10 &5%
Fayette R. Plumb.....
C. Hammond & Son.....
Kelly's.....
Buffalo Hammer Co.....
Sargent's & Co.....
P. S. & W. Co.....
Schulte, Lohoff & Co.....
} 50 @ 50 &10%
Ten Eyck Edge Tool Co.....
Collins.....10%

Hay and Straw Knives
See *Knives.*

Hinges—
Blind Hinges—
Parker.....75&10%
Huffer.....50@50&10%
Clark's Nos. 1, 3, 5, 40 and 50 80&5@80&10%
Clark's Mortise Gravity.....50%
Sargent's Nos. 1, 3, 5 11, 12, 13 75&10@75&10&5%
Reading's Gravity.....75&10@75&10&5%
Clark's, Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—
Western.....℔ doz $4.20, 60@60&10%
N. E.....℔ doz $7.80, 60@60&10%
N. E. Reversible ℔ doz..$5.60, 60@60&10%
Clark's, Nos. 1 2, 3.... 60&10@60&10&5%
N. Y. State.....℔ doz $4.90, 60@60&10%
Automatic.....℔ doz $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—
Geer's Spring and Blank Butts....40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's Japanned.....35%
Bommer's All other Kinds.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent Checking.....15%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem and Star.....20%
Oxford.....20%
Royal.....66⅔%
Reliable.....60%
Champion.....60%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ℔ gro., $30.....50&5%
Samson.....60@60&7½%
Wiles', No. 1, ℔ gro., $16; No. 2.....$13
Devore, No. 1.....℔ gro , $13.00
Rex.....℔ gro., $13.00
Freeport.....℔ gro., $12.00
New Idea Nos. 1 and 10....℔ gross $13.00
New Idea Dbl. Acting.....45%
Ideal No. 3.....℔ gross $10.00
Stearns' Noiseless Floor Hinge, ℔ set, $5.00.....20&10@30%

Extra 5@10% often given.

Wrought Iron Hinges—
List February 14, 1891.
Strap and T.....50&10@50&10&10%
Corrugated Strap and T.....50&10&5%
Screw Hook and Strap..... { 6 to 12 in., ℔ ℔.. 4¢ / 14 to 20 in., ℔ ℔..3½¢ / 22 to 36 in., ℔ ℔.. 3¢
Screw Hook and Eye.... { ⅝ in., ℔ ℔ 7¾¢ / ⅝ in., ℔ ℔ 5¾¢ / ½ in., ℔ ℔ 4¾¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 252 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10¢
Plate Hinges { 8, 10 & 12 in., ℔ ℔.....5¢ / "Providence" { over 12 in. ℔ ℔.....4¢

Hoes—
Eye—
D. & H. Scovil.....20%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat } 60&5
Am. Axe and Tool Co., S. & O. Pat } @60&10%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—
Garden, Mortar, &c... .....70@70&5&2%
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%
Magic.....℔ doz $4.00

Hog Rings and Ringers—
See *Rings and Ringers—*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow-Ware—
See *Ware, Hollow.*

Holders—
Bag—
Sprengle's Pat.....℔ doz $18....60%

Bit—
Extension.
Barber's, ℔ doz $15.00.....40@40&10%
Ives, ℔ doz $20.00.....60&5@60&10%
Diagonal.....℔ doz $24.00, 40%
Angular.....℔ doz $24.00, 40&5%

File and Tool—
Bals Pat.....℔ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—
Motley's Adj. Sash, Medium Size.....℔ doz $1.20, 40%

Hooks—
Cast Iron—
Bird Cage, Sargent's List ... } 60&10&10%
Bird Cage, Reading ..... }
Clothes Line, Sargent's List .. }
Clothes Line, Moore's 70%
Clothes Line, Reading list 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading. 50&10@50&10&10%
Coat and Hat, Moore's.....70%

Wrought Iron—
Cotton.....℔ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg. Co....50%
Wrought Staples Hooks, &c. See Wrought Goods

Wire—
Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....80&15@80&20%
Atlas, Coat and Hat.....65%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Bright Wire Goods—See Wire.

Miscellaneous—
Grass, No. 2, $2.00; No. 3, $2.10; No. 4, $2.25
Nolin's Grass.....℔ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—
See *Shoes, Horse.*

Hose, Rubber—
Competition, Fair quality.....75@75&10%
Competition, Low Grade .....80@80&10
Standard.....70&10&70@10&5%
Extra.....60&10@60&10&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40&5@50%
N. Y. B. & P. Co., Dundee.....60@60&5%
Cotton Garden, ¾ in., coupled:
Fair Quality, ℔ ℔.....7¢
Good Quality, ℔ ℔.....8½¢

Huskers—
Blair's Adjustable.....℔ gr $3.00
Blair's Adjustable Clipper.....℔ gr 7.00
Hubbard's Solid Steel.....℔ gr 4.50

Indurated Fiber Ware—
See *Ware, Indurated Fiber.*

Irons.
Sad—
From 4 to 10, at factory....℔ 100 ℔, $2.30@$2.40
Self-Heating.....℔ doz $8.00
Self-Heating Tailors'.....℔ doz $18.00
Mrs. Potts' Sad Irons, per set:

No.	50	55	60	65
Small lots	.90	.85	1.05	.95

Crown Improved.....60&10%
Ideal Irons, new list...50&10@50&10&10%
Salamander Irons.....25%
B. B. Sad Irons, ℔ ℔.....3@3¼¢
Chinese Laundry (N.E.Butt Co.).8½¢, 15%
New England.....5¢, 20@20&5%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓&%
National Self-Heating.....30%

Soldering—
Soldering Coppers.....℔ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886, 35&2%
Tinker's Dread..℔ doz $1.75; ℔ gro. $18

Pinking—
Pinking Irons, ℔ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—
Daisy.....33⅓%
Victor.....33⅓%
Lockport.....40%

Kettles—
Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Stamped Brass Kettles.....℔ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—
Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.
Wilson's Butcher Knives, List Dec 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's Aa A1 Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....25@30%
Ames' Bread Knives, ℔ doz $1.50, 15@20%
Moran's Shoe and Bread.....20@20&10%
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—
Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—
Witherby.....
P. S. & W.....
Mix.....
New Haven.....
Merrill.....
} ...75@75&10&5%
Douglass.....75&75@5%
Watrous.....15&10@25¢
L & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—
Lightning, from jobbers....$6.50@$7.50
Wadsworth's.....40&7½@40&10%
Carter's Needle...℔ doz. $11.00@$11.50
Heath's.....℔ doz. $13.00@$13.50
Nolin's Hay.....℔ doz. $7.00@$8.00

Mincing—
Am. (2d quality), ℔ gr., 1 blade, $7
2 blades, $12; 3 blades, $18..... net
Lothrop's.....20&10%
Smith's, ℔ doz., Single, $2; Double $3 45@50%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable....℔ doz. $3.00, 33⅓&%

Knobs—
Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nicke..1....$2.00@$2.25
Drawer, Porcelain....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885..40%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....℔ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladders.
Davies Extension and Single.....29&5%

Ladies—
Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, P., S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—
Tubular—
Regular, with Guard.....℔ doz $3.50
O. K., with Guard.....℔ doz $3.75
Side Lift, with Guard.....℔ doz $4.00
Square Lift, with Guard.....℔ doz $4.25
Anti-Friction, with Guard....℔ doz $4.50
Brass Plated, Sq. Lift, Guard.℔ doz $5.50
Cop. Plated, Sq. Lift, Guard..℔ doz $5.50

Bull's Eye Police—
2¾-inch regular.....℔ doz $3.6
3-inch regular.....℔ doz $3.90
2¾-inch flash light.....℔ doz $4.00
3-inch flash light.....℔ doz $4.50

Lawn Mowers—
See *Mowers, Lawn.*

Leaders, Cattle—
Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—
See *Squeezers, Lemon.*

Lifters, Transom—
Wollensak's:
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Class 3 and 4, Brass.....50%
Skylight Lifters.....25%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....60@60&10%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—
Cotton and Linen Fish.....50%
Chalk.....60%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ℔ gro.....25%
Mason's Linen, No. 3½, $1.50; No 4, $2.00; No 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes..Nos. 18 19 20
100 ft..... $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..℔ doz $7.50..20%
Ossawan Mills:
Twisted Chalk.....60%
Braided Chalk.....50%
Solid Braided Ventilator and Masons' Lines.....25%
Cotton Clothes Lines.....℔ ℔ 16¢

Links, Open—
Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—
Cabinet—
Eagle, Gaylord Parker and Corbin... } List, March '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Champion Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&10%
Champion Cab. and Combin.....33⅓&%
Yale.....net prices
Romer's.....25%

Door, Locks, Latches, &c.
R. & E. Mfg. Co., list Mar. 20, 1889..... } 60&10@70% Much lower net prices often made
Mallory, Wheeler & Co. list July, '88..... }
Sargent & Co., List Aug. 1, '88 }

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Britain, Graham & Mathes, list Jan. 1890 ..... 60&10&10%
Plate ..... 33⅓&2%
Barnes Mfg. Co. ..... 40@40&10%
Yale ..... net prices
Deitz Flat Key 30%
Romer's Night Latches 15%
Brooklyn Latches ..... 50&10%
Warner's Burglar Proof, ℔ doz. $8.00, 50%

Elevator—

Moore's 33⅓%

Padlocks—

List June 10, 1891 ..... 50&2%
Norwich Lock Mfg. Co., old list ..... 50&2%
Yale Lock Mfg. Co.'s ..... net prices
Eagle 40%
Eureka, Eagle Lock Co. ..... 40&2%
Romer's Nos. 0 to 91 ..... 30%
Romer's Scandinavian, &c., Nos. 100 to 505 ..... 15%
A. E. Deitz 40%
Champion Padlocks 40%
Hotchkiss 30%
Star 60%
Horseshoe ..... ℔ doz $9, 50@50&10%
Barnes Mfg. Co ..... 40@40&10%
Nock's 30%
Scandinavian ..... 90&40%
E. T. Fraim's Keystone Scandinavian,
1010 line ..... 9 &40%
120 line ..... 90&25%
109 line 65%
510 line ..... 70&10%
225, 610 and 209 lines 70%
All other numbers ..... 50&5%
Ames Sword Co. up to No. 150 ..... 40%
Ames Sword Co. above No. 150 ..... 50%
Slaymaker, Barry & Co.
No. 1010 line ..... 90&5%
No. 41 line 50%
No. 61 line 60%
No. 21 line 80%

Sash, &c.—

Clark's No. 1, $10; No. 2, $8 ℔ gr. 33⅓%
Ferguson's 33⅓%
Victor ..... 60&10&2%
Walker's 10%
Attwell Mfg. Co. ..... 25&33⅓%
Reading ..... 66⅔&10@66⅔&10&10%
Hammond's Window Springs 40%
Common Sense, Jap'd, Cop'd and Br'zed ..... ℔ gr $4.00
Common Sense, Nickel Plated. ℔ gr $10.00
Universal 30%
Kempshall's Gravity 60%
Kempshall's Model ..... 60@60&10%
Corbin's Daisy, list Feb. 15, 1886 ..... 70%
Payson's Perfect ..... 60&10&10%
Hugunin's Sash Balances ..... 25&5&2%
Hugunin's New Sash Locks ..... 25&5&2%
Ives' Patent ..... 60&10&5@60&10&10%
Fish (Liesche's pat.), No. 100, ℔ gr., $8; No. 105, ℔ gr., $10 ..... 50%
Davis Bronze. Barnes Mfg. Co 60%
Champion Safety list January, 1893. 70&5%
Security 70%
Giant, list Jan., 1892 ..... 70&5%
Wolcott's ..... 60&10&5%
Monarch 50%

Lumber Tools—

See *Tools, Lumber.*

Lustre—

Four-ounce bottles ..... ℔ doz, $1.75; ℔ gross $17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.
Douglas	$5.50	$6.75	50%
Snell's, Rice's Pat.	5.50	6.75	40&10&10%
Jennings'	5.50	6.75	50@50&5%
Other Machines	2.25	2 50	
Phillip's Patent with Augur	7.00	7.50	
Millers Falls		7.50	25%
Boss, Carpenters'	3.60		
Boss, Ship Bldrs'.	3.85		

Fluting—

Knox, 4½-inch Rolls ..... $3.25 each } 35%
Knox, 6-inch Rolls ..... $3.60 each }
Eagle, 3½-inch Rolls, $2.15 ..... 35%
Eagle, 5½-inch Rolls, $2.85 ..... 35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each 35%
Crown Jewel, 6 in. ..... $3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each 35%
Domestic Fluter ..... each, $1.50
Geneva Hand Fluter, White Metal, ℔ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25 ..... 30%
Shepard Hand Fluter, No. 85, per doz $15.50 ..... 40%
Shepard Hand Fluter, No. 110, ℔ doz $11.60 ..... 40%
Shepard Hand Fluter No. 95, ℔ doz $3.00 ..... 40%
Combined Fluter and Sad Iron. ℔ doz $15.00 ..... 30%

Hoisting—

Moore's Hand Hoist, with Lock Brake. 20%
Moore's Anti-Friction Differential Pulley Block 20%
Moore's Rope Differential Pulley Block 60%
Energy Mfg. Co.'s 25%
See also *Blocks.*

Washing—

Anthony Wayne, ℔ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American ..... ℔ doz $36.00
Western Star ℔ doz, No. 2, $36; No. 3 $39
Weisell ..... ℔ doz $54.00
Fair and Square ..... ℔ doz $42.00

Mallets—

Hickory ..... 20&10@20&10&10%
Lignumvitæ ..... 20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks—Regular list. 60&10@60&10&5%

Measures

Standard Fibreware, No. 1, peck ℔ dozen, $3.50; ½-peck, $3.00

Meat Cutters—

See *Cutters, Meat.*

Menders, Harness—

Per doz $2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—

Box and Side, List, Jan. 1, 1888. .60@60&5%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893 ..... 20%
The Swift, Lane Bros. 30%
Waddel's New Box Mills, Ideal Brand, New List 60%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Best Machines: 10-in., $4; 12-in., $4.50; 14-in., $5; 16-in., $5.50; 18-in., $6.
Low-Grade Machines:
10-in. $3; 12-in., $3.25 14-in., $3.50 each

Muzzles—

Safety ..... ℔ doz, $3.00, 25%

Nails.—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92 ..... 85&5%
Tack Mfrs.' list ..... 70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

	Nos. 6	7	8	9	10	
Putnam	23¢	21¢	2C¢	19¢	18¢.	.15%
American	9½	9½	9½	9½	9½	net
Ausable	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	.30&5%
Essex	28¢	2C¢	25¢	24¢	23¢	40&10@50%
Lyra	9¼	9¼	9¼	9¼	9¼	net
Snowden	9½	9½	9½	9½	9½	net
Standard	23¢	21¢	20¢	19¢	18¢	.35%
Vulcan	23¢	21¢	20¢	19¢	18¢.	.25%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	40%
A. C.	25¢	23¢	22¢	21¢	21¢	40&10%
Maud S.	25¢	23¢	22¢	21¢	21¢	50&10&5%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&2%
Champion	25¢	23¢	22¢	21¢	20¢	10&10&10%
Capewell.	19¢	18¢	17¢	16¢	16¢.	.10&5%
Anchor	23¢	21¢	20¢	19¢	18¢	.35%
Western	23¢	21¢	20¢	19¢	18¢	.50%
Empire Bronzed						13@14 ℔ ℔

Picture—

Brass Head, Sargent's list ..... 60@60&10%
Brass Head, Combination list ..... 50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent 40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.80¢	6.50¢ off list
Cold Punched	5.00¢	5.10¢ off list

In packages of 100 ℔, add 1-10¢ ℔ ℔, net; in packages less than 100 ℔, add ½¢ ℔ ℔, net.

Oakum—

Best or Government ..... ℔ ℔ 6¾@7¼¢
U. S. Navy ..... ℔ ℔ 5¾@6¢
Navy ..... ℔ ℔ 5¢@5½¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Zinc and Tin ..... 65&10@70&5%
Brass and Copper ..... 50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ℔ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list 45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass 50%
Olmstead's Tin and Zinc 60%
Olmstead's Brass and Copper 50%
Broughton's Zinc 60%
Broughton's Brass 50%
Steel, Draper & Williams 50%
Wilmot & Hobbs Mfg. Co., Steel Anti-Rust 60%

Openers, Can—

Messenger's Comet ..... ℔ doz $3.00, 25%
American ..... ℔ gross $2.75@$3.00
Duplex ..... ℔ doz 25¢, 15@20%
Lyman's ..... ℔ doz $3.75, 20%
No. 4, French ..... ℔ doz $2.25, 55@60%
No. 5, Iron Handle ..... ℔ gr $6.00, 45@50%
Eureka ..... ℔ doz $2.50, 10%
Sardine Scissors ..... ℔ doz $2.75@3.00
Star ..... ℔ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 66¾@70%
Excelsior, No. 1 $2.50; No. 2, $1.50 ..... 40%
World's Best ℔ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00 ..... 50&10%
Universal, ℔ doz $3.00 ..... 55&5%
Domestic, ℔ doz $2.00 ..... 45%
Champion, ℔ doz $2.00 ..... 50%
Moore's 70%

Packing, Steam—

Rubber—

Standard, fair quality ..... 70@70&10%
Inferior quality ..... 75@80%
Extra ..... 60@60&5%
N. Y. B. & P. Co., Standard 50%
N. Y. B. & P. Co., Empire 60%
N. Y. B. & P. Co., Salamander 25%
Jenkins' Standard, ℔ ℔ 80¢ ..... 26@25&5%

Miscellaneous—

American Packing ..... 10@11¢ ℔ ℔
Russia Packing ..... 14¢ ℔ ℔
Italian Packing ..... 13@14¢ ℔ ℔
Cotton Packing ..... 15¢@17¢ ℔ ℔
Jute ..... 7@8¢ ℔ ℔

Pails—

Creamery—

S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 ℔ doz. 5%

Galvanized—

	Quarts	10	12	14
Hill's Light Weight, ℔ doz.	$2.75	3.00	3.25	
Hill's Heavy Weight, ℔ dz.	3.00	3.25	3.75	
Sidney Shepard & Co.	2.50	2.75	3.00	
Central Stamping Co.	2.50	2.75	3.00	
Iron Clad	2.50	2.75	3.00	
Fire Buckets	2.75	3.25	3.50	

Buckets—See Well Buckets.

Indurated Fiber Ware

Star Pails, 12 qt. ..... ℔ doz $4.20
Milk, 14 qt. ..... ℔ doz $5.40
Stable, 14 qu. ..... ℔ doz $6.00
Fire Pails, deep ..... ℔ doz $4.80
Fire Pails, round bottom ..... ℔ doz $5.40
} 25%

Standard Fiber Ware—

	Plain.	Deer'd
Water Pails, 12 qt., ℔ doz.	$3.15	$3.75
Dairy Pails, 14 qt., ℔ doz.	3.75	4.25
Fire Pails, No. 1, 12 qt., ℔ doz	3.75	
Fire Pails, No. 2, 14 qt., ℔ doz	4.25	
Sugar Pails	5.50	6.00
Horse Pails	4.50	
Buggy Pails	3.50	
Slop Jars (bal. trap)	7.50	8.50
Chamber Pails, 14 qt.	6.00	7.00

Pans—

Dripping—

Small sizes ..... ℔ ℔ 5½¢
Large sizes ..... ℔ ℔ 5¢
Silver & Co. (Covered) 40%

Fry—

Standard List:

No.	0	1	2	3	4
℔ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
℔ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods ..... 75@75&10%
Acme Fry Pans 66⅔%

Dust—

Steel Edge, No. 1 ..... ℔ doz $1.75

Roasting and Baking—

Columbian, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each ..... 60&10%

Paper and Cloth—

Sand and Emery—

List April 19, 1886 ..... 50&10@50&10&10%
Sibley's Emery and Crocus Cloth 30%

Parers—

Apple—

Advance ..... ℔ doz $4.75
Baldwin ..... ℔ doz 5.25
Bonanza ..... each 5.00
Daisy ..... ℔ doz 4.00
Dandy ..... each 7.50
Eclipse ..... ℔ doz 4.00
Eureka, 1888 ..... each 16.00
Family Bay State ..... ℔ doz 12.00
Favorite ..... ℔ doz 5.00
Gold Medal ..... ℔ doz 4.00
Ideal ..... ℔ doz 4.00
Improved Bay State ..... ℔ doz 27.00@30.00
Little Star ..... ℔ doz 4.50
Monarch ..... ℔ doz 13.50
New Lightning ..... ℔ doz 5.50
Oriole ..... ℔ doz 4.00
Penn ..... ℔ doz 3.00
Perfection ..... ℔ doz 4.00
Pomona ..... ℔ doz 4.00
Rocking Table ..... ℔ doz 6.00
Turn Table ..... ℔ doz 4.50
Victor ..... ℔ doz 13.50
Waverly ..... ℔ doz 4.00
White Mountain ..... ℔ doz 4.00
Reading 72 ..... ℔ doz 4.25
Reading 78 ..... ℔ doz 7.00

Potato—

White Mountain ..... ℔ doz $4.50
Antrim Combination ..... ℔ doz $5.50
Hoosier ..... ℔ doz $13.50
Saratoga ..... ℔ doz $5.50

Pencils, Soapstone—

See *Crayons.*

Pickers, Fruit—

Prize Fruit Pickers 50%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00 ..... 60&10&5@60&10&10&5%

Picture Nails—

See *Nails, Picture.*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s ..... 60&10%
Sargent & Co.'s, $17 and $18 ..... 60&10%
Peck, Stow & W. Co. ..... 50&10@50&10&5%

Escutcheon—

Iron, list Nov. 11, 1885. .50&10@50&10&5%
Brass ..... 60@60&5%

Pipe, Wrought Iron—

List April 13, 1893.

1¼ and under, Plain ..... 57½&10%
1¼ and under, Galv. ..... 50&10%
1½ and over, Plain ..... 67½&10%
1½ and over, Galv. ..... 57½&10%
Boiler Tubes, list Oct. 24, 1892 ..... 65&10%
Casing, list Nov. 16, 1892 ..... 52½&10%
Inserted Joints Casing, list Nov. 16, 1892 ..... 47½&5%
Steel Boiler Tubes ..... 27½&5%
Cold Drawn Seamless Steel Tubing 50%

Planes and Plane Irons—

Wood Planes—

Molding ..... 40&10%
Bench, First quality ..... 45&10%
Bench, Second quality ..... 50&10%
Bailey's (Stanley R. & L. Co.) ..... 50&10%

Iron Planes

Bailey's (Stanley R. & L. Co.) ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10%
Steers' Iron Planes ..... 50@50&5%
Meriden Mal. Iron Co.'s ..... 50@50&5%
Davis' Iron Planes ..... 50@50&5%
Birmingham Plane Co ..... 60@60&5%
Gage Tool Co.'s Self-Setting ..... 20&10&10%
Chaplin's Iron Planes ..... 50@50&5%
Sargent's ..... 60@60&10%
Standard Tool Co ..... 50@50&5%

Plane Irons—

Butcher's ..... $5.00@$5.25 to
Buck Bros. $6

Auburn Thistle ..... } .30&10@30&10&10%
Ohio ..... }
Sandusky ..... }
L. & I. J. White 25%
Stanley R. & L. Co. ..... 50&10%

Plates—

Felloe ..... ℔ ℔ 6¢@6¼¢

Pliers and Nippers—

Button's Patent 60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ℔ doz 40%
Humason & Beckley Mfg. Co. 50@50&10%
Lindsay's Giant 33⅓%
Gas Pliers 60%
Gas Pliers, Custar's Nickel Plated. 60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel 25%
P., S. & W. Cast Steel ..... 50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 6% 10%
Carew's Pat. Wire Cutters 20%
Morrill's Parallel, ℔ doz; $12.00 ..... 30&5%
Cronk's 5 in., $15.00; 10 in. $20
Cronk's Button Pattern ..... 50&10@60%
Cronk's Carrier Pliers ..... 60@60&5%

Plumbs and Levels—

Regular List ..... 75&10@75&10&10%
Stanley's Duplex ..... 20&10%
Stanley's Handy ..... 20&10%
Disston's 50%
Cook's ..... 40&10%
Pocket Levels ..... 70&10@70&10&10%
Davis Iron Levels 30%
Davis Inclinometers ..... 10&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ℔ doz. No. 1, $6.00; No. 2, $9.00 ..... 33⅓%
Silver & Co., 6-Ring, ℔ doz., $4.00; 8-Ring $2.00

Pokes, Animal—

Bishop's I. X. L. ..... ℔ doz $6.00
Bishop's Monarch ..... ℔ doz $4.50
Bishop's Pioneer ..... ℔ doz $4.00
Bishop's American ..... ℔ doz $3.00
Eagle, Double Stale ..... ℔ doz $5.75
Eagle, Single Stale ..... ℔ doz $3.75
Buckeye, Single Stale ..... ℔ doz $2.75
Bolding ..... ℔ doz $6.00
Metallic Horse Poke ..... ℔ doz $6.00

Police Goods—

R. I. Tool Co., Handcuffs, $15.00 ℔ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ℔ doz 10%
Tower's 25%
Daley's Improved Handcuffs; 2 Hands, Polished, ℔ doz, $48.00; Nickeled, $57.00: 3 hands, Polished, ℔ doz, $72.00; Nickeled, $84.00 ..... 25%
J. P. Lovell's Police Goods 25%

Polish—

Metal—

Prestoline 30%
Prestoline Paste 33⅓%
Gaston's Silver Compound 33⅓%

Stove—

Joseph Dixon's ..... ℔ gro, $6.00, 10%
Gem ..... ℔ gro, $4.50, 10%
Gold Medal ..... ℔ gro. $6.00, 25%
Lustro ..... ℔ gro, $4.75
Ruby ..... ℔ gro, $3.75
Rising Sun, 5 gro lots ..... ℔ gro, $5.50
Dixon's Plumbago ..... ℔ ℔ 8¢
Boynton's Noon Day ..... ℔ gro, $13.00
Parlor Pride Stove Enamel, ℔ gro,
Yates' Liquid, 2 3 5 10 gal
℔ gal. $0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ℔ ℔ 12½¢
Jet Black ..... ℔ gro $3.50
Japanese ..... ℔ gro $3.50
Fireside ..... ℔ gro $2.50
Diamond O. K. Enamel ..... ℔ gro $19.00
Bonnell's Liquid Stove Polish, ℔ gro $9.00
Bonnell's Paste Stove Polish, ℔ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans ..... 12½¢
Black Jack Water Paste, 5 and 10 ℔ cans ..... 12½¢
Nickel Plate Paste ..... ℔ gro $6.00
Crown Paste ..... ℔ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ℔ gro 12¢
Black Flag ..... ℔ gro $7.20
Black Flag, 5 and 10 ℔ pails ..... ℔ gro 12¢
Black Flag, liquid, in bottles, ℔ gro $8.00
Diamond Rock Nickel Cleaner ℔ gro $10 20
Raven Liquid, 6 oz. bottles ..... ℔ gro $8.00
Raven Liquid, 8 oz. bottles ..... ℔ gro $9.00
Raven Water Polish, large boxes ..... ℔ gro $7.20
Raven Paste in 5 lb. pails (cases of 6 pails), ℔ ℔ 10¢

Poppers, Corn—

Round or Square,
1 qt. ..... ℔ doz $1.00; ℔ gr $8.00
1½ qt. ..... ℔ doz $1.00; ℔ gr $9 00
2 qt. ..... ℔ doz $1.50; ℔ gr $14.00

Post Hole and Tree Augers and Diggers—

See *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Tinned ..... 40&10@40&10&5%
Enameled ..... 40&10@40&10&5%
Family, Howe's "Eureka" 40%
Family, L. F. C.'s "Handy" 50%

Powder—

In Canisters—

Fine Sporting, 1 ℔ each ..... } For revised prices see Trade Report.
Duck, 1 ℔ each ..... }
Rifle, 1 ℔ each ..... }
Rifle, ½ ℔ each ..... }

In Kegs—

Rifle, 25-℔ kegs ..... }
Rifle, 12½-℔ kegs ..... }
Rifle, 6¼-℔ kegs ..... }
Duck, 25-℔ kegs ..... }
Duck, 12½-℔ kegs ..... }
Duck, 6¼ ℔ kegs ..... }

Presses—

Fruit and Jelly—

Enterprise Mfg. Co. 25%
Henis ..... ℔ doz $3.50
Shepard's Queen City 40%
Silver & Co. ..... ℔ doz $2.75

Pruning Hooks and Shears—See *Shears.*

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Pullers Nail—
Scranton.. ....₩ doz., $18.00, 33⅓%
Giant, No. 1.....₩ doz., $18.00, 10%
Giant, No. 2.....₩ doz., $16.00, 10%
Pelican.....₩ doz., $9.00, 25%
Eclipse.....₩ doz., $24.00, 40%
Economy .....₩ doz., $6.00

Pulleys—
Hot House, Awning, &c.....66⅔@70%
Japanned Screw.....60&10&10%
Brass Screw.....70%
Japanned Side.....60&10&10%
Moore's Side, Anti Friction.....50%
Moore's Ceiling or End, Anti-Friction 40%
Moore's Dumb Waiter, Anti-Friction 50%
Moore's Electric Light ... .33⅓%
Japanned Clothes Line.....60&10%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5.70.....50%
Hay Fork, "F" Common and Patent Bushed 20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating....60%
Hay Fork, Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00.....40%
Shade Rack.....45%
Tackle Blocks—See Blocks.
Shepard's Niagara, No. 25..₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense.....60%
Empire.....60%
Ideal, Nos. 2, 4, 10 & 15 } 30% less 1¢ ₩
Acme } .doz net.
Star. }
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. ..₩ doz. 22¢ net.

Pumps—
Cistern, Best Makers..... .60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddler's or Drive, good..₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co.'s Springfield Socket..65%
Spring, good quality..₩ doz., $2.50@$2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Check.....55%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44.....55%
Tinners' Hollow Punches, P., S. & W. Co .....20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches.....20&2%
Niagara Solid Punches.....55%

Rail—
Sliding Door, Wr't Brass....₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron..₩ ft., 7¢
Sliding Door, Iron, Painted..₩ ft., 4¢, 40%
Barn Door, Light..In. ½ ⅝ ¾
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet.....$3.15 2.70 3.25 Net
Terry's Steel Rail.....₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot.....50&2%
Carrier, double braced, Steel Rail, ₩ foot .....3½@4¢
Lundy Parlor Door, Planed Edge, ₩ ft.7¢
Moore's Steel Rail.....25&10%
Moody Steel Rail ₩ ft., 5¢.....45%

Rakes—
Cast Steel, Association g'ds..70@70&5&2%
Cast Steel, outside g'ds,.....70@70&5&2%
Malleable .....70@70&5%
Gibbs' Lawn Rake.....₩ doz., $4.90
Gibbs' Canton Lawn Rake...₩ doz., $3.75
Gibbs' Acme Lawn Rake....₩ doz., $4.75
Gibbs' Favorite Lawn Rake.₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1.....₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake.....₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless.....65%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—
J. R. Torrey Razor Co.....Net prices
Wostenholm and Butcher, $10 to $... 10%
Jordan's AAAI, new list.....Net prices
Jordan's Old Faithful, new list.Net prices
Galvanic.....₩ doz., $15.00
Electric Cutlery Co.....Net prices
Campbell Cutlery Co.....50%

Razor Strops—
See *Strops, Razor.*

Registers —
Moore's Japanned.....75%
Moore's Electroplated.....75%
Moore's Bronze Finishes.....70%
Moore's Solid Bronze.....65%
Moore's Stove Pipe.....33⅓

Rings and Ringers—
Bull Rings—
Union Nut Co.....55%
Sargent's .....75&10%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers.....₩ doz $2.00
Top of the Hill Rings.....₩ doz $1.25
Hill's Improved Ringers.....₩ doz $1.25
Hill's Old Style Ringers.....₩ doz $1.12½
Hill's Tongs .....₩ doz $3.00
Hill's Rings.....₩ doz bxs $1.00
Perfect Rings.....₩ doz bxs $1.50
Perfect Ringers.....₩ doz $2.15@$2.25
Blair's Hog Ringers.....₩ doz $2.00
Blair's Hog Rings.....₩ doz 90¢@$1.00
Champion Ringers.....₩ doz $2.00
Champion Rings, Double.....₩ doz $2.25
Brown's Ringers.....₩ doz $2.00
Brown's Rings.....₩ doz $1.15@$1.25
Electric Hog Rings.....₩ doz boxes $1.50
Electric Hog Ringers.....₩ doz $2.00
Major Rings.....₩ doz $1.25
Major Ringers.....₩ doz $2.00

Rivets and Burrs—
Norway Iron, list Nov. 17, '87....60&10%
Second quality.....70%
Copper .. ..60@60&10%
Coppere Iron, Betina Brand.....50&5%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—
Stair, Brass.....25@30%
Stair, Black Walnut.....₩ doz 40¢

Rollers—
Barn Door, Sargent's list. ....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.... .....70%
Moore's Barn Door Stay.....50%
Thompson Mfg. Co.'s Lawn Rollers ..30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ¼¢@½¢ on large lots; terms, 1½% for cash.
Manila, 7-16 in. diam. and larger..... ₩ ℔ 8 @ 8½¢
Manila.....½ in. ₩ ℔ 8½@ 8⅝¢
Manila....¼ and 5-16 in. ₩ ℔ 9 @ 9¼¢
Manila, Tarred Rope.... ₩ ℔ 7½@ 7⅝¢
Manila, Hay Rope, Med'm ₩ ℔ 8 @ 8¼¢
Sisal, 7-16 in. and larger ₩ ℔ 5¾@ 6 ¢
Sisal..... ⅜ in. ₩ ℔ 7¼@ 7½¢
Sisal.....¼ and 5-16 in. ₩ ℔ 6¾@ 7 ¢
Sisal, Hay Rope..... ₩ ℔ 5¾@ 6 ¢
Sisal, Tarred Rope..... ₩ ℔ 5¼@ 5½¢
Sisal, Medium Lath Yarn. ₩ ℔ 5½@ 5¾¢
New Zealand.....7-16 in. and larger..... ₩ ℔ 5½@ 5¾¢
New Zealand.....½ inch. ₩ ℔ 5¾@ 6 ¢
New Zealand, ¼ & 5-16 in. ₩ ℔ 6¼@ 6½¢
New Zealand, Hay Rope. ₩ ℔ 5½@ 5¾¢
New Zealand, Tar'd Rope ₩ ℔ 5 @ 5¼¢
Cotton Rope.....₩ ℔ 13½@16¢
Jute Rope..... ₩ ℔ 6¼@7¢

Wire—
List February, 1892. All kinds.....45%

Rules—
Boxwood.. .....80&10&10@80&10&10&10%
Ivory.....50&10%
Starrett's Steel Rules and Straight Edges.....25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—
See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—*See Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—
Note.—Extra 5@10% often given.
Disston's Circular.....45@45&5%
Disston's Cross Cut, list Jan. 1,'93.40&10%
Disston's Hand.....25%
Woodrough & McParlin.
Hand, Panel and Rip.....25&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....30&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Atkins' Circular..... .....50&10%
Atkins' Cross Cuts, new list. 40%
Atkins' Mulay, Mill and Drag.....50&10%
Atkins' One-Man Saw.....40%
Atkins' Wood Saws.....40%
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip.....25@25&5%
Peace Cross Cuts, list Jan. 1,'93...45&10%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts, list Jan. 1, '93.45&10%
Richardson's Hand, &c ..... .25@25&5%
C E. Jennings & Co.'s 25%

Hack Saws—
Griffin's, complete.....40&10@50
Griffin's Hack Saw Blades.....40&10@50
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—
Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab Makers'$15,25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—
Hatch, Counter, No. 171, good quality, ₩ doz $18.00@$19.00
Hatch, Tea, No. 161....₩ doz $6.50@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales.....50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10
Riehle Bros.' Platform.....40%

Scale Beams—
See *Beams, Scale.*

Scissors, Fluting.....45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%
Box, 1 Handle.....₩ doz $2.00
Box, 2 Handle.....₩ doz $3.00@$4.00
Defiance Box and Ship..... .....20&10%
Foot.....50&10@60%
Ship, Common..... .....₩ doz $5.50
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—
See *Drivers, Screw*

Screws—
Bench and Hand—
Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech..... .....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....35%

Coach, Lag and Hand-Rail—
Lag, Blunt Point, list Jan. 1, 1890..... 80&10@80&25%
Coach and Lag, Gimlet Point, list Jan. 1, 1890..... ....80&10@80&20%
Hand Rail, Sargent's..... .....70&10%
Hand Rail, H. & B. Mfg. Co....70&10@75%
Hand Rail, Am. Screw Co.....75%

Jack Screws—
Jack Screws, Millers Falls list.50@50&10%
Jack Screws, P., S. & W.....35%
Jack Screws, Sargent.....70%
Jack Screws. Stearns'.....40@40&10%

Cork—
Humason & Beckley Mfg. Co..40&10@50%
Williamson's..... .....33⅓@33⅓&5%
Williamson's Forged Worm, Apple-wood Handle, ₩ doz., $5.00; Rose-wood, $5.50 .....40%
Detroit Cork Screw Co.....33⅓%

Machine—
Flat Head Iron.....65%
Round Head Iron.....60%

Wood—
List January 1, 1891.
Flat Head Iron.....70% } Extra 10& 10% often given.
Round Head Iron.....65%
Flat Head Brass.....70%
Round Head Brass.....65%
Flat Head Bronze.....70%
Round Head, Bronze: ...65%
Rogers' Drive Screws.....82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—
Grain.....40&5@40&10%
Grass.....40&10&50%

Scythe Snaths—
See *Snaths, Scythe.*

Sets—
Awl and Tool—
Aiken's Sets, Awls and Tools, No. 20, ₩ doz$10.00..... .....60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9..... .....45%
Millers Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18..... .....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets. No. 42, $10.50; No. 43, $12.50...70&10&5%

Nail—
Square.....₩ gr. $4.00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr. $12, 20%

Rivet—
Regular list..... .....70%

Saw—
Stillman's Genuine....₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $6.50.....65@55&10%
Common Lever.....₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00..... .....40&20%
No. 11, $16.00..... .....40&20%
Nos. 3 and 4, Cross Cut, $23.00..40&20%
No. 5, Mill, $31.00..... .....40&20%
No. 10, $15.50..... .....40&20%
Leach's..No. 0, $8.00; No. 1, $15...15@20%
Nash's..... .....20&10@40%
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat.45%
Bemis & Call Spring Hammer..... 30&5%
Bemis & Call Co.'s Plate..... .....20%
Bemis & Call Co.'s Cross Cut..... .....30&5%
Aiken's Genuine.....$13.00, 60@60&10%
Aiken's Imitation.....₩ doz $3.00@$3.25
Hart's Pat. Lever..... .....20%
Disston's Star..... .....25%
Leopold..... .....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00..... .....40&10@50%
Avery's Saw Set and Punch..... .....50%
Kohler's Royal.....₩ doz $7.00
Kohler's Giant Royal.....₩ doz $12.00
Crescent.....₩ doz $3.00
Lloyd's Acme.....₩ doz $15, 40&10%
Taintor Positive.....₩ doz $18, 50%

Sharpeners, Knife—
Larkins'.
Applewood Handles...₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%

Shaves, Spoke—
Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.)..... .....40&10%
Stearns'..... .....30&10%
Cincinnati..... .....25&10%
Goodell's ₩ doz. $9.00..... .....25%

Shears—
American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers..₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality..... 80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Hatch Cutlery Co., Solid Steel Forged.60%
Davenport Cutlery Co..... .60@60&10%
Clauss brand, Japanned.....70%
Clauss brand, Nickeled, same list....60%
Galvanic 8½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co.....Net
Campbell Cutlery Co., Jap'd.....75%
Nickel Plated.....65%

Tinners' Snips—
Wrt. Handles, Steel Blades. ..20@20&10%
Niagara Snips and Shears. ....20&10%
Cast Handles, Laid with Steel 40%

Pruning Shears and Hooks—
Disston's Combined Pruning Hook and Saw..... ....₩ doz. $18.00, 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 20&10%
E.S.Lee & Co.'s Pruning Tools.50&10@70%
Pruning Shears, Henry's Pat. ₩ doz. $3.50@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₩ doz $12.00
Dunlap's Saw and Chisel, ₩ doz $8.50,30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co..... .....60%
Levin Pruner No. 1, $15.00 ₩ doz. 40&3%
Levin Pruner No. 2, $21.00 ₩ doz...40&3%

Tinners', &c.—
Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co..... .....33⅓%

Sheaves—
Sliding Door—
M. W. Co., list July, 1888....50&10@60&5%
R. & E., list Dec. 18, 1885..... 55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's..... .....75%
Russell's Anti-Friction, list Dec. 18, 1885..... 60&2%
Moore's Anti-Friction..... 50%

Sliding Shutter—
R. & E., list Dec. 18, 1885.....60&10&2%
Sargent's list..... 70%
Reading list..... 60&10&10%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list).....20&10&2%
Prize..... 40&2%
Star, Club, Rival and Climax Brands... 33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge..33⅓&10&2%
Selbold's Comb. Shot Shells..... 15&2%
Brass Shot Shells, 1st quality.... 60&2%
Brass Shot Shells, Club, Rival, Climax 65&2%

Shells, Loaded—
Standard List, July 19, 1890..... 40&10&10@40&10&10&5% 7% cash, 10 days.

Ship Tools—
L. & I. J. White..... 20&5

Shoes, Horse, Mule, &c.
Horse—
Burden's, Perkins', Phœnix, Standard, Diamond State, Bryden's Boss and Crescent, at factory.....$4.00
Bryden's Frog Pressure, at factory .$5.00

Mule—
Add $1 ₩ keg to above prices.

Ox Wrought—
Ton lots..... ₩ ℔ 9¢
1000 ℔ lots..... ₩ ℔ 9½¢
500 ℔ lots..... ₩ ℔ 10¢

Shot—
	Small lots.	
Drop, up to B, 25-℔ bag	$1.45	In ton lots a discount of 5¢ ₩ bag (25 ℔) is made, and 2½% for cash.
Drop, up to B, 5-℔ bag	.35	
Drop, B and larger, 25-℔ bag	1.70	
Drop, B and larger, 5-℔ bag	.40	
Buck and Called, 25-℔ bag	1.70	
Buck and Chilled, 5-℔ bag	.40	
Dust Shot, 25-℔ bag	2.00	
Dust Shot 5-℔ bag	.45	

Shovels and Spades
Ames' Shovels, Spades, &c., list Nov. 1, 1885..... 20%
Note.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron..... 50&10%
Griffith's C. S..... 60@60&5%
Griffith's Solid C. S. R. R. Goods. 20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co..... 15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co..... 50&10%
H. M. Myers Co..... 30%
Payne Pettebone & Son..... 33⅓ &5%
Remington's (Lowman's Pat.)40&10@50%
Rowland's Black Iron.. 50&10@50& 10&5%
Rowland's Steel..... .....60&5@60&10%
Terra Haute Shovel & 25%

Shovels and Tongs—
Iron Head.....60&10@60& 10&5%
Brass Head.....60&10&10%

Sieves and Sifters—
Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co....50&25&20%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $21.00
Electric Light..₩ doz $1.50; ₩ gro $15.00
A. & W. Sifters..... .....₩ gr $15.00
Hunter's Genuine..₩ doz $1 75, ₩ gr $16.50
Hunter's Imitation..... ₩ doz $1.75; ₩ gr $15.00

Sieves, Wooden Rim—
	Iron	Plated
Mesh 18, Nested, ₩ doz....	$0.80	$1.00
Mesh 20, Nested, ₩ doz...	.95	1.10
Mesh 24, Nested, ₩ doz..	1.15	1.25

Sinks, Wrought Steel—
Columbus, Painted or Unpainted.... 30@3?&10%
Columbus, Galvanized and Enameled. 50@5?&10%
New Era, Painted..... 40&10@50&5%
New Era Galvanized and Enameled.. 60&10&10@70&5%

Skeins, Thimble—
Western list..... 7?&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co..... .. 60%
Seneca Falls Pattern..... 60%
Utica P. S. T. Skeins..... ... 60%
Utica Turned and Fitted..... .....35%

Slates—
School, by case.....40@40&10%
Large lots.....40&10&5@50%

Slaw Cutters—See *Cutters.*

Sleds Hand—
Tubular Steel ....₩ doz. $24&50%.00, 40 (Lots of 6 doz. 50%)

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Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Sargent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&10&5&2%
Covert, New Patent.....50&10&5&2%
Covert, New R. E.....60&10&5&2%
Covered Spring.....60&10&10%
Covert's Saddlery Works' Triumph.33⅓%
John Protz Snaps.....75@75&5%
Kelley & Woolworth's Steel Harness.....50&10@60%

Snaths—

Scythe.....50&2@50&5&2%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₩ doz., No. 5, $8; No. 5X, $9.
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list.....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo, S. S. & Co.....33⅓&2%

Silver Plated—

4 months or 5% cash 30 days:
Meriden Brit. Co., Rogers.....40&15%
Rogers & Hamilton.....40&15%
C. Rogers & Bros.....40&15%
Rogers & Bros.....40&15%
Reed & Barton.....40@40&5%
Wm. Rogers Mfg. Co.....40, 15&5%
Simpson, Hall, Miller & Co.....40, 15&5%
Holmes & Edwards Silver Co.....40, 15&5%
L. Boardman & Son.....50&12½%

Miscellaneous—

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10&5%
No. 80 Silver Metal.....50&10&5%
No. 24 German Silver.....50&10&5%
No. 50 Nickel Silver.....50&5%
No. 49 Nickel Silver.....50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal.....50&10&6%
18% Rogers' German Silver.....60&6%
22% Rogers' Nickel Silver.....50&6%
Rogers & Hamilton:
Steel Goods.....40&10%
Cimetar, Flatware.....40&15&5%
Cimetar, Steel Goods.....40&10%
Crown Hamliton, Flatware and Cutlery.....30%
German Silver.....50@50&5%
Nickel Silver.....50&5@50&10&5% cash
Brittannia.....60@60&5%
Boardman's Nickel Silver, list July 1, 1891.....60&7½&5%
Boardman's Brittannia Spoons, case lots.....60&5% cash

Springs—

Door—

Torrey's Rod, 39 in.....₩ doz $1.20@1.2
Warner's No. 1, ₩ doz $1.50; No. 2, $3.40.....55@55&10%
Gem (Coil), list April 19, 1886.....20%
Star (Coil), list April 19, 1886.....20&10%
Victor (Coil).....60&10@60&10&5%
Champion (Coil).....60&10@60&10&10%
Cowell's, No. 1, ₩ doz $18.00; No. 2, $15.00.....50@50&10%
Rubber, complete, ₩ doz $4.50.....55&10%
Hercules.....50@50&10%
Phœnix.....33⅓%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll.....60&10@60&10&10&10 or net prices
Cliff's Bolster Springs.....25%

Squares—

Steel and Iron.....
Nickel-Plated.....} .80&10&10@80&25%
Try Square and T Bevels.....60&10&10%
Disston's Try Square and T Bevels.....50%
Winterbottom's Try and Miter.....30&10%
Starrett's Micrometer Caliper Squares.....25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor.....50%

Squeezers—

Fodder—

Blair's.....₩ doz $2.00
Blair's "Climax".....₩ doz $1.25

Lemon—

Porcelain Lined, No. 1.....₩ doz $6.00.....25&30%
Wood, No. 2.....₩ doz $3.00, 35%
Wood, Common.....₩ doz $1.70@1.75
Duniap's Improved.....₩ doz $3.75, 20%
Sammis No. 1, $5.00; No. 2, $9; 12 $18 ₩ doz.....25&10%
Jennings' Star.....₩ doz $2.50
The Boss.....₩ doz $2.50
Dean's..No. 1, ₩ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant.....50@50&5%
King.....40&5%
Hotchkiss Straight Flash.....₩ doz $12.00
Silver & Co., Glass.....₩ gro. $9.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Barbed Blind, ½ in. and larger.₩ ℔ 7@7½¢
Barbed Blind, ¾ in.....₩ ℔ 8@8½¢
Fence Staples, Galvanized. } Same price as B'rb Wire
Fence Staples, Plain. } See Trd. Rep
Grand Crossing Tack Co.'s list.....75&10%

Steelyards.....40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods.....35%
Butterfield's Goods.....35%
Lightning Screw Plate.....25@30%
Reece's New Screw Plates.....25@30%
Reversible Ratchet.....30%
Gardner.....25%
Green River.....25@30%

Stops Bench—

Morrill's, ₩ doz, No. 1, $10.00; No. 2, $11.00.....40&20%
Hotchkiss'.....₩ doz, $5, 10@10&10%
Weston's, No. 1, $10, No. 2, $9, 25&10&5%
McGill's, ₩ doz $3.....10%
Cincinnati.....25&10%
Terrell's Nos. 1 and 2, ₩ doz., $3; No. 3, $3.60.....30%
Millers Falls.....25%
Stearns'.....20&10%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892.....33⅓%
Cleveland Stone Co., list Nov. 1892..33⅓%

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₩ ℔....8¢
Sand Stone.....5¢
Turkey Oil Stone, 4 to 8 in.....80¢ } 40 @ 40&10%
Turkey Slips.....$2.00
Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 3 to 5½ in., $2.80
Arkansas Stone, No. 1 5½ to 8 in., $3.50 } 33⅓@33⅓&10%
Lake Superior.....₩ ℔ 13¢
Lake Superior Slips.....₩ ℔ 20¢

Stove Polish—

See *Polish, Stove.*

Stretchers Carpet—

Cast Steel, Polished.....₩ doz $2.2
Cast Iron, Steel Points.....₩ doz 75@80¢
Socket.....₩ doz $1.75
Bullard's.....25@25&10%

Strops, Razor—

Genuine Emerson.....60@60&5%
Imitation "....₩ doz $2.00, 20&10&5%
Torrey's.....Net prices
Badger's Belt and Com.....₩ doz $2.00
Lamont Combination.....₩ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89. 50%
Electric Cutlery Co.....Net prices
Campbell Cutlery Co.....Net prices

Stuffer, Sausage—

Miles' Challenge, ₩ doz $20.....50@50&5%
Perry....₩ doz, No. 1, $15.00; No. 0, $21.00.....50&5@50&10%
Draw Cut No. 4, each $30.00.....20%
Enterprise Mfg. Co., list Jan 17, '93..25%
Silver's.....40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5.....₩ doz $17.00
Bissell No. 3.....₩ doz $20.00
Bissell, Grand.....₩ doz $36.00
Standard.....₩ doz $24.00
Domestic.....₩ doz $21.00
Domestic, No. 2.....₩ doz $22.00
Grand Rapids.....₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic.....₩ doz $15.00
Improved Parlor Queen,
Nickeled.....₩ doz $27.00
Japanned.....₩ doz $24.00
Excelsior.....₩ doz $22.00
Garland.....₩ doz $18.00
Parlor Queen.....₩ doz $24.00
Housewife's Delight.....₩ doz $15.00
Ladies' Friend.....₩ doz $15.00
Ladies' Friend No. 2.....₩ doz $16.00
Advance.....₩ doz $18.00
Our Leader.....₩ doz $19.00
Triumph.....₩ doz $20.00
Supreme.....₩ doz $22.00
Easy..Jap'd, ₩ doz $22.00; Nickel, $24.00
Gilt Edge.....₩ doz $24.00
Acme.....₩ doz $26.00
Imperial.....₩ doz $26.00
Grand Republic.....
Jap'd, ₩ doz $30.00; Nickel, $33.00
Banner.....
Jap'd, ₩ doz, $22.00; Nickel, $24.00
The Star.....₩ doz $21.00
Reliable.....₩ doz $22.00
Rapid..Jap'd, ₩ doz, $22.00; Nickel, $24.00
Our Own.....₩ doz $27.00
Model.....₩ doz $27.00
Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months.....₩ doz $1.00
10 dozen in 6 months.....₩ doz $2.00
Except on L.F., when 10 dozen price is $13.50, and 25 dozen $18.00.

Lawn—

Thompson Mfg. Co.....30%

Swings—

Davies Lawn.....25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued.....66⅔%
American, Tin'd and Cop'd.....70%
Steel, Bright and Blued.....66⅔%
Steel, Tinned and Coppered.....70%
Swedes Iron, Blued.....72½%
Swedes Iron, Tinned.....75%
American Iron Tacks, Domestic.66⅔%
Swedes Iron Tacks—
S. S., Blued.....66⅔%
S. S., Tinned.....70%
Lanc., Blued.....55%
Lanc., Tinned.....60%
Gimp and Lace Tacks—
S. S., Blued.....62½%
S. S., Tinned.....66⅔%
Lanc., Blued.....55%
Lanc., Tinned.....60%
Basket and Trimmers' Tacks—
Lanc.....52½%
S. S.....55%
Hungarian Nails.....60%
Common and Patent Brads.....55%
Leathered Tacks.....10%
Brush Tacks, S. S.....60%
Looking Glass Tacks, S. S.....35%
Picture-Frame Points, S. S.....35%
Finishing Nails.....60%
Trunk and Clout Nails—
Black.....65%
Tinned or Coppered.....67½%
Basket Nails.....60%
Chair Nails.....52½%
Cigar Box Nails.....45%
Tin Capped Nails.....50%

Extra discount 25&2%

Miscellaneous—

Double Point.....90&10@90&10&10%
Wire Carpet Nails.....50&10%
Claw Handle Carpet.....₩ gross $4.00
Bonnie Blue.....₩ box $1.50
Bill Nye Brad Box.....4 00
Parisian Gilt Nails, cartoon.....50
Home Tacks, No. 50 ₩ case (12 cartons), $36.00; No. 100, ₩ case (12 cartons), $72.00.
Home Nails, No. 200, ₩ case (12 cartons), $30.00; No. 400, ₩ case (12 cartons), $60 00. } 50@2%
Upholsterers' Nails.....50&10%

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each.....50&10&5%

Tapes, Measuring—

American.....40@40&10%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887.....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves Cincinnati Tool Co.....20%

Lumber—

Ring Peavies, "Blue Line".₩ doz $20.00
Ring Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mall. Iron Socket Peavies..₩ doz $19.00
Cant Hooks, "blue Line".....₩ doz $16.00
Cant Hooks, Common Finish..₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes....₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks.....₩ doz $18.00

Saw—

Atkins', new list.....40%

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse.....40@40&5%
Oneida Pattern.....75@75&10%
Game, Blake's Patent.....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₩ doz holes, 9@10¢
Mouse, Round Wire.....₩ doz $1.50 10%
Mouse, Cage, Wire.....₩ doz $2.50 10%
Mouse, Catch-'em-alive..₩ doz $2.50 15%
Mouse, Bonanza.....₩ doz 0.90@$1.00
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 75¢; in full cases, ₩ doz. 60@65¢
Hotchkiss Imp. Rat Killer...₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00
Dandy.....₩ doz., $1.75
Waddel's Go Bang, ₩ gro.....$12.50

Fly—

Harper, Champion or Paragon.....₩ doz. $1.75, ₩ gro. $16.50
Balloon, Globe or Acme.....₩ doz. $1.50, ₩ gro. $13.50

Triers—

Butter and Cheese.....25%

Trimmers, Spoke—

Bonney's.....₩ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. 55&10%
Douglas'.....₩ doz $9.00, 20%
Cincinnati.....25%

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.25@25&10%
Peace's Plastering.....25@25&5%
Clement & Maynard's.....20@20&5%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%
Cleves' Angle Trowel, ₩ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Thompson Mfg. Co.....40%
Barnes' Barrel Trucks.....40%
Daisy Stove Trucks, Improved pattern, ₩ doz. $18.00

Tubes. Boiler—

See Pipe.

Twine—

Flax Twine—

	BC.	B.
No. 9, ¼ and ½ ℔ Balls	25¢	31¢
No. 12, ¼ and ½ ℔ Balls	22¢	30¢
No. 18, ¼ and ½ ℔ Balls	20¢	29¢
No. 24, ¼ and ½ ℔ Balls	20¢	29¢
No. 36, ¼ and ½ ℔ Balls	18¢	28¢

No. 264 Mattrass, ¼ and ½ ℔ Balls, 52@54¢
Chalk Line, Cotton, ½ ℔ Balls.....25¢
Mason Line, Linen, ½ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine).....15½¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls.....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔..15¢@18¢
2, 3, 4 and 5 Ply Jute, ½ ℔ Balls 10¢
Wool.....6½¢@6¾¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz. 18¢

Vises—

Solid Box.....50&10@60%

Parallel—

Fisher & Norris Double Screw...15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....50%
Millers' Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Hollands'.....35@40%
Sargent's.....70&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
Massey Quick Action.....20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00...40&10@50%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises...33⅓@35%
Hopkins'.....₩ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Economy, ₩ doz., Nos. 110, $10.00; 120, $15.00.....50&10&10&5%

Miscellaneous—

Phœnix Vises.....33⅓%
Phœnix Hand Vises....₩ doz $3.60, 33⅓%
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises.....each $3.00, 40%
Massey Combination Pipe Vise.....40%

Wads—Price Per M.

U.M.C.&W.R.A.—B. E., 11 up.. 68¢
U.M.C.&W.R.A.—B. E., 9&10.. 82¢
U.M.C.&W.R.A.—B. E., 8..... 96¢
U.M.C.&W.R.A.—B. E., 7.....$1.10
U.M.C.&W.R.A.—P. E., 11 up. 1.15
U.M.C.&W.R.A.—P. E., 9&10.. 1.50
U.M.C.&W.R.A.—P. E., 8..... 1.70
U.M.C.&W.R.A.—P. E., 7..... 1.80
Dis 20&2%
Eley's B. E., 11 and larger.... $1.70@$1.75
Eley's P. E., 12 to 20.....$3.00@$3.25

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow-Ware—
Ground.....60&10@60&10&10%
Unground.....65&10@70&5
White Enameled Ware—
Maslin Kettles.....70&10@75%
Boilers and Saucepans.....60@60&5%
Tinned Boilers and S'pans.....60@60&5%
Rustless Hollow Ware.....50@50&5%
Gray Enameled Ware—
Stove.....50%
Maslin Kettles.....60@60&10%
Boilers and Saucepans.....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889.....33⅓% } Extra 10% on many leading articles.
Ironclad Enameled Ware.....dis 33⅓&10% }

Kettles—

Galvanized Tea-Kettles—

Inch	6	7	8	9
Each	55¢	60¢	65¢	75¢

Standard Fiber

	Per Doz. Plain.	Decorated.
Wash-Basins, 10¼ in.	$1.80	$2.00
Wash-Basins, 12 in.	2.00	2.50
Keelers, 11¼ in.		3.50
Cuspidors		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure	3.50	
Half-peck Measure	3.00	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₩ doz.....$6.00
Basins, Ringed, ₩ doz., No. 2 ..2.80
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), ₩ nest.....$5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....$2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....$1.50
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), ₩ set.....$1.20
25%
See also Pails.

Silver Plated, Hollow

4 mo. or 5% cash in 30 days.

Reed & Barton.....
Meriden Britannia Co.....
Simpson, Hall, Miller & Co.....
Rogers & Brother..... } 40&5%
Hartford Silver Plate Co.....
William Rogers Mfg. Co..... } 40&5&5%

Washers—

Size hole	5-16	⅜	½	⅝ to 1¾
Washers	5½	4½	3¼	2¾

In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Washer Cutters—

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Iron.....₩ ℔ 3½¢@3½¢
Steel.....₩ ℔ 3¾¢

Weights, Sash—

Solid Eyes.....₩ ton, $18.00@19.00

Well Buckets Galvanized—See *Buckets, Well Galvanized.*

Wheels, Well—

8 in., $2.00; 10 in. $2 50 12 in., $2.75

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Whips

	Length.	4½	5	5½	6	6½	7	7½	8 ft.
'X. L. Whalebone Driving		$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone.		....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whale bone		....	....	11.00	12.00	13.00	15.00	....	....
American Standard		8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center		6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors		....	....	....	6.00	....	....	....	....
Americus, 93 Pen Whip		....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111		....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106		....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No.103		....	....	3.75	4.00	....	....	....	....

Per dozen.

A large variety of cheaper grades.....50@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....₩ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Wire and Wire Goods—

Iron—

Market,

Br. & Ann., Nos. 0 to 18, 75&10@75&10&5%
Cop'd, Nos. 0 to 18.75&5%
Galv., Nos. 0 to 18, 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18, ...70@70&10%

Extra 5@10% often given and low net prices often made on large lots.

Stone,
Br. and Ann'd,
Nos. 16 to 18.....80%
Nos. 19 to 26.....80&5%
Nos. 27 to 36.....82½&5%
Extra 10% often given.
Tinned Broom Wire, 13 to 21, ₩ ℔....4¼¢
Galvanized Fence .....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Ossawan Mills, An'ld and Tinned on Spools.....60&10%
Ossawan Mills, Brass and Copper on Spools.....50&10%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass 50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported.... 60@70¢ ₩ ℔
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....85&10@85&10&10%

Wire Cloth and Netting—

Painted Screen Cloth ₩ 100 ft.....$1.10
Galvanized Wire Netting..... 75&10@75&10&5%

Wire Barb—

See Trade Report.

Wire Rope—See *Rope, Wire.*

Wrenches—

American Adjustable 40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50@50&10%
Coes' "Mechanics'".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural..... 75&10@80%
Lamson & Sessions' Agric'l..
W. & B. Diamond.....

Bemis & Call's:
Pat. Combination Bright .....40&5%
Pat. Combination Black.....40&10%
Merrick's Pattern.....45%
Brigg s Pattern.....30&10%
Cylinder or Gas Pipe.....45&5%
No. 3 Pipe.....55%
Aiken's Pocket (Bright)....$6.00, 50&10%
The Favorite Pocket....₩ doz., $4.00, 40%
Webster's Pat. Combination 25%
Boardman's.....30%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Eagle.....50&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70@70&5%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes-

Am. Wringer Co.'s list, July 1, '93..2% cash
Colby Wringer Co., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list July 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw., per gal.	..	@	40
Linseed, City, boiled	..	@	43
Linseed, Western, raw	38	@	40
Lard, City, Extra Winter	76	@	77
Lard, City Prime	75	@	76
Lard, City, Extra No. 1	..	@	50
Lard, City, No. 1	..	@	45
Lard, Western, prime	..	@	75
Cotton-seed, Crude, prime	..	@	30
Cotton-seed, Crude, off grades	27	@	29
Cotton-seed, Summer Yellow, prime	38	@	39
Cotton-seed, Summer Yellow, off grades	34	@	36
Sperm, Crude	65	@	..
Sperm, Natural Spring	66	@	68
Sperm, Bleached Spring	71	@	73
Sperm, Natural Winter	71	@	75
Sperm, Bleached Winter	76	@	78
Whale, Crude	.	@	.
Whale, Natural Winter	..	@	45
Whale, Bleached Winter	..	@	48
Whale, Extra Bleached	..	@	50
Sea Elephant, Bleached Winter	..	@	..
Menhaden, Crude, Sound	35	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed	39	@	40
Menhaden, Bleached W'ter	..	@	43
Menhaden, Extra Bleached	..	@	46
Tallow, City, prime	..	@	55
Tallow, Western, prime	..	@	50
Cocoanut, Ceylon	5½	@	5¾
Cocoanut, Cochin	6½	@	6¾
Cod, Domestic	38	@	40
Cod, Foreign	42	@	45
Red Elaine	44	@	46
Red Saponified, ₩ ℔	4	@	4¼
Bank ..... per gal	38	@	..
Straits	39	@	..
Olive, Italian, bbls	58	@	62
Neatsfoot, prime	60	@	65
Palm, prime, Lagos, ₩ ℔	7¾	@	8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test ..... per gal	7	@	7½
Black, 29 gravity, 15 cold test	7½	@	8
Black, 29 gravity, summer	6	@	6½
Cylinder light, filtered	14	@	16
Cylinder, dark, filtered	10	@	13
Paraffine, 23½ @ 24 gravity	11	@	12
Paraffine, 25 gravity	10	@	11
Paraffine, 28 gravity	7½	@	8
Paraffine, red	9½	@	10½

Paints and Colors—

Barytes, Foreign, ℔ ton	$22.00	@	24.00
Barytes, Amer. floated	29.00	@	32.00
Barytes, Amer. No. 1	16.00	@	18.00
Barytes, Amer. No. 2	13.00	@	15.00
Barytes, Amer. No. 3	11.00	@	12.00
Blue, Celestial, ₩ ℔	6	@	8
Blue, Chinese	40	@	50
Blue, Prussian	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½	@	1
Brown, Vandyke, Amer.	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk	2.75	@	..
Carmine, No. 40, in boxes or barrels	2.85	@	..
Carmine, No. 40, in ounce bottles	3.75	@	..
Chalk, in bulk, ₩ ton	1.75	@	2.00
Chalk, in bbls., ₩ 100 ℔	33	@	40
China Clay, English, ₩ ton	13.00	@	18.00
Cobalt Oxide, prep'd	9.00	@	11.00
Cobalt Oxide, black, lots 100 ℔	1.90	@	....
Cobalt Oxide, black, less 100 ℔	1.96	@	....
Green, Paris, in bulk	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs	10½	@	11
Green, Paris, small pack	12	@	17
Green, Chrome, ordinary	6	@	12
Green, Chrom., pure	22	@	25
Lead, Eng., B.B. white	8½	@	10
Lead, Amn. White, dry or in oil:			
Kegs, lots less than 500 ℔	7	@	7¼
Kegs, lots 500 ℔ to 5 tons	6½	@	6¾
Kegs, lots 5 tons to 12 tons	6⅜	@	6⅝
Kegs, lots 12 tons and over	6¼	@	6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price	..	@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	..	@	2½
Lead, Red, bbls. and ½ bbls	6	@	7
Lead, Red, kegs	6¼	@	7¼
Litharge, kegs	6¼	@	7½
Litharge, bbls. and ½ bbls	6	@	7

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35	@	1½
Ocher, French Washed	1½	@	2½
Ocher, German Washed	1½	@	3
Ocher, American	1½	@	1½
Orange Mineral, English	8½	@	9
Orange Mineral, French	10	@	10½
Orange Mineral, German	8½	@	9
Orange Mineral, American	8½	@	8¾
Paris White, English Cliff stone	1.00	@	1.15
Paris White, American	65	@	75
Red, Indian, English	5½	@	7
Red, Indian, American	2	@	6½
Red, Turkey	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American, ₩ 100 ℔	1.00	@	1.10
Red, Venetian, English	1.20	@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔	4	@	5
Sienna, Ital., Burnt Lumps	1½	@	3½
Sienna, Ital., Raw, Powd	4½	@	5½
Sienna, Ital., Raw, Lumps	1¾	@	3½
Sienna, American, Raw	1½	@	1¾
Sienna, American, Burnt and Powdered, ₩ ℔	1½	@	1¾
Talc, French	..	@	1½
Talc, American	1¼	@	1⅝
Terra Alba, Fr'ch. ₩ 100 ℔	95	@	1.25
Terra Alba, English	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered, ₩ ℔	3½	@	4
Umber, Turkey Bnt. Ln	2¾	@	3
Umber, Turkey, Raw and Powdered	3¼	@	....
Umber, Turkey, R'w Lumps	2¼	@	2¾
Umber, Turkey, Bnt. Amer	1¼	@	1½
Umber, Turkey, R'w Amer	1¼	@	1½
Yellow, Chrome	10	@	25
Vermilion, American Lead	11¼	@	12
Vermilion, Quicks'er, bulk	53	@	..
Vermilion, Quicks'er, bags	54	@	..
Vermilion, Quicksilver sm'r pkgs	62	@	..
Vermilion, English Import	85	@	90
Vermilion, Imitation, Eng	8	@	35
Vermilion, Trieste	90	@	92½
Vermilion, Chinese	92½	@	95
Whiting Common, ₩ 100 ℔	37½	@	42½
Whiting Gilders'	45	@	55
Zinc, American, dry, ₩ ℔	3½	@	4¼
Zinc, French, Red Seal	7⅞	@	..
Zinc, Frech, Green Seal	9	@	..
Zinc, Frech, V. M. X	..	@	7
Zinc, Antwerp, Red Seal	7½	@	..
Zinc, Antwerp, Green Seal	7¾	@	..
Zinc, German, L. Z. O	6¾	@	7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over	10¾	@	11½
lots less than one ton	11	@	11⅝
Zinc, V. M. in Poppy Oil, Red Seal	..	@	..
lots of 1 ton and over	10	@	10½
lots of less than 1 ton	10¼	@	10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort	25	@	30
Black, Drop, English	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory	8	@	15
Blue, Chinese	35	@	40
Blue, Prussian	20	@	45
Blue, Ultramarine	12	@	18
Brown, Vandyke	7	@	12
Green, Chrome	8	@	13
Green, Paris	16	@	18½
Sienna, Raw	7	@	14
Sienna, Burnt	7	@	14
Umber, Raw	7	@	10
Umber, Burnt	7	@	10

Putty—

In barrels and ½ bbls	.01¾	@	.01¾
In tubs	.01⅝	@	.01¾
In tin cans	.01½	@	.02⅛
In bladders	.01⅞	@	.02⅛

Spirits Turpentine—

In regular bbls	30	@	30¼
In machine bbls	30	@	30½

Glue—

Low Grade, ₩ ℔	8	@	10
Cabinet	12	@	14
Medium White	13	@	15
Extra White	17	@	20
French	10	@	22
English	10	@	15
Irish	12	@	..

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

NOVEMBER 22, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:
¾ to 2 in. round and square.. } ₩ lb 1.80 @ 1.90¢
1 to 6 in. x ⅜ to 1 in.... ..... }
Refined Iron:
¾ to 2 in. round and square. }
1 to 4 in. x ⅜ to 1½ in.... ... } ₩ lb 1.90 @ 2.00¢
4½ to 6 in. x ⅜ to 1 in. .... }
1 to 6 in. x ¼ and 5-16..... ₩ lb 2.10 @ 2.20¢
Rods —⅜ and 11-16 round and sq. ₩ lb 2.00 @ 2.10¢
Bands —1 to 6 x 3-16 to No. 12.... ₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price. ₩ lb.... ...3.00¢
Burden's "H. B. & S." Iron, base price..... ..... ₩ lb.. .....2.80¢
"Ulster"..... ... . ₩ lb.....3.00¢
Norway Bars... ....3.75 @ 4.00¢
Norway Shapes..... 4.50 @ 5.00¢

Merchant Steel from Store—

Per lb

Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots .. .. 2½¢
Best Cast Steel, base price in small lots. 8 ¢
Best Cast Steel Machinery, base price in small lots .... 5 ¢

Sheet Iron from Store—

Black—

Best Refined Iron.

Nos. 14 to 20.....3 @ 3½¢
21 to 24.....3¼ @ 3⅜¢
25 to 26.....3⅜ @ 3½¢
27.....3½ @ 3⅝¢
28.....3⅝ @ 3¾¢

Common ¼¢ less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 16.....2½ @ 2⅝¢
" " " 18 to 20.....2⅝ @ 3¢
" " " 21 to 24..... .....3⅛ @ 3¼¢
" " " 25 to 26.....3⅜ @ 3½¢
" " " 27 to 28.....3⅝ @ 3¾¢

Best Bloom Sheets, ¼¢ extra over above prices.
Best Bloom, Galvanized, jobbing dis. 70 @ 70&5%
Ordinary Bessemer, ⅛¢ @ ¼¢ lower than above prices.

Russia, Planished, &c.

Genuine Russia, according to assortment..... ₩ lb 12¢ @ 13¢
Patent Planished .....₩ lb A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel..... ₩ lb, 8½¢

Foreign Steel from Store—

Best Cast..... ₩ lb 15 ¢
Extra Cast..... ₩ lb 16½ @ 17 ¢
Swaged, Cast..... ₩ lb 16 ¢
Best Double Shear .... ₩ lb 15 ¢
Blister, 1st quality..... ₩ lb 12 ¢
German Steel, Best..... ₩ lb 10 ¢
2d quality.... ₩ lb 9 ¢
3d quality..... ₩ lb 8 ¢
Sheet Cast Steel, 1st quality..... ₩ lb 15 ¢
2d quality..... ₩ lb 14 ¢
3d quality..... ₩ lb 12½¢
R. Mushet's "Special"..... ₩ lb 48 ¢
" " Annealed..... ₩ lb 75 ¢
" " "Titanic" ..... ₩ lb 20 ¢
Eicken's Special No. 8..... ₩ lb 30 ¢
" Extra..... ₩ lb 15 ¢

METALS—

Tin—

Per lb

Banca, Pigs..... .....22¢ @ 22½¢
Straits, Pigs..... 21½¢ @ 22¢
Straits in Bars..... .....22½¢ @ 23¢

Tin Plates—

Duty: 2.24 ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade. IC, 10 x14.. @ $6.50
" " " IC, 12 x12.. @ 6.75
" " " IC, 14 x20.. @ 6.50
" " " IC, 20 x28.. @ 13.00
" " " IX, 10 x14.. @ 8.50
" " " IX, 12 x12.. @ 8.75
" " " IX, 14 x20.. @ 8.50
" " " IX, 20 x28.. @ 17.00
" " " DC, 12½x17.. @ 6.00
" " " DX 12½x17.. @ 8.00
Allaway Grade ....IC, 10 x14.. @ 6.00
" " .....IC, 12 x12.. @ 6.25
" " .....IC, 14 x20.. @ 6.00
" " .....IC, 20 x28.. @ 12.00
" " .....IX, 10 x14.. @ 7.50
" " .....IX, 12 x12.. @ 7.75
" " .....IX, 14 x20.. @ 7.50
" " .....IX, 20 x28.. @ 15.00
" " .....DC, 12½x17.. @ 5.50
" " .....DX, 12½x17.. @ 7.00

Coke Plates—Bright—

Steel Coke.—IC, 10 x 14, 14 x 20.. $5.40 @ $5.50
10 x 20.. .... @ 8.50
20 x 28.. 11.50 @ 12.00
IX, 10 x 14, 14 x 20.. .... @ 7.00
BV Grade—IC, 10 x 14, 14 x 20.. .... @ 5.50

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.
Dean Grade.—IC, 14 x 20..... .... @ $5.65
20 x 28..... .... @ 11.00
IX, 14 x 20..... .... @ 6.40
20 x 28..... .... @ 12.80
Abecarne Grade.—IC, 14 x 20... .... @ 5.55
20 x 28.... .... @ 10 75
IX 14 x 20.... .... @ 6 40
20 x 28.... .... @ 12.80

Tin Boiler Plates—

IXX, 14x 26 .....112 sheets..... .... @ $13.35
IXX, 14 x 28.....112 sheets..... .... @ 14.50
IXX, 14 x 31.....112 sheets .... @ 16.00

American Terne Plates.—Apollo.

IC, 14 x 20 ....$6.25
IC, 20 x 28 ....12.50
IX, 14 x 20 ....7.25
IX, 20 x 28 ....14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35% ad valorem.

Ingot—

Lake..... .. @ 11 ¢
Ansonia grade Arizona..... .. @ 10½¢
Ansonia grade Casting..... .. @ 10 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 35 %, according to size of order. Stubs' gauge standard.

Not wider than	Not longer than	And longer than	Weights per sq. foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30	72		22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36	96		22	22	23	25	27	31	35	...
48	96		22	22	24	26	28	32	....	....
48	96		22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60	96		22	23	28	...	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84	96		24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅜ inch diameter and over, ₩ lb 22¢
Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

Per lb.

14 ounce to square foot and heavier.....26¢
12 ounce and up to 14 ounce to square foot...27¢
10 ounce and up to 12 ounce.....29¢
Lighter than 10 ounce.....32¢
Circles less than 8 inches diameter, 2¢ ₩ lb additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned..... ₩ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each..... 8¢
Tinning sheets on one side, 30 x 60 each..... 30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each..... 15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each..... 12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each..... 12¢
Tinning sheets on one side, other sizes, per square foot..... 2½¢
For tinning both sides double the above prices.

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier..... 24¢ ₩ lb
14 oz..... 25¢ ₩ lb
12 oz..... 27¢ ₩ lb

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

July 6, 1892. Net.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional

Brazed Brass Tubing. (To No. 20 inclusive.)

Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive.....35¢
Plain, above 3 inch.....45¢
Plain, 5-16 inch.....45¢
Plain, ¼ inch.....60¢
Plain, 3-16 inch.....$1.00
Plain, ⅛ inch.....$1.50
Fancy Tubing, Brass, to No. 20, inclusive.....43¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.
Discount from list.....30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2	in. 10	in. 12	in. 14	in. 16	in. 18	in. 20	in. 22	in. 24
To No. 20 inclusive	.21	.22	.23	.25	.27	.29	.31	.33	
Nos. 21, 22, 23 and 24.	.22	.23	.24	.26	.28	.30	.32	.34	
Nos. 25 and 26.....	.22½	.23½	.24½	.27	.29	.31	.33	.35	
Nos. 27 and 28.....	.23	.24	.2	.28	.30	.32	.34	.36	

Common High Brass: Wider than and including	in. 2	in. 4	in. 6	in. 8	in. 10	in. 12	in. 14	in. 16	in. 18	in. 20	in. 22	in. 24
To No. 20, inclusive..	.36	.39	.42	.46	.50	.55	.60	.65				
Nos. 21, 22, 23 and 24.	.37	.40	.43	.47	.51	.56	.61	.68				
Nos. 25 and 26.....	.38	.41	.44	.48	.52	.57	.63	.71				
Nos. 27 and 28.....	.39	.42	.45	.49	.53	.58	.65	.75				

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive.....	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20.....	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22.....	$0.26	$0.28	$0.30	$0.34
No. 23.....	.28	.30	.32	.36
No. 24.....	.30	.32	.34	.38
No. 25.....	.32	.34	.36	.40
No. 26.....	.35	.37	.39	.43
No. 27.....	.38	.40	.42	.46
No. 28.....	.42	.44	.46	.51
No. 29.....	.45	.47	.49	.54
No. 30.....	.48	.50	.52	.62
No. 31.....	.51	.53	.55	.67
No. 32.....	.55	.57	.59	.73
No. 33.....	.59	.61	.63	.82
No. 34.....	.64	.66	.68	.95
No. 35.....	.70	.72	.74	1.30
No. 36.....	.76	.78	.80	1.50
No. 37.....	1.00	1.02	1.04	1.70
No. 38.....	1 30	1.32	1.34	2 00
No 39.....	2.00	2.02	2.00	3.25
No. 40....	2.60	2.62	2.60	5.75

—% discount.
Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

	Per lb.		Per lb.
No. 5.....	49¢	No. 11.....	56¢
No. 6.....	49¢	No. 12.....	58¢
No. 7.....	49¢	No. 13.....	60¢
No. 8.....	50¢	No. 14.....	65¢
No. 9.....	52¢	No. 15.....	70¢
No. 10.....	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive..... 17¢ ₩ lb
Over 3½ to 5 inches inclusive..... 18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive..... .....18¢ ₩ lb
Over 3½ to 5 inches inclusive ....19¢ ₩ lb

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.
Western Spelter..... .....4½¢@4¾¢
Bertha (pure)..... 8¢@8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.
600 lb casks..... .. .. 5½¢@5¾¢
Per lb..... ... 6½¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.
American Pig..... .....4¢@4.10
Bar..... .....4½¢
Pipe, subject to discount 20%..... ..... 6¼¢
Tin-Lined Pipe, subject to discount 20%... 15¢
Block Tin Pipe, subject to discount 20%.....37½¢
Sheet, subject to discount 20%..... ... 7¢
Old Lead in exchange, 3¼¢ ₩ lb.

Solder—

½ @ ½ .... 13½¢ @ 14½¢
No. 1 ....11¾¢ @ 12½¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson .. .. ₩ lb 11 ¢
Hallett's .. ..10½¢

Aluminum—

Duty: 15¢ ₩ lb.
No. 2 grade metal, in to a lots..... ₩ lb .75
No. 1 (guaranteed to be 98 % pure and over), in ton lots..... ₩ lb .90
Lots less than 1 ton.....10¢ ₩ lb additional

Old Metals—

Prices Paid in New York.

Heavy Copper..... ₩ lb 7½¢
Light and Tinned Copper..... ₩ lb 6½¢
Heavy Brass..... ₩ lb 5½¢
Light Brass..... ₩ lb 4½¢
Lead..... ₩ lb 3 ¢
Tea Lead..... ₩ lb 2 ¢
Zinc..... ₩ lb 2¾¢
No. 1 Pewter..... ₩ lb 14 ¢
No. 2 Pewter..... ₩ lb 7 ¢
Wrought Scrap Iron..... ₩ gross ton $9.00
Heavy Cast Scrap..... ₩ gross ton 7.00
Stove Plate Scrap..... ₩ gross ton 4.50
Burnt Iron..... ₩ gross ton 3.00

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THE IRON AGE

THURSDAY, NOVEMBER 30, 1893.

Steel Castings.

BY JOSEPH S. OWEN, CHICAGO, ILL.

Within the last ten years steel castings have come very extensively in use, but they have not given universal satisfaction. Invariably complaints come in about "blow holes." I cannot see what trouble there is to be feared if the holes are small—that is, if the general appearance of the casting is not bad, inasmuch as the solidity of a casting is obtained at the expense of the strength in general. Therefore, castings with blow holes are stronger than solid ones, everything else being equal chemically Blow holes can be prevented chiefly by the addition of silicon, aluminum and manganese in proper quantities and at the proper stage of the operation. About 17 years ago the properties of silicon in reference to the manufacture of steel castings became known and appreciated, and at that time attention was called to the fact in a paper which was read before the British Iron and Steel Institute on the manufacture of solid steel castings. In that communication attention was called to the fact that the gases produced in the manufacture of steel, alike by the Bessemer and open-hearth processes, were retained in the liquid metal and caused the blow holes, or air bubbles, that have been found in steel castings and are so difficult of expulsion. That is to say, the gases occluded in the liquid bath, and which when the metal becomes solid are still unexpelled, constitute the source of the honeycombed structure which was formerly so frequently to be met with. Silicon, however, when introduced at the proper time and in certain proportions into the liquid metal enables those blow holes to be got rid of and a solid steel to be produced. The rationale of this action of silicon has been much discussed among scientific metallurgists. So long as the only gas discovered in the liquid metal and in the blow holes of the solid metal was carbonic oxide the matter appeared to be simple enough, and the explanation of the effects of silicon which was suggested at that time was that silicon neutralized carbonic oxide in the production of silica and free carbon according to the formula $Si + 2CO = SiO_2 + 2C$. This explanation appeared to be satisfactory enough until Dr. Mueller discovered, and Mr. Richards and Mr. Stead afterward confirmed, the fact that the greater part of the gases occluded in the blow holes was not carbonic oxide at all, but was hydrogen resulting from the moisture of the air, hence the new problem was presented of the effect of silicon on hydrogen. These considerations led to the investigation of the phenomena of the increasing solubility of both carbonic oxide and hydrogen when silicon is present in sufficient quantities. This action is analogous to that which is obtained when limestone is dissolved in water in the presence of carbonic acid; however, such an explanation appears to be a little open to question still, in my way of thinking.

Aluminum in very small proportions produces a very marked effect on a bath of soft steel. In Osberg's petroleum furnaces, known as the Mitis process, from 0.05 to 0.10 of 1 per cent. of aluminum was added to metal low in carbon, being also fairly low in silicon. The results were very satisfactory for soundness and toughness. These results were obtained at one establishment in particular by the crucible process. Aluminum increases fluidity when working with steel low in carbon, but thickens to a certain extent high carbon metal. Aluminum seems to oxidize very quickly, as only traces are found in the castings by analysis. Aluminum, however, releases gases from metal through the suddenly increased fluidity, inasmuch as after the "stock" is melted gases are then taken up by the metal. "Killing" the steel is not necessary when aluminum is properly used by the crucible process.

For castings that are liable to draw and crack in cooling, manganese, in my opinion, is essential, its presence giving the casting strength when in the semi-solidified condition. Manganese when added to oxygenated iron removes the oxygen as oxide of manganese or silicate of manganese, thus it is a positive cure for red shortness by setting free intermixed particles of slag as a double silicate of manganese, at the same time being a strong carrier of sulphur in the slag. Steel foundrymen have a dread of high manganese in their castings, but the writer has seen steel castings carrying as high as 0.85 to 0.95 of manganese, which proved very tough and strong. This does not support the theory that 5 parts of manganese are equal to 1 part of phosphorus in producing brittleness.

The Mansfield Disappearing Gun Carriage.

One of the most important questions at present confronting the army is that of carriages for the heavy guns and mortars intended for seacoast defense batteries. In this matter it appears that the guns have reached a degree of perfection, comparatively speaking, far in advance of the carriages.

It is therefore interesting to present a description of a design the invention of Lieut.-Col. S. M. Mansfield, Corps of Engineers, U. S. A. This system possesses an elasticity throughout which relieves the carriage from undue strain. Further, it is composed of few parts, which are strong, and there is no delicate machinery liable to get out of order. In the firing position the muzzle of the gun is put well over the parapet, where the blast of discharge will do it no injury. With a reduced charge of powder giving an initial velocity to the projectile of about 1800 feet a second the gun will recoil gently to the loading position. The excess of energy of recoil due to charges giving a projectile velocity up to 1975 feet is taken up by a hydraulic buffer in the rear of the lower carriage.

Inside of the parapet is a well, Fig. 4, in which is suspended a counterpoise from the upper carriage on which the gun is mounted. The top of the well is covered by a metal plate having a hole formed in it for the passage of the rope from the counterpoise. The lower carriage is adapted to be traversed in a horizontal plane as usual, its upper end being for this purpose pivoted on a hollow cylindrical hub projecting upward from the well cover. Journaled near the upper end of the lower carriage and arranged to roll on the well cover, or on a circular plate attached to its top, are wheels or rollers. The lower end is provided with a series of wheels rolling on a segment, as is com-

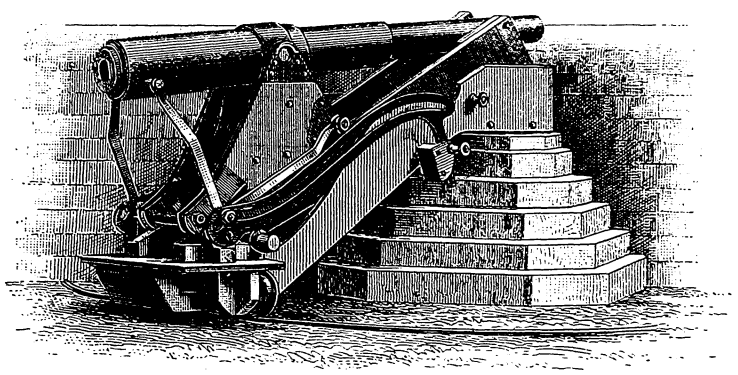


Fig. 1.—Gun in Depressed Position.

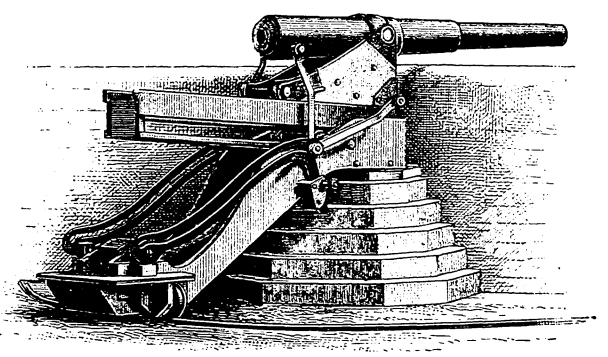


Fig. 2.—Gun in Firing Position.

THE MANSFIELD DISAPPEARING GUN CARRIAGE.

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mon in gun carriages, shown plainly in Figs. 1 and 2. The chassis is between the upper and lower carriages, and is pivoted near its forward end to the lower carriage. The upper carriage is provided with wheels to act when the gun is run into battery, but during recoil the carriage rests upon its shoe, so as to cause a sliding and frictional resistance; the rear wheels being journaled eccentrically to allow of ready transfer from sliding to rolling friction, or *vice versa*.

For the purpose of automatically inclining the gun from its loading to firing position, and *vice versa*, there is pivoted on each side of the rear end of the lower carriage a slotted bar of desired curvature, the upper end of which is movable for the purpose of adjusting the gun in a vertical plane after it has been raised above the parapet, as shown in Fig. 4, or it may be set for elevation before the gun is raised into battery. The adjustment of the upper end of each of the slotted bars is accomplished by means of a pinion meshing in the teeth of a curved rack, forming a part of the upper end of each of the slotted bars, these pinions being secured to a shaft journaled in the upper end of the lower carriage and actuated by means of power applied to a crank. To each side of the rear end of the gun is pivoted loosely journaled on a transverse shaft, on which is also journaled a pair of rollers adapted to roll on the upper edges of the lower carriage during the depression of the gun. It is essential that the roller shaft should be connected to the upper carriage during the depression of the gun, and for this purpose the upper carriage is provided with one or more vertically yielding spring actuated clutches adapted when released to encompass the roller shaft during the recoil and depression of the gun, and to be automatically released from the shaft shortly before the upper carriage reaches its lowest position on the chassis, such release being accomplished by the lower end of the clutch coming in contact with a cam surface or incline on the lower carriage. During the upward motion of the carriage on the chassis and upward swinging motion of the latter on its pivot, the roller shaft remains in the rear end of the grooves until the chassis inclines slightly downward, when the shaft rolls forward in the grooves until it reaches its position, where it is ready to engage with the upper carriage in its elevated position ready for a discharge. When the chassis by the gravity of the gun is swung into position for discharge the clutches are automatically raised to allow the shaft and its rollers to come into the position above mentioned, and this is accomplished by means of a lever (for each clutch) pivoted to the lower carriage, the rear end of which lever is swung upward against the lower end of the clutch when a projection at the front end of the chassis comes in contact with the forward end of the pivoted lever, as shown in Fig. 4.

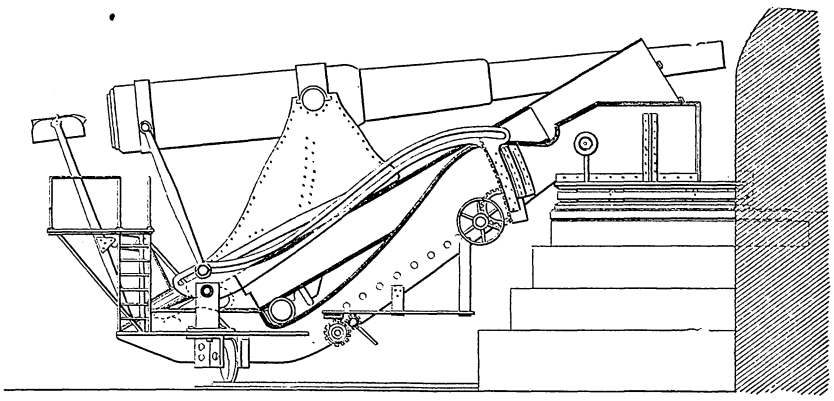


Fig. 3.—Side Elevation of Gun in Depressed Position.

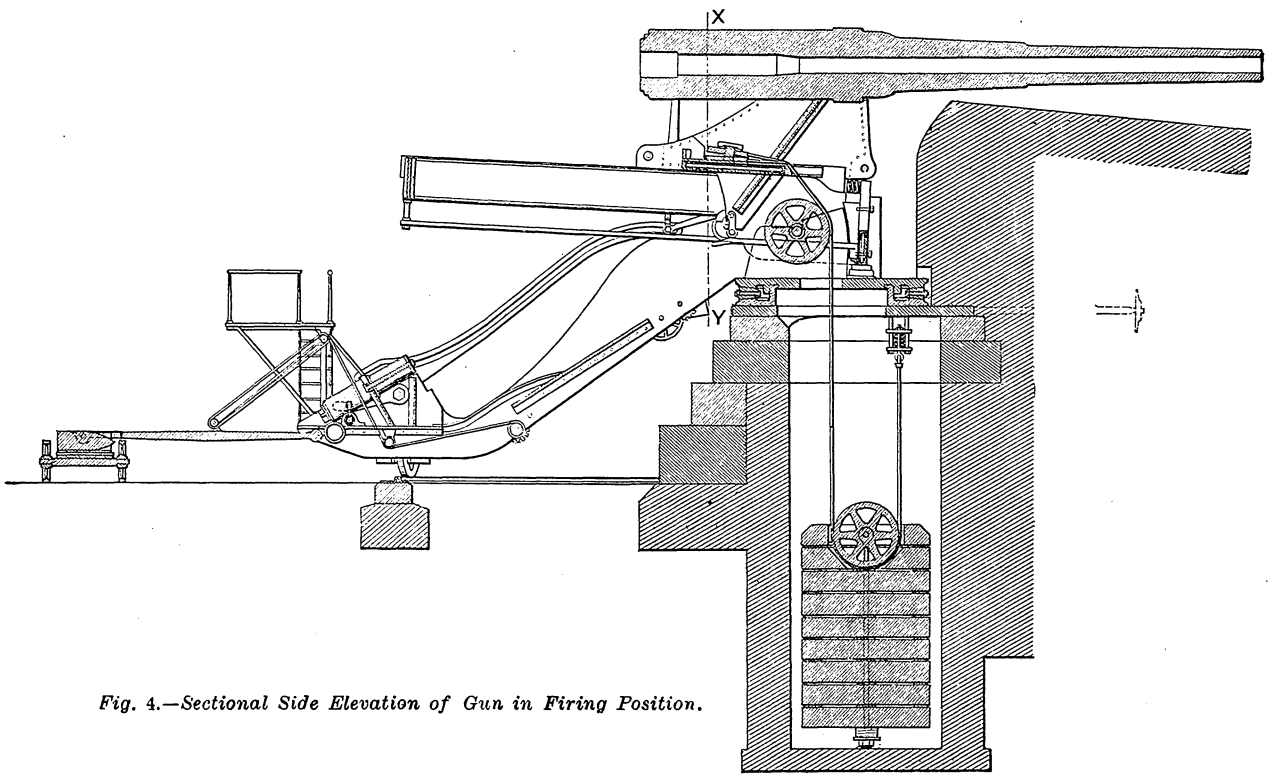


Fig. 4.—Sectional Side Elevation of Gun in Firing Position.

THE MANSFIELD DISAPPEARING GUN CARRIAGE.

a link, the lower end of which is guided in the slotted bar, and to the lower end of the link is pivoted a link, the forward end of which is pivoted to the upper carriage, as shown in the drawings. By this arrangement of links and grooved bar the gun is automatically guided from the position shown in Fig. 3 to the position shown in Fig. 4, and *vice versa*, during the raising or lowering of the gun to or from firing position.

Each chassis rail has on its under side a longitudinal groove formed by means of a rail secured at a suitable distance from the under side of such chassis, as shown in Figs 4 and 5. In these chassis grooves are located rollers

The operation of the system is as follows: Supposing the gun to be in the elevated position and ready for discharge, as represented in Fig. 4, the discharge of the gun causes its carriage to recoil on the chassis under sliding friction. The clutches on the upper carriage are automatically connected to the roller shaft the moment they pass beyond the rear end of the levers. The chassis commences to swing downward as soon as the center of gravity of the gun and its carriage has moved back of the pivot where the chassis is hinged to

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the lower carriage, and during such downward swinging motion of the chassis the rollers on the shaft are caused to roll respectively against the under side of the chassis and top of the lower carriage, by which the downward sliding motion of the upper carriage on the chassis and the tipping motion of the latter on its fulcrum are properly constrained and retarded so as to check recoil and prevent a too rapid and dangerous descent of the gun to the depressed position. When the chassis reaches its lowest position its rear end comes to a stop against an abutment on the lower carriage. During the descent of the upper carriage as it approaches its lowest position on the chassis the weight of it and the gun will be overcome by the counterpoise, causing the upper carriage to be automatically moved upward and forward on the chassis, and as the center of gravity of the gun and its carriage comes in advance of the fulcrum the chassis will gradually assume the slightly forward tipped position shown in Fig. 4, and as it reaches such position the clutches are automatically raised by the projection and lever, allowing the shaft and its rollers to roll forward on the rails until the rollers on the shaft are brought to the forward end of the chassis grooves ready to engage with the upper carriage, as before stated. During such upward motion of the gun it is gradually inclined from the position shown in Fig. 3 to the one shown in Fig. 4 by the agency of the links and grooved bar, as stated.

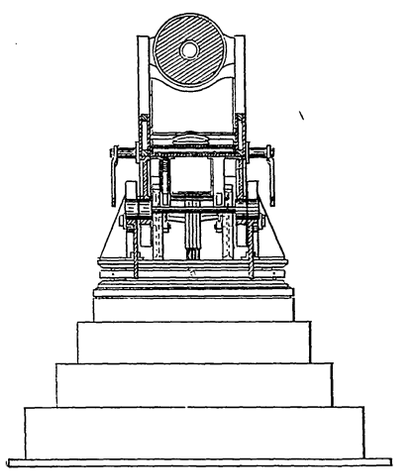


Fig. 5.—Section on Line X Y of Fig. 4.

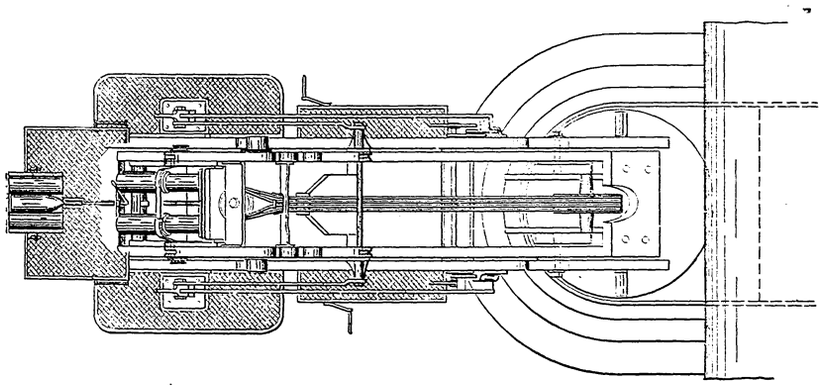


Fig. 6.—Plan of Carriage with Gun Removed.

THE MANSFIELD DISAPPEARING GUN CARRIAGE.

clutches are automatically released from the shaft by a cam or incline, and the carriage is brought against the buffer, causing the gun to come to its loading position without shock or jar. During the descent of the gun the counterpoise attached to the carriage is raised and its rope guided on the rotary wheel or pulley. The gun will remain in its depressed position by the frictional resistance between the carriage and upper portions of the chassis. During the descent of the gun it is automatically inclined from the position shown in Fig. 4 to the one shown in Fig. 3 by the pivoted links and grooved bar, as before mentioned. After loading the gun, when it is desired to raise it, it is only necessary to cause the upper carriage to rest with a rolling friction on the chassis, which is done simply by adjusting the eccentric rollers until they bear on the chassis, when the rolling friction of the carriage and of the drum, which blows the scale out of the boiler. The device is nearly completed and ready for trial.

F. E. Fitch of the Northern Central machine shops, Elmira, N. Y., is the inventor of a device called a circulator, which is attached to the boiler of a locomotive. It has long been a source of great trouble to engineers to have the scale caused by unclean water in the boiler cling to the flue pipes, and in time make what is called mud burn, which wears out the boiler. Engineer Fitch conceived the idea that circulating water would stop the scale deposits, and has arranged a set of 4-inch pipes which lead from the rear end of the boiler down through the fire box into a drum which is located about 4 feet in front of the fire box. The drum is 3 feet long and 1 foot in diameter. A blow off cock is located in the bottom

Governor Peck of Wisconsin is receiving donations at Milwaukee for the destitute iron ore miners of the Lake Superior region. Generous contributions of food, clothing and money have already been forwarded from Chicago, while the citizens of Wisconsin are making vigorous efforts to help the sufferers.

The demand for water works machinery is growing very much livelier. During the past two weeks bids were opened in New York for two 10,000,000 gallon and two 4,000,000 gallon engines, in Philadelphia for four 20,000,000 gallon engines and in St. Louis for two 30,000,000 gallon engines.

Heavy Steel Forgings—II.*

Their Production in the United States.

BY RUSSELL W. DAVENPORT, BETHLEHEM, PA

Gun Forgings.

The high working strains to which modern heavy ordnance is subjected have called for the highest attainable qualities in the material of which the parts are made. To insure this end, the specifications governing the manufacture of gun forgings have been drawn with great care, a large number of test specimens, cut from the actual forgings after final treatment, are required to show uniform and high physical qualities, and the manufacture is subject to constant and thorough inspection. The result is that the steel for gun forgings is melted of the best obtainable material, ingots are cast with special care to avoid cracks, blow holes and other defects, hollow forging is practiced whenever possible, and tempering and annealing is universally applied. In short, all the resources of the steel maker's art have been called upon to insure a perfect product in which the highest attainable physical qualities have been developed. As steel gun forgings have up to the present time been in general made of simple steel, improvements in physical qualities to meet the demands of higher working pressures must be looked for in some steel alloy. Chrome has been used to a limited extent for parts of small dimensions where great hardness and high elastic limit are aimed at, as in the Brown segmental gun, but nickel offers the best promise of improvement in the physical qualities of gun forgings. A complete set of forgings for an 8-inch gun has been made by the Bethlehem Iron Company for the Bureau of Ordnance, U. S. Navy, of nickel steel and are now being assembled at the Washington Navy Yard. The average physical qualities obtained in these forgings in transverse specimens were:

	Tensile strength. Pounds per square inch.	Elastic limit. Pounds per square inch.	Extension. Per cent.	Contraction of area. Per cent.
Tube..	93,200	58,300	21.2	42.0
Jacket	99,900	60,000	20.4	45.9
Hoops.	109,100	68,200	20.5	46.9

Size of specimen, 2¼ inches diameter and 2 inches long.

As compared with an average of qualities usually obtained in corresponding navy gun forgings, made of simple steel, the tensile strength shows an increase of about 10 per cent., and the elastic limit an increase of from 22 to 28 per cent.; the elongation and contraction of area are but slightly reduced.

It is believed that by modifying the composition of this steel a considerably higher tensile strength and elastic limit can be obtained without dangerous sacrifice in ductility.

The Ordnance Department of the Army have also ordered a tube for a 12-inch gun, model 1892, to be made of nickel steel. The physical qualities guaranteed in transverse specimens $\frac{9}{16}$ inch diameter and 3 inches long are as follows: Tensile strength, 85,000 pounds per square inch; elastic limit, 53,000 pounds per square inch; elongation, 18 per cent.; contraction of area,

* From a paper read at the first annual meeting of the Society of Naval Architects and Engineers.

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35 per cent., which is an increase of 9 per cent. in tensile strength, 26 per cent. in elastic limit, 6 per cent. in extension and 17 per cent. in contraction of area over the usual minimum requirements.

It is thought probable that tubes of nickel steel may offer an increased resistance to erosion of bore as compared with simple steel, and it is hoped that more extended experiments will be made to determine this important point.

Armor Plate.

The remarks made regarding the high standard aimed at in the manufacture of gun forgings are also applicable to that of steel armor plate. "The best is none too good," is a safe motto. Besides meeting certain physical requirements in specimens taken from the plates, the manufacturer has to guarantee a successful ballistic trial of any plate of a group which the inspector may choose to select; and as the financial loss in case of failure may be very great, it is evident that every possible care must be taken to perfect and control the manufacture. The ballistic acceptance test of armor plate for the United States Navy is more severe than that demanded in any other country.

Forged armor plates made of simple steel, as originally developed by the Creusot Works, offered a much greater resistance to penetration than wrought iron or even compound plates when attacked with steel armor piercing projectiles, but the vice of the all steel plate lies in cracking, and it was the introduction of nickel into the steel, as already stated, which to a great degree corrected this defect.

It is probable that an increased resistance to penetration may be obtained by the introduction of other metals along with nickel, and at the St. Chamond Works, in France, steel containing both nickel and chromium has given good results. Developments in this direction, however, have been somewhat checked by the advent of hard faced steel plates, by which it is aimed to stop and break up the steel projectiles before serious penetration takes place.

The introduction of carbon by cementation into the face of the plate with subsequent water hardening, as proposed by Harvey, and known as the "Harvey process," has, up to the present time, given the best results in this direction. The application of this process, which was developed at the Bethlehem Works, with the energetic aid of the Bureau of Ordnance of the United States Navy, has now passed its experimental stage for plates of medium thickness, and the Harveyized 12-inch taper plate representing the side armor of the "Maine" (recently tested at Indian Head), and manufactured by the Bethlehem Iron Company, gave highly satisfactory results, and is beyond doubt the most resisting "service" armor plate ever submitted to trial.

Marine Shafting and Engine Forgings.

It may be said that in the manufacture of this class of heavy steel forgings it is not yet the usual practice to aim at the highest attainable combination of physical qualities, and that therefore there is a wider field for improvement in this direction than in the case of forgings for guns and armor plate.

From this statement it must not be inferred that the demands of the United States Navy specifications, which may now be taken as the standard in this country, are not such as to insure an excellent quality of steel; on the contrary, the conditions of inspection are rigorous, the amount of testing large, and the physical qualities demanded are such as can only be obtained by the use of high grade stock, by ample forging facilities and by careful manufacture throughout. The present physical requirements for shafting, including cranks, are: Tensile strength not less than 58,000 pounds per square inch, and an average elongation of not less than 28 per cent. in longitudinal specimens ½ inch diameter and 2 inches long, cut from full sized prolongations of forgings. For connecting and piston rods a somewhat harder steel, with a tensile strength of not less than 65,000 pounds per square inch and an elongation of not less than 25 per cent., is used. No treatment other than annealing is prescribed, and the elastic limit is not considered as a condition of acceptance. From these requirements it will be seen that a distinctly soft steel is being used, in which the elastic limit often falls to about 27,000 pounds per square inch, and averages something over 30,000 pounds. In adopting such soft steel, the practice of the English Admiralty and merchant marine has been followed, and in view of the fact that this practice is based upon wide experience and the use of a very large amount of material, much of which has done excellent service, it has been a wise and conservative course to make no hasty and radical departures from same.

It must indeed be conceded that soft steel presents in some respects marked advantages as the standard material for shafts and engine forgings, particularly when the manufacture is intrusted to forges having insufficient facilities and lack of experience in handling the harder classes of steel. In the ingot form and during forging soft steel can bear with safety rougher treatment than harder steels; it is less sensitive to the hurtful effects of irregular and repeated heatings, and dangerous internal strains and defects are less apt to be developed thereby; these are important considerations, especially in the case of forgings of irregular shape, such as solid forged cranks, connecting rods, &c. Further, by the use of soft steel the cost of machining, and hence the cost of finished forgings, is reduced to a minimum. It is natural, therefore, that marine engineers should hesitate to make a change in a matter of such importance, feeling, as they do, that in soft steel forgings there is an element of safety that cannot be overlooked.

In calculating the dimensions of marine engine forgings the elastic limit of the material used has not been as important a factor as in the designing of heavy guns. This is principally due to the larger factor of safety used in engine forging to insure stiffness or rigidity of parts under transverse strains. There is much evidence at hand, however, to indicate that the importance of a high elastic limit in steel forgings has not been sufficiently considered, and that many failures of soft steel forgings of excellent quality can be ascribed to a low elastic limit. A notable instance is that of locomotive crank pin forgings, where soft steel has in many cases failed by breakage as frequently as wrought iron, and where a harder steel with higher elastic limit has given far better results. The length of service of hammered piston rods has also been much increased by the use of steel of high elastic limit. These are instances of machine parts subjected to exceptionally severe working strains.

In the highest development of the modern marine engines reduction of weight of all parts is of prime importance. This can only be accomplished by reducing sectional areas. On the other hand, outside dimensions cannot be usually reduced without sacrificing necessary stiffness. We are, therefore, led to removing the metal along the neutral axes, or, in other words, to the use of hollow forgings. This practice has been followed in designing the shafting of all the ships of the new navy except the four Roach ships.

In most cases, however, the danger of too great a reduction of sectional area has evidently been feared, and the diameters of axial holes have been made too small to allow of advantageous hollow forging on a mandrel. Solid forging with subsequent boring has, therefore, been necessary, whereby a distinct loss in quality of metal has occurred.

It is evident that to reduce further relative weights as well as to increase the absolute strength of parts, the designer of marine engines needs a stronger material than that now employed; that is, a material having a greater elastic limit, but at the same time possessing such a degree of toughness as to insure resistance to sudden strain or shock. Such a material can be found in steel harder than that now used, strengthened and toughened by tempering and annealing. Simple steel of the proper natural hardness, and so treated, will show in specimens cut from the center of sections, say 3 to 6 inches thick, an elastic limit of about 45,000 pounds per square inch, an elongation of about 23 per cent. in 2 inches and a contraction of area of from 50 to 55 per cent. To allow of safe and effective tempering forgings must be made hollow wherever possible, rectangular sections reduced in thickness as far as practicable, large fillets used, and sharp re-entering angles and sudden changes from thin to thick sections avoided. In shafting, axial holes should be made large enough wherever practicable to allow of hollow forging, and additional strength with the same weight obtained by increasing both outside and inside diameters and thus reducing thickness of walls.

A further and very pronounced improvement in strength and toughness can be obtained, as already indicated, by the use of nickel steel, tempered and annealed and prepared for treatment as above described. The use of nickel allows a reduction of carbon, makes the steel more sensitive to temper, and facilitates the tempering of irregular shapes. Specimens from nickel steel forgings, tempered and annealed, will show uniformly an elastic limit of from 50,000 to 55,000 pounds per square inch, an elongation of 23 per cent. and above, in specimens 2 inches long and 1½ inches in diameter, and a contraction of area of from 55 to 60 per cent. In cases where, owing to thickness of section and irregular shape, tempering is not advisable, nickel steel will still show a higher combination of elasticity and toughness than any other material known under the same conditions.

Here, then, is a material admirably suited to the shafting and engine forgings required by the marine engineer in the construction of modern high service engines, and it is believed that as its merits become known its use will be widely extended.

The Bureau of Steam Engineering has already taken this material into consideration, and in designing the shafting

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of the "Brooklyn" and "Iowa," it was decided to make the two propeller shafts of the former and the two intermediate line shafts of the latter ship of nickel steel. The diameters of the "Brooklyn's" propeller shafts will be 17 inches outside and 11 inches inside, giving walls 3 inches thick, while the line shafts of the "Iowa" will be 15¾ inches outside diameter and 9¾ inches inside diameter, with walls also 3 inches thick.

The specifications prescribe that these shafts shall be oil tempered, and demand a tensile strength of not less than 85,000 pounds per square inch, an elastic limit of not less than 50,000 pounds, an average elongation of 23 per cent. in specimens 2 inches long and ½ inch in diameter (no specimen to fall below 20 per cent.).

A comparison of the strength of these shafts within their elastic limit with that of solid shafts of same sectional area made of soft, simple steel, having an elastic limit of 30,000 pounds per square inch, and also a comparison of their weights per linear unit with that of soft steel solid shafts of equal strength may be of interest. The following table gives the results of calculations made by Prof. Mansfield Merriman of the Lehigh University:

Comparison of three steel shafts. Case I.	Propeller shaft United States steamship "Brooklyn." Hollow. Outside diameter 17 inches, inside diameter 11 inches. Nickel steel. E. L. 50,000 pounds per square inch.	Solid shaft, same (approximate) sectional area. Diameter 13 inches. Simple steel. E. L. 30,000 pounds per square inch.	Solid shaft of same strength under applied loads, or horse-power. Diameter 18.9 inches. Simple steel. E. L. 30,000 pounds per square inch.
Areas of sections, square inches	131.95	132.73	280 55
Weights per yard, pounds	1,346	1,354	2,861
Comparative strengths under applied loads in flexure, or under applied horse-power in torsion	307	100	307
Load, in pounds, at middle of a span of 12 feet on two supports, which strains to one-half elastic limit	276,200	89,900	276,200
Length of beam on two supports, which is strained by its own weight to one-half elastic limits, feet	121.6	77.6	83.4
Horse-power transmitted at 50 revolutions per minute when strained to one-half elastic limits	15,780	5,130	15,780

Comparison of three steel shafts. Case II.	Intermediate line shaft United States steamship "Iowa." Hollow. Outside diameter 15¾ inches, inside diameter 9¾ inches. Nickel steel. E. L. 50,000 pounds per square inch.	Solid shaft, same (approximate) sectional area. Diameter 12⅜ inches. Simple steel. E. L. 30,000 pounds per square inch.	Solid shaft of same strength under applied loads or horse-power. Diameter 17.71 inches. Simple steel. E. L. 30,000 pounds per square inch.
Areas of sections, square inches	120.17	120 28	246.34
Weights per yard, pounds	1,225	1,227	2,513
Comparative strengths under applied loads in flexure, or under applied horse-power in torsion	293	100	293
Load which, at middle of a beam 12 feet in span on two supports, causes strains equal to one-half elastic limit, pounds	227,200	77,500	227,200
Length of beam on two supports which is strained by its own weight to one-half elastic limits, feet	115.6	75.9	80.8
Horse-powers transmitted at 50 revolutions per minute when strained to one-half elastic limits	12,980	4,430	12,980

From the above it will be seen that by the use of the hollow shafts made of the stronger steel there is again in strength of three to one and a reduction in weight of more than one-half as compared with solid steel shafts of equal weight and equal strength respectively.

It must be borne in mind that this gain in strength and reduction of weight are not obtained at a dangerous sacrifice of toughness, for the stronger tempered steel is also extremely tough, as shown by cold bending and by the extension and the contraction of area of tensile specimens.

It will be readily admitted that such gains cannot be overlooked by the marine engineers and that there is here a wide field open for improvement in marine engine forgings.

The Morewood Company's Tin Plate Works.

The Morewood Company are now getting in shape their new tin plate works at Gas City, Ind. For some time they have been running the coating department, but results have not been satisfactory, owing to frequent delays in receiving supplies of black plates, some of which have been purchased from American makers and some imported from Wales. Meantime the erection of rolling mills has been pushed, and these will shortly be in operation, after which there will be no interruption to the company's business for lack of essential materials.

The establishment of this plant at Gas City is wholly due to the enterprise of the president of the company, J. H. Rogers, one of the foremost manufacturers of tin plate in Wales, operating two large works. For some years Mr. Rogers had foreseen that the United States would eventually engage in the manufacture of tin plate, and contemplated making a venture on his own account. Some two years since this idea developed into a determination, and he visited this country to survey the field with that object in view. Early in 1892 he decided to locate at Gas City, but in the meantime put up temporary coating works at Elizabethport, N. J., which are now being removed to Gas City. Contracts for the building and much of the machinery were let in the spring and summer of 1892, but ground was not broken for the foundations until October. Since then work has been pushed as rapidly as consistent with the erection of a good plant on a thoroughly substantial basis. The buildings which have been erected are all strictly fire proof, having steel frames and metal roofs and sides. They are equipped with the best machinery adapted to the manufacture of tin plate, among which are found numerous special machines devised by Mr. Rogers for the rapid and easy handling of materials.

At present seven tinning stacks are in operation, but within a month three more will be at work. Of these there are three that exclusively run on ternes, while the others can vary from bright to ternes, according to the requirements of the trade. The pots used are not new, being principally of the kind invented by Mr. Rogers' father. This is a point upon which Mr. Rogers has expended much thought and investigation. He has decided that instead of seeking rapidity and cheapness in coating, at the sacrifice of quality, he will manufacture after the old style of soaking instead of merely painting the plate with a thin coat of tin in one passage through rolls. By this method say 40 sheets are placed in the tin bath at a time, then removed and the oxide of tin wiped off, after which they are dipped again and run through rolls in palm oil. This insures a perfect union of the tin with the steel sheet and makes a more durable plate. For months Mr. Rogers visited meat and fruit packers and other tin plate consumers, getting their criticisms of the ordinary plates and finding out what was demanded. The personal contact with the consumer convinced him that tin plate makers were altogether on the wrong track in trying to make their plates as cheaply as possible. Hence his decision with regard to the method of coating. He believes that this will obviate the long-standing complaint of pin holing.

In the pickling, annealing and rolling departments old methods are, however, dropped as much as possible. Here every effort is made to economize labor and insure rapidity of operation. Pickling vats are filled, agitated and emptied by ingenious machinery. Annealing furnaces are operated by a mechanical charger. The rolls are arranged on a plan not hitherto known in this country. There are four cold rolling mills in which the trains are set in parallel rolls run by gearing from a common engine. In other works the practice is to set the rolls in a straight line. There are numerous reasons advanced by the Morewood Company in favor of their method, in which they follow the latest and most improved practice in the best Welsh mills. The hot rolling mills now in course of construction will at first comprise four mills, but it is expected that four more will be added between now and next summer. For the present tin plate slabs will be purchased, but it is the intention of the company to erect steel works at an early day to make their own steel, and thus control the quality of their material as far as possible.

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The brands adopted by the company thus far are as follows: F. W. B. This is the heaviest possible coated roofing plate. J. H. R. is the next grade of terne plate, and is of Worcester grade. H. C. B. is the Lille grade of terne. P. T. L. is a bright terne, and is the grade with which the exposition buildings in Philadelphia in 1876 were roofed. R. H. J. is a bright plate intended for the use of canners of meat, fish, fruit, &c., and will be made as near perfection as possible.

These statements are subject to some qualification, in view of possible action upon the tariff question. Mr. Rogers states that, from his knowledge of wages on both sides of the Atlantic, any serious reduction in the tin plate duty must be met by heavy reductions in the wages paid here or the manufacture of tin plate will have to be abandoned. Even with wages reduced to some extent during the prevailing depression, the labor cost in the rolling department is treble the cost in Wales, and in the finishing department it is double. If the duty is not disturbed it is the intention of the company to push extensions of the plant steadily forward until it becomes the largest in the world. In the arrangement of their buildings this has been kept in view, and plenty of room has been kept for that purpose. The inclosure comprises over 50 acres. It is in one of the best gas districts in Indiana, where the pressure is constant at nearly 300 pounds. Railroad connections are afforded by the Panhandle branch of the Pennsylvania system.

Modern Fixed Ammunition*

BY HAROLD THOMAS ASHTON.

(*Concluded from page* 851, *November* 9.)

Completing Operations.

The head is turned by a cutting tool, which is brought against it while the case is rotating at a high speed in a tightly fitting coned chuck, into which it has been fed by the usual combination of slides and spring fingers, or by hand. The distinguishing marks are stamped on the base by steel dies, under which the cases are brought by a revolving table. The fire hole is pierced at two operations, the first consisting in merely making a center mark, through which the hole is punched in the second operation. The machines for each are similar, the cases being fed by hand into a revolving table which carries them opposite the tools. The cases are cleaned by dipping them into an acid solution, and, after they have been washed, placing a number of them at a time with hard sawdust in a revolving drum. The cap chamber is rectified by the insertion of a plug made of the exact size required, serving to correct any distortion of the chamber due to the operation of tapering the case. The mouth of the case is finally reamed to give it the exact length required, and, by beveling the edges internally, to facilitate the insertion of the bullet when the case is loaded. This is done by feeding the case into a coned bush, in which it is moved up against rapidly revolving cutters.

Necking.

The cases are then examined and gauged, but though the reduction of the mouth of the case to the bottle necked shape, Fig. 13, is not conducted in the small case under consideration until after it has been charged, it may be most conveniently described here. In the larger cartridge case, where the mouth is not rendered inconveniently small for the insertion of the charge by the process, the neck is formed before loading, and the case leaves the factory in its finished form; while in some types, such as the 1-inch Nordenfeldt machine gun and the revolver pistol ammunition, necking is not required. The method of operation is an extension of that used for coning the case. For this purpose the case is supported on its base, and a die brought down upon its mouth reduces it in diameter, and forms the straight cylindrical part and the shoulder. As under this treatment the metal does not thicken appreciably at the mouth, but obtains relief by extending slightly in length, a considerable strain is thrown on the portion of the case immediately below the shoulder, which, if too soft, bulges or buckles. Another defect occurring at this time if the metal is unequally distributed around the mouth, either as regards quality or quantity, is the formation of a crease or fold longitudinally in the straight part of the neck.

Final Examination.

The examination of the finished cases is most severe. No case with the smallest scar, scratch or blemish in the shape of scaly or doubtful metal is allowed to pass, unless it is found on a second examination to be less defective than certain defined standards. The dimensions at every portion of the case are also tried by gauges made to the upper and lower limits of size allowed. The difference between the two is so small that the gauges require considerable care to prevent their wear becoming a serious source of error in passing the work. Thus, in the diameter of the cap chamber, the difference between the high and low gauges is only 0.001 inch, and an expert examiner will go through 7000 cases in an ordinary working day, the examination of each one wearing the gauge slightly. In the other dimensions somewhat more play is allowed, to the extent of 0.003 inch in the diameter of the body, 0.006 inch in the thickness of the head, 0.010 inch in the depth of the cap chamber, 0.020 inch in diameter of head, and 0.015 inch in total length. All the gauging has beeen done till recently by hand, but machines have been in use in Germany for some time which, it is stated, do the work as well or better than the inspectors they replace. They have been tried in the Royal Laboratory, but have not been found entirely satisfactory. With a view to obtain uniformity in the metal of the case, the weight is also laid down as 164–5 grains.

General.

To insure this high degree of exactitude in the product of so many operations, it is necessary that each one should do its share of the work of manufacture with equal precision. In order that this may be done the same standard of accuracy must be maintained in the various stamping, drawing and cutting tools. As these are exposed to considerable wear in the performance of their work it is necessary to make them of the extreme limits of size allowable, and extremely hard, so that they may work for as long a time as possible before wearing to a size which causes them to produce work that would be rejected by the gauges. Also, as apart from accidents, the only stoppages in the running of the machines are those made to allow the tools to be changed, it follows that not only the quality, but also the quantity of the work done by any manufacturing plant is dependent on the excellence attained in the tools. These may be classified as punches, dies and cutting tools. With the cutting tools no great difficulties are experienced, as they can be made small in size and easy to harden, while the cartridge metal cuts freely, and so does not wear them seriously. The punches and bolsters are required to be as hard as possible, consistent with the possession of sufficient toughness to allow them to withstand considerable shocks and to yield slightly to work which has not left the previous operation absolutely correct. The dies for extending, coning, &c., should be somewhat harder than the punches, as they have more surface wear to resist; they must not readily score or chip at the edges, and must not split.

In making these tools, the actual shaping presents nothing more than accurate machine work finished to gauge, but in hardening them considerable skill is needed. Methods of hardening steel tools are very numerous, but the greater their simplicity and uniformity the better are the results obtained. Of the means specially adapted for cartridge case manufacture the following have been found most servicable: A small gas furnace is convenient for heating the tools, as it is clear and the temperature can be easily watched and regulated. For dies requiring a specially hard surface, an application of potash while the die is hot gives excellent results; and for many of the tools sulphuric acid as a cooling agent gives better results than water, which is, however, more generally useful. It is not well to be continually experimenting with either the steel or the methods of hardening, nor, if the usual methods or temperatures used prove unsatisfactory, is it wise to change them at once. Sometimes steel which has turned out badly at one time has been laid aside for weeks or months, and has then, when treated apparently in precisely the same manner, worked well, owing to some changes in the condition of the steel or of its surroundings. Changes of atmospheric temperature have a most marked effect on the hardened tools, so much so that those left in the machines from Saturday to Monday in frosty weather, or even over night if the temperature of the factory falls considerably, rarely last beyond a very short time after the work has been resumed, the punches breaking off short, and the dies bursting and cracking. With these, as with all other hardened steel articles, an interval between the time of hardening and the time of using adds to their stability.

In manufacturing the smaller sizes of solid drawn cartridge cases the use of hardened steel for all tools is obligatory; but for the larger varieties, where the masses of metal in the tools are large and the stresses upon them less concentrated, cast iron and unhardened steel may be used occasionally. Strong cast iron has been found particularly economical for use in the coning dies for the quick firing cases; it is cheaper than and has not the same tendency to score the cases as unhardened steel, while in hardening steel dies of the size required there is great loss owing to cracks and deformations. For large drawing punches chilled cast iron is used with success, and for the large drawing dies a high carbon steel, un-

* From the proceedings of the Institution of Civil Engineers.

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hardened, is found most suitable. Some other variations from the course pursued in making the smaller cases are also noticeable in the manufacture of the large cartridge cases for quick firing guns.

As the cases increase in size they are made in tens instead of in thousands, and are fed into the comparatively slow running machines more often by hand and less by automatic gear. The machines employed are entirely different. The drawing machines have heavy saddles in which the dies are placed, traversed slowly to and fro in their frames horizontally by screws or racks like planing machine tables. The punches are fixed on both sides of a central stationary yoke, up to which the dies are moved alternately, work being done first on one side and then on the other, the traverse of the machine in each direction being utilized to effect different operations. The trimming machines develop into specially designed lathes with chucks, into which the cases are fitted by hand. The heading machines are large hydraulic presses which upset the heads of the cases under a pressure measured in hundreds of tons, or their place is taken by steam hammers in which a number of blows are substituted for one squeeze. Also in the large cartridge cases the primer occupies a smaller proportion of the area of the base than is required in the smaller ones and the hole for it is usually bored out of the solid metal.

One question enters into the construction of the machinery for the manufacture of all cases, particularly of the smaller kinds, which has not been touched upon and is of some interest. This is whether it is advisable to make machines so that the attendant merely feeds the cases into a slide or revolving table, and leaves the rest to the machine; or whether, as is possible in many of the lighter operations, such as trimming, the cases should be brought to the tools entirely at the will of the operator and at a speed dependent on his skill, enabling him at his best to exceed somewhat the speed of working of an automatic machine. The non-automatic machine is simpler, and is consequently less liable to stoppages due to accidents, but the automatic machine has the advantage of running more steadily when at work. The solution of the question depends chiefly on the human element involved, and, although there are exceptions, it appears generally best to place as much reliance on the machines and as little on the attendant as possible.

Here it may be well to consider the behavior of the case when set to do the work for which it was made. Defects which are not evident till the case fails in firing are for the most part due to the bad quality of the metal of which it has been manufactured; but some faults are due to methods of manufacture. Of these the most serious are the complete or the partial separation of the base from the body, owing to internal folding of the metal where the walls of the case spring from the base, arising from incorrect shaping of the punches used in the later drawing operations, and escapes of gas around the primer in consequence of imperfect consolidation of the metal of the head. Splits at the mouth must either be due to bad metal or to imperfect annealing having left it hard and inelastic. On the other hand, the metal may err by being too soft, making it difficult to extract the case after firing, owing to the head and body having expanded permanently. Splits and bursts may also occur anywhere owing to defective metal. A good case may be fired several times, if ordinary gunpowder forms the charge, provided the residue from the explosion is promptly cleaned away, as otherwise the metal deteriorates. If, however, the charge is composed of any of the smokeless explosives based on the nitro-compounds, although the pressure to which the case is exposed may be lower, the intense heat accompanying the explosion appears to render the thin metal rotten and untrustworthy for future use. In the stronger quick firing cases these evil results are not so marked, as the metal is thicker and has a greater factor of safety.

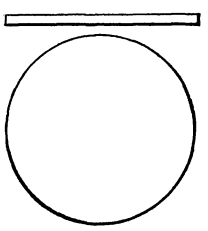


Fig. 14.—Blank.



Fig. 26.—Formation of Cap.

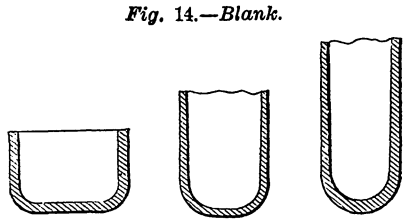


Fig. 15. Cup. *Fig. 16. 1st Draw.* *Fig. 17. 2d Draw.*



Fig. 27.—Formation of Anvil.

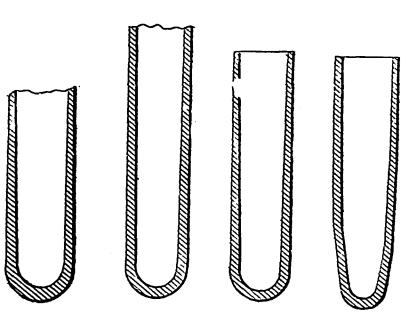


Fig. 18. 3d Draw. *Fig. 19. 4th Draw.* *Fig. 20. Trim.* *Fig. 21. Formed.*

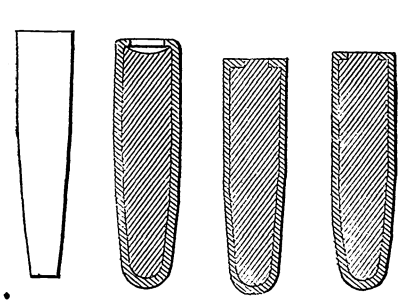


Fig. 22. Core. *Fig. 23. 1st Pressing.* *Fig. 24. 2d Pressing.* *Fig. 25. Rectified.*

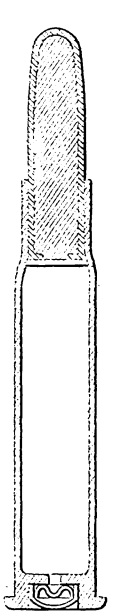


Fig. 28.

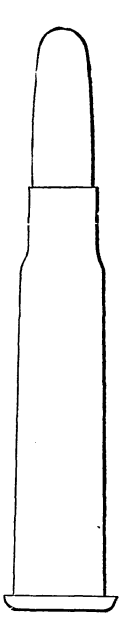


Fig. 29.

MODERN FIXED AMMUNITION.

Means of Ignition.

The method of ignition, although not particularly affecting the active efficiency of the cartridge, provided that the ignition is uniformly and readily obtained, has an important bearing upon the safety of the ammunition during transit and use. A central firing percussion cap is now always used in small-arm ammunition and in the smaller varieties of quick firing cartridges. It consists of a cup of brass, or of an alloy of copper with a small percentage of lead, having cylindrical sides, with a layer of detonating composition pressed into the crown. This cup is tightly fitted mouth forward into the chamber prepared for it in the base of the cartridge case, in the center of which, either separate and inserted with the cap or formed as part of the case by raising a conical projection in the center of the chamber, is the anvil. When the cap is struck centrally the crown gives way and the detonating composition, crushed between the crown of the cap and the anvil, detonates and fires the charge by the flash it transmits around the anvil and through the hole or holes pierced for the purpose in the base of the cap chamber. The pressure caused by the explosion expands the cap tightly in its chamber and prevents all escape of gas around its edges, while the cap is prevented from being blown out by the friction between its walls and that of the chamber into which it has been forced. The

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sensitiveness of the cap can be regulated by varying the material used for the detonating composition or the thickness of the crown. In the larger sizes of fixed ammunition an electrical primer is usually screwed in the base of the cartridge case so as to be removable at pleasure. An insulated contact piece and the body of the primer are connected by a fine wire bridge, which, when heated after the completion of the electrical circuit, fires the priming surrounding it, which in turn ignites the main charge. Escape of gas through or around the primer is prevented by packing or gas checks.

The Projectile

The remaining component of the cartridge to be considered is the projectile. This, the actual agent of the work to be done by the ammunition, has as many forms as there are classes of targets to be attacked, and their detailed consideration would form a wide subject of inquiry. As, however, only a relatively small quantity of shot and shell are made up in fixed ammunition, for which the great majority of projectiles are merely what may be classed as bullets, it is proposed to consider these only; and as with the cases so with the projectiles, those for the new small bore rifle appear the most worthy of detailed consideration, as they are made in the largest quantities and present the most interesting features in manufacture. A principal object in the design of any projectile is that its powers of penetration on reaching the target should be sufficient to do the work required of it. The material and the striking velocity of the projectile are the chief factors in this equation. It is necessary that the larger projectiles used against all varieties of defenses and objects should be made of some of the hardest materials available, but this is not so with the bullets whose employment is principally against men. For these lead is universally adopted as the main element of their composition, owing to its great density and the consequent advantage obtained during its flight through the air and to its adaptability to the most convenient methods used to impart rotation, the disadvantage attending its comparative softness being overcome by the addition of a percentage of antimony or tin or a thin casing of some harder metal. The exact form of a projectile is comparatively unimportant. An ogival head or that approximation to it most suitable to the material of which it is made, gives the best results, the accuracy with which the target can be hit depending chiefly on the maintenance of certain relations between the velocity, speed of rotation and proportions of the projectile and on their individual uniformity. This in its turn, provided regularity has been obtained in the explosive charge, is dependent upon the completeness with which the projectile follows the direction of the rifling and fills the barrel from which it is fired and on the uniformity of the resistance therein encountered. A number of methods of arranging the projectile to take the rifling have been used. It has been made a mechanical fit, as in the Whitworth system, or partially so, as in the studded shot used in many muzzle loading guns, or the force of the explosion has been used to drive into the grooves of the rifling a cup, band or coating of soft metal fixed to the projectile. In breech loading small arms, however, the method almost invariably used has been to make the bullet sufficiently yielding to entirely fill the bore through which it has to pass on being driven forward by the explosion of the charge in spite of its irregular shape. No great difficulty was met with for a long time in the use of this system with a lead or lead alloy bullet, but as the muzzle velocities obtained from small bore rifles were raised and the calibers were diminished metallic fouling in the rifling at once increased in quantity, and became more objectionable. In rifles of a caliber as small as 0.4 inch, with a muzzle velocity of upward of 1500 feet per second, the difficulty was met by means of copious lubrication from a beeswax wad behind the bullet and by covering the rear cylindrical part of the bullet with fine paper. The bullet was made of an alloy of lead and tin. But in more modern rifles in which the caliber has been reduced to about 0.3 inch, and even less, and the muzzle velocity has been raised to 2000 feet per second, the difficulties due to fouling have been overcome by using a compound bullet consisting of a lead core pressed into a thin envelope or casing of suitable hard alloy, which, while its use is free from the worst difficulties in the barrel, possesses considerably greater penetration than a bullet of the same size formed of an alloy rich in lead. This bullet is shown in Fig. 25. The opening through which the lead core is inserted is at the rear of the envelope, which is thicker at the nose than elsewhere, and the attachment between the two is completed by turning over the rear edges of the envelope.

Major Rubini, the inventor of the compound bullet, is reported to have successfully used a modification of it consisting of a lead alloy bullet tipped with a steel cap to increase its penetrative power, and covered over its main diameter with specially prepared paper; but experiments in England on these lines have not given good results. Many materials, including almost all ductile alloys and plated iron and steel, have been experimented upon with a view to their use for the manufacture of bullet envelopes; but nothing has been found more suitable than an alloy of copper and nickel in the proportions of about 20 per cent. nickel and 80 per cent. copper, with small quantities of manganese, iron and silicon. This alloy is tough, hard and white, capable of taking a fine polish, only slightly affected by the atmosphere, and giving in rolled sheets a tensile strength of 27 tons per square inch, with an elongation of 25 per cent. in 5 inches.

Preparation of Envelope.

The successful manufacture of this alloy requires the greatest care, extremely small deviation from the established course producing disastrous results. There is at the outset some difficulty in obtaining supplies of nickel of uniform quality, apparently due to the variations in the amount and manner of its reduction from the nickel oxide. The nickel and copper cannot be satisfactorily cast and worked by themselves, and the small percentage of other elements present in the alloy are introduced on this account. The particular methods of their introduction are regarded by some of the manufacturers who use them successfully as trade secrets, but the best effects have been obtained in the Royal Laboratory by the addition to the copper and nickel of a small amount of silico-spiegel, originally obtained for use in steel manufacture. Other physic, including varying quantities of ferromanganese, iron, zinc, aluminum and phosphorus, have been tried with varying results, some of the metal produced having worked well during manufacture, but failed completely in the final and severest test of firing, while some of it has been entirely satisfactory.

The alloy is cast in chills in the same manner as the metal used for cartridge cases, and is rolled down similarly, although it is not possible to do so much work upon it at each passage through the rolls without injuring it. The thickness to which the cupro-nickel strip is finally reduced is 0.04 inch, and this, after being annealed, cleaned and trimmed to a suitable width, is passed to cupping machines similar to those used in the first operation in the case manufacture, which at once punch out the blanks and form them up into the cups, Fig. 15, from which the envelopes are gradually formed. The cups having been annealed, are passed to drawing machines, which also are similar in design and action to those used for case manufacture. These extend the envelope and thin its walls to the required extent in four operations, which are accompanied by two trimming operations, in which the ragged edge at the mouth of the partially formed envelope is cut off, before and after it is drawn for the fourth time. It is not found necessary to anneal the cupro-nickel after every drawing operation, as is the case in dealing with the brass used for the cartridge cases. Indeed, it is the practice of some manufacturers not to anneal the cupro nickel after any operation subsequent to the formation of the cup. In the Royal Laboratory, however, the metal is found to give the best results if annealed after the fourth drawing operation.

In order to make the envelope with the rounded nose required, the drawing punches are approximate in shape to the final internal form. They cannot be made exactly of this form without being liable to punch out the front of the cups when descending upon them to force them through the drawing dies. Consequently the envelopes leave the drawing and trimming operations as hollow cylinders open at one end and closed by a dome at the other end, the interior cavity being slightly tapered, as shown in Fig. 20. In order to bring them to their finished proportions they are passed to the point forming machines, in which a punch, made exactly of the internal size of the finished envelope, presses them home into a die the exact size of the finished bullet. This tries the metal severely, for, although if good it receives no injury, weak or brittle metal gives way round the punch, which passes through the front of the would be envelope and at once destroys it. After being formed the envelope is completed by having its mouth reamered, and being trimmed to length.

Preparation of Lead Cores.

The lead cores now inserted by hand into the envelopes are made of an alloy of lead with 2 per cent. of antimony. This alloy is squirted into a rod by hydraulic pressure, for which purpose it is cast into a cylindrical chamber in the head of a hydraulic press, which is raised immediately the metal has set. Directly above the cylindrical cavity, and entering it when the ram is raised, is a fixed piston in whose center is placed a hardened steel die, with a central hole through which the semi-plastic metal is squirted as the ram continues to rise. It is curious that the die through which the lead is forced continues to grow smaller for some time

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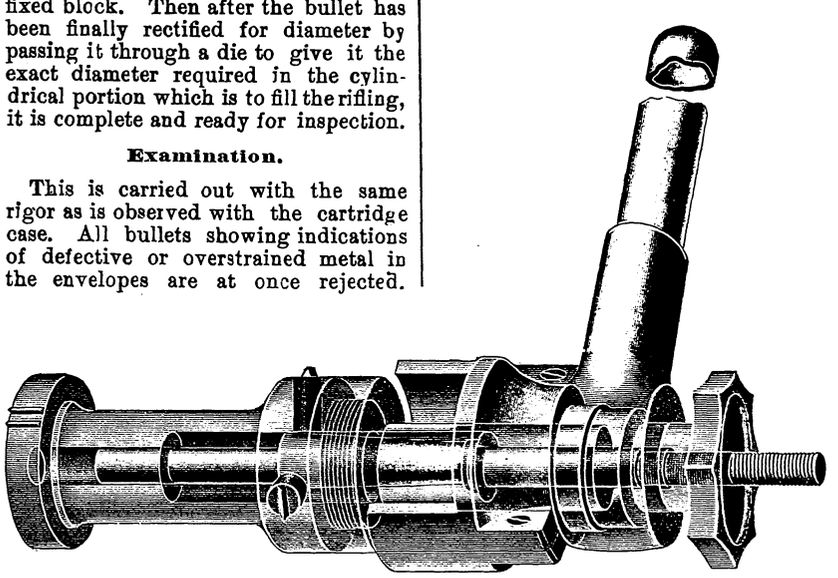
after it is first put in, instead of wearing larger, as would naturally be expected. This is due to the high temperature of the lead taking the temper out of the steel, and causing the die to shrink at a greater rate than is compensated for by the wear due to the passage of the lead. To make the cores the lead rod is passed to machines which cut it into short lengths, which are formed to the required shape by pressure in a die or mold.

Assembling, &c.

After the cores have been placed in the envelopes by hand they are pressed home so as to fill them completely. The envelope is held for the time in a die of the size of the finished bullet, and the tool that presses in the core turns in the rear edges of the envelope slightly in readiness for the next operation, which consists in pressing these edges firmly down on the core and consolidat the whole bullet. After this a cannelure or groove to contain lubricant is formed near its base by rolling it between a suitably shaped revolving disk and a fixed block. Then after the bullet has been finally rectified for diameter by passing it through a die to give it the exact diameter required in the cylindrical portion which is to fill the rifling, it is complete and ready for inspection.

Examination.

This is carried out with the same rigor as is observed with the cartridge case. All bullets showing indications of defective or overstrained metal in the envelopes are at once rejected.



THE LE VASSEUR BOILER TUBE CUTTER.

Two-thousandths of an inch are allowed between the high and low diameters of the bullets, but more latitude—viz, 0.032 inch—is allowed in its length. Large numbers of bullets are fired into water or sawdust, and are afterward examined to ascertain whether the envelope has held well together, and neither cracked along the marks made by the rifling nor been torn away at the rear. The weight is an important point, and is allowed to vary between 215 + or — 3 grains. Of this the envelope weighs 57 to from 60 grains.

The machines used in the manufacture of the compound bullet are all made on lines similar to those used for making the cartridge cases; in all, the envelopes or bullets are fed into tables or slides by hand and delivered to the operating tools by mechanical means. Also in the manufacture of the envelope, in which the chief difficulties in making the compound bullet lie, success depends as much on the quality of the tools used as in the manufacture of the solid drawn case, and the qualifications required in them are the same. The cupro-nickel is, however, both harder and stronger than the brass, and consequently wears the tools more rapidly, and causes them to scratch more easily.

As with the case so with the projectiles, more latitude is given in respect of weight, dimensions, quality of material and defects in manufacture in the larger sizes of small arm or quick firing ammunition; but the inspection of all varieties is extremely stringent.

Assembling the Cartridge.

In assembling the several components to form the complete cartridge, the object chiefly sought, after the production of perfectly sound ammunition, is safety while the work is being performed. This is attained by a system of carefully inspected danger buildings in which numerous precautions are taken, and from which all men and materials not actually required are excluded.

The operations here performed being similar for all kinds of ammunition, need only be particularly referred to as applied to the small arm class, the manufacture of bullets and cases for which has already been described. First, the cap, after having been primed, is inserted in the case, and firmly pressed home into the chamber prepared for it. Then after the insertion of the charge the case is bottle necked in the manner described. The internal diameter of the neck is made such as to just admit the bullet, the base of which has previously been coated over with beeswax, and is inserted in the case over wads—the beeswax doing double duty as lubricant for the bullet and water tight packing between the latter and the case. The neck of the case is then finally pinched on to the bullet and indented for cordite and cannelure, when the cartridge is complete. The examination and gauging which follows is chiefly designed for the detection of faults due to the manner of assembling, but also acts as a check on the previous examinations of the components of the cartridge. Every cartridge is tried in a socket gauge, smaller than the chamber in which it is intended that it should be fired, and most of the external dimensions of the cartridge are also gauged separately. The bundles of cartridges, as made up for service, are all weighed to make certain that no cartridge has found its way through the factories with any hidden part missing, such as the whole or portion of the charge or core of the bullet. Proofs are fired for velocity and accuracy, any defects developed in bullets or cases being noticed at the same time, while separate firing proofs specially for the detection of such defects may also be taken.

The accuracy of the shooting obtained from any ammunition, considered apart from the influence of the rifle used, depends on the extent to which uniformity is obtained in the components of the cartridges and in their arrangement on assembling, a principal factor being the hold which the case has upon the bullet; for, although insignificant in comparison with the enormous pressure finally developed by the exploded charge, the pressure required to start the bullet from the case has a considerable effect on the burning of the charge, particularly if it be made of one of the new smokeless explosives.

The tightness with which the bullet fits the mouth of the case has also considerable effect upon the stability of the cartridges under the rough usage to which they may be subsequently subjected. For, although carefully packed, their treatment in transit by sea and land is sufficiently rough to make itself severely felt. In use also they may have to bear considerable violence, for it can easily be imagined that the speed with which 500 or 600 cartridges per minute travel backward from the feeding belt, forward into the firing chamber, and with which the empty cases are extracted, in the Maxim automatic gun, is a severe trial both for the complete cartridge and for the fired case. The safety obtained by the use of the solid drawn case inclosing the charge is remarkable; for experiments have shown that it is impossible to explode any number of such cartridges at once, either by firing one of their number or by firing into the mass. It is for such important qualities that fixed ammunition having the solid drawn case has been preferred to all other varieties, and, indeed, has, owing to the extended use of machine and quick firing guns, become indispensable.

With regard to possible future developments it may be interesting to note that ammunition has been made in which a portion of the duties usually assigned to the case is performed by the charge, which in the form of a durable stick or tube of smokeless explosive is attached at one end to the bullet and at the other end to the rudiments of a solid drawn cartridge case consisting of a short gas check with a strong base containing the detonator. Such cartridges have not as yet, however, come into practical use, and cartridges of the type shown in Figs. 28 and 29 remain for the present the principal form assumed by modern fixed ammunition.

The Le Vasseur Boiler Tube Cutter.

This tool is intended for cutting out old boiler tubes or flues for renewal or otherwise, and for trimming off new flues or cutting pipe. It consists of a mandrel conforming loosely to the size of the tube to be cut, in which are knives or cutters radiating from an inner mandrel of varying diameter and provided with a screw by means of which the knives may be fed out as the cut in the tube progresses. These knives are attached by dovetail grooves in the mandrel.

In operation the tool is placed in the tube with the knives at the point to be cut; the tool is then revolved by means of a ratchet handle and the nut is held stationary, which gradually draws the inner mandrel toward the handle, thus

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bringing the larger diameter under the heels of the knives and throwing them out against the inner wall of the tube, the operation continuing in this manner until the cut is completed. When the nut is run back to its original position the mandrel may then be pushed from the handle and the knives drawn down into their sockets and the tool removed. This cutter is made by the Gouverneur Machine Company of Gouverneur, N. J.

Management of Men and Manufacturing Industries *

SECOND PAPER.

Engineering the Establishment of Competitive Manufacturing Enterprises.

BY THOMAS D. WEST, SHARPSVILLE, PA.

In days of sharp competition, the starting of new enterprises soon places upon the shoulders of its managers and investors a weight they had not figured on carrying, and all sentimental ideas of self importance and there is "millions in it" vanish long before dividends are declared.

Could the struggles of late enterprises to get a foothold be fully outlined we could not fail to have volume after volume giving recitals of trials. Could the principals in them have foreseen what they had to go through, with the chances to be taken ere they could establish a paying business, there would have been much hesitancy before starting in and a great probability of their not having done so.

The writer having fought through two such undertakings within the past five years, the first being lost by fire, should be in a position to know from experience some of the difficulties attending the establishment of a business open to free competition, an element most all new enterprises have to figure on combating.

Procuring Proficient Employees.

Of the many struggles to be met and mastered there is none more serious than that of getting a works filled with competent, faithful employees having qualifications such as are necessary to fill the many different characteristic lines of work called for in their business.

I know that there are those who do not believe it, but nevertheless such is true. There are industries which it may take from one to three years to procure the character of employees they would like to see filling all posts of duty, and one factor almost all new enterprises should specially figure on at the start is that of not being compelled to rush out work to the full capacity of their plant.

Go Slow the First Year.

The endeavor to do this will often entail serious loss financially. There are few whose character of manufacture will admit of such proceedings without loss, but with almost all it is much the better plan to go easy for the first year and be under as few obligations as possible in matters of manufacturing their product.

In first starting business the quality and quantity of an employee's daily out put is to be considered. A new firm will, by having new appliances, &c., have their own customs and standard they will desire to see adopted and achieved. No matter if the mechanic or employee did do the same character of work in his last place their standard is not yours and you want the benefit of modern arrangement and tools and the work done to your idea.

If your plant is rushed your men will know it and in nine cases out of ten you will find yourself placed in the position to shut up shop or let the employees, to a degree, establish their own notions of the customs and standard to be adopted.

No one but an experienced manager knows how difficult and expensive it is to undertake to change the customs, day's work and standard in a workshop after it is once established.

If in first starting up a firm could be assured of filling all its positions with men having the character and qualifications they would like them to have, and if it were not necessary before procuring one good man to discharge in some cases a dozen, business could be figured different, and the rushing of the plant to its full capacity, turning out the quality and quantity desired profitably, could be much more satisfactorily relied upon.

Taking the employees' side of the subject, it is also better for them that the starting off of a new plant should go slow, for it gives all more room to work, a better chance for the overseer to assist them in systemizing and becoming accustomed to their labors, and should the employee at first not manifest the ability required, business not being rushing the overseer can permit the man hanging on a little longer to see if he can make any success of him, and often eventually thereby making a reliable man that can stay as long as he may desire; otherwise he might be walking the streets looking for work.

Endangering Life and Breaking Machinery.

A factor to be also considered by the employer and employee in starting a new plant is the much lessened risks taken in persons being injured where there is much new machinery with green hands to run it by going slow the first year.

It is much better for the overseer to have ample time to watch and educate employees in the use of tools and machinery than to have them all crowded together with a go-as-you-can principle, injuring themselves and breaking the machinery.

Testing New Machinery.

Another good reason why it is advisable for new firms to figure on going slow the first year is to test their machinery. The plant is yet to be built that for the first year did not discover many weak points in its appliances and machinery that required shut downs and time to strengthen and repair. If rushed with work things will be found to go wrong that would not have given any trouble could there only have been the time spared to humor and nurse them, for new machinery often requires such treatment in order to have it run and act well just as much as a sick child.

Financial Troubles.

As a general thing a plant will be more sure of making money by going slow the first year than by attempting to drive the plant to its utmost capacity, and it is pretty sure to be the case that more money is laid out to put up the buildings and place machinery ready to start than was figured on, and the establishment often finds itself left with a very small working capital. If with such it is attempted to rush business the first year the chances are that the plant goes under, or is involved in difficulties from which several years of profitable work may extricate it.

A firm cannot survive many blunders, and the attempt to rush business the first year is generally to try a risk. "Be sure you are right, then go ahead."

* Read before the Civil Engineers' Club of Cleveland, Ohio, September 12, 1893.

The Classification of Steel Plates.

A prominent manufacturer of steel plates writes to us as follows on the vexed question of this classification:

The classification of steel plates, as set forth by manufacturers generally, is misleading and puzzling to the average customer. There is a wide mark from uniformity, and competition becomes a matter of unequal conditions, so that manufacturers of steel plates are bidding against each other, with quality so far apart and prices of equal difference, placing the consumer in a quandary as to what it all means and creating a distrust as to the fairness of those he purchases from.

As the facts now exist some mills are making two grades of fire box steel, two grades of flange steel and two grades of shell steel.

As a rule, the purchaser of plates will buy the cheapest—if plates are stamped to indicate grades—regardless of what the quality may be, and so it is evident that much of the steel sold in the market is not of first-class quality, because the price is so low it cannot be made first class. However, the consumer wants to get the cheapest, and he buys at the lowest price. The practice is dangerous to consumers of plates and users of boilers, because the fact is that the very best is none too good to put into use where life is at stake.

It is evident that some uniformity of classification of grade should be adhered to and insisted upon by inspection departments, and it would seem that the grades should be simple, and each to carry requirements such as will insure only first-class quality. The following would seem to be clear and well defined:

Fire Box Steel.

Tensile strength	54,000 to 60,000
Elastic limit, per cent	50 to 60
Elongation in 8 inches, per cent	27 to 30
Reduction of area, per cent	55 to 60

Flange Steel.

Tensile strength	54,000 to 62,000
Elastic limit, per cent, at least	50
Elongation in 8 inches, per cent	25 to 28
Reduction of area, per cent	50 to 55

Shell Steel.

Tensile strength	56,000 to 64,000

Tank Steel.

Tensile strength, about	60,000

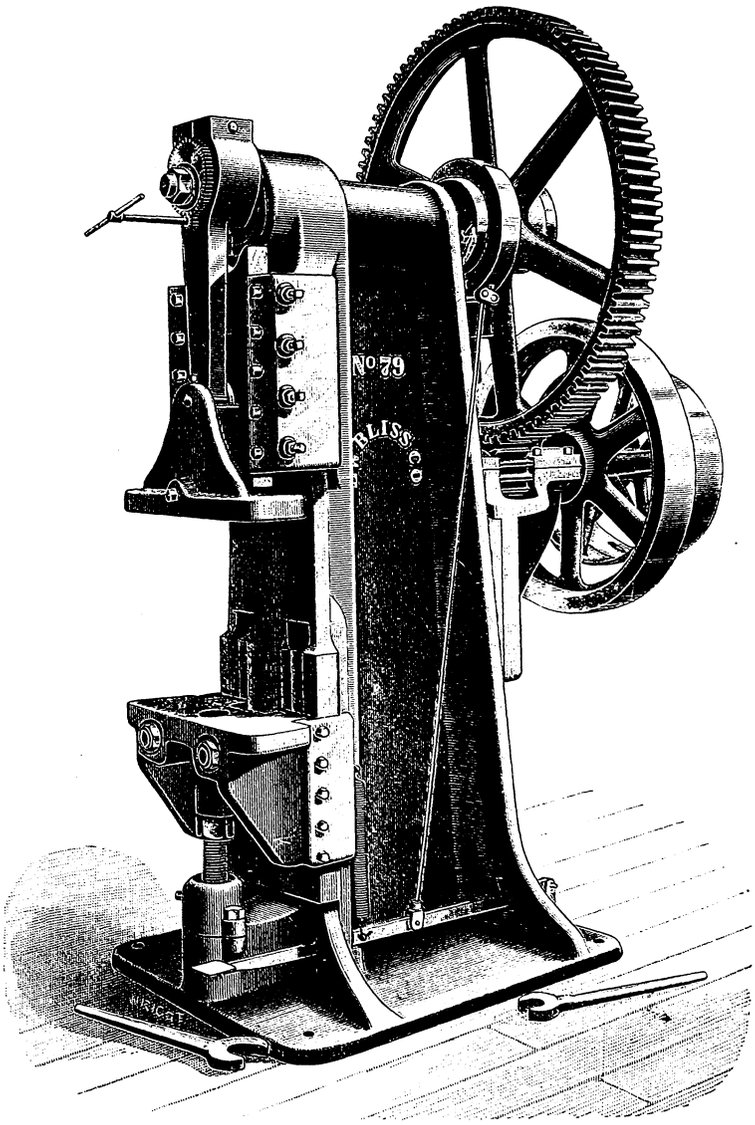
It is the opinion of writer that practically the foregoing list would insure such material as would be suitable for first class work and would place a higher standard of quality before consumers, and command a comparative price, while the present system of "any quality, any price" is disastrous not only to the manufacturer as to sustaining prices, but also in the general use of boilers as to safety of life and property.

It is stated that a large quantity of steel rails have been shipped from London to Vancouver, B. C., by way of Cape Horn, for the British Columbia Pacific Railway.

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The Bliss Reducing Power Press.

The engraving shows a long stroke press designed by the E. W. Bliss Company of Brooklyn, N. Y., for redrawing, shaping, trimming and other operations on deep sheet metal articles. It is provided with a screw adjustment for the table, which permits the use of dies varying greatly in hight, and also has an eccentric device in the pitman which facilitates making the finer adjustments required for the tools. The press is provided with an automatic clutch controlled by foot power, so as to have the slide stop automatically at the top of the stroke, unless continuous strokes are wanted, in which case the foot is kept on the treadle. The machine is made with or without gearing. For broaching castings or forgings where a very slow movement is required it is frequently constructed with back gearing of much greater ratio than shown, in which case a friction clutch on the driving shaft is used instead of automatic clutch on the crank shaft. The press, as shown in the cut, weighs about 8200 pounds, has a maximum distance between bed and slide of 15½ inches, an adjustment for this space of 10 inches and a stroke up to 8 inches. The ratio of gearing is one to seven and a half and the number of strokes usually made per minute 40.



THE BLISS REDUCING POWER PRESS.

Tariff Testimony.

A volume has been published which contains the tariff testimony submitted in hearings and in correspondence to the Ways and Means Committee. It contains a full stenographic report of the testimony submitted by the iron manufacturers, to which we referred at the time. The remarks of Joseph Wharton, W. R. Stirling, John Lambert, G. M. Laughlin and Cyrus Elder are full of interest. There are a few statements made by workmen, members of the Amalgamated Iron and Steel Association. John Jarrett, secretary of the Association of Iron and Steel Manufacturers and Tin Plate Manufacturers, presented figures relating to wages in the sheet rolling industry paid in this country and England. A letter is printed from E. H. Sears, president of the Collins Company, urging that the reciprocity features of the present law be retained, that scrap iron be placed on the free list, and that the duty on charcoal iron bars be reduced. Houghton & Richards of Boston plead for a reduction of the duty on high grade iron bars and plates, with a view to helping Low Moor. J. G. Batelle spoke on behalf of the makers of iron and steel sheets, representing 200 finishing trains of rolls, with an aggregate capacity of 400,000 tons. F. G. Niedringhaus of St. Louis, W. C. Cronemeyer of Demmler and W. B. Leeds of Elwood, Ind., were those who presented the views of the tin plate manufacturers during the same hearing.

At another time N. A. Gilbert of Cleveland made a statement on behalf of the Shelby Steel Tube Company of Shelby, Ohio, who ask that the duty be taken off from Swedish hollow billets, which they import for the manufacture of solid drawn tubing. They state that they are the only importers and on 2,505,842 pounds imported, which cost $97,158.74, they paid a duty of $38,-910.94. It is claimed that American steel makers cannot produce a satisfactory article, the analysis of which, by the way, is given as follows: Carbon, 0.13; silicon, 0.035; manganese, 0.155; sulphur, 0.005, and phosphorus, 0.041. In the course of the testimony the statement was made that the demand for bicycles is about 4 000,000 feet of cold drawn tubing per year and that last year the company, whose plant cost $350,000, made 2,000,000 feet.

Henry Disston & Sons of Philadelphia send a brief communication recommending that the duty on band saw plates, wholly or partially manufactured, black or bright, thinner than No. 13 gauge, up to 14 inches wide, be made 7 cents.

The California Wire Works of San Francisco ask that the duty on wire rods be reduced from 0.6 cent to 0.1 cent per pound. The Kidd Steel Wire Company of Sharpsburg, Pa., newly established, manufacturers of watch and needle wire, drill rods, &c., present a letter requesting the retention of the present duty on that class of wire. S. & C. Wardlow, importers, of New York, on the other hand, urge a reduction of the duties on steel and on flat steel wire or strips, on the ground that the present rates of duty are unjust to American makers of pens and producers of watch springs, &c. John A. Roebling's Sons Company point to the large increase in the imports of wire and demand a retention of present rates. The imports, which were 8,072,137 pounds in the fiscal year ending June 30, 1892, rose to 9,305,075 the next year.

The testimony of W. C. Dalgell of South Egemont, Mass., was put in on September 16. He called attention to the fact that the specific duty of 2 cents per pound is inadequate as applied to the higher grades of carriage axles. His testimony was supported by a letter similar in tenor from T. Gray of the Tomlinson Spring Company of Newark, N. J.

A particularly interesting talk is that of Thomas W. Bradley of Walden, N. Y., who with W. F. Rockwell of Meriden, Conn., represented the American pocket cutlery manufacturers. Mr. Bradley related his experience in his negotiations with the promoters of the United States Cutlery Company, his firm being mentioned in connection with it without authority.

George C. Hatch of Bridgeport submits a statement relating to the cost of pocket knives. He figures that the cost of making two dozen knives, which is an average day's work, is 70 cents in Germany and $2.20 in this country. This is the cutler's work. The cost of grinding and finishing is 24 cents in Germany and 56 cents here.

The retention of the present tariff on razors and razor blades is supported by an argument sent by J. R. Torrey of the Torrey Razor Company of Worcester, Mass., who estimates that fully 33 per cent. of the razors consumed in this

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country to-day are of domestic manufacture.

A highly interesting document is that signed by James D. Foot of Kearney & Foot Company, in relation to files. Mr. Foot urges that files should be put in three classes, viz.: Files for mechanical uses, for jewelers' and silversmiths' uses and rasps for blacksmiths' or farriers' uses. Mr. Foot states that at the time when the Mills bill was being drawn up he urged a reduction of the duty on files. Now, however, he recedes from that position because the advantages once possessed by American manufacturers have disappeared. When he claimed at a former period ability to compete with foreign manufacturers in spite of a lower duty he relied upon the excellence and ingenuity of American machinery. Since that time, however, the foreigners have equipped themselves with machinery of American design, so that they are on equal terms in this respect and continue to enjoy the additional advantages of cheap labor. Mr. Foot presents some general information in regard to the decline in prices and in raw material and data relating to wages. Mr. Foot makes the somewhat surprising statement which follows: "To-day, through home competition, the price (of steel) varies from 4 to 6 cents per pound, and such is the fact that if by an act of Congress should an export business be established in files, by which the steel could be imported into this country and on custom house oath re-exported in files, thereby obtaining for the manufacturer of files a practical remittance of all duties, no manufacturer of files could afford to use this steel in comparison with home prices even with this rebate allowed. Consequently there would be no possibility of reducing the cost of producing files by a corresponding reduction in the cost of raw material in the shape of bar steel through the removal of duties on same." Mr. Foot does not seem to be aware of the fact that under the present law 99 per cent. of the duties are refunded as a drawback on exportation, so that if such a business was feasible, it could have been done for some time. We are inclined to believe, however, that foreign steel could be landed here at prices below that of American steel for a re-export business.

A number of manufacturers of shotguns urged the retention of the present duties.

The Ausable Horse Nail Company, through their president, A. Bussing, point out that the manufacture of horse nails by machinery is an American industry and that the machinery for this purpose is of exclusively American invention. The machinery now being used in Europe is built in this country. The annual production is from 6000 to 7000 tons. Mr. Bussing states that the industry can stand a reduction in the duty of 1 to 1½ cents per pound, making it 2½ to 3 cents per pound.

The interests of wood screw manufacturers are represented by a letter from M. J. Woodruff, president of the Russell & Erwin Mfg. Company of New Britain, Conn. Mr. Woodruff pronounces it a well recognized fact with all wood screw manufacturers that to provide for the daily product of each 1000 gross of screws of average sizes, capital invested in permanent plant, machinery, tools, fixtures and working means to the extent of $100,000 must be provided, and that the most successful manufacturers are unable to manufacture and market at average market prices a quantity of wood screws equal in value to the capital invested in less than two years of time; that is, it requires the market product of two years' time in which to turn the capital over once. Iron and steel wire drawn to required sizes is the raw material of the screw manufacturers. The average cost of this wire in this country to the screw manufacturers is about 3⅛ cents per pound; in England, 1⅞ cents per pound; in Germany, 1¼ cents per pound; in France, 1⅛ cents per pound; in Belgium, 1¼ cents per pound. Other incidental supplies, as oil, fuel, soda, gas, &c., bear about relative proportions.

Investigations recently made in the various foreign countries regarding comparative wages paid upon similar processes in manufacture of screws show that where the manufacturers in this country pay $1 in England is paid 52 cents, in Germany is paid 46 cents, in France is paid 47 cents and in Belgium is paid 43 cents. In Norway and Italy wages are still lower. Mr. Woodruff's company, being interested in works near Hamburg, have been able to verify this comparison.

Many foreign makers use the same pattern machinery as is used in this country, and the speed of the machine is governed by the power applied, and controls the rapidity of the product. In this country we are certainly not ahead of our foreign friends in the production or application of power for rapidity of production; consequently, one day's wages of foreign labor will produce as many screws as the same time of American labor.

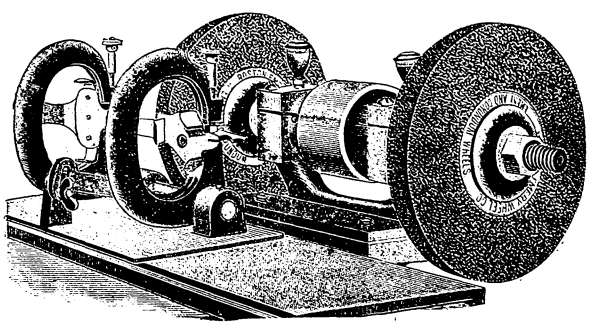
Mr. Woodruff asks for the continuance of the present classification and specific rates.

The facts relating to aluminum were presented in a paper by Albert E. Hunt, president of the Pittsburgh Reduction Company, who was closely questioned by the committee after its reading had been completed. He urges that a duty of 25 cents per pound be substituted for the present ad valorem duty of 45 per cent. upon rolled, forged or drawn bars, rods, plates, sheets, wire, pipe, tubing or castings of aluminum or of alloys of which aluminum is the component part of chief value.

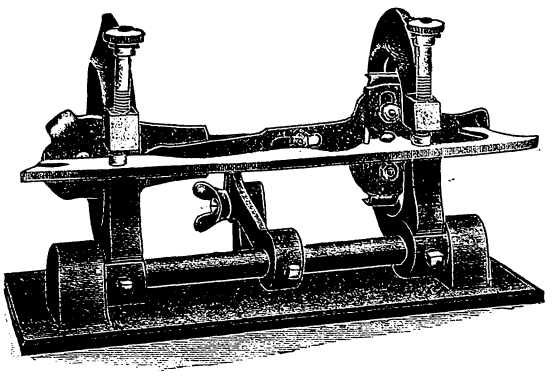
Very voluminous testimony was taken on the question of the duties on lead ores, L. E Holden, owner of the Cleveland *Plain Dealer*, and Hugh N. Camp of New York, representing the St. Joseph and Doe Run Lead companies of Missouri, being the two witnesses.

Among the other subjects taken up in the metal schedule was quicksilver, by W. B. Buckminster of the Napa Consolidated Quicksilver Mining Company; metallic bedsteads, cotton machinery, by the Knowles Loom Works, and bicycles, by the Pope Mfg. Company.

The testimony is closed by a letter from Henry T. Seymour, secretary of the American Shear Mfg. Association.



Complete Machine.



Skate Holder.

THE KEENEDGE SKATE GRINDER.

The Keenedge Skate Grinder.

The skate holder, shown detached in the right hand view, can be used on any emery grinder by attaching a plate to the grinder at such a hight as will bring the skate nearly opposite the center of the wheel. The holder consists of a flat bed plate upon which is mounted a shaft, carrying at each end a clamp for holding the blade of the skate. This shaft also carries a bar, by means of which the device may be adjusted so that the blade will be at the proper angle to the emery wheel. After the skate has been firmly clamped in the holder the latter is moved to and fro, the skate being held lightly against the wheel to prevent heating the runner. This holder will grind square or high on either edge, as may be desired. This device is made by Charles Perkins of Bridgewater, Mass.

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Silicon and the Grading of Pig Iron.

BY A. P. BJERREGAARD, IVANHOE, VA.

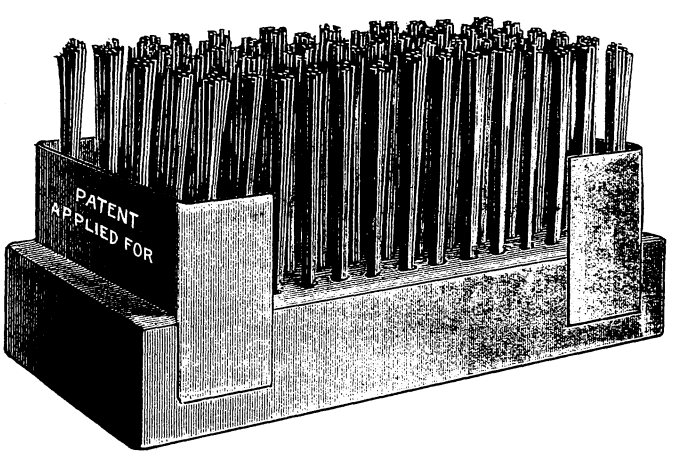
Why are there often several grades of iron in the same cast? This question often enters the mind of one having to do with the control of a blast furnace. It is a common opinion among furnacemen that they are caused by a difference in specific gravity. This explanation appears to receive corroboration from the observed fact that the closer grades are the first to leave the furnace and to fill the lower pig beds. But this phenomenon may also be attributed to the partial chilling of the iron in the cold sand runner. The runner soon becomes heated, so that the succeeding iron retains its heat, and therefore forms larger crystals. To determine whether there is any difference in specific gravity upon which the above mentioned opinion could be founded, the author made the following tests of specific gravity:

	Specific gravity.
No. 1X pig iron	6.972
No. 2X pig iron	7.044
No. 3 pig iron	7.109

Silicon Contents of Different Grades of Pig Iron.

No. 1X.	No. 2X.	No. 3.
3.71	3.57	3.29
3.58	3.43	3.24
3.29	3.19	3.06
2.89	2.35	2.12
2.82	2.47	2.21
2.82	2.45	2.12
2.81	2.49	2.16
2.80	2.48	2.36
2.78	2.63	2.33
2.63	2.35	2.02
2.63	2.04	1.79
2.56	2.45	2.37
2.41	2.32	2.23
2.40	2.04	1.83
2.31	2.16	2.07
2.26	2 17	2.02
1.93	1.88	1.60
1.76	1.22	0.87
1.75	1.41	1.32
1.57	1.27	1.18
1.25	1.03	0.89

It is the author's opinion that the variation in the silicon contents of the same cast is the cause of the difference in grade, and not an effect. For it is well known that silicon has the property of causing combined carbon dissolved in pig iron to crystallize out as graphite when the fluid iron solidifies. Since it is by the amount of coarsely crystalline graphite visible to the eye that the iron is graded, it follows that the grade is determined by the relative amount of silicon present.



STEEL WIRE BRUSH.

These figures seem to point to the truth of the opinion that the difference in grade is caused by a difference in specific gravity.

But it might reasonably be expected that these different grades or qualities of iron would become mixed, if not in the furnace at least in the runner. That they do not is proved by the difference in crystallization often observed in different parts of the same pig. It is not rare to see pigs composed of several grades arranged in crude layers, the closest generally at the bottom. However, the author has seen pigs in which the "close spot" was near the top.*

The difference of grade under discussion is not confined entirely to mere physical characteristics, but extends even to the chemical composition. This is illustrated by the following analyses. Several kinds of iron are represented. The table is arranged according to the amount of silicon in the No. 1X grade. In every case it will be seen that the No. 2X has less silicon than the No. 1X, and the No. 3 less than the No. 2X, although in each case the three grades were all produced in the same cast.

*No reference is here made to a chilled crust on the iron, which is sometimes formed. It may be either white, mottled, "close" or a lower grade of foundry iron than the heart of the pig.

The various masses of iron ore passing down through the furnace are associated with different amounts of silica, and different amounts of limestone, so that some particles of iron will have an opportunity to absorb more silicon than others. These various particles of iron, when melted, arrange themselves in layers, the heaviest, containing the least silicon, sinking to the bottom, the lightest, containing the most silicon, floating above.

Still another explanation possible is that the iron first formed lies at the bottom, and since it is for a longer time exposed to various cooling effects, it is not so hot as that above it, hence it will part with some of its silicon to its hotter neighbor above. Both these explanations will also account for the so-called "close spots." In the first case the melted iron will not all have an opportunity to reach its proper level before tapping, hence some of the closer iron will be mixed in the same pig with more open iron. In the second case the iron from next the wall will be as cold as that at the bottom, and it will become mixed with the hotter iron, so causing "spots." It may be that both these explanations are true causes.

Whatever theory may be accepted the fact remains that the most openly crytallized iron in each cast contains the most silicon, and the difference is often very great. We are, therefore, constrained to believe that the method of grading pig iron in vogue is not so arbitrary as is supposed; but that it really rests on a scientific basis.

Another fact noticeable in the table of analyses is that it is not the absolute but the relative amount of silicon that determines the grade. Whether the silicon in the whole cast is high or low, there is always more in the more open iron and less in the closer. If the comparison had been carried further, taking the "close" or gray forge grade into account, the same difference would be observed, but to a greater extent. One curious example that has come under the author's observation was some No. 2X pig iron containing a spot of white iron. The No. 2X iron contained 0.96 per cent. silicon, while the white iron layer near the bottom of the pig (yet entirely surrounded by foundry iron) contained 0.37 per cent.

There is often also a slight variation in the amounts of phosphorus and manganese in the different grades formed in the same cast, but so far no regularly occurring progressive variation has been observed. At best the difference is only a few hundredths of 1 per cent.

The phenomena discussed in this paper are entirely different from segregation. In segregation the impurities in the same pig will tend to collect themselves toward the center of the pig, whither the iron drives them while crystallizing. We have here to do with a more profound cause, one that takes its origin in the blast furnace itself.

Steel Wire Brush.

This steel wire brush for cleaning castings is made by the S. Obermayer Company of Cincinnati, Ohio. It will be noted that there is a sheet metal strip inserted in each end of the block and which by the protection it affords the wires adds to the durability of the brush. It is stated that the wire will not crystallize and break, and that it will wear down to the block.

Official Report on U. S. Cruiser "Columbia."

Rear Admiral Belknap, president of the Trial Board, reports to the Secretary of the Navy in regard to the recent official trial of the United States cruiser "Columbia," that the mean speed of the ship for two runs over the measured course from Cape Ann to Cape Porpoise, under forced draft, with an average air pressure of $\frac{9}{10}$ inch, carefully calculated and corrected for tidal flow, was at the rate of 22.80 knots per hour. The board finds that the "Columbia" fulfills the contract requirements in every respect, and regards the vessel as possessing qualities of steadiness, seaworthiness and ready obedience to helm in a marked degree. Only the best material and most thorough workmanship, says the report, could have produced engines and boilers of such notable performance. In conclusion the board expresses the opinion "that, in the 'Columbia,' the service and the country have a vessel that, as a type of superior construction, advanced enginery and great speed, marks an epoch in modern cruiser design and building." The result of the official speed trial insures a bonus for the "Columbia's" builders, the Cramps of Philadelphia, of about $350,000.

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THE WEEK.

Announcement is made that the Republic of Nicaragua is about to bring suit in the United States courts against the embarrassed Nicaragua Canal Construction Company for failure to fulfill their contracts with that Government. The reasons given are that no work has been done on the canal for a year and that the company have gone into the hands of a receiver.

An official report has been received in Washington from the special agent sent by the Government to investigate the gold discoveries in Minnesota. The agent reports that he is firmly convinced that the district in the vicinity of Rainy Lake is distinctively a mineral country. In the quartz of Township 71 the mineral is deemed very rich, and the land has been withdrawn from settlement.

On Wednesday, November 22, the first steel merchant vessel ever built in Maine was launched at Bath. She is the twin screw steamer "City of Lowell," built for the Norwich & New York Transportation Company, and designed by A. Cary Smith of New York. The vessel is a magnificent example of a modern Sound steamer. She is 336 feet long, 49 feet molded beam, or 66 feet from guard to guard amidship; will draw 13 feet of water when loaded and steam 20 knots an hour at the least, with a possible 22 knots. The hull is unusually strong, the frames being steel angle irons covered with steel plates $\frac{12}{16}$ inch thick. The decks are of steel covered with thick pine. The "City of Lowell" is a twin screw boat with triple expansion engines of 26, 40 and 64 inch cylinders, 36 inches stroke and 4500 indicated horse-power. Steamer will be supplied by six Scotch return tubular boilers, built for a working pressure of 165 pounds.

Experiments are being made in Italy with light electric vehicles, somewhat larger that ordinary tricycles. The vehicles are equipped with a battery of ten cells, capable of yielding sufficient energy to propel them for from three to five hours.

In Great Britain the work of connecting all the lightships and lighthouses with the telegraph system of the country has been begun.

The Alps are to be pierced by another railway tunnel. This time it is the Simplon that is to be attacked, by a company recently formed in Switzerland for the purpose. The work is estimated to cost $15,000,000 and to occupy five and a half years.

The Herreshoffs of Bristol, R. I., have received an order from a New York man for a Tobin bronze steam yacht, which, it is said, will be the finest yacht afloat. These famous builders are enthusiastic over the future and efficiency of Tobin bronze in yacht construction.

The present low price of wheat in the United States is not to be wondered at when it is considered that the stocks now held reach the immense aggregate of 67,000,000 bushels. This is double the amount held at this time last year, and is far larger than the stocks in hand at the like period for many years past.

A great pool, or combination, of the lake shipping interests which center at Buffalo and West Superior has, it is rumored, been arranged.

It is understood that the President's message to Congress will include the recommendation of an appropriation for the construction of another new battle ship and four torpedo cruisers for the navy.

Plenty of capital is said to be ready for carrying out a rapid transit system for New York City as soon as the commissioners come to a decision on the plan to be adopted.

Chicago is reported as suffering from a regular fire insurance famine. So many insurance companies have been crippled by large damage claims of late that big business concerns find it impossible to obtain all the insurance they desire to carry.

The Salvation Army in San Francisco recently undertook to sift the truth of the rumors about the large numbers of unemployed workingmen alleged to be in that city. It offered work at $1.40 a week and found no takers. The *Coast Seamen's Journal* does not think the test was a fair one.

The season's export trade of Montreal, Canada, ended on November 22, when navigation was closed. From all reports the season has been an exceptionally poor one. Freights have been remarkably low and prices bad on the other side. The amount of grain shipped from the St. Lawrence was 22,500,000 bushels.

The deplorable waste of natural gas continues. A well drilled recently near Greenfield, Ind., was wrecked by the pressure of gas, and by last accounts a flow of gas estimated at 30,000,000 cubic feet a day was rushing out unrestricted, the owners being totally unable to get it under control.

Certain localities in Ohio, West Virginia and other States are suffering from an acute visitation of the tramp plague.

Japanese trade with the United States, according to a late statement issued by the Japanese Customs Bureau, is increasing more rapidly than it is with England, France or Germany.

A British trade contemporary lays stress upon a noticeable feature that has recently developed in the engineering trades of the English Midlands—namely, the demand from Russia for machinery and plant for iron and steel making. Some important contracts have been lately forwarded and others are now in hand for rolling mill machinery of the most improved kind, showing the growth of enterprise in the direction of the manufacture of steel and iron in the dominions of the Czar.

A most curious dinner, so far as regards the place in which it was consumed, was given in Brooklyn last week, when 108 persons, guests of the Brooklyn City Railroad Company, were entertained inside the big chimney of that company's newly constructed power house. The chimney, which is 300 feet high, is the loftiest in New York State and one of the highest in the world, and forms a very conspicuous feature of the Williamsburg district of the city of Brooklyn.

A vessel sailed from San Francisco for Havre, France, last week, carrying the first full cargo of tallow ever shipped from the Pacific Coast.

October net earnings of the Reading Coal & Iron Company were $358,358, being the largest net earning for any month in the history of the corporation. It is nearly $50,000 in excess of that of October, 1892, although the ruling prices of coal at that time were 10 to 15 cents per ton higher. The company's collieries produced in October, 1893, 860,928 tons of coal, an amount only once before exceeded.

Coal fishing is a curious industry prevailing at the town of Northumberland, on the Susquehanna River. The bed of the stream in this vicinity is thickly lined with coal, washed down from various colliery centers and prevented from going beyond Northumberland by a large dam. The fuel thus recovered from the river last year amounted to 4000 tons, which was sold at an average price of $2.20 per ton.

Plans are afoot for a consolidation of the surface street railroads of Brooklyn, N. Y., with an aggregate stock of $55,000,000.

A British Torpedo Boat Destroyer.

The British torpedo boat destroyer "Havock," recently built by Yarrow & Co. for the British Government, has, on her official trial, proved herself the fastest vessel in the British Navy, having maintained during three hours a mean speed of 26¼ knots per hour. This speed was the more remarkable on account of the trial having taken place in a very heavy sea, the water finding its way even into the engine room. The "Havock" is the first of 12 similar vessels of an entirely new and distinctive type, which are being built for the British Admiralty by private contract, after the design of the Director of Naval Construction, W. H. White. They are intended, as their name indicates, to act against torpedo boats, and to exceed those boats in speed. The "Havock" is 180 feet long by 18½ feet beam, and about 200 tons displacement. She has two sets of triple expansion engines, with cylinders 18, 26 and 39½ inches in diameter, by 26 inches stroke, designed to give 3500 horse-power at 400 revolutions per minute. They drive twin screws, having three manganese bronze blades, 6 feet 2 inches in diameter. Her boilers are two in number and of the locomotive type, one to each set of engines, in separate stokeholds, forced draft being supplied to them by two fans by Allen & Co., and are designed for a working pressure of 180 pounds per square inch. The armament of the "Havock" consists of one 12-pounder and three 6 pounder rapid fire guns, as well as one fixed bow torpedo and two revolving deck tubes, 18 inches in diameter. She carries an electric search light. Yarrow & Co. are building a sister ship, the "Hornet," from which they expect to obtain a speed of 27 knots.

At a fully attended meeting of the iron trade of Boston held November 20, noon, at the Chamber of Commerce, to take action on the death of Charles T. Richardson, who for more than 30 years has been identified with the iron trade of this city, the following resolutions were passed: "Called together by the event of the death of one of their number, Charles Tyng Richardson, who passed away November 18, 1893, the members of the iron and steel trade of Boston desire to express their appreciation of his integrity and honorable career as a merchant, and his kind and upright character as a friend and associate, and their sorrow at his death. They offer to his surviving family their tender and heartfelt sympathy in their great sorrow and affliction, and it is resolved, that a copy of the above be sent to the family and the trade be represented at the funeral."

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The Iron Age

New York, Thursday, November 30, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Time to Look for Better Business.

It is a queer sort of philosophy that does not recognize conditions as they exist. It is more singular still that credit should be expected for the profound act of shutting one's eyes and refusing to look. Yet this is being done by persons connected with the iron trade who fancy that they possess some influence as leaders of opinion. For many weary months, so many that we dislike to count them, trade has been so bad that it could hardly be worse, and yet there are individuals to be found, and of some pretensions to leadership, who persistently ignore the distress into which manufacturers and merchants have been plunged and tell them in effect that matters are not really bad, but to keep up their spirits, as times will surely be better by and by. This is a Micawber like spirit, merely waiting for something to turn up. It is not the spirit of an alert business man keenly alive to the influences prevailing at the moment and studying how he can best take advantage of them and rise above them. When business is poor such a man realizes it, acknowledges the fact and endeavors to put himself in shape to endure it. There is nothing to be gained by his being falsely told that he is mistaken in his views, that he will soon find affairs very much improved, and that then he will laugh at his apprehensions of trouble.

We believe that manufacturers are to-day not much in need of advice how to act. Those who hardly knew what to do when hard times so suddenly chilled them have been driven by the force of circumstances into the only course possible. They have retrenched in every way and in directions which at one time would not have been deemed open for such action. Expenses have been curtailed which seemed to be rigidly fixed. Arguments as to costs by sellers of materials have been wholly ignored, and prices have ruthlessly been beaten down, making such producers in their turn grapple with their own difficult problems. Without concerted action, and with no preconceived theories as to a permanent lowering of values, the whole country has nevertheless proceeded in that direction, and to day we find ourselves to have been participants in a revolution. It is possible that a reaction may be inspired by causes now wholly invisible which will again force prices on a higher plane, but it seems to us the part of wisdom to base no hopes on such a change.

Accepting values as they exist to-day, that manufacturer or merchant who is able to adjust his views most quickly to the new order of things will reap the greatest benefits. In many lines possible tariff changes have already been anticipated. Perhaps most commodities have fallen in price as low as, if not lower than, prospective reductions in duties might have forced them to go if a new tariff had been put into effect over night. If this is the case, there is no reason why business men generally should not feel confidence in existing values and purchase freely to cover their known requirements. The worst having been prepared for, the general interests of the country are just so much better off, as the reductions in duty when made are found to fall short of what had been expected.

With the revision of the tariff discounted, so that it is no longer a bugaboo, and with the currency question happily settled on a sound basis, thus checking the flow of gold abroad, there is nothing to prevent a revival of trade except the lack of confidence, which was so rudely shaken during the past spring and summer. If the philosophers of optimism and cheerfulness can stimulate the growth of confidence, now is the time for them to come forward, but the people have probably lost faith in such blind leaders who did not recognize calamity when brought face to face with it.

The Wilson Tariff.

We believe that iron manufacturers generally had settled down to the belief, during the past few weeks, that the rates of duty which would be proposed by the Ways and Means Committee would not be very radical. Apparently reliable forecasts of the principal features of the measure had agreed pretty well. None of them had prepared the metal industries for the heavy blow which is now aimed at them. At first sight the figures may not look alarming, because a comparison is difficult. A closer study is well calculated to bring consternation and dismay to the manufacturers and wage earners in the great American industries involved. That study presupposes familiarity with foreign values, to which the American iron trade has given little attention for some time, since domestic competition has crowded prices to a level at which foreign material has been practically out of the race, under the present rates of duty.

The plea made by Mr. Wilson that ad valorem rates of duty offer less opportunity for fraud than specific rates, because cheap weighers can be more readily bribed, will be brushed aside contemptuously by every business man, be he importer or manufacturer. The ad valorem rates have been adopted because they disguise the heavy cut made, and because with ignorant people they leave the impression that the iron industry has been generously dealt with. We shall not now deal with the inconsistencies of a measure which puts cotton ties on the free list as a raw material. We shall return later on to that grave defect in the bill which puts goods of the highest finish on the same basis as the cruder forms of the same group. We propose now merely to present some figures which will enable the trade to appreciate how sweeping the measure is.

Let it be fully understood at the outset that ad valorem duties are assessed on the market value at foreign works, so that it may happen that it is cheaper to buy from an inland plant abroad than from one which from its location at tidewater would be the natural seller. The apparently generous percentages are not measured upon American values, but upon the lowest foreign prices, often made to clear the home markets of European producers of an uncomfortable surplus. In our computations we have calculated the pound sterling at $4.88, and the mark per metric ton at 25 cents per gross ton.

Pig Iron.—Beginning with pig iron, we find that makers' brands of Cumberland Bessemer pig have sold as low as 42 shillings, or $10.25, f.o.b. With a duty of 22½ per cent. the rate would be $2.31, against $6.72 at present, a cut of $4.40. No. 1 Coltness Scotch foundry iron has sold down to 50 shillings, which would make the duty $2.75, or a cut of $4. The lowest price at which Scotch warrants have sold, so far as our records go, is 37 shillings, in June, 1888, which is $9.03. At this valuation the duty would be $1.99. A good deal has been said lately about the low prices at which Alabama warrants have been placed. The recent transactions referred to by us were at $7.50. Now, the cost of hauling the iron to tidewater at Savannah is $2, and it takes $2 more to bring it to New York. In other words, Alabama in the days of its greatest distress cannot get to tidewater as cheaply as Scotch iron on board ship at Glasgow, American duty paid, and cannot reach New York as cheaply as can the Scotch warrant iron.

Middlesborough warrants sold down, in July, 1886, to 29 shillings, equal to $7.07. On this valuation the duty would be $1.58 only. We do not know what could be done in freights from the East Coast, but a liberal allowance would put this warrant iron, if its lowest price were repeated, at $10.50, ex-ship New York.

Steel Rails.—The steel rail manufacturers have been led to believe that even the extremists would not venture to place the duty on that product at less than $5 per ton. But the rate has been put at 25 per cent. With rails at £3. 10/ at English works this figures out $4.25, as against $13.44, the present duty. Steel rails can be laid down under the proposed duty at $24, New York, figuring $1.75 for land and ocean freight and 50 cents for insurance and unloading. This would give foreign makers the Gulf markets, and surrender to them the Pacific Coast. Inci-

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dentally it may be remarked that the latter market will be completely controlled by foreign producers in the whole line of iron and steel manufacture from one end to the other.

Lest the statement that the Gulf markets would be lost be held to be too sweeping, we are in a position to state on the authority of a leading firm of importers that negotiations for the sale of a block of 5000 tons of English steel rails fell through recently because a 5-shilling freight could not be secured. The buyer was willing to pay $30 at New Orleans. The English maker was anxious to sell at that figure, paying even $13.44 per ton duty.

Steel Billets.—In soft steel billets the Germans are by far the lowest sellers. At the present time 60 marks at works could be done, say $16. At the 25 per cent. rate of duty this would figure $4, or a cut of nearly $5 per ton, so that foreign billets could be landed at New York at $22.75 to $23. In this, as in other articles, the present domestic price could be low enough to keep out the foreign product. But it must be remembered that present domestic prices represent panic values, at which profits are squeezed out of everything, even to the best located and best equipped plants, and at which wages have been cut down to a level never attained during the last 20 years, and let it be hoped not to be reached again after the coming recovery.

Beams.—On structural shapes the proposed duty is 35 per cent. ad valorem. This article is sold, for American sections, at interior German mills at 75 marks per ton, or, say, $18.75, which would make the duty $6.56 per gross ton, as compared with the present rate of $20.16, or only one-third. Land and water freights and charges would put the German steel beams into this market at, say, 1.50 cents, when the lowest at which Western beams have sold in this market is 1.60 cents per pound. At this price confessedly the Eastern works cannot compete. The New England market would be lost to the domestic mills. Belgian beams at 110 francs, f.o.b. Antwerp, figure close to the German article. It may be of interest to note that a representative of a Belgian steel works began offerings of its material on the day following the announcement of the Wilson tariff.

Bars and Plates.—Welsh bars can be bought at £4. 10/, which at 30 per cent. could make the duty $6.59 and would enable the foreign makers to put them down at 1.40 cents, New York, coming close to our quotations for common iron. Marked Staffordshire bars are quoted at £6, on which the duty would be $8.78 per gross ton, allowing them to reach our shores at, say, 1.80 cents. In steel plates our mills could probably hold their own.

Tin Plates.—Recent quotations in Wales are 10 shillings and 6 pence for Bessemer plates, or, say, $2.56 per box of 108 pounds. At 40 per cent. the duty would amount to $1.03 per box, against $2.38 at the present time. In other words, the present duty would be reduced more than one-half on common plates, and about that amount on the better grades.

Metals.—The transfer of copper and its ores to the free list is a matter of indifference to American producers, as one of the foremost champions of their cause in former years acknowledged to the writer. We have become such great exporters that we have long been practically on the basis of the world's markets. Our nickel production is limited to one mine, which probably is unable to compete under any circumstances against the great deposits of Sudbury. We have never been able to establish a satisfactory antimony industry, while the producers of pig tin have forfeited all claims to consideration. The most serious proposal is that relating to lead. The duty is cut down one-half and the doors are opened wide to the importation of Mexican and Canadian ores. The latter particularly will develop into a very formidable competitor during the next few years. With silver down to present prices, and lead cut down to an importation point of 3 cents, New York, mining in the Rocky Mountains will suffer frightfully. Justice has not been done to the growing aluminum industry.

We believe that we have afforded an opportunity to appreciate how radical are the reductions proposed. The articles which we have touched cover only the coarser forms, which are relatively better able to resist the shock. Those goods into which labor enters to a much greater extent are in a much worse condition. Analysis is more difficult, but very striking facts will be presented.

Even when apparently our industries are safe, there is real and imminent danger. We are selling at panic prices now, and wages and profits are below a living level. Those who framed the Wilson bill now declare that we shall not rise above that level, that the plants and men now idle shall remain unemployed, and that our producers shall surrender the Pacific Coast and a part of the Gulf and New England markets.

We join with the majority in the trade in believing that the Wilson bill, in its present form, cannot pass, chiefly because it is so radical that it antagonizes sections of the country without whose active support it cannot hope to pull through both Houses of Congress.

Although the majority of the Ways and Means Committee has overshot its mark, all our industries must for months to come suffer from uncertainty and dread. The winter threatens to be an unprecedentedly poor one in the iron trade, for which the blame will rest with the majority of the Ways and Means Committee.

THE TARIFF BILL.

The bill to reduce taxation, to provide revenue for the Government and for other purposes has at length come forth from the Committee on Ways and Means.

The following is the complete text of the metal schedule, with the rates for the corresponding articles under the act of 1890. The difference can therefore be readily computed. The free list is also given, so far as it concerns raw materials of metals:

Schedule C.—Metals and Manufactures of.

IRON AND STEEL.

108. Iron in pigs, iron kentledge, spiegeleisen, ferromanganese, ferrosilicon, wrought and cast scrap iron, and scrap steel, twenty-two and one-half per centum ad valorem; but nothing shall be deemed scrap iron or scrap steel except waste or refuse iron or steel fit only to be remanufactured; Act 1890, three-tenths cent a pound.

109. All iron in slabs, blooms, loops, or other forms more advanced than pig iron, and less finished than iron in bars, twenty-five per centum ad valorem.

110. Bar iron, rolled or hammered round iron, in coils or rods, and bars or shapes of rolled iron, thirty per centum ad valorem; 1890, bar iron, eight-tenths, nine-tenths, one cent per pound; round iron, one and one-tenth cent a pound, with provisos. The act of 1883, respective rates were eight-tenths, one, one and one-tenth cents per pound, and round iron, one and two-tenths cents a pound.

111. Beams, girders, joists, angles, channels, car-truck channels, T T, columns and posts or parts or sections of columns and posts, deck and bulb beams, and building forms, together with all other structural shapes of iron or steel, whether plain or punched, or fitted for use, thirty-five per centum ad valorem; 1890, nine-tenths cent per pound; 1883, one and one-quarter cents per pound.

112. Boiler or other plate iron or steel, except saw plates hereinafter provided for, not thinner than number ten wire gauge, sheared or unsheared, and skelp iron or steel sheared or rolled in grooves, thirty per centum ad valorem; 1890, five-tenths, one and four-tenths, sixty-five-one-hundredths cent per pound; eight-tenths, one and one-tenth, one and five-tenths, two, two and eight-tenths, three and one-half cents per pound according to value; above thirteen cents per pound, forty-five per centum ad valorem.

113. Forgings of iron or steel, or forged iron or steel combined, of whatever shape, or in whatever stage of manufacture, not specially provided for in this act, thirty per centum ad valorem; 1890, two and three-tenth cents per pound.

114. Hoop, band, or scroll iron or steel, except as otherwise provided for in this act, thirty per centum ad valorem; 1890, one, one and one-tenth and one and three-tenths cents per pound.

115. Railway bars, made of iron or steel, and railway bars made in part of steel, T rails, and punched iron or steel flat rails, twenty-five per centum ad valorem; 1890, six-tenths cent per pound.

116. Sheets of iron or steel, common or black, including all iron or steel commercially known as common or black taggers' iron or steel, and skelp iron or steel, thirty-five per centum ad valorem; 1890, one, one and one-tenth and one and four-tenths cents per pound.

117. All iron or steel sheets or plates, and all hoop, band, or scroll iron or steel, excepting what are known commercially as tin plates, terne plates, and taggers tin, and hereinafter provided for, when galvanized or coated with zinc or spelter, or other metals, or any alloy of those metals, thirty-five per centum ad valorem; 1890, three-quarter cent per pound more than corresponding gauges black sheets.

118. Sheet iron or sheet steel, polished, planished, or glanced, by whatever name designated, thirty-five per centum ad valorem: 1890, two and one-half cents per pound.

119. Sheets or plates of iron or steel, or taggers' iron or steel, coated with tin or lead, or with a mixture of which these metals, or either of them, is a component part, by the dipping or any other process, and commercially known as tin plates, terne plates, and taggers' tin, forty per centum ad valorem; 1890, two and two-tenths cents per pound.

120. Steel ingots, cogged ingots, blooms and slabs, by whatever process made; die blocks or blanks; billets and bars, and tapered or beveled bars; steamer, crank and other shafts; shafting; wrist or crank pins; connecting rods and piston rods; pressed, sheared, or stamped shapes; saw plates, wholly or partially manufactured; hammer molds or swaged steel; gun-barrel molds not in bars; alloys used as substitutes for steel tools; all descriptions and shapes of dry sand, loam, or iron-molded steel castings; sheets and plates not specially provided for in this act; and steel in all forms and shapes not specially provided for in this act, twenty-five per centum ad valorem; 1890, four-tenths, five-tenths, eight-tenths, nine-tenths, one and two-tenths, one and six-tenths, two, two and eight-tenths, three and one-half, four and two-tenths and seven cents per pound, according to value.

WIRE.

121. Wire rods: Rivet, screw, fence, and other iron or steel wire rods, and nail rods, whether round, oval, flat, square, or in any other shape, in coils or otherwise, thirty per centum ad valorem; 1890, six-tenths cent per pound.

122. Wire: Iron or steel wire, and wire or strip steel, commonly known as crinoline wire, corset wire, and hat wire, flat steel wire, or sheet steel in strips, uncovered or covered with cotton, silk or other material, iron or steel wire cloths, and iron or steel wire nettings made in meshes of any form, iron or steel wire coated with zinc or tin,

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or any other metal, wire rope and wire strand, thirty per centum ad valorem; 1890, one and one-quarter, one and three-quarters, two and one quarters and three cents per pound, according to gauge.

GENERAL PROVISIONS.

123. No allowance or reduction of duties for partial loss or damage in consequence of rust or of discoloration shall be made upon any description of iron or steel, or upon any article wholly or partly manufactured of iron or steel.

MANUFACTURES OF IRON AND STEEL.

124. Anchors, or parts thereof, of iron or steel, mill irons and mill cranks of wrought iron, and wrought iron for ships, and forgings of iron or steel, or of combined iron and steel, for vessels, steam engines and locomotives, or parts thereof, twenty-five per centum ad valorem; 1890, one and eight-tenths cents per pound.

125. Axles, or parts thereof, axle bars, axle blanks, or forgings for axles, whether of iron or steel, without reference to the stage or state of manufacture, twenty-five per centum ad valorem; 1890, two cents per pound.

126. Anvils of iron or steel, or of iron and steel combined, by whatever process made, or in whatever stage of manufacture, twenty-five per centum ad valorem; 1890, two and one half cents per pound.

127. Blacksmiths' hammers and sledges, track tools, wedges, and crowbars, whether of iron or steel, twenty-five per centum ad valorem; 1890, two and one-quarter cents per pound.

128. Boiler or other tubes, pipes, flues, or stays of wrought iron or steel, twenty-five per centum ad valorem; 1890, two and one-half cents per pound.

129. Bolts, with or without threads or nuts, or bolt blanks, and finished hinges or hinge blanks, whether of iron or steel, twenty-five per centum ad valorem; 1890, two and one-half cents per pound.

130. Card clothing, thirty per centum ad valorem.

131. Cast iron pipe of every description, twenty-five per centum ad valorem; 1890, nine-tenths cent per pound.

132. Cast iron vessels, plates, stove plates, and irons, sad irons, tailors' irons, hatters' irons, and castings of iron, not specially provided for in this act, twenty-five per centum ad valorem; 1890, one and two-tenths cents per pound.

133. Castings of malleable iron not specially provided for in this act, twenty-five per centum ad valorem; 1890, one and three-quarters cents per pound.

134. Cast hollow ware, coated, glazed, or tinned, thirty per centum ad valorem; 1890, three cents per pound.

135. Chains of all kinds, made of iron or steel, thirty per centum ad valorem; 1890, one and six-tenths, one and eight-tenths and two and one-half cents per pound.

CUTLERY.

136. Penknives or pocket knives of all kinds, or parts thereof, and erasers, or parts thereof, wholly or partly manufactured, razors and razor blades, finished or unfinished, valued at not more than sixty cents per dozen, thirty-five per centum ad valorem; valued above that, forty-five per centum ad valorem; 1890, twelve cents, fifty cents, one dollar, two dollars, and fifty per cent. per dozen.

137. Swords, sword blades, and side arms, thirty-five per centum ad valorem; 1890, thirty-five per centum.

138. Table knives, forks, steels, and all hunting, kitchen, bread, butter, vegetable, fruit, cheese, plumbers', painters', palette, and artists' knives; also all carving, cooks', and butchers' knives, forks, and steels. All sizes of all of the above, finished or unfinished, thirty-five per centum ad valorem; 1890, ten cents to five dollars, and thirty per cent. per dozen.

139. Files, file blanks, rasps, and floats, of all cuts and kinds, thirty-five per centum ad valorem; 1890, thirty-five cents to two dollars per dozen.

FIREARMS.

140. Muskets, muzzle loading shotguns, and sporting rifles, and parts thereof, twenty-five per centum ad valorem; 1890, twenty-five per centum.

141. Sporting, breech loading shotguns and pistols, and parts thereof, thirty per centum ad valorem; 1890, one dollar and fifty cents to six dollars, and thirty-five per centum; one dollar, and thirty-five per centum; and forty cents and one dollar, and thirty-five per centum.

142. Sheets, plates, wares, or articles of iron, steel, or other metal, enameled or glazed with vitreous glasses, thirty-five per centum ad valorem; 1890, forty-five per centum. and fifty per centum.

NAILS, SPIKES, TACKS, AND NEEDLES.

143. Cut nails and cut spikes of iron or steel, twenty five per centum ad valorem; 1890, one cent per pound.

144. Horseshoe nails, hob nails, and all other wrought iron or steel nails not specially provided for in this act, twenty-five per centum ad valorem; 1890, four cents per pound.

145. Wire nails made of wrought iron or steel, twenty-five per centum ad valorem; 1890, two cents to four cents per pound.

146. Spikes, nuts, and washers, and horse, mule, or ox shoes, of wrought iron or steel, twenty-five per centum ad valorem; 1890, one and eight-tenths cents per pound.

147. Cut tacks, brads, or sprigs of all kinds, twenty-five per centum ad valorem; 1890, two and one-quarter cents per thousand, two and three-quarters cents per pound.

148. Needles for knitting or sewing machines, crochet needles and tape needles and bodkins of metal, twenty-five per centum ad valorem; 1890, thirty-five per centum and twenty-five cents per pound.

PLATES.

149. Steel plates engraved, stereotype plates, electrotype plates, and plates of other materials, engraved or lithographed, for printing, twenty-five per centum ad valorem; 1890, twenty-five per centum.

150. Railway fish-plates or splice bars, made of iron or steel, twenty-five per centum ad valorem; 1890, one cent per pound.

151. Rivets of iron or steel, thirty per centum ad valorem; 1890, two and one half cents per pound.

SAWS.

152. Crosscut saws, mill, pit, and drag saws, circular saws, hand, back, and all other saws, twenty-five per centum ad valorem; 1890, eight cents to fifteen cents per linear foot; circular, thirty and forty per centum

153. Screws, commonly called wood screws, thirty per centum ad valorem; 1890, five cents to fourteen cents per pound, according to length.

154. Wheels, or parts thereof, made of iron or steel, and steel-tired wheels for railway purposes, whether wholly or partly finished, and iron or steel locomotive, car, or other railway tires or parts thereof, wholly or partly manufactured, 1890, two and one-half cents per pound; and ingots, cogged ingots, blooms, or blanks for the same without regard to the degree of manufacture, thirty-five per centum ad valorem; 1890, one and three-quarter cents per pound.

MISCELLANEOUS METALS AND MANUFACTURES OF.

155. Aluminium or aluminum, in crude form, alloys of any kind in which aluminum is the component material of chief value, fifteen per centum ad valorem; 1890, fifteen cents per pound.

156. Argentine, albata or German silver unmanufactured, fifteen per centum ad valorem; 1890, twenty-five per centum.

157. Brass, in bars or pigs, old brass, clippings from brass or Dutch metal, and old sheathing, or yellow metal, fit only for remanufacture, ten per centum ad valorem; 1890, one and one-half cents per pound.

158. Bronze powder, 1890, twelve cents per pound; metallics or flitters, bronze or Dutch metal, or aluminum, in leaf, thirty per centum ad valorem; 1890, eight cents package one hundred leaves.

COPPER.

159. Copper in rolled plates, called braziers' copper, sheets, rods, pipes, and copper bottoms, also sheathing or yellow metal of which copper is the component material of chief value, and not composed wholly or in part of iron ungalvanized, twenty per centum ad valorem; 1890, thirty-five per centum.

GOLD AND SILVER.

160. Bullions and metal thread of gold, silver, or other metals, not specially provided for in this act, twenty-five per centum ad valorem; 1890, thirty per centum.

161. Gold leaf, thirty-five per centum ad valorem; 1890, two dollars per package five hundred leaves.

162. Silver leaf, thirty-five per centum ad valorem; 1890, seventy-five cents per package five hundred leaves.

LEAD.

163. Lead ore and lead dross, fifteen per centum ad valorem upon the lead contained therein, according to the sample and assay at the port of entry: *Provided*, That all ores containing silver and lead, in which the value of the silver contents shall be greater than the value of lead contents, according to sample and assay at the port of entry, shall be considered silver ores; 1890, one and one-half cents per pound.

164. Lead in pigs and bars, molten and old refuse lead run into blocks and bars, and old scrap lead fit only to be remanufactured, one cent per pound; 1890, two cents per pound: *Provided*, That in case any foreign country shall impose an export duty upon lead ore or lead dross or silver ores containing lead, exported to the United States from such country, then the duty upon lead in pigs and bars, molten and old refuse lead run into blocks and bars, and old scrap lead fit only to be remanufactured, herein provided for, when imported from such country, shall remain the same as fixed by the law in force prior to the passage of this act.

165. Lead in sheets, pipes, shot, glaziers' lead, and lead wire, one cent per pound; 1890, two and one-half cents per pound.

166. Pens, metallic, except gold pens, thirty-five per centum ad valorem; 1890, twelve cents per gross.

167. Penholder tips, penholders or parts thereof, and gold pens, twenty-five per centum ad valorem; 1890, thirty per centum.

168. Pins, metallic, including hair pins, safety pins, and hat, bonnet, shawl and belt pins, not commercially known as jewelry, twenty per centum ad valorem; 1890, thirty per centum.

169. Type-metal, and new types, fifteen per centum ad valorem; 1890, one and one-half cents per pound for lead, twenty-five per centum new types.

WATCHES.

170. Chronometers, box or ship's, and parts thereof, ten per centum ad valorem; 1890, ten per centum.

171. Watches and clocks, or parts thereof, whether separately packed or otherwise, twenty-five per centum ad valorem; 1890, twenty-five per centum.

ZINC OR SPELTER.

172. Zinc in blocks or pigs, twenty per centum ad valorem; 1890, one and three-quarters cents per pound.

173. Zinc in sheets, twenty-five per centum ad valorem; 1890, two and one-half cents per pound.

174. Zinc, old and worn-out, fit only to be remanufactured, fifteen per centum ad valorem; 1890, one and one-quarter cents per pound.

175. Manufactured articles or wares, not specially provided for in this act, composed wholly or in part of any metal, and whether partly or wholly manufactured, thirty-five per centum ad valorem; 1890, 45 per centum.

THE FOLLOWING IS THE FREE LIST:

Antimony ore.
Bells, broken, and metal.
Bullion gold and silver.
Coal, anthracite, bituminous and shale, and coal slack or culm.
Coke.
Copper in ores.
Old copper.
Regulus of copper, and black and coarse copper and copper cement.
Copper in plates, bars, ingots or pigs or other forms not manufactured.
Cotton ties of iron or steel, cut to length and with or without buckles for baling cotton.
Iron ore, including manganiferous iron ore, also the dross or residium from burnt pyrites, and sulphur ore as pyrites or sulphuret of iron in its natural state.
Models of inventions.
Needles.
Nickel, nickel oxide, alloy of any kind in which nickel is the component material of chief value.
Ores of gold, silver and nickel, and nickel matte.
Pewter and Britannia metal,
Platina in ingots, &c.
Platinum, unmanufactured, &c.
Plows, tooth and disk harrows, harvesters, reapers and other agricultural implements.
Quicksilver.
Shotgun barrels.
Tin ore, &c., cassiterite or black oxide of tin, and tin in bars, &c.

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A Comparison of the Present and Proposed Duties.

Articles.	Present Duties.	Proposed Duties.
Iron ore	75 cents per ton.	Free.
Pig iron	$6.72 per ton.	22½ % ad valorem.
Wrought scrap iron, cast scrap iron and scrap steel	$6.72 per ton.	
Iron rails over 25 pounds	$13.44 per ton.	30 % ad valorem.
Steel rails over 25 pounds		
Iron or steel rails not over 25 pounds		
Iron or steel flat rails, punched		
Flat bar iron not less than 1 inch wide nor less than ⅜ inch thick	8-10 cent per pound.	30 % ad valorem.
Round bar iron not less than ¾ inch in diameter, and square bar iron not less than ¾ inch square	9-10 cent per pound.	
Flat bar iron less than 1 inch wide or ⅜ inch thick, round bar iron from 7-16 to ¾ inch in diameter, and square bar iron less than ¾ inch square	1 cent per pound.	
Round iron less than 7-16 inch in diameter	1 1-10 cents per pound.	
Rolled iron not specially enumerated	1 1-10 cents per pound.	
All iron bars, blooms, billets or sizes or shapes of any kind, in the manufacture of which charcoal is used as fuel	$22 per ton.	
Iron or steel, with longitudinal ribs for the manufacture of fencing	6-10 cent per pound.	
Beams and structural shapes	8-10 cent per pound.	35 % ad valorem.
Plate iron or steel not thinner than No. 10 wire gauge:		
Valued at 1 cent per pound or less	5-10 cent per pound.	30 % ad valorem.
" above 1 cent and not above 1.4 cents per pound	65-100 cent per pound.	
" " 1.4 " " " 2 " "	8-10 cent per pound.	
" " 2 " " " 3 " "	1.1 cents per pound.	
" " 3 " " " 4 " "	1.5 cents per pound.	
" " 4 " " " 7 " "	2.0 cents per pound.	
" " 7 " " " 10 " "	2.8 cents per pound.	
" " 10 " " " 13 " "	3.5 cents per pound.	
" " 13 " per pound	45 per cent.	
Galvanized plates and sheets:		
Thinner than No. 10 and not thinner than No. 20 wire gauge	1.75 cents per pound.	35 % ad valorem.
" " 20 " " " 25 "	1.85 cents per pound.	
" " 25 wire gauge	2.15 cents per pound.	
Polished, planished or glanced sheet iron or sheet steel	2½ cents per pound.	
Plate or sheet or taggers iron or steel, pickled	1.35 cents per pound.	
Sheet iron:		
Thinner than No. 10 and not thinner than No. 20 wire gauge	1 cent per pound.	
" " 20 " " " 25 "	1.10 cents per pound.	
" " 20 wire gauge	1.40 cents per pound.	
Taggers iron	1 cent per pound until after July 1, 1891; after that date 2.2 cents per pound.	40 % ad valorem.
Tin plates		
Cotton ties	2-10 cent per pound additional on hoop, &c., from which they are made = 1 3-10 cents per pound.	
Hoop iron:		
Valued at 3 cents per pound or less, 8 inches or less in width and less than ⅜ inch thick, and not thinner than No. 10 wire gauge	1 cent per pound.	35 % ad valorem.
Thinner than No. 10 and not thinner than No. 20 wire gauge	1 1-10 cents per pound.	
Thinner than No. 20 wire gauge	1 3-10 cents per pound.	
Cast iron pipe	9-10 cent per pound.	25 % ad valorem.
Cast iron stove plates, &c.	1 2-10 cents per pound.	
Iron castings not specially enumerated	1¾ cents per pound.	
Cut nails and spikes (iron or steel)	1 cent per pound.	
Wire nails	2¼ cents per 1000.	
Cut tacks not exceeding 16 ounces to the 1000	2¾ cents per 1000.	
" exceeeding 16 ounces to the 1000		
Iron or steel fish plates:		
Two inches long or longer, not lighter than No. 12 wire gauge	2 cents per pound.	
From 1 to 2 inches in length, lighter than No. 12, not lighter than No. 16	2½ cents per pound.	
Shorter than 1 inch and lighter than No. 16 wire gauge	4 cents per pound.	
Malleable iron castings not specially enumerated	1¾ cents per pound.	
Spikes, nuts, washers and horseshoes	1 8-10 cents per pound.	
Rivets	2½ cents per pound.	30 % ad valorem.
Bolts or bolt blanks, hinges or hinge blanks	2¼ cents per pound.	25 % ad valorem.
Anchors	1 8-10 cents per pound	
Anvils	2½ cents per pound.	
Forgings for vessels, steam engines and locomotives	1 8-10 cents per pound.	
Iron or steel axles	2 cents per pound.	
Blacksmiths' hammers and sledges	2¼ cents per pound.	
Forgings not specially enumerated	2 3-10 cents per pound.	
Horseshoe nails and hob nails	4 cents per pound.	
Boiler tubes, or flues, or stays, of wrought iron or steel	2½ cents per pound.	
Other tubes or pipes of wrought iron or steel		
Chains not less than ¾ of an inch in diameter	1 6-10 cents per pound.	30 % ad valorem.
" less " " " " "	1 8-10 cents per pound.	
" " " ⅜ " " "	2⅞ cents per pound.	
Cross cut saws	8 cents per linear foot.	25 % ad valorem.
Mill, pit and drag saws:		
Not over 9 inches wide	10 cents per linear foot.	
Over 9 inches wide	15 cents per linear foot.	
Circular saws	30 per cent.	
Other saws	40 per cent.	
Files:		
4 inches in length and under	35 cents per dozen.	35 % ad valorem.
Over 4 inches in length and under 9 inches	75 cents per dozen.	
9 inches in length and under 14	$1.30 per dozen.	
14 inches in length and over	$2 per dozen.	
Steel ingots, blooms, slabs, billets, &c.:		
Valued at 1 cent per pound or less	4-10 cent per pound.	30 % ad valorem.
" above 1 cent and not above 1 4-10 cents per pound	5-10 cent per pound.	
" " 1 4-10 cents " " 1 8-10 " "	7-10 cent per pound.	
" " 2 1-10 " " " 2 2-10 " "	9-10 cent per pound.	
" " 2 2-10 " " " 3 " "	1 2-10 cents per pound.	
" " 3 " " " 4 " "	1 6-10 cents per pound.	
" " 4 " " " 7 " "	2 cents per pound.	
" " 7 " " " 10 " "	2 8-10 cents per pound.	
" " 10 " " " 13 " "	3½ cents per pound.	
" " 13 " " " 16 " "	4 2-10 cents per pound.	
" " 16 " per pound	7 cents per pound.	

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Articles.	Present Duties.	Proposed Duties.
Steel circular saw plates	1 cent per pound extra on above rates for saw plates.	30 % ad valorem.
Steel or iron wheels, and iron or steel tires for railway purposes	1¼ to 2½ cents per pound.	35 % ad valorem.
Iron or steel wire rods :		
Not smaller than No. 6 wire gauge	6-10 cent per pound.	
Smaller than No. 6 to be classified as wire		
Wood screws :		
More than 2 inches in length	5 cents per pound.	
Over 1 inch and not more than 2 inches in length	7 cents per pound.	
" ½ " " " 1 " "	10 cents per pound.	
½ inch and less in length	14 cents per pound.	
Iron wire :		
Not smaller than No. 10 wire gauge	1¼ cents per pound.	
Smaller than No. 10 and not smaller than No. 16 wire gauge	1¾ cents per pound.	
" " 16 " " " 26 "	2¼ cents per pound.	
" " 26 wire gauge		
Steel wire	45 cents per pound.	
Not smaller than No. 10 wire gauge	1¼ cents per pound.	
Smaller than No. 10 and not smaller than No. 16 wire gauge	1¾ cents per pound.	
" " 16 " " " 26 "	2½ cents per pound.	
" " 26	3 cents per pound.	
Wire of iron, covered with cotton, silk, or other material, and wire commonly known as crinoline, corset and hat wire	5 cents per pound.	
Wire of steel, covered :		
Not smaller than No. 10 wire gauge	5 cents per pound.	
Smaller than No. 10 and not smaller than No. 16 wire gauge		
" " 16 " " " 26 "		
" " 26 wire gauge		
Iron wire, galvanized :		
Not smaller than No. 10 wire gauge	1¾ cents per pound.	
Smaller than No. 10 and not smaller than No. 16 wire gauge	2¼ cents per pound.	
" " 16 " " " 26 "	2¾ cents per pound.	
" " 26 wire gauge	3½ cents per pound.	30 % ad valorem.
Steel wire, galvanized	45 per cent.	
Not smaller than No. 10 wire gauge	1¾ cents per pound.	
Smaller than No. 10 and not smaller than No. 16 wire gauge	2¼ cents per pound.	
" " 16 " " " 26 "	2¾ cents per pound.	
" " 26 wire gauge	3½ cents per pound.	
Wire rope and wire strand, made of iron wire:		
Not smaller than No. 10 wire gauge	2¼ cents per pound.	
Smaller than No. 10 and not smaller than No. 16 wire gauge	2¾ cents per pound.	
" " 16 " " " 26 "	3¼ cents per pound.	
" " 26 wire gauge	4 cents per pound.	
Galvanized	3¾ cents per pound. 4½ cents per pound.	
Made of steel wire:		
Not smaller than No. 10 wire gauge	3¼ cents per pound.	
Smaller than No. 10 and not smaller than No. 16 wire gauge	3¾ cents per pound.	
" " 16 " " " 26 "	4¼ cents per pound.	
" " 26 wire gauge	5 cents per pound.	
Galvanized	4¼ cents per pound.	
Wire cloth and wire nettings, made in meshes of any form, of iron or steel wire:		
Not smaller than No. 10 wire gauge	3¼ cents per pound.	
Smaller than No. 10 and not smaller than No. 16 wire gauge	3¾ cents per pound.	
" " 16 " " " 26 "	4¼ cents per pound.	
" " 26 wire gauge	5 cents per pound.	
Galvanized:		
Not smaller than No. 10 wire gauge	4¼ cents per pound.	
Smaller than No. 10 and not smaller than No. 16 wire gauge	4¾ cents per pound.	
" " 16 " " " 26 "	5 cents per pound.	
" " 26 wire gauge	50 cents per pound.	
Pocket knives:		
Valued at not more than 60 cents per dozen	12 cents per dozen and 50 %.	
" at more than 60 cents and not exceeding $1.50 per dozen	50 cents per dozen and 50 %.	Valued at not more than 60 cts. per dozen, 35 %; above, 45 %.
" " " $1.50 " " $3 "	$1 per dozen and 50 %.	
" " " $3 per dozen	$2 per dozen and 50 %.	
Razors:		
Valued at less than $4 per dozen	$1 per dozen and 30 %.	
" " $4 or more	$1.75 per dozen and 30 %.	
Swords, sword blades, and side arms	35 per cent.	
Table knives, &c.:		
Valued at not more than $1 per dozen	10 cents per dozen and 30 %.	
" at more than $1 and not more than $2 per dozen	35 cents per dozen and 30 %.	
" " " $2 " " $3 "	40 cents per dozen and 30 %.	
" " " $3 " " $8 "	$1 per dozen and 30 %.	35 % ad valorem.
" " " $8 per dozen	$2 per dozen and 30 %.	
Carving, &c.:		
Valued at not more than $4 per dozen pieces	$1 per dozen and 30 %.	
" at more than $5 and not more than $8 per dozen pieces	$2 per dozen and 30 %.	
" " " $8 " $12 " "	$3 per dozen and 30 %.	
" " " $12 per dozen pieces	$5 per dozen and 30 %.	
Steel not specially enumerated		
Cutlery not specially enumerated		
Hollow ware, coated, glazed or tinned	3 cents per pound.	30 % ad valorem.
Manufactures of iron or steel, not specially enumerated	45 per cent.	35 % ad valorem.

OBITUARY.

STEPHEN WILCOX.

Stephen Wilcox, vice president of the Babcock & Wilcox Company, New York and Glasgow, died November 27 at his residence, 298 Washington avenue, Brooklyn, N. Y., aged 63 years. The cause of his death was pneumonia. Mr. Wilcox was one of the founders of the Babcock & Wilcox Company, whose business was established in 1868.

SYLVESTER PHINEAS PIERCE.

Sylvester Phineas Pierce, president of the Pierce, Butler & Pierce Mfg. Company and S. P. Pierce, Sons & Co., Syracuse, N. Y., died on November 5, aged 79 years. Mr. Pierce was born in the little hamlet of Sanquoit, Oneida County, N. Y., on September 19, 1814. The success and position in the trade of the concerns with which he was so long connected were largely due to Mr. Pierce's exceptional business sagacity and steadfast integrity.

F. J. V. Skiff, chief of the Mines and Mining Department of the World's Fair, is conspicuously mentioned in connection with the directorship of the Columbian Museum, now being put in shape by the citizens of Chicago. Mr. Skiff's eminent fitness for such a position seems to be firmly established by his achievements in the Mines and Mining Department of the late exposition. He not only carved out a new field hitherto unknown in universal expositions, but made it a shining success, showing great ability as an organizer and decided executive force.

The Ste. Etienne Steel Works Company, Ste. Etienne, France, have taken up the manufacture of armor plates by the Harvey process.

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MANUFACTURING.

Iron and Steel.

The appraisers of the Wellman Iron & Steel Company, who are now in the hands of a receiver, made their final report on November 22. The appraisers find that the assets of the company reach the total of $1,216,052.13, which is divided as follows: Real estate, including permanent machinery, $940,111.43; personal property and chattels, $163,559.46; book accounts receivable, $107,213.74; bills receivable, $5067.50; stock, $100.

The Sanders & Thompson magnetic ore separator is undergoing trial at the Lebanon Valley furnace plant of J. & R. Meily, Lebanon, Pa.

The blast furnace of Isaac McHose & Sons, at Norristown, Pa., will shut down for an indefinite period, it is stated, after working up the stock now on hand.

The Irondale Rolling Mills, at Anderson, Ind., which burned recently, will probably not be rebuilt there. Indiana papers report that the offer made by Middletown, Ind., in the next county to that in which Anderson is located, has been accepted. The rolling mill company are to take $10,000 in lots, and get in addition to this $40,000. They agree to erect a plant that will employ 400 men. Thirty days will be given in which the money is to be paid over.

Kirkpatrick & Co., Limited, proprietors of the Leechburg, Pa., Iron Works, obtained an injunction restraining members of the Amalgamated Association from trespassing on or tampering with their property at the iron works there, or molesting non-union employees in their mills.

The Shenango Valley Steel Company have leased the Raney & Berger Furnace, at New Castle, Pa., for a limited period, and will, it is stated, start it up at an early date. The stack is now being put in working shape.

The puddling department of the Elmira, N. Y., Rolling Mills completed its first week since reopening on November 18. The iron which has been turned out is pronounced to be first class. Two more furnaces were fired November 20, which makes six furnaces in operation, all of which are manned by puddlers who were engaged in the mill before the strike of three years ago. It is quite probable that from present indications a large majority of the furnaces in the puddling mill will be working before the holidays.

The Linden Steel Company of Pittsburgh, Pa., are attracting special attention to their Linden patent steel floor plate, and particularly for its use for runner boards on locomotives, for which purpose it is being largely adopted, and for engine and fire rooms and steps of steam vessels. The plates are said to be very much superior to cast plates for general use wherever roughened surfaces are required on walks or places likely to be slippery or subject to much wear. Should they bend they can be easily straightened, and are, moreover, much easier to fit and lay down. The plates are made in weights from 10 to 22½ pounds per square foot, and in size as large as 40 x 96 inches.

The Excelsior Furnace, at Ishpeming, Mich., is to be put in blast as soon as the plant can be repaired. It is a charcoal furnace.

William Chambers, superintendent of the Anderson Steel Casting Company, Anderson, Ind., has asked the court to appoint a receiver for that company.

Blast furnace No. 6 of the Cambria Iron Company, Johnstown, Pa., has resumed.

In a circular letter which they are issuing to the trade, the Carbon Steel Company of Pittsburgh, Pa., call attention to the fact that they are the largest producers in this country of acid open hearth steel boiler, ship, bridge and tank plates. The standard of quality of this material is well testified to by the large amounts consumed annually in the construction of United States war ships, including the boilers for the same. The circular letter in question is accompanied by a reference card showing the different sizes of sheets and plates manufactured by the company, and by a neat nickel steel paper cutter, stamped with the name of the company.

A statement has at last been made of the indebtedness of Forsyth, Hyde & Co., the Chicago pig iron merchants, who failed early in the summer. It was filed in the County Court of Cook County last week, by E. Louis Kuhns, assignee of the firm, and shows liabilities of $529,804.41. Of this amount, $297,922 is for general or direct indebtedness, $231,120 for indorsements, $761 for labor performed. The heaviest holder is the Chemical National Bank of Chicago, with $134,311 general and $96,237 contingent. The First National Bank of Fond du Lac, Wis., holds a contingent claim of $55,149.39 and William Deering & Co. a direct claim of $30,488. These are largely on notes. The York Iron Company hold an account of $34,543 against the insolvents, while the Commercial National Bank of Milwaukee wants $20,478 on a note. The assets in sight are sufficient to realize probably 30 cents on the dollar, but they are clouded by other claims which may practically wipe them out.

The Milwaukee works of the Illinois Steel Company were on Monday put in full operation in all departments except the blast furnaces. This is the first time since last June that the entire rolling mill plant has been in operation. There is much rejoicing among the workmen who have so long been idle.

The Clark & Windsor Wire & Spring Company of Joliet, Ill., have gone into bankruptcy after an ineffectual struggle to maintain an existence. An execution was filed against the company on the 18th inst. for $23,800 by the Illinois Steel Company, and another for $15,100 by H. S. Smith. These claims do not cover the entire indebtedness, other creditors being interested. The Clark & Windsor Company were drawers of wire and makers of springs of various kinds. The business interests of Joliet have been hard hit during the depression now prevailing.

The Muncie Nail Works, at Muncie, Ind., have been leased by the Muncie Muck Bar Iron Company, a new corporation. The officers of the company are T. F. Rose, president; Joseph Porter, secretary and treasurer, and Michael Hanley, John Rockaway and W. J. Bowen, directors. The nail factory, it will be remembered, was burned down some time since and not rebuilt. Since then the mill has made muck bar exclusively.

The Globe Tin Plate Company have been incorporated at Chicago for the manufacture of tinned and terne plates. The incorporators are James Spruce, William Killmer and Henry C. Gager. A manufacturing plant will, it is stated, be erected at Hammond, Ind., at a cost of $32,000.

The assignee of the Linden Steel Company, Pittsburgh, Pa., has been discharged by order of court, and the plant is now in operation. The assignment, as generally known at the time, was made necessary to avoid attachment of foreign accounts while an extension was being arranged, which has been satisfactorily done. How full the works will run will depend on the condition of trade; at present only the blooming mill, one 10-inch mill, hammers and sheet mill making Linden patent steel floor plate are running.

Machinery.

The Caldwell water tube boiler is now being manufactured for the West by the Link Belt Machinery Company, Chicago, with sales agencies in the principal cities.

Riehlé Bros. Testing Machine Company of Philadelphia have just closed a contract with Chas. F. McKenna of New York for an outfit of testing machinery for a new physical testing laboratory he is equipping at 221 Pearl street, New York City. The outfit will consist of a vertical screw power testing machine, with electric automatic beam and card appliance, and United States standard cement testing machine of 2000 pounds capacity, with worm gear attachment and all necessary appliances for exhaustive tests of cement. Riehlé Bros. Testing Machine Company have also furnished to the Department of Public Works of the city of Peoria, Ill., testing machines for a physical laboratory they are establishing for the purpose of testing all materials used by the city in its public improvements.

The compressors furnished to the Brazilian Government for furnishing air at 3000 pounds pressure for the dynamite gun on the steamer "El Cid," or "Nictheroy," were built by the Rand Drill Company.

The Reeves Pulley Company, Columbus, Ind., have perfected arrangements with the management of the Columbian Exposition Museum whereby their mammoth pulley will be removed from Machinery Hall and placed on permanent exposition in the museum.

A. D. Quint of Hartford, Conn., sold his entire collection of turret drills exhibited at the World's Fair to the Danville Foundry & Machine Company of Danville, Ill. He recently shipped a drill arranged for tapping, with cone countershaft, to Russia, and also one to Sweden.

It is reported that capitalists have purchased ground near Rockford, Ill., on which they propose to erect buildings for the manufacture of Corliss engines.

The Walburn-Swenson Company of Chicago Heights, Ill., have received a large order for machinery from Claus Spreckels to be used in the manufacture of sugar in the Hawaiian Islands. Since then other orders for machinery have come to hand from Mexico and Java. They have also received an order for paper machinery from Massachusetts. They have recently been obliged to add 75 men to their force. This report is in agreeable contrast to the gloomy reports coming from so many industrial establishments.

The Indiana Car & Foundry Company of Indianapolis, Ind., have secured some contracts for cars, and will put their works in operation in December after several months' idleness The foundry will start up at once. It is hoped that other orders can be obtained to keep the plant running steadily from this time.

Berghaefer & Lupinski, machinists, 967 to 973 North Water street, Milwaukee, made an assignment on the 24th inst. to J. Roemer. Liabilities are $33,000 and assets are put at $55,000. The assignee believes the assignment will be but temporary.

The Thomson Electric Welding Company have issued a circular announcing that their Boston offices have been removed to their works at Lynn, Mass., where all correspondence should hereafter be sent.

A fire originating in the casting room of the Ohio Brass & Iron Mfg. Company, Cleveland, Ohio, caused the complete destruction of the plant. It was insured for $23,500.

F. A. Thomas & Co.'s foundry, at Woonsocket, R. I., has been burned. Loss, $3000; insured.

W. G. & G. W. Lavers, steel die manufacturers of Boston, have decided to erect a factory at Brockton, Mass.

The Lever Engine Company, capitalized at $18,000, have filed articles of incorporation in New Jersey. The concern will build engines at Newark, N. J., and Corry, Pa.

The Bell Bearing Car Wheel & Mfg. Company of Cleveland, Ohio, capital stock, $50,000, have been organized for manufacturing car wheels, rolling stock, machinery and conveying apparatus.

The Hagerstown, Md., Steam Engine & Machine Company have closed their works for an indefinite period.

A temporary lessening of the force at the works of the Altoona Mfg. Company, Altoona, Pa., gave rise to the rumor that the plant had closed down.

Hardware.

Owing to the growth of their business the Wyeth Hardware & Mfg. Company, St. Joseph, Mo., will consolidate their manufacturing departments at 302 to 308 North Second street, using the old premises on Third street for storage purposes.

The nail factory of the Pottstown Iron Company, Pottstown, Pa., which has been lying idle for some months past, resumed work on the 13th inst., 20 machines being put in running order A few more machines have since been put in operation.

The handle finishers employed in the Goodell Company's works, at Antrim, N. H., refused to accept a reduction in wages and struck on the 16th inst.

At a meeting of the stockholders of the Stover Mfg. Company, Freeport, Ill., on the 21st inst., the capital stock was increased from $100,000 to $250,000, $50,000 of which will be preferred stock and will be put on the market. The plant has been greatly enlarged during the past few years, as has also been the territory covered by the products of the company, and it was therefore thought desirable to also increase the capital stock. The company were started 12 years ago with a capital of $20,000. With the increase in capital the company will manufacture on a more extensive scale, and new buildings will soon be added to their already large plant.

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The plant of the Birmingham Hardware Specialty Company of Birmingham, Ala., which has been idle for four or five months, will soon start up again, giving employment to 25 or 30 men.

The Grand Rapids Refrigerator Company, Grand Rapids, Mich., in a neatly gotten up circular to the trade state that their factory is and has been running full time, ten hours a day, six days a week. The company suggest that the trade send in their orders early so that they can make up the identical sizes desired. Last season, they explain, they were caught with a large stock of the wrong sizes on hand, which they refer to as having been unsatisfactory to themselves and their customers. Reference is also made to the fact that the company were awarded three medals and a special diploma at the World's Fair for the excellence of their refrigerators.

S. B. Husselman of Worcester, Ohio, has purchased the entire interests of J. H. Logan, Geo. B. Logan and Edward P. Logan of Pittsburgh in the Logan & Strobridge Iron Company, New Brighton, Pa., and also the interest of J. H. Logan in the old New Brighton Cutlery Building Association, the building of the latter being now occupied by the Robinson Mfg. Company. The interests purchased by Mr. Husselman are thought to be worth $50,000. With the advent of Mr. Husselman the Logan & Strobridge Iron Company will in addition to coffee, corn and spice mills, builders' and house furnishing hardware, light gray iron castings, &c., manufacture railroad, farm and yard fencing under the Husselman patents. The company at present employ about 100 men, which force will be increased when the fence trade opens in the spring. There will be no change in the management of the company except that Mr. Husselman will take the place of J. H. Logan as director.

The Union Mfg. & Plating Company, Freeport, Ill., manufacturers of hardware specialties, &c., now have their new factory under cover, and will be in running order again about December 1.

The Everett Nail Works, at Everett, Wash., are to resume operations on December 1.

M. V. Root of Maquoketa, Iowa, is organizing a stock company for the manufacture of hardware specialties.

The Vienna Stamping & Enamel Works, at Porter, Ind., whose proprietors failed during the summer, have been sold to new parties. Arrangements are being made to resume manufacturing operations.

The Alaska Refrigerator Company of Muskegon, Mich., started work in their factory on the 23d inst., after an idleness of four months. This is claimed to be the largest plant of its kind in the world, and the resumption of work gives employment to a great many hands.

The New England Screw Company, Boston, Mass., advise us that they are running to their full capacity with good orders ahead. The company will soon engage in the manufacture of a line of brass work, including socket and lamp base shells, &c.

The Arcade File Works of Anderson, Ind., have recently closed a contract for an electric light plant with a capacity of 500 16 candle-power incandescent lights. They are still engaged in adding to their plant a large number of the improved machines invented recently by Alfred Weed, vice president and general manager of the works.

At the works of the H. M. Myers Company, Beaver Falls, Pa., manufacturers of shovels, spades and scoops, copies of the following notice were posted last week: "Owing to a lack of orders and the uncertainty as to the future, we have decided to pay all our employees in full to December 1, and set them free to make the best arrangements or change in any direction they can for themselves. When we start again on steady run, whether it be sooner or later, necessity compels us to revise our prices now paid for labor, on account of the extremely low prices at which shovels are now being offered and sold in the market; consequently, when we resume work it will be necessary for all who wish employment to call at the office."

The plant of the Consolidated Steel & Wire Company, at Braddock, Pa., with offices in the Westinghouse Building, Pittsburgh, is now being operated double turn in every department.

TRADE REPORT

The shock which the Iron trade has received through the publication of the Wilson tariff bill has staggered even those who were ready to admit that the industry could stand a conservative readjustment of rates. It has startled them out of their fancied security. We print editorially figures which illustrate the savage cuts made.

The belief is gaining ground, however, that the bill has no chance of passing as at present framed, because it attacks indiscriminately interests in sections of the country whose loyalty to the framers of the bill must be retained to carry it through.

The immediate effect upon business cannot help being bad. The early date named for its going into effect must act to deter buyers from covering spring and summer requirements. It seems likely to confirm purchasers all along the line in a policy of keeping supplies down to the minimum.

In spite of denials made it is true that a new combination of the Rail mills has been formed, the arrangement being that the Maryland and Pennsylvania companies shall not make Rails for steam roads. We should state, however, that the former company will not discontinue making Steel Billets, as stated by us, and that the latter go on making all their specialties, contrary to the interpretation put upon our report by writers in the daily press. A well informed writer in the New York *Sun* intimates that it was the Pittsburgh mill which sued for peace after the short but sharp war. It is reported that the Eastern campaign of the Western mill led to the capture of only one small order, and that a flank movement was made into its own territory. The report quietly circulated that two of the Eastern mills are not in the new arrangement is without foundation.

A heroic effort is being made on the part of some of the Southern furnaces to advance the price of Pig Iron. The chief basis for this standing out for more money seems to be that considerable sales have been made lately, and that they include speculative purchases. Whether this advance will be actually secured depends upon whether other producers in the South and in Northern districts will see fit to cover the current demand at old prices. As yet no serious disposition has been shown to follow the leadership of the large companies in question.

Some very low sales of Bessemer Pig have taken place in the valleys, the Iron having been carried for some time past.

Good lots of Steel Billets are openly selling in Pittsburgh at $17, and the announcement that Edgar Thomson has started on this class of material is giving rise to some uneasiness. Eastern Pennsylvania makers are meeting Western prices, but are confronted with a market swept pretty bare of orders. Some good orders have been placed in the Chicago district.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, November 29, 1893.

The local Iron market continues in the same condition of hesitancy that has characterized it for some time. It is true that in some lines there has been a gradual progress toward a large volume of business, but this has by no means brought the trade up to its usual standard. The promulgation of the new tariff bill has projected another uncertain element into the situation, and general apprehension is felt of a decline in values all along the line. The reductions proposed are greater than had been anticipated, and all calculations are at sea. Even at this early day cancellations of orders have begun by buyers, who now fear the future.

Pig Iron.—The most important occurrence during the week is the effort of some large Southern companies to put a check to the demoralization in prices by actually asking an advance, which amounts to about 50¢ ℔ ton on the grades most sold in this market. They decided to take the bull by the horns and see if it was not possible to put the market in better condition by such action. The consequence is that for the past few days some search has been required to find sellers willing to make the low prices heretofore current. On Southern Iron the general situation has been improving for several weeks past. Quite a number of foundries making specialties are getting ready to start in December, while general jobbing foundries are almost all again in operation, although working only part time or with part of their force. Nothing new is reported in local Coke, but taking a survey of the month, sales agents find that there has been a steady improvement in the demand from the beginning to the close. It is hoped that this will continue, although some fear is expressed that December and January, which are usually dull months, may cause something of a relapse. Quotations are now as follows for cash:

Lake Superior Charcoal.....	$15.50 @	$16.00
Local Coke Foundry, No. 1...	13.50 @	14.00
Local Coke Foundry, No. 2...	12.75 @	13.00
Local Coke Foundry, No. 3...	12.25 @	12.75
Local Scotch.....	14.00 @	14.50
Ohio Strong Softeners No. 1..	15.50 @	16.00
Southern Silvery, No. 1.	@	13.75
Southern Silvery, No. 2.....	@	13.25
Southern Coke, No. 2..... ...	11.85 @	12.10
Southern Coke, No. 3.....	11.10 @	11.35
Southern, No. 1, Soft.....	11.85 @	12.10
Southern, No. 2, Soft.....	11.10 @	11.35
Tennessee Charcoal, No. 1...	16.00 @	16.50
Southern Gray Forge.....	10.60 @	10.85
Alabama Car Wheel.....	18.25 @	18.50
Jackson County Silvery.....	16.00 @	16.50
Other Ohio Silvery.....	15.00 @	15.50

Bars.—While a number of manufacturers report their trade somewhat smaller than it has been, a number of others make statements of a much more encouraging character, having had better trade and received more inquiries during the past week than in any week for the previous two months. So many more mills are now running, however, that even if business is greater it is spread over more ground, and may therefore seem less active to some manufacturers who were steadily running during September and October. The movement toward the substitution of Steel for Iron is more pronounced than ever. Consumers who were prejudiced in favor of Iron have now abandoned it, and are taking Steel. Some who had placed large season contracts with the option to make Steel or Iron are taking Steel exclusively. Mill shipments of Bar Iron are quoted at 1.35¢ @ 1.40¢ Chicago, from near by mills, while the

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Valley mills are endeavoring to maintain 1.45¢, and report some business at that figure. Soft Steel Bars are selling at 1.45¢ @ 1.55¢, Chicago, according to the character of the order. Jobbers are in receipt of continued good business from both large and small consumers, and report prices for small lots from stock 1.60¢ @ 1.70¢ for Bar Iron and 1.65¢ @ 1.75¢ for Soft Steel Bars.

Structural Material.—The Milwaukee viaduct on which bids are to be opened on December 1 will show where prices are in this section. Some other good contracts for bridge material have recently been placed, among which was one for 1500 to 2000 tons, all of Iron, which is an unusual thing. The building trade is quiet. Quotations are as follows, Chicago delivery: Beams, 1.65¢ @ 1.75¢; Tees, 1.90¢ @ 2¢; Angles and Universal Plates, 1.60¢ @ 1.65¢. Small lots are sold from stock at an advance of 10¢ @ 15¢ ℔ 100 above these prices.

Plates.—The demand for mill shipments has been very light. Dealers also report a very quiet business on orders from stock. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.60¢ @ 1.70¢; Shell Steel, 1.80¢ @ 1 90¢; Flange Steel, 2¢ @ 2.10¢; Fire Box, 2.75¢ @ 5¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2.25¢ @ 2.40¢; Tank Steel, 2.10¢ @ 2.20¢; Shell Steel, 2 20¢ @ 2 40¢; Flange Steel, 2 50¢ @ 2.65¢; Boiler Tubes, 70 and 5 % off.

Sheets.—Black Sheets are almost entirely neglected, jobbers and consumers evidently having secured sufficient stock for some time to come. Carload lots of No. 27 Common are quoted at 2.70¢ @ 2 75¢, Chicago, while small lots are selling at 2.90¢ @ 3¢ from stock. Galvanized Iron is in exceptionally good demand at about 75 % off for Juniata on mill shipments; small lots are selling at 70 % @ 70 and 7½ %, according to quantity. Sheet Copper is unchanged at 30 % @ 35 % off, according to the size of the order.

Merchant Steel.—Quite a spurt has been observed in the increased number of specifications sent on season contracts. New business has also been fairly active. Prices are remarkably steady on this class of material. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel, 1.90¢ @ 2¢; Ordinary Bessemer Machinery, 1 60¢ @ 1.65¢; Ordinary Bessemer Tire, 1.55¢ @ 1.60¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Billets.—The sales for the past week have aggregated about 7000 tons. Quotations are continued at $19.25 @ $19.50, Joliet.

Rails and Track Supplies.—The railroads have not yet come into the market for their next year's tonnage of Steel Rails, and it is not definitely known when they will begin to place contracts, hence the past week has been very quiet; the price ranges from $25 upward, according to quantity. Very little business is reported in Fastenings, with quotations at 1.50¢ @ 1.60¢ for Splice Bars; 2.55¢ @ 2 60¢ for Track Bolts with Hexagon Nuts, and 1.90¢ @ 1.95¢ for Spikes.

Old Rails and Car Wheels.—Nothing has been done lately in Old Iron Rails, and quotations are nominally at $14; Old Steel Rails are held at $7.50 @ $10, according to length. Speculative interest in Old Car Wheels continues, with buyers naming $10.50 @ $11 as the price at which they would take in good sized lots. Nothing is doing with consumers.

Scrap.—The inquiry for Old Material is somewhat better and sales are reported of good quantities of Cast, Wrought and Malleable; even Steel is beinning to move again. Prices appear to have touched a point from which only slight fluctuations are made, and dealers think that present values are likely to hold for some time in the future. Quotations are maintained at old figures: No. 1 Forge, $10; No. 1 Mill, $8; Sheet Iron, $4.50; Pipes and Flues, $8; Axles, $16; Horseshoes, $11; Fish Plates, $12; Spikes and Bolts, $10; Cast Borings, $4.50; Wrought Turnings, $6.50; Axle Turnings, $8; Heavy Cast, $9 50; Stove Plate, $7.75; Malleable Cast, $8; Mixed Steel, $7, gross ton; Leaf Steel, $14 50.

Metals.—Copper is moving upward in consequence of the very heavy demand for export, which is now affecting the home market. Carload lots of Lake are quoted at 10⅝¢. A large inquiry is reported for casting brands, but manufacturers are not disposed to sell for forward delivery. The price for leading brands is unchanged at 9¾¢, but an advance is looked for at an early day. Spelter is unchanged at 3.55¢ for carload lots, with a good demand.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., November 28, 1893.

At the risk of being thought pessimistic or monotonous, it must be again stated that the situation in this vicinity shows no improvement. Repair work is beginning to be of some importance, but new contracts for large work are conspicuous by their absence. Taking everything into account, it may be said that there is no more work on hand today than there was a month ago, or two or three months ago, the incoming of new orders from week to week being fully offset by current deliveries; nevertheless there is a general feeling that the outlook is vastly improved. Liquidation has been pretty well completed, prices and stocks are at the lowest point possible, and as money is accumulating in large amounts, there appears to be absolutely nothing to prevent a return to normal conditions. This will come gradually, however, and there may yet be some delay in getting started; but there is an intuitive feeling that the acute stage has been passed, and that complete recovery is merely a question of time. Still, it is hardly to be supposed that anything important will be entered upon until the tariff agitation is settled, so that under the circumstances it will probably be well on toward spring before there is any very decided change from the conditions now ruling.

Pig Iron.—The demand is not specially urgent, but consumers are evidently so nearly out of stock that orders are frequent, if not large. It begins to look as though there will be a pretty active business after the turn of the year: 1, Because stocks are unusually low; 2, because requirements will probably be larger than they have been during the past six or eight months, and, 3, because if the two former theories are correct, prices will seem more attractive than they were when money was close and when consumers had some stock on hand, but very few orders coming in. Everything seems to shape for ultimate improvement, although at the moment there is no trouble in placing orders at the lowest figures of the entire year. There is no pressure to sell, however, and less chance for concessions than there was some time ago. General quotations for Philadelphia or near by deliveries are about as follows:

No. 1 Foundry	$13.75 @ $14.25
No. 2 Foundry	13.00 @ 13.25
Standard Gray Forge	12.00 @ 12.50
Ordinary Gray Forge	11.50 @ 11.75

Steel Billets.—There is very little demand, and such as there is can be supplied at the lowest figures ever quoted. First-class buyers have placed orders for 1000-ton lots at $19 30, delivered, and can easily duplicate their purchases to-day, but there is nothing but small lots asked for, on which $19 75 @ $20 is asked and paid for a few carloads, or for 100 to 200 ton lots.

Finished Material. — Business has not attained anything like the proportions which after so many weeks of depression might reasonably be expected. In spots there is a little improvement, but it is so faint and so irregular that for all practical purposes mills are just about in the same condition as they have been for three months past. Under such circumstances it goes without saying that prices are weak and uncertain, and, in fact, hardly quotable, unless on specifications actually in hand. Western mills are competing at the low figures which they established some days ago, and some business is being taken, although those who look to quality and the permanency of their business are inclined to stick to their regular sources of supply rather than take risks elsewhere for the sake of a possible saving of a few cents ℔ 100 ℔ on a few temporary transactions. The demand is not large, however, small lots being the rule, and chiefly at prices about as follows:

Grooved Skelp, delivered	1.45¢	@	1.50¢
Best Refined Bars	1.45¢	@	1.55¢
At interior points	1.35¢	@	1.40¢
Tank Steel	1.45¢	@	1.55¢
Heavy Plates	1.50¢	@	1.60¢
Shell	1.60¢	@	1.75¢
Flange	1.90¢	@	2.00¢
Angles	1.60¢	@	1.70¢
Beams and Channels	1.75¢	@	1.90¢

Old Material.—There is no special change in this department. The supply is large enough for all demands, so that prices are unchanged—a trifle higher, perhaps, on choice lots, but in ordinary cases buyers can get all the material they want within the following range of prices:

No. 1 Wrought Scrap, delivered	$12.00	@	$13.00
Machinery Cast, delivered	10.00	@	11.00
Heavy Steel Scrap, delivered	12.00	@	13.00
Old Iron Rails, delivered	14.00	@	14.50
Old Street Rails, delivered	15.50	@	16.00
Wrought Turnings, delivered	10.00	@	11.00
Cast Borings, delivered	6.00	@	7.00
No. 2 Light Scrap	6.00	@	7.00

Messrs. J. W. Hoffman & Co. of Philadelphia have removed their offices from Walnut street to the Bullitt Building, on Fourth street. Messrs. Hoffman & Co. have secured a ground floor front, and have one of the most prominent as well as one of the most central locations in the city for the interests with which this firm have been identified during the past 25 years. Messrs. Hoffman & Co. extend a cordial invitation to their friends to call and see them at their new address, Bullitt Building, Philadelphia.

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St. Louis.

(*By Telegraph.*)

Office of *The Iron Age*, Bank of Commerce Building, St. Louis, November 29, 1893.

Pig Iron. — There is no material change to note, either as regards price or the volume of trade. The general tone of the market is dull, occasioned somewhat by the position taken by consumers, in holding off shipments of Iron due. There are no "job lots" being offered just now, and sales are made on the basis of the following quotations, which are for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	$13.25 @ $13.50
Southern Coke, No. 2 Foundry	11.50 @ 11.75
Southern Coke, No. 3 Foundry	10.75 @ 11.00
Southern Gray Forge	10.25 @ 11.50
Southern Car Wheel	17.25 @ 18.25
Lake Superior Car Wheel	16.50 @ 17.00
Ohio Softeners	16.00 @ 16.50

Bar Iron —A fair trade is reported from store at 1.75¢. Mills are not busy, however, and inducements in the way of low prices fail to influence trade. Mills quote 1.45¢ for carload lots, half extras, f.o.b. cars East St. Louis.

Barb Wire.—There is only a moderate demand for Barb Wire. Mills quote Painted $2 @ $2.05, and Galvanized $2.40 @ $2.45. Jobbers ask $2.10 @ $2.15 for Painted, with 40¢ ℔ hundredweight additional for Galvanized.

Wire Nails.—Trade is light in this department, and rumors of extremely low prices are current. The usual mill price for carload lots to jobbers is $1.40, but this would doubtless be shaded for large quantities. Jobbers quote $1.45 @ $1.55, according to quantity.

Rails and Track Supplies.—Track Supplies continue in good demand, as follows: Splice Bars, 1.65¢ @ 1.70¢; Spikes, 2¢ @ 2.05¢; Bolts, Square Nuts, 2.50¢; with Hexagon Nuts, 2.60¢. Old Rails are offered at $14, but buyers are scarce and bids of $13.50 are the best that can be secured. Steel Rails are firmer in consequence of the new agreement making the price at Western works $25. Locally they are quoted at from $27 to $27.50.

Pig Lead.—There are no large offerings of this metal, and sales are limited to carload lots. At the close of the market to-day 3.15¢ was bid, while sellers ask 3.17½¢; the result is a narrow and uninteresting market.

Spelter.—This metal remains unchanged. The selling price is 3.40¢, but consumers refuse to pay this price.

Cincinnati.

(*By Telegraph.*)

Office of *The Iron Age*, Fifth and Main Sts, Cincinnati, November 29, 1893.

The increase in the volume of business in Pig Iron keeps up well, and during the past week it was much larger than the preceding week, although the sales were smaller than three weeks ago; but what is more encouraging, an advance of 25¢ ℔ ton is asked and obtained for spot and early future delivery, and a still further advance would have to be paid for delivery next spring. The furnaces have recently sold more Pig Iron than they have made and there is a scarcity of the three grades most in demand. The prices current now for Gray Forge are $7.25; Mottled, $7; No. 3 Foundry, $7.75, and No. 2 Foundry, $8.25, f.o.b. Birmingham, and the tendency seems to be strongly upward. There is nothing doing in No. 1 Foundry, so it is merely nominal at the old rate. The sales the past week aggregate upward of 30,000 tons and embrace more liberal quantities for Eastern shipment, as well as fair quantities for consumption in this district. The better monetary outlook has evidently infused a feeling of confidence into the Iron trade in all of its branches. Money is easy for all business in good credit, and collections are again satisfactory. There is scareely any movement in Charcoal Iron. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$12.25 @ $12.50
Southern Coke, No. 2	11.00 @ 11.25
Southern Coke, No. 3	10.50 @ 10.75
Ohio Soft Stone Coal, No. 1	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2	14.50 @ 14.75
Lake Superior Coke, No. 1	15.00 @ 15.25
Lake Superior Coke, No. 2	14.00 @ 14.25
Hanging Rock Charcoal, No. 1	18.50 @ 19.00
Hanging Rock Charcoal, No. 2	17.50 @ 18.00
Tennessee Charcoal, No. 1	14.00 @ 14.25
Tennessee Charcoal, No. 2	13.00 @ 13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @ 18.00
Lake Superior Car Wheel and Malleable	17.00 @ 17.25

Forge.

Gray Forge	10.00 @ 10.50
Mottled Coke	9.75 @ 10.00

Pittsburgh.

(*By Mail.*)

Office of *The Iron Age*, Hamilton Building, Pittsburgh, November 28, 1893.

Within the past week two events have occurred, both of which are expected to add to the demoralization which has prevailed in the Iron and Steel trades for so long. The first of these was the announcement that the Rail makers had made a new agreement by which the Rail making industry would be controlled by five concerns. The second was the making public of the new Tariff bill by the Ways and Means Committee. The radical reductions in the tariff proposed by this bill will undoubtedly be contested by manufacturers whose interests it affects, and while this contest is being waged business must suffer, and undoubtedly will suffer, by reason of the uncertainty existing as to what reductions will finally be made. Interviews with a few of the leading Pittsburgh manufacturers would indicate that they do not expect the bill to go through as originally drafted. A hard fight will be made against it, which will probably be prolonged for some months. Considerable criticism is expressed over the action of the committee in putting duties on an advalorem basis entirely, the claim being made that it opens the way for frauds upon the Government, which will be brought about by false invoicing, which specific duties make impossible. After sufficient time has elapsed to allow thorough consideration of the bill, we shall doubtless have expressions of opinions from affected industries, which will be difficult for those who will finally vote on the bill to ignore. It has been figured that 40% ad valorem duty on Tin Plates means about 1¢ ℔ lb, as Coke Plates can be bought in Swansea to-day for $2.50 ℔ box of 108 lb. Rails at 25 % ad valorem duty means about $4.25, based on the present selling price abroad, and if put through will allow foreign Rails to come in unless home makers establish a lower price. The placing of Cotton Ties on the free list will seriously affect some Pittsburgh and Mahoning Valley manufacturers, who are large makers of this product. After all, as one maker puts it, if the tariff is finally reduced to any great extent further reductions in wages sufficient to place us on a level with foreign manufacturers will have to be speedily made. We can compete in everything but labor, and if necessary to preserve our interests we can compete in that as well. The Iron and Steel trades present no new features this week. Business is no better, perhaps a little worse, while prices seem to be getting lower right along, particularly in Finished Materials. The expected revival in the demand for Rails has not come, and any improvement in the demand for Ore and Pig Iron from this source seems as far off as ever.

Pig Iron.—There has been no improvement in the market since our last report. Indeed, it would seem that prices are a shade weaker, due largely to recent sales of Valley Iron, owned by a Pittsburgh interest, at prices said to be much lower than any of the other makers here are willing to accept. Much of this Iron was bought when prices were from $2 to $3 per ton higher than at present, and the forcing of it on the market was accompanied by a heavy loss to the seller. An Ohio Valley concern is said to have bought a large block of this Iron. While it is true that more Pig Iron is being consumed now than at any time since July, it is also true that there has been a large increase in production, owing to the blowing in of stacks here and in the two valleys. The second furnace of the Monongahela Furnace Company, at McKeesport, Pa., has gone in and is making Bessemer for the new Steel plant. The Raney & Berger Iron Company, at New Castle, started up their furnace last week. As to prices, it can be said that Gray Forge is being held at $10.50, Pittsburgh, while Bessemer is offered at $11 for prompt shipment, although a number of furnaces, both here and in the Valley, are refusing to meet this price and are holding their Iron at $11.25 @ $11.50. We quote as follows:

Neutral Gray Forge	$10.50 @	cash
All-Ore Mill	10.50 @ $10.75	"
Bessemer	11.00 @ 11.25	"
No. 1 Foundry	12.50 @ 13.00	"
No. 2 Foundry	11.50 @ 12.00	"

We note a sale of 1000 tons of Bessemer for December delivery at $11, Pittsburgh, and one of 1500 tons for December and January at $11.25, Pittsburgh. Also a sale of 1000 tons of Gray Forge for December and January at $10.50, delivered.

Billets.—The Steel market has shown no marked change during the week. There is a moderate amount of Steel changing hands, but as near as can be learned no contracts calling for large tonnage have recently been closed. However, it can be stated that as we get nearer the close of the year there is more disposition shown on the part of makers to sell into next year at present prices. For ordinary business mills continue to quote $17.25 @ $17.50, the first named being the ruling price. For desirable orders, with payments and deliveries satisfactory to makers, it is probable that such business could be placed at $17 at maker's mill. We note a sale of 5000 tons for delivery into March of next year at a price equal to about $17 at maker's mill; also a sale of 3000 tons for December, January and February at $17 at maker's mill; also a sale of 1000 tons for December and January at $17.25 at maker's mill. The new Bessemer plant of the National Tube Works Company, at McKeeaport, Pa., was started up this week. Every-

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thing worked smoothly and in a manner highly satisfactory to both the builders and owners of the plant.

Ferromanganese. — We quote at $52 @ $52.50 for 80 % domestic and note a sale of 50 tons at a prices equal to about $52, delivered at buyer' mill.

Muck Bars.—There is little doing, owing to the low price at which Billets can be obtained. We quote best grades Muck Bars at $20.75 @ $21, delivered at buyer's mill. We note a sale of 250 tons for delivery at the first named price.

Plates. — The slightly improved demand noted last week continues. Prices are no better, but on the contrary are weak and lower. We quote: Tank Steel at 1.35¢ @ 1.40¢, and for round lots the lower quotation would be shaded. Flange Steel we quote at 1.65¢ @ 1.75¢; Shell, 1.55¢ @ 1 60¢; Fire Box, medium quality, 2½¢ @ 3¢, best quality, 3½¢ @ 4¢.

Steel Rails.—The Edgar Thomson mill was off last week, but will start up again in a few days on Rails. Reports that the local mill had captured a number of large orders, one of them amounting to 40,000 tons, for the Lake Shore Railroad, have not been confirmed. It is understood during this week the final papers of the new agreement between the Rail makers will be adjusted.

Structural Material.—The demand for Beams has kept up remarkably well this month, due, no doubt, to the mild weather, which has permitted building operations to go on without interruption. Pittsburgh has recently taken two Government contracts which called for a good sized tonnage of Beams. For ordinary lots we quote Beams up to 15 inches, 1.50¢ @ 1.60¢. For desirable orders our lower quotation would be shaded. We quote Angles and Universal Plates, 1.50¢ @ 1.60¢; Tees, 1.70¢ @ 1.75¢. Makers here are looking for a very heavy demand for Structural Material next year should a revival of business come in spring, which is confidently anticipated.

Bars.—A general resumption of operations among the valley mills has taken place, and this will highten the struggle for work which has been going on for some time. As a direct consequence of the starting up of additional mills prices have shown a weaker tendency, although no material decline has taken place. We continute to quote Soft Steel Bars at 1.35¢ @ 1.40¢, with Bar Iron extras, Pittsburgh. For good round lots it is probable that a lower price than we have named would be accepted. The valley mills are holding Bars at 1.30¢, and it is claimed it is exceedingly hard to shade this price even to slight extent.

Barb Wire.—There is no improvement in demand, and prices have recently shown a weaker tendency. We quote Four-Point Galvanized at $2.20 in carload lots at mill, with the usual advance for less quantities. For round lots this price would probably be slightly shaded. Plain Wire is in moderate demand, and we quote at $1.45 in carload lots for Nos. 6 to 9. For a fair sized order this price would be shaded.

Wire Nails.—Although there is an active demand for Wire Nails, the fact that all the mills are in operation causes considerable competition for business, and as a result prices are slightly weaker. We quote Wire Nails in carload lots at $1.15 @ $1.20. Small lots are held at $1.30 @ $1.35. There is also a good demand for Cut Nails, but in sympathy with Wire Nails prices have shown a weaker tendency. We quote at 95¢ @ $1, at mill, for the usual averages.

Wire Rods.—There has been an active demand for Rods for some time and some of the mills have their entire output for the balance of the year under contract. On account of the low price of Steel, Rods for delivery during the first quarter of next year are offered at $24.75 @ $25, at maker's mill. Under very desirable conditions it is possible that our first named quotation would be slightly shaded.

Merchant Steel.—There is nothing of interest to report this week. The demand continues only fair, and considerable disappointment is being expressed by mills on account of the slow manner in which new business is developing. A part of the plant of the Linden Steel Company, in this city, has been put in operation, the firm having made satisfactory arrangements with their creditors and secured an extension of five years. Prices are unchanged, and we continue to quote Open Hearth Tire Steel at 1.90¢ @ 2¢; Bessemer Machinery at 1.55¢ @ 1.65¢; Toe Calk, 2¢ @ 2.10¢; Tool Steel, from 5½¢ upward, according to quality.

Skelp Iron.—The demand for Skelp Iron is slightly better, owing to the starting up of some two or three plants that had practically done nothing for some months. Prices continue very low, and we quote Grooved Skelp at 1.37¢ @ 1.50¢, and Sheared at 1.50¢ @ 1.60¢, the price depending largely on the nature of the order.

Pipes and Tubes.—There is nothing of interest to report this week. The demand is only moderate, and the prospects for an improvement in this direction before next year are not very promising. No attention has been paid to the official discount list for some months.

Coke.—Within the past week or so a number of contracts for Furnace Coke for delivery up to July 1, 1894, have been closed, these contracts being based on $1.10 in tons of 2000 lb on board cars in Connellsville region. As near as can be learned this price has not been shaded, and there is a disposition among Coke makers not to make contracts for their entire output, for the reason that better prices for Coke are expected after the first of the year on account of the increased demand brought about by the blowing in of a number of furnaces. For the week ending November 18 there were 7180 ovens in the Connellsville region in blast and 10,339 idle, with a total estimated production of 66,090 tons. Compared with the previous week there was a net gain of 695 active ovens and an increase in production of 8235 tons. We continue to quote Furnace Coke at $1.10 in tons of 2000 lb, f.o.b. cars in Connellsville region, and Foundry Coke is held at $1.50 to dealers and $1.65 to consumers.

The collieries of British India produced, in 1892, 2,537,696 tons of coal, or almost exactly double the amount put out in 1883. During the interval the number of collieries has increased from 61 to 88. The industry is stated to have received quite a decided impetus of late from the widespread demand that India should be self supporting in her fuel supplies, as well as from recent railroad extensions which have brought some of the coal mines into easier communication with the cities.

Metal Market.

Copper.—No large sales of Lake Superior Ingot have been reported or even rumored, but brokers have been supplied with orders to bid stiff prices, not only on Exchange contracts, but on actual Copper for near future delivery. In some quarters it was claimed that 5,000,000 lb or any part would have been taken at 10¢. Elsewhere *bona fide* bids of 10⅛¢ for moderate quantities were turned down. On the Metal Exchange a trade was recorded involving 50,000 lb, for delivery during the latter part of December, at 10⅛¢, but reliable information went to show that several prominent producers were willing and ready sellers at that rate for delivery during the first quarter of next year. There is some suggestion of manipulation, or at least a tendency to make the most of all the best features prevailing, but enough legitimate demand prevails to give the market good tone. In the cheaper varieties hardly the same degree of interest is manifested, but sales are sufficient to keep the market in quite good form. The range of prices quoted is 9⅛¢ @ 9¾¢ for Electrolytic and 9¼¢ @ 9½¢ for casting stock, according to brand and quantity.

Pig Tin.—For spot stock and on deliveries running during the balance of the year, prices have been well maintained on the basis of about 20.65¢. Speculation has remained almost at a standstill, and regular operators, as well as outside interest, seem to have virtually withdrawn pending the fate of the new tariff bill. The jobbing and consumptive demand has also been on a moderate scale, but the best information on the subject goes to show that steady inroads have been made upon spot stocks, and that the distribution exceeds the combined total quantity afloat and the importations since the McKinley duty went into effect. Along with the fact that stocks in Europe have been steadily increasing this would suggest more than a bare possibility of some lively speculative movement in the event of the present duty being removed. At the close the market was apparently steady in tone but very quiet.

Pig Lead —There has been somewhat freer offering, due partly to slow condition of trade latterly and partly to some uneasiness over the provisions of the new tariff bill. Under the weight of the two circumstances selling price has dropped to 3.40¢. Carload and larger lots have been offered at that rate for delivery up to the balance of the year. At the present there seem to be no buyers at above 3.35¢, and few at over 3.30¢. The market thus has a weak as well as a dull appearance in the face of all the bullish speculative manipulation and argument that has been brought into play during the past two weeks.

Spelter.—Under the influence of good demand from Western consumers, along with about average buying in this city and vicinity, the market shows better form and closes quite firm. Single carload lots of ordinary Western went at 3.75¢ @ 3.85¢ for prompt and near future shipment. The latest sales were at the higher price. That is now bid, and in remote instances offers were

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made as high as 3.87½¢ for ordinary delivery by speculative operators.

Antimony.—The jobbing demand is fair, but little, if anything, is doing in round lots. Prices remain quite steady, however, with 9⅝¢ @ 9¾¢ quoted for Hallett's and 10⅛¢ @ 10¼¢ for Cookson's.

Tin Plate.—Business has been slow, and the market is bare of really encouraging features. Spot goods are taken in small quantities only, as immediate wants may dictate, and the aggregate outturn is hardly up to the average. Interest in forward shipments is exceedingly tame, although prices have been quite freely quoted that range from 5¢ to 10¢ below current selling prices for spot goods. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $5.30; J. B. grade, do., $5.35; Bessemer full weight, $5.35; light weights, $4.95 for 100 lb, $4.85 for 95 lb, $4.70 @ $4.75 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60; Siemens Steel, IC basis, $5.65; IX basis, $6.75 @ $7. Charcoals—Melyn grade, IC, $6.37½ @ $6.50; Crosses, $8; Allaway grade, IC, $5.60; Crosses, $6.75; Grange grade, IC, $5.75; Crosses, $6.85. Charcoal Ternes—Worcester, 14 x 20, scarce; do., 20 x 28, $11.35; M. F., 14 x 20, $7.35 @ $7.37½; do., 20 x 28, $14.75; Dean grade, 14 x 20, $5.35; do., 20 x 28, $10.50 @ $10.60; D. R. D. grade, 14 x 20, $5.15; do., 20 x 28, $10.10; Alyn, 14 x 20, $5.32½ @ $5.35; do., 20 x 28, $10.50; Wasters—S. T. P. grade, 14 x 20, $4.75; do., 20 x 28, $9; Abercarne grade, 14 x 20, $4.60; do., 20 x 28, $8.87½.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, November 29, 1893.

Pig Iron.—Reports of additional sales of Southern warrants to speculative buyers are current. Some of the leading Southern producers are making an effort to secure better prices, but in this market no advance has yet taken place, since a good deal of cheap Iron is still offering. We quote: Northern brands, $14 @ $15 for No. 1; $13 @ $14.25 for No. 2; $12.25 @ $12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, $13 @ $14 for No. 1; $12 @ $13 for No. 2; $11.50 @ $12.25 for No. 3; $11.75 @ $12.25 for No. 2 Soft, and $12.25 @ $12.50 for No. 1 Soft. Gray Forge is $11.25 @ $12.

Spiegeleisen and Ferromanganese.—In the absence of business we quote: Foreign Spiegeleisen, 10 % @ 12 %, $21.50 @ $22, and 20 %, $25.50 @ $26, on cars, Jersey City, and Ferromanganese, $55 @ $55.50.

Billets and Rods.—The market is very dull and is a shade weaker. We quote nominally: Domestic Billets, $20 @ $22, and foreign Billets $28 @ $28.50, tidewater; domestic Wire Rods, $28 @ $29, and foreign Rods, $39.50 @ $40, tidewater.

Steel Rails.—The new combination is a fact, all reports to the contrary notwithstanding. The tidewater price has been fixed for 1894 delivery at $24.80, while the price at Pittsburgh is $24 and at Chicago $25. The market has been altogether too unsettled to allow of any business being done, nor is it likely that any large tonnage will be placed in this market in the near future. Some of the leading roads appear to have covered their requirements. Old Steel Rails, fit to relay, in which there was quite a business, dropped down to $15.

Track Material.—We quote as follows for small lots: Spikes, 1.75¢ @ 1.90¢; Fish Plates, 1.30¢ @ 1.50¢; Track Bolts, Square Nuts, 2.10¢ @ 2.40¢, and Hexagon Nuts, 2.30¢ @ 2.50¢, delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—New business is very small in volume and there is very little new work in prospect in the near future. Prices continue very low under the leadership of the Western mills. A very large block of Hoops has been placed. We quote nominally: Beams up to 15-inch, 1.65¢ @ 2¢, 20-inch, 2¢ @ 2.25¢, for round lots; Angles, 1.65¢ @ 1.80¢; Universal Mill Plates, 1.60¢ @ 1.75¢; Tees, 2¢ @ 2.15¢; Channels, 1.70¢ @ 2¢, on dock. Steel Plates are 1.55¢ @ 1.70¢ for Tank; 1.75¢ @ 1.90¢ for Shell; 2¢ @ 2.15¢ for Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.50¢ @ 1.9¢, on dock, and Common, 1.40¢ @ 1.50¢; Soft Steel Bars are 1.50¢ @ 1.70¢; Scrap Axles are quotable at 1.70¢ @ 2¢, delivered; Steel Axles, 1.70¢ @ 1.90¢, and Links and Pins, 1.70¢ @ 1.80¢; Steel Hoops, 1.75¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ ℔ 45-lb bundle, at mill.

Old Material.—We note a sale of a few hundred tons of Old Iron Rails at $12.50, which represents a further decline. Old Steel Rails have sold during the week at $9.

George B. Douglas, who has been for many years representative of David Colville & Sons, Dalzell Steel Works, Scotland, has assumed as partner his brother, John B. B. Douglas, the new firm being Geo. B. Douglas & Bro. The office has been removed from the Boreel Building to Room 1005 Havemeyer Building.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, November 29, 1893.

There has been very little movement in prices of Pig Tin the past week. Sales of prompts were made at as low as £75. 2/6 a few days ago, the steadiness in silver having no pronounced effect. A slight improvement in home demand and better inquiry from America brought a bouta reaction to £75. 10/ but there is complete absence of outside speculative interest and regular traders have been influenced very little by the propositions in the new American tariff bill.

Copper has been fairly active at intervals during the week, with more active home trade demand and better reports from America regarding the market there. It is stated that Merchant Bars sold for American account recently have been covered, and that some firms have been rebuying American Copper recently sold to Europe, but yet unshipped, at a profit to original purchasers. There is quite a good demand also for cash metal to cover old forward sales that also helps to improve the market. There is somewhat better outside speculative interest. Merchant Bars are now quoted at about £43. 2/6 for prompt and £43. 12/6 for three months' futures. Best selected English is now £46 upward.

Tin Plate prices are weak and irregular. Orders are scarce. The outlook is uncertain, owing to dearth of buyers in the face of lowness of prices. Over 20 works are idle, and many others are working to only part of their capacity, owing to prevailing dullness. This is attributed partly to "bear" operations directed against dealers in London and Liverpool who hold immense stocks. Last returns show total stock of 258,000 boxes in Swansea. Liverpool quotations for Plates are as follows:

IC Charcoal, Alloway grade	12/6 @ 13/
IC Bessemer Steel, Coke finish	11/3 @ 11/6
IC Siemens " " "	11/6 @ 11/9
IC Coke, B. V. grade, 14 x 20	11/3 @ 11/6
Charcoal Terne, Dean grade	11/ @ 11/3

Pig Lead is a trifle weaker, with sellers at £9. 10/ for soft Spanish and the demand slow.

There is hardly anything more than routine demand for Spelter, but prices are quite steady at £17. 2/6 for ordinary Silesian.

In the market for Iron and Steel there has been hardly any change aside from ordinary fluctuation in prices of warrants. Business has been moderate in all departments and the demand is only fair. Makers' prices of Pig Iron were advanced somewhat, owing to higher quotations on warrants, but are now rather weaker. Last dealings in warrants were at 43/ @ 43/2 for Scotch. 34/9 @ 35/ for Cleveland, and 45/ for Hematite.

The New Sheet Scale.

As announced in these columns last week, an agreement has been reached between the Association of Iron and Steel Manufacturers and the Amalgamated Association, by which a straight reduction of 10 per cent. on the sheet mill scale has been granted the manufacturers. It will be remembered that at the first meeting of the two committees representing the employees and the sheet mill owners, a settlement was prevented on account of the Amalgamated Association refusing to reduce wages of roughers and catchers, which they claimed were already low enough. The manufacturers insisted that a straight reduction of 10 per cent. must be granted, and the matter was finally settled by the rollers agreeing to accept that part of the reduction which would fall upon the roughers and catchers. Below we print the new scale governing sheet mills, which became effective on Monday, November 20, and is as follows:

SHEET MILL.

Western scale of prices agreed upon between the Association of Iron and Steel Manufacturers and the Amalgamated Association of Iron and Steel Workers, at Pittsburgh, Pa., on November 22, 1893, to be in force for the year ending June 30, 1894. It is agreed that at a 2-cent Western Iron Association's card, the prices for rolling on a sheet and jobbing mill shall be as follows, with 2 per cent. additional for each one-tenth advance of said card, and 2 per

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cent. decline for each deduction of one-tenth from said card:

Gauges.	Price for rolling on a 2-cent card, per ton, 2240 lb.
No. 8 and heavier	$3.24
Nos. 9 to 11	3.60
Nos. 12 to 14	4.32
Nos. 15 to 17	5.00
Nos. 18 to 21	6.07
Nos. 22 to 24	7.20
Nos. 25 and 26	8.28
No. 27	9.00
No. 28	9.59
No. 29	10 34
No. 30	10.80

Gauges.	Price for rolling on a 2-cent card, per ton, 2240 lb.
No. 8 and heavier	$2.70
Nos. 9 and 10	3.15
No. 11	3.60

Balance of scale to remain as at present. This to apply only to two-high jobbing mills rolling No. 10 and heavier over 48 inches in width.

TIN AND BLACK PLATE MILLS.

It is agreed that at a 2-cent Western Iron Association card the prices for rolling, shearing, doubling and heating on a tin and black plate mill shall be as follows, with 3 per cent. additional for each one-tenth advance of said card, and 3 per cent. decline for each deduction of one-tenth from said card:

Gauges.	Rolling steel, 2240 pounds.	Doubling.	Heating.	Shearing on jaw or crocodile shears, and job work on squaring shears.
Nos. 8 to 11	2.04	.93	.85	.99
Nos. 12 and 13	2.14	.96	.90	
Nos. 14 and 15	2.45	1.10	1.07	
Nos. 16 and 17	3 24	1.46	1.32	1.59
Nos. 18 to 20	3.62	1.63	1.48	
Nos. 21 to 24	4.07	1.86	1.63	
Nos. 25 and 26	4.57	2.07	1.88	1.71
Nos. 27 and 28	4.63	2.21	2.05	
Nos. 29 and 30	5.30	2.70	2.48	1.76
No. 31	5.40	2.84	2.68	1.78
No. 32	5 65	2.97	2.79	1.88
No. 33	5.99	3.13	2.88	1.98
No 34	6.64	3.33	3.15	2.21
No. 35	6.98	3.52	3.34	2.30
No. 36	7.43	3.60	3.47	2.46
No. 37	7.52	3.65	3.52	2.49
No. 38	7.61	3.72	3.58	2.52

1. Fifteen per cent. less than above prices for iron, except shearman.
2. Shearman on modern squaring shears to receive $1 per turn. This clause only applies for shearing tin plate.

EXTRAS.

1. Twenty per cent. added for changed steel and 20 per cent. on net price of iron.
2. Seventeen per cent. added for pickle finished iron and steel, except shearman.
3. For all sheets sheared into circles on tin and black plate mills where the loss exceeds 10 per cent., 20 per cent. extra shall be paid.
4. That all sheets cut down to smaller sizes on tin and black plate mills be paid for at scale prices.

The heating system adopted at the new works of the Bucyrus Steam Shovel & Dredge Company, South Milwaukee, Wis., described in a recent issue of *The Iron Age*, was that of the Huyett & Smith Mfg. Company, Detroit, Mich.

Frank S. Witherbee of Witherbee, Sherman & Co., Port Henry, sails for Algiers to-day.

The Effect of a Perpetual Wages Scale for Iron Workers.

If the proprietors of rolling mills and the Amalgamated Association of Iron and Steel Workers should finally agree that the existing scale of wages be made perpetual, only to be changed by three months' notice from either side, the beneficial effect will be so far reaching that the subject is worthy of notice in advance, and all interested should make earnest efforts to bring about such a state of affairs. The present result of negotiations has given great satisfaction in the industrial parts of the central States, but there will be still greater cause for gratification if the perpetual scale is adjusted.

The prevailing opinion among manufacturers and others whose interests are allied to the iron and steel industries is that greater stability in business will result; that there will be less fluctuation in values and an absence of that speculation in stocks of material which the present arrangement encourages. Under existing conditions, the annual July scare in regard to the probable outcome of wage conferences produces an unnecessary agitation in commercial circles, and everything runs at high pressure during several months before the time approaches, only to be followed by a distressing calm and policy of retrenchment on the part of buyers in case an amicable settlement is reached.

Consumers of rolling mill products are anxious to make certain that their orders will be filled to cover a few months' requirements in case of a lockout, and they place specifications early with jobbers or dealers, who in turn crowd the mills to their utmost capacity; but if the lockout does not take place cancellation of orders usually follows and business is thrown into a generally unsatisfactory state.

Under the new arrangement there will be a greater certainty that operations of rolling mills will continue with regularity during the year. The manufacturer will know that his stock of bar iron, sheet iron or other material which he uses can be replenished by giving a week's or ten days' notice to his jobber, and he will not have to borrow money to lay in stocks as a safeguard against July strikes. Jobbers of Chicago and the Northwest will not be compelled to place contracts for spring and summer delivery for material which they expect to sell in the fall, the quantity of which they can only guess at, as the sales throughout that territory depend, in their extent, very much upon the weather. During past years this scare has reached even small consumers in isolated territory, and cases are common where a tinner or blacksmith has placed his order for a few bundles of iron many months ahead for the sole purpose of being prepared against labor troubles. From these rivulets of commerce rivers grow, and the effect grows with the increasing volume of business. The jobbers speculate on the number of small consumers who are holding back their orders, and thus the ups and downs are caused.

Under the proposed changed conditions orders will be distributed over longer periods, and more stability to business will result. All concerned will be benefited, not omitting the iron worker, for he himself will soon concede that he is far better off if he only works four days of a week the year around than if he made full time for six months and was idle the balance of the year.

While discussing this subject the writer would ask, Why cannot the arrangement be made still more secure by making the scale perpetual and sliding? The 1½-cent card rate may soon be as absurd as the 2-cent card rate has been in the past. Now is the time for a permanent adjustment. The scale is settled until April 1, 1894; when the average selling price of bar iron or sheet iron is known for the intervening period let that price govern the ensuing three months' scale of wages, and so during the year, and, for that matter, for all time. A committee of workmen could meet a committee of manufacturers every quarter, and there would be little trouble in reaching a satisfactory agreement.

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HARDWARE.

Condition of Trade.

BUSINESS during the past week has been without material variation in volume except the falling off which is expected at this season and during the last days of the month. The market has been characterized by a somewhat more hopeful tone, and manufacturers and merchants have been making their plans for a more vigorous conduct of their business. While the volume of trade has not increased, inquiries in regard to future shipments and the placing of orders for spring delivery have been more frequent, which was regarded as an indication that things were resuming their normal course. The announcement of the new Tariff bill, however, with its large reductions in the duties on the many lines of Hardware and related goods, will, it is apprehended, have the effect of unsettling business and checking the improvement which was beginning to make itself apparent in trade circles.

Chicago.

(*By Telegraph.*)

Shelf Hardware jobbers report a somewhat better condition of business. Not only are orders a little more numerous, but collections are also improving considerably. Shelf goods are going out in larger volume, as well as seasonable goods. The demand for Snow Shovels and other winter supplies, Skates, Sleds and holiday goods generally has been very fair during the week. There is also increased movement in Sheet Iron and Tinners' Stock. Owing to the sustained winter weather, no material change is reported in the price of Shelf goods. Manufacturers seem to have produced in sufficient quantities only to meet the regular demand, and are, therefore, not pressing sales of accumulated stock, as in some other lines. Heavy Hardware keeps up fairly well, owing to the demand for Iron and Steel coming in from both large and small consumers. There are indications of an improvement in the Carriage trade, and a few orders have already been entered for Carriage material for spring delivery.

St. Louis.

(*By Telegraph.*)

There is a partial falling off in trade since our last report. Retailers will not stock up, and only order as their needs require. Jobbers are preparing for renewed activity after the turn of the year. That they do not anticipate to equal their spring trade of last year is evidenced by the fact that one of the largest jobbing houses here is only ordering sufficient goods to do 75 per cent. of the business they did last spring. This is not encouraging, but it is the truth, and it is to be hoped that the house referred to will be disappointed in their low estimate. Remittances are received regularly, and a number of concerns are now discounting their bills, showing that a better financial feeling exists. The demand runs largely to seasonable goods, and prices as a rule are well maintained.

Notes on Prices.

Wire Nails.—The market has developed no special features of importance since our last review. The demand is only moderate, but the aggregate is considerable, as the low prices which are ruling induce many dealers to purchase such Nails as they require in the near future. Quotations continue on a basis of $1.15 to $1.20 for round lots at mill, the former figure being usually obtainable on good orders. Carload lots delivered in New York are quoted at $1.35.

Chicago, by Telegraph.—The heavy purchases of Wire Nails continued during the past week, but as navigation on the lakes has now closed, the movement will probably be light from this time. There are, however, inquiries for delivery in January, February and March, but manufacturers hesitate to quote so far ahead. Prices dropped to a little lower level during the active trade of the past week, but with the change to all rail delivery an effort is being made to keep prices at the equivalent of $1.30, Chicago. Small lots are now selling at $1.40 to $1.45 from stock.

Cut Nails. The condition of the Cut Nail market is unsatisfactory, but prices are not quotably lower than last week. The market is represented by the quotation of 95 cents for carload lots at mill, though this figure is shaded and orders can be placed at 90 cents. Small lots from store in New York are quoted regularly at $1.20.

Chicago, by Telegraph.—A fair trade is in progress in Cut Steel Nails, with continued good shipments to the Southwest. Wheeling Nails are again being quoted in this market quite freely, but thus far little business has resulted, as the local makers appear to have a firm grip on the trade. Prices on factory lots are quoted at $1.15 to $1.20, according to the character of the order, while small lots from stock are selling at $1.25.

Barb Wire.—In view of the unsatisfactory condition of the market and the extremely low prices which are ruling, some of the manufacturers are practically withdrawing from the market for the time being, refusing to meet the prevalent figures. The competition, however, continues active and prices are low and weak. We continue to quote $2.15 to $2.20 for car lots of Four-Point Galvanized at mill.

Chicago, by Telegraph.—The demand for Barb Wire is of a light character throughout the Northwest and manufacturers appear to be getting most of their business from the South and Southwest. Competition for this business has been keen, but so far it has not affected the local trade. Carload lots of Galvanized are quoted to purchasers in this vicinity at $2.40, while jobbers quote small lots from stock at the old rate of $2.55. Heavy transactions have taken place in Plain Wire at lower prices than ever before made in this vicinity.

Skate Sharpener.—The Union Skate Sharpener, manufactured by the Union Hardware Company, Torrington, Conn., an illustration of which appeared in our issue of November 16, 1893, is listed at $3 per dozen, subject to a discount of 30 per cent. to the retail trade.

Climax Lamp Stove.—The Climax Lamp Stove, which was illustrated in *The Iron Age* of November 23, 1893, is manufactured by Clarence M. Kemp, 101 North Frederick street, Baltimore, Md. The stove is sold to the trade, without the lamp, at $48 per dozen, net.

Brass Nails.—The Just Enough Brass Nails, manufactured by the Grand Crossing Tack Company, Grand Crossing, Chicago, and illustrated in *The Iron Age* of November 2, 1892, are sold at 50 cents per carton of 20 papers.

Novelty Scraper.—Smith's Novelty Scraper, an illustration of which was given in our issue of November 16, 1893, is manufactured by Fernando B. Smith, Canton, Ohio, and is sold at 75 cents per dozen, or $7.20 per gross, net, f.o.b. Canton.

Sliding Door Latch.—The Sliding Door Latch illustrated in *The Iron Age* November 23, 1893, and manufactured by Lane Brothers, Poughkeepsie, N. Y., John H. Graham & Co., 113 Chambers street New York, agents, is sold at $4 per dozen, subject to a discount of 25 per cent.

Universal Brace.—The Universal Brace, manufactured by the National

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Mfg. Company, Wilkesbarre, Pa., and illustrated in *The Iron Age* of November 16, 1893, is sold at a discount of 20 per cent. from the following list:

	Sweep		
	6-inch.	7-inch.	8-inch.
Nickel plated, per doz..	$33.00	$36.00	$39.00
Black enameled, nickel plated trimmings, per doz.....	30.00	33.00	36.00

Glass.—The dissolution of the Plate Glass Manufacturers' Association, to which reference was made in our last issue, has resulted in an open market, and manufacturers of American Plate Glass are in a position to accept orders at any price they may individually choose. There is a reported decline in prices from factory of 20 per cent. American Window Glass is being sold from factory at 85 and 20 per cent. discount for Single Strength and 85 and 20 and 5 per cent. discount for Double Strength. In face of a declining market something like 200 additional pots are reported as having gone into operation since our last report. French Window Glass is still quoted at 75 and 10 and 5 to 80 and 5 per cent. discount. It is too early to surmise what reduction the proposed tariff would make in the selling price of imported Glass, or to what extent it would affect American Glass manufacturers.

New Members of the Hardware Club.

THE following gentlemen have recently been elected members of the Hardware Club of New York:

GEORGE H. BARTLETT,
Bethlehem, Pa.

J. H. CAMPBELL,
Deputy City Chamberlain,
New York.

L. C. DAWES,
Editor *The Metal Worker*,
New York.

JOSEPH J. O'DONOHUE,
City Chamberlain, New York.

DANIEL E. SEYBEL,
41 Park row, New York.

R. W. SHAPLEIGH,
St. Louis, Mo.

THEODORE H. SILKMAN,
41 Park row, New York.

E. OSBORN THOMPSON, JR.,
245 Broadway, New York.

European Imitations of American Arms.

WE HAVE already referred to the fact that of late the Continental manufacturers of Firearms have been imitating American patterns and in some cases counterfeiting brands and trade-marks. This has for some time been done in connection with the Arms of Smith & Wesson, Springfield, Mass., which have been imitated in Belgium, and in many cases their marks have been counterfeited on both barrels and stocks of an inferior class of Revolvers, thus injuring the firm's reputation and business. With a view to preventing this they have recently had their marks registered in all the principal countries of the world, including Belgium, and have instituted proceedings against the makers of and dealers in these imitations with a view to putting a stop to this piracy. Within a short time their attorneys in Liege have seized a large quantity of these spurious Arms and brought action in the courts against the makers and dealers, and an early and favorable decision is expected. Smith & Wesson advise us that they propose to push the matter strenuously, and are confident of the successful termination of their efforts to protect their name and business interests.

The Van Wagoner & Williams Company.

A PLAN for reorganizing the Van Wagoner & Williams Company, under the name of the Van Wagoner & Williams Hardware Company, who have their plant in Cleveland, Ohio, and their Eastern office at 14 Warren street, New York, is being submitted to the creditors. The Committee on Reorganization, composed of Messrs. Austin B. Fletcher of 29 Broadway and Edward P. Lyon of 34 Nassau street, in connection with some of the largest creditors and the receivers, found that the plant was very valuable and well worth being continued as a going concern, and therefore have prepared a plan which has already been approved by about three-fourths of the creditors. The main features are to have the creditors accept for their claims a 7 per cent. cumulative guaranteed stock; and as there is a large amount of property and the earning capacity of the company is great, it gives value immediately to this guaranteed stock, while doing justice to all other interests. In this way it is expected that the creditors will be able to realize their claims in full and the company will be relieved from all indebtedness. C. S. Van Wagoner and Wm. H. Williams will retain their respective positions in charge of manufacturing and marketing the product of the company. The new company will be capitalized at about $750,000, $600,000 of which will be fully paid in, provision being made for gradually retiring the guaranteed stock, upon the accomplishment of which the control of the company will pass to the original stockholders. It is expected that the plan determined upon will place this popular concern upon a sound financial basis and promises a successful future for the business.

It Is Reported—

That the storage warehouse of George M. Steinman & Co., Hardware dealers, Lancaster, Pa., was destroyed by fire on the 14th inst. The warehouse was 60 feet long by 25 feet wide. The stock was valued at $4500, partly insured.

That T. Covert has sold out his Hardware business at Byron, Neb.

That the Hardware store of Sawyers & Havens, Bellevue, Mich., was recently burglarized.

That Treat & Son, Le Mars, Iowa, have sold out their Hardware business to C. W. Waldeck of Cedar Rapids.

That Libby & Stiles have recently entered the Hardware business at Denmark, Maine.

That the Hardware stock of Turner & Kirch, Chanute, Kan., was destroyed by fire on the 14th inst.

That E. S. Fonda has disposed of his Hardware business at Little Cedar, Iowa.

That Ambrose Bros., Hardware merchants, Gallatin, Mo., have sold out their stock to J. T. Gough and S. J. Dice.

That A. S. Hovey of Lake City, Mich., will in the spring open a Hardware and furniture store at McBain, Mich.

That the Hardware store of John Waeldin, Johnstown, Pa., was robbed on the 15th inst.

That A. L. Winder, Hardware merchant, Berkley, Va., has moved into new quarters.

That the stock of Tinware in the Stanton Hardware store at Oneonta, N. Y., has been purchased by J. M. Roney, who will remove it to Arena, Delaware County.

That Moses Crosley of Farina, Wis., has purchased H. C. Saunders' interest in the Hardware firm of Saunders & Naxon, Milton Junction, Wis.

That the Hardware stores of Byers & Woodward and C. B. Moss, at Grand Ridge, Ill., were destroyed by fire on the 17th inst. The former firm's loss was $5000, with insurance of $3000; Mr. Moss's loss was $3500, with insurance of $2000.

That the warehouse of the Texarkana Hardware Company, Texarkana, Ark., was destroyed by fire on the 17th inst. Loss, $4000; insurance, $1500.

That thieves recently broke into the Hardware store of Sheldon & Hande, Spring Valley, Minn., and got away with $200 worth of Cutlery and Revolvers.

That the Hardware store of J. K. Aldridge, Chestertown, Md., was robbed on the morning of the 13th inst. The plate glass front, $\frac{5}{16}$ inch thick, was smashed in with a brick, the crash being heard nearly two squares away. A hole was broken scarcely large enough to admit the body of a large sized man, and through this the robber entered. The safe, in which a small amount of money had been left and which was not locked, was then rifled of about $20. Some pistols and cartridges were also stolen, together with about $10 from the money drawer.

That George Ripley will soon open a new Hardware store at W. Stewartstown, N. H.

That Neuman & Fechner's Hardware store, at Stanton, Neb., was robbed of Revolvers, Razors and Pocket Cutlery on November 16.

That $50 worth of goods were taken from the Hardware store of Levi Baker, Lincoln, Neb., on November 13. This is the third or fourth time that the store has been robbed.

That Fred. Howlett, Gregory, Mich., contemplates putting in a stock of Hardware in the store recently vacated by N. E. Moore.

That Paris McKenzie has purchased a half interest in his father's, H. F. McKenzie's, Hardware store, at Chesaning, Mich.

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John P. Chatillon.

JOHN P. CHATILLON, the subject of this sketch, was born in New York, April 7, 1845, and died in Paris, France, November 17, 1893, of Bright's disease. Just one year from the day of his decease he left New York by steamer, accompanied by two sisters, two of his older children and a trained nurse. His plan contemplated spending the winter and spring along the Mediterranean with a view to a restoration of his health. The party went direct to Naples, and eventually visited the leading cities of the Continent. Since the death of his wife, about eight years ago, those who knew Mr. Chatillon intimately perceived a change in him, although generally among his associates and business acquaintances he has been known as an invalid for but a comparatively short time.

The concern now so widely known and of which he was a part was inaugurated by an uncle, George H. Chatillon, in Cherry street in 1835. In 1842, upon the death of the founder, the enterprise was taken by a brother, John Chatillon, father of the deceased. John P. Chatillon began his education in a public school in this city and eventually graduated from the College of the City of New York. Soon after leaving college he was employed by the old Hardware establishment of Clark, Wilson & Co., at 81 Beekman street. He remained there until 1868, when he was taken into his father's business.

In 1872, before the death of his father, which occurred that year, he and his brother, George H. Chatillon, were admitted to a partnership. Since that time the management of the concern has been solely in their hands.

John P. Chatillon was long a director in the American Institute of New York and for years chairman of its Fair Committee. He was also a member of the Arion Society. He leaves a son and three daughters. While it was known that he was in impaired health, the tidings of his death were a surprise to his friends, and were received with sorrow by all who knew him, by whom he was held in high regard for his business abilities and personal worth.

IN A FIRE at Concord, N. H., on the 11th inst., the Hardware stock of Thompson & Hoague in their Main street store was badly damaged by water. The loss is estimated at $8000 or $10,000, which is fully covered by insurance. Their wholesale building in Railroad square was, however, uninjured, and as their stock carried therein is very complete they will be able to fill orders as usual. The catalogue cupboard of the firm having been thoroughly wet new copies of catalogues, circulars, &c., from manufacturers will be thankfully received by them.

The Business Depression.

AN ADDRESS BY WILLIAM W. SUPPLEE.

THE FOLLOWING ADDRESS was made by William W. Supplee, president of the Supplee Hardware Company, before the HARDWARE MERCHANTS AND MANUFACTURERS' ASSOCIATION OF PHILADELPHIA, at their meeting, November 23, by whom its publication was requested. We take pleasure in laying it before a larger audience than the influential body to which it was originally presented:



JOHN P. CHATILLON.

Mr. President and Members of the Hardware Merchants and Manufacturers' Association:

I am before you in compliance with a request made at the last meeting of the association that I read a paper on: "Our present business depression. To what extent has the fear of tariff reduction been responsible?"

There has been sufficient discussion in Congress on our business depression and the causes of the same to fill hundreds of pages of the *Congressional Record*, and editors of papers have aired their opinions daily for the last eight months.

The renowned novelist, Walter Besant, while recently traveling in this country, remarked: "The American people are a nation of readers. You see them reading eyerywhere; on the railway cars you will see men with two to four daily papers, eagerly devouring their contents."

In this he is unquestionably correct. The great majority of these readers, however, confine their reading to papers which represent their political views. These readers must naturally become biased in their opinions and prejudiced in forming their conclusions on important subjects under discussion.

One finds it an easy matter to say the fear of tariff reduction is largely reponsible for certain conditions; equally easy to deny it has been in any way responsible; quite as easy to attribute the conditions solely to the Sherman silver purchasing clause.

Therefore, I may be expected to illustrate why and how I arrive at the conclusions. The three years preceding the year 1893 were years of exceeding prosperity. Labor had never been more fully employed, and wages were never so high.

Reference to Aldrich's report, sustained by the Bureau of Statistics and by the present Secretary of the Treasury, showed the wage earners enjoyed the largest proportion of that which they produced than any other class of labor ever enjoyed in the history of the world. The wage earners were never so well paid, and the masses never earned so much.

Reports of the deposits in savings banks in the United States showed that the wage earner had upon deposit a larger amount than ever before known.

Foreign commerce exceeded any previous experience; manufacturers had orders upon their books that would require months to execute; mercantile houses showed an excess of trade over any previous years; money was plenty, and, owing to the prosperous times, banking houses extended credit freely. Indeed, we were in the midst of unparalleled prosperity; nor was there any visible evidence of overproduction, and almost in a day, as if by a magic wand, the scene was entirely transformed.

The cause or causes that produced this change were, I believe, as stated in an article written for *The Iron Age*, under date of August 17, and I have no reason since for changing the then expressed opinion:

FIRST (and greatest).—The mistaken theory of surplus reduction.

SECOND.—Partisan insincerity.

THIRD.—Government's experimental financial policy.

FOURTH.—The silver law existing prior to July, 1890, supplemented by the Sherman silver purchasing clause July 14, 1890.

Referring to the first and second of these four, in the year 1879, when the Secretary of the Treasury, John Sherman, resumed specie payments, the cash in the United States Treasury was over $380,000,000, and the Government receipts beyond expenditures for the fiscal year were about $20,000,000, and the demand indebtedness was then as many millions less than at present.

At that time many questioned the ability of successful resumption. Years

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later the same element astounded the country by advocating the reduction of our Government surplus (then between $200,000,000 and $300,000,000) to $100,000,000, giving as their reason for reduction the saving of a few millions in interest.

This theory touched the masses, largely unacquainted with financial results, and it became a party factor, which eventually both parties adopted; even the framers of the present McKinley bill so regulated it as to insure a reduction in our revenue receipts, and as we are all aware, $100,000,000 was adopted as a gold redemption reserve, not to be encroached upon. Fortunately, owing to a favorable trade balance, we were able to retain a sum in excess of this amount until the spring of 1893, when trade balances ran largely against us.

This Government surplus reduction was one of those vagaries founded upon theory, which could not be sustained from precedent or experience, and placed us at the mercy of foreign countries in search of gold, and equally disadvantageously when any scarcity of gold existed in our own country.

In February, 1893, the reserve gold in the United States Treasury ran from $104,000,000 to $106,000,000, slightly in excess of the amount which the law required, but with this small sum we were liable to be called upon to redeem over $1,000,000,000 of redeemable gold notes, silver and silver Treasury notes.

In the meantime, balance of trade became largely against us; besides, Europe had been drawing largely on us for gold in exchange for bonds, and partisan editorials had for two months flamingly stated that when our gold went below the $100,000,000 mark, as a nation we were bankrupt. It had now about reached that mark.

Partisan insincerity (please do not construe partisan as political) had inflamed the public mind, as well as the minds of foreign investors, who plainly saw that we had less than 10 per cent. of available gold to redeem our entire demand indebtedness, and naturally feared the result.

At this state of the public mind the change of administration came, quite unprepared from recent experience to meet the emergency, and a policy of inaction temporarily controlled the Government's financial policy and our gold reserve had gone below the mark.

Financial leaders of our country discussed the situation, and, fearing the results, offered the United States Treasurer assistance which unfortunately was rejected. Had it been accepted I very much doubt whether the object lesson would have occurred. As it was, heads of financial institutions became uneasy, and perhaps some of them unnecessarily aggressive. Europe looked with distrust not only on what might seem our inability, but at the uncertainty of what might perhaps follow.

At this juncture the Secretary of the Treasury, doubtless with good intentions, to prevent further drawing of gold, stated that, according to law, he did not consider it necessary to redeem silver certificates in gold, and he would redeem them in silver.

Here came the crisis, it being a well-known fact that the Secretary had voted for free coinage in the Senate, and the intimation that silver, worth about 70 cents on the dollar, would be paid in the place of gold startled not only this country but foreign nations.

Soon after this England intensified the panic by closing the mints in India. The situation became serious and perplexing. A dark cloud overcast our entire financial sky. In order to quiet the unrest, President Cleveland was called upon to reverse the decision. He stated we would redeem all the Government's indebtedness, including silver certificates, in gold; but there had been vacillation. No one supposed the Secretary of the Treasury had given his opinion without consultation. Therefore, nothing more than an experimental financial policy could be inferred.

In addition to this, visions of State bank notes were seen in the distance. Our revenue receipts were now running less than our expenditures, and we were paying out about $3,000,000 per month for silver, which amount, however, in prosperous times, had neither affected our credit or finances.

We all remember the condition of the country at the time the President's special message called Congress together, from which message I quote as follows:

"The existence of an alarming and extraordinary business situation, involving the welfare and prosperity of all our people, has constrained me to call together, in extra session, the people's representatives in Congress.

"The distrust and apprehension concerning the financial situation which pervade all business circles have already caused great loss and damage to our people, and threaten to cripple our merchants, stop the wheels of manufacture, bring distress and privation to our farmers, and withhold from our workmen the wages of labor."

Referring to the above extracts, one would naturally ask had the silver purchasing clause been the sole cause of the panic upon us at that date, would it not at least have gradually shown itself to some extent during the three preceding years?

Congress, however, met under the gravest situation of industrial and financial convulsion. Deposits were withdrawn from banks and hoarded by individual owners; hundreds of banks failed or temporarily suspended; trust companies refused to make payments other than under the 30 or 60 day rule; both currency and gold commanded a premium, and hundreds of manufacturers were obliged to close their works, failures were being recorded at the rate of 400 to 500 per week; mercantile houses kept their forces employed at a loss to themselves, and wage earners were daily being thrown out of employment, until the number reached some 2,000,000.

I am not a believer in the notion that the purchasing of the comparatively small amount of silver, $3,000,000 per month, which sum, according to a construction placed upon the law by Mr. Carlisle, was reduced to a trifle over half (by buying silver on London quotations only), could alone be the cause of our financial troubles, and I think it folly to suppose that President Cleveland saw no other cause. It doubtless became apparent to him that we could no longer sustain our financial credit other than by paying our obligations in coin that had an equal par value in all parts of the world.

I believe he also saw the mistake in the attempt to sustain our credit upon our present small surplus, but was too shrewd a politician to state it in his message.

It was about this date that an English publication, known as the London *Commerce* wrote as follows: "The proportion of gold held by the Government of the United States to its liabilities in respect to the amount of notes and currency certificates issued has diminished to a corresponding degree, with the result that foreign capital has ceased to flow into the States."

I do believe, however, that had Congress acted sagaciously, promptly and effectively in correcting a law which was drawing even a small amount from our already depleted Treasury, and then have strengthened our gold reserve by, say, an additional $150,000,000 to $200,000,000, the gathering clouds which collected themselves in Europe, and were wafted to this country, would never have penetrated over all our financial and industrial enterprises and reached the households, to more or less extent, thoughout our entire land.

It would, therefore, naturally appear that had it been believed by the Representatives in Congress that the silver purchasing clause was the sole cause of our trouble, the strain would have been at once relieved; but the leader in the United States Senate, Mr. Voorhees, had opposed a bill repealing this same law in February, 1893, and it was not accepted as the sole cause of the trouble; hence, hesitancy, which proved so destructive to the country, and the verdict of some 1500 commercial bodies had but an indifferent effect to urge action.

Fortunately, in time conditions changed. The financial situation was relieved in a measure from large to small importations from abroad, and by being able to dispose of a large amount of grain, even at a low price, the balance of trade became favorable to us.

A large amount of money was borrowed in Europe on hypothecated securities, and a large amount of stocks which had been materially reduced in value was bought up by foreign investors, which repaid the debt, so that the deposits in our banks became normal, and even several millions in excess of the usual surplus.

But the money taken from the banks and temporarily hoarded by individual depositors, when unlocked, was to be used cautiously; fear of a return stared people in the face.

The bell that sounded the alarm was not the only sound. Chimes of bells ringing caution, economize and retrench were heard.

A well clothed and well housed nation could pass one year with but little expenditure in their outfit; well equipped railroads could economize for a year; anticipated and projected improvements could be postponed, but all at the expense of a lesson to trade.

The reduction of the purchasing power, through enforced idleness and its correlatives, will, in itself, extend into billions of dollars.

The reduction in the purchasing power, through the decline in wheat, cotton, wool and corn, has had a surprising effect, and the fearful liquidation of stocks of 30 to 50 per cent. from their former value caused further contraction in the volume of trade. Let us consider, therefore, what the loss of some $2,000,000,000 of trade from the above causes involves. Besides, both wholesale and retail merchants restricted their purchases to immediate wants, and manufacturers who had closed their doors found no immediate inducement to resume, preferring to await a certain revival in trade.

One would naturally suppose that the prospect of a tariff revision, with its uncertainties, would have had an aggravating effect upon the situation, but I am unwilling to believe that either manufacturer or merchant would refuse present trade offered fearing the results of what might occur one year hence.

It is also worthy of notice in this connection that out of several hundred manufacturers who had from various causes closed their doors not 5 per cent. of the number who were asked for information have been willing to admit they were affected by expected tariff reduction.

It is quite probable that many manfacturers have been induced to start their works only on conditions which

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have involved the wage earners sharing a portion of the uncertainty and responsibility by a decline in wages.

But public opinion has undergone considerable change regarding tariff legislation within the last few months. The fact of our present revenue being insufficient has had its effect upon those who have the matter in charge at Washington, and the pulse of public opinion has been felt at various times in a suggested advance in sugar duties and the advisability of an income tax, neither of which have met with popular approval. Local representatives from various sections of the country have shown a desire to modify or suppress a reduction affecting their own immediate industries, and we think that it is generally conceded that a general decline in duties upon goods suicidal to our domestic manufacture is impracticable and will be touched upon cautiously.

I can therefore see nothing which indicates that the fear of tariff reduction has thus far had any material influence upon the present business depression. Whatever may be the effect of the proposed tariff legislation during the coming winter remains in the dim future, and need not now be discussed. I have not been called upon to express an opinion on the future.

The reasons which I believe have been the cause of the present panic have not all been removed. I believe the first is essential before recuperation is complete. At the present time we have less than 8½ per cent. reserve gold to pay our demand indebtedness. When this is corrected, then if we could be assured that the proceedings in Congress on the Tariff during the coming winter would not disastrously affect trade, men who have money invested at the risk of business and commerce, and our banks that now hold almost an unprecedentedly large surplus reserve, would feel more secure in extending credits; manufacturers would then be disposed to anticipate a revival of trade, and the services of the wage earner would naturally be called for.

It may be well to call to mind, however, that a cyclone may destroy an entire town in a night, but it may require years to rebuild.

An Abnormal Demand.

THE CHICAGO Hardware merchants have experienced an unusual demand the past two or three weeks for Bolts, Sash Locks and Revolvers. There has been an alarming increase in house breaking and in highway robbery, and the natural result is that the citizens are endeavoring to protect themselves as thoroughly as possible. Bolts are being put on doors which hitherto have been deemed sufficiently secure when locked in the ordinary manner, and peaceful citizens who never fired a pistol in their lives have suddenly transformed themselves into walking arsenals. Hardware merchants say that the demand for the articles referred to is greater than they have known for a long time. It is, of course, only temporary, but for the time it has amounted to a small sized boom. Extraordinary police precautions are now being taken to suppress the people who are committing depredations, and perhaps by this time the scare is over. It is ascribed by the authorities to the scarcity of employment, and the sudden advent of cold weather has also made many desperate who were in absolute need. It is not a condition of things which makes Chicago Hardwaremen happy, even if they do receive some profit thereby.

The Hardware Club of New York.

I. DESCRIPTION OF PREMISES.

WE GIVE HEREWITH detailed drawings, engraved from the architect's drawings, showing the ground plans of the premises which the Hardware Club will occupy in the near future. They are located in the upper portion of the noble Postal Telegraph Building, at the corner of Broadway and Murray streets, and were arranged specially with a view to their accommodation. Owing to law suits, fires, strikes and other delays the completion of this structure has been interfered with, but February 1 is now named as the time when the club authorities can take possession and prepare the apartments for occupation.

THE BUILDING.

As originally intended the edifice was to be 13 stories high, but as the result of negotiations between the governors of the club and the Postal Telegraph Company, a fourteenth story has been added for the use of the club, and above it a mezzanine floor for storage, and above this an extensive addition on the roof for culinary purposes, the help's dining rooms, &c. The proprietors of the building have taken pleasure in meeting the views of the club in a most liberal spirit, arranging the rooms as desired, and giving the whole an elegant finish, thus adapting the premises perfectly to the purposes of the club. In view of this fact the club would practically be no better off if they had projected and erected the building themselves, renting that part of it for which they have no use. Outside of the portion reserved for telegraph and club purposes the remainder of the building will be divided into offices.

If our readers will refer to *The Iron Age*, October 6, 1892, and compare the floor plan there given with those which are presented herewith, they will obtain an excellent idea of the manner in which the project has grown, as the result of the indefatigable efforts of the gentlemen who have had the matter in charge, who have been endeavoring to provide suitable quarters for what has been gradually developing into an association of much dignity and character. Many of the members of the club probably do not fully realize the measure of solidity, prominence and character represented by the names already on the roll, standing as they do for men well known to the trade and throughout the country as leading merchants and manufacturers, with not a few eminent in finance, law and other dignified vocations.

When the club is installed in its new home it is safe to say that the members will feel amply repaid for the delay in carrying out the project in the completeness, luxury and extent of the provisions for their comfort. The conditions of the club are such also that no re-establishing of themselves in larger quarters will be necessary in consequence of subsequent growth and expansion for a long time to come. The governors and committees, under the advice of accepted authorities in positions of responsibility in the best dining clubs of the metropolis, have very sagaciously provided for the present and anticipated future needs.

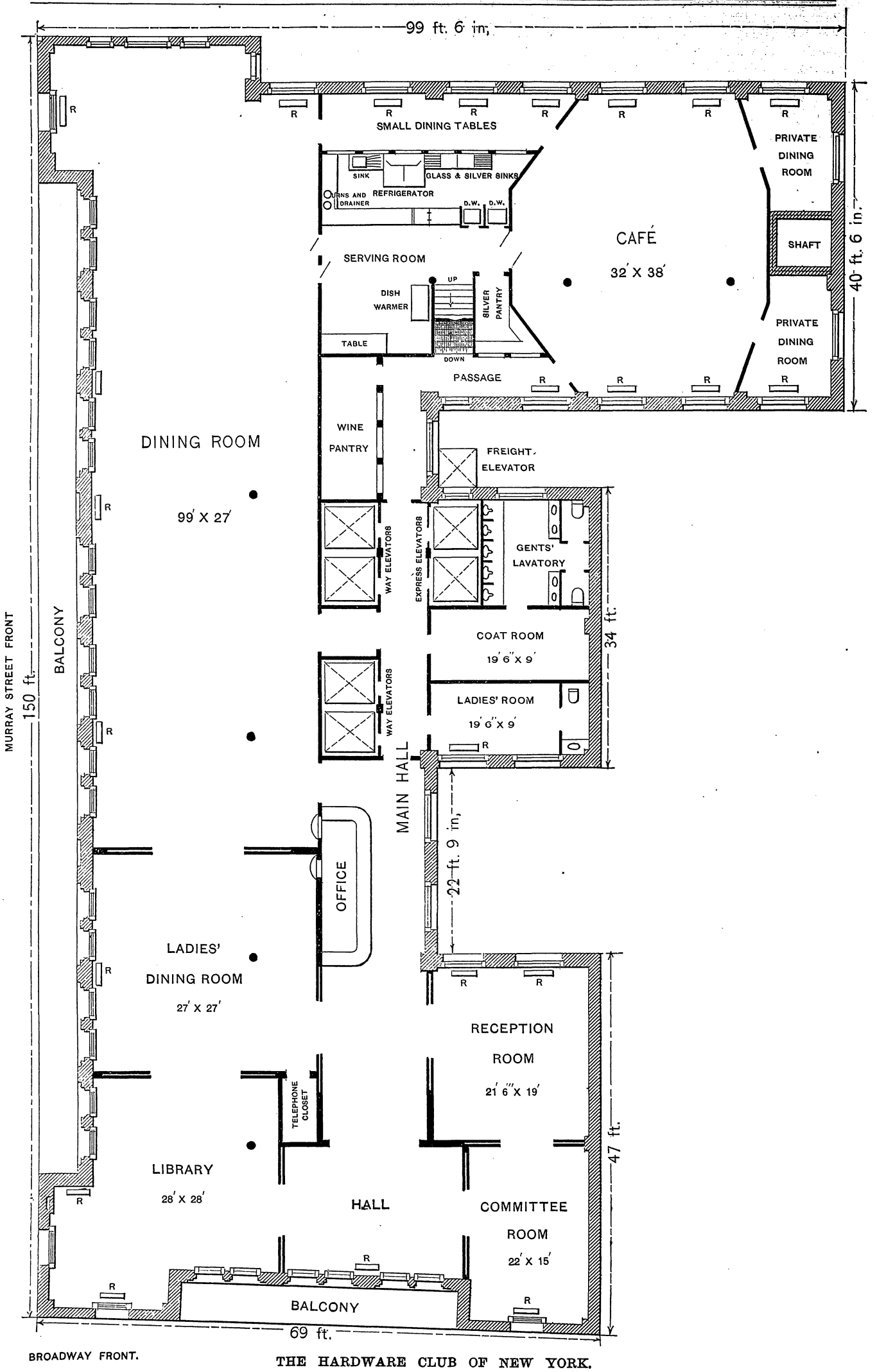
It will be remembered by those familiar with the subject that when the decision was made to enlarge the scope of the membership, reserving to the Hardware and related trades the government of the club, the direction of its policy and the control of its action, gentlemen connected with other lines of business were made eligible for membership. This step was taken with a view to providing better facilities than would have been possible except with a large revenue. It was believed that very many desirable persons could thus be secured as members, and the correctness of this view has since been demonstrated by the applications which have been received for membership from many gentlemen unconnected with the Hardware and kindred lines. The great majority of the members are, however, connected with the special branches of trade for which the club is specially intended.

The building itself is centrally located in the territory in which the Hardware and Metal trades are mainly concentrated, and is also conveniently accessible to a large number of the members of the club who are bankers, financiers, lawyers and merchants identified with other lines, city officials and prominent professional men in different walks of life. Situated as the club is on Broadway opposite the City Hall, it is easily reached by surface lines and elevated railroads, and is conveniently accessible to ferries, and is also but a few minutes' walk from the terminus of the New York and Brooklyn Bridge.

From the roof of the structure, which is covered with cement walks similar to those on the street, is afforded an inspiring view of both the North and East rivers, with their enormous commerce, of the harbor and lower bay, of the Narrows, forts, islands, &c. Following the course of the East River the Long Island Sound can be distinctly seen, while the famous Palisades of the Hudson are equally near. The building itself has been constructed of the best materials in the most substantial manner, and is a splendid example of modern architecture and improved appliances for the comfort and convenience of those who are especially concerned.

The opinion is expressed by an official of one of the best known dining clubs in the city that when the plans determined on and now in course of execu-

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THE HARDWARE CLUB OF NEW YORK.

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tion are consummated, the appointments and facilities of the club's quarters will be excelled by none in New York. While essentially a dining club, it will be possible to obtain a meal there at any time during the day from 7 a.m. until 7 p.m.

Entering the building from the street one will have a choice of six luxurious elevators which run to the top of the structure. Two of these will be express elevators, making their first stop at the eleventh story. Stepping from any of the elevators one finds himself in the main hall, which is 94 feet long, and one end of which opens out into a fine balcony on the Broadway front of the building.

MAIN HALL.

It is intended to make the main hall a leading feature of the club's quarters. For a considerable distance it is 14 feet wide, but near the front at the Broadway end, as shown in the plan herewith, it becomes 22 feet. It may be said here that the entire floor will be of stone of a reddish color. The hall will be carpeted or strewn with rugs. Settees, chairs, &c., will be distributed at intervals, the walls will be hung with pictures, and the whole court made very inviting and effective. Near the entrance to the hall proper on the Murray street side will be the office, with an official in charge.

COMMITTEE AND RECEPTION ROOMS.

At the left of the hall is what may be termed a reception room, 21½ by 19 feet in dimensions, while beyond it is another room, 22 by 15 feet in size, which can be used as a committee room. Both rooms are suitable for a number of uses, among which may be mentioned their adaptability for trade meetings, such as are often held in places of business, hotel parlors &c. On proper notice it will no doubt be feasible to obtain one of these rooms for such purposes, and should the meeting be protracted luncheon, dinner and supper can be expeditiously served there. Merchants will thus be free from interruption and can satisfactorily attend to the matters for the adjustment of which the meeting was called.

LIBRARY.

To the right of the hall, as shown in the plan, is the library, the greatest dimensions of which are 28 x 28 feet. This will be luxuriously fitted up with easy chairs, rockers, lounges, &c. The leading commercial, news and trade papers will be kept on file, and facilities given for correspondence or other use of the members. Here, also, it would be desirable to have for reference as complete a line of catalogues, price-lists and other trade literature as it may be feasible to collect. This room, overlooking the City Hall Park and having a southern exposure, with a view down Broadway, is not likely to prove unattractive.

LADIES' DINING ROOM.

Between the library and the main dining room is the ladies' dining room, the size of which is 27 x 27 feet. The principal entrance to this room will be from the large hall. It will be remembered that the original plan in regard to these premises did not contemplate having such a room, as the amount of space available did not permit it. The enlargement of the project, however, by which the kitchen and other apartments connected with the preparation of food were put in the structure on the roof, permits this important addition to the outfit of the club, the members of which will thus have a suitable place in which to entertain the lady members of their families when in the vicinity. It is needless to say that this will supply a long felt want, owing to the scarcity of such conveniences in a purely business district.

TELEPHONE.

It will be observed that between the ladies' dining room and the main hall the telephone closet is located. The importance of this adjunct will be appreciated, and with the long distance telephone members of the club will be in communication not only with houses in the city and vicinity, but with places out of town within a constantly enlarging circle.

THE DINING ROOM.

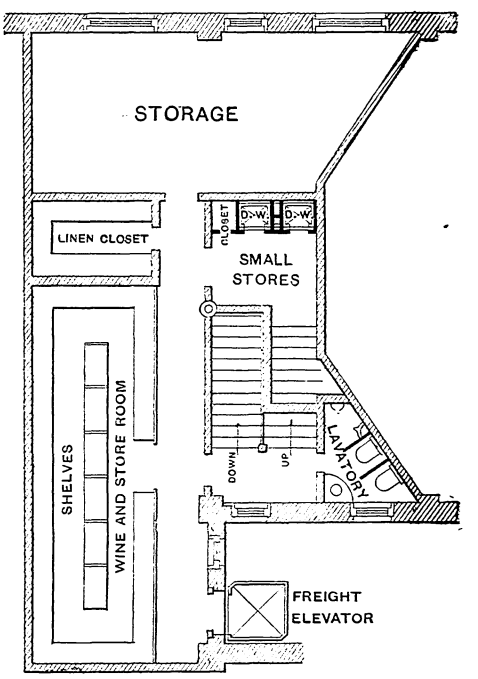
The main dining room will have an ample capacity, being about 99 feet long and 27 feet wide. It has been estimated that this room will comfortably accommodate about 300 persons at one sitting. There are four principal entrances to this room, not to mention those leading to the serving and similar rooms. The office, it will be seen, also opens into it. In this spacious room the annual club dinner will probably be served. With the floor richly carpeted and the furniture harmonizing with the mahogany cabinet work with which the whole premises will be trimmed, and with the extensive outlook to the South, there will be little to desire in the way of comfort and elegance. Light will be furnished from electric incandescent burners, and heat through radiators, the location of which is indicated on the diagram. Above the ceilings will be a spacious air chamber, through which air will be forced to counteract the superfluous heat during the summer months. All meal orders will be written and instantaneously transmitted through pneumatic tube service to the *chef* in charge of the preparing room. This will save much valuable time to the waiters. A glance at the diagram will discover how close contact with the serving room, silver, glass and wine pantries is secured. The table furniture will be in keeping with the character of the club as regards china, silver, glassware, linen, &c. The order for the linen, which will be of special design and will contain the club's monogram, has already been given.

BALCONIES.

Before leaving this part of the building the balconies on both the Murray street and Broadway sides should not be ignored. The aggregate length of both is 156 feet; the depth 4½ and 5 feet, respectively. They are easy of access, and in suitable weather will prove an excellent place in which to sit and chat. In the summer the windows will be equipped with awnings to afford protection from the sun's rays.

CAFÉ.

Continuing the circuit, the *café* is reached from the large dining room through the passage beyond the serving room, which is 7 x 28 feet. Presumably the majority of *café* patrons will go directly to that room on reaching the club floor through the main hall, which will be the principal thoroughfare for that purpose, but the hall or court above alluded to adds to the convenience and accessibility of its location. It has been suggested that in this passage one or more tables can be



The Hardware Club.—Mezzanine Floor.

placed at any time for an overflow from dining room or *café*, or for any who may prefer the isolation and seclusion thus obtained. Being near the western windows, the outlook, with a view of the North River, is an admirable one. The *café* itself is an eight-sided room, the greatest dimensions of which are 32 x 38 feet. Here a hurried or an informal meal can be enjoyed with greater freedom than would in the nature of things be expected in the main dining room.

PRIVATE DINING ROOMS.

It is about settled that the two irregular shaped rooms seen in the diagram beyond the *café* can be best utilized for private parties. Each is about 16 feet long and 8 feet wide, and if they are much sought after it is suggested that it may be necessary to charge a small amount for their use, with the purpose solely of insuring an equitable distribution of the privilege, unless some more satisfactory method can be devised.

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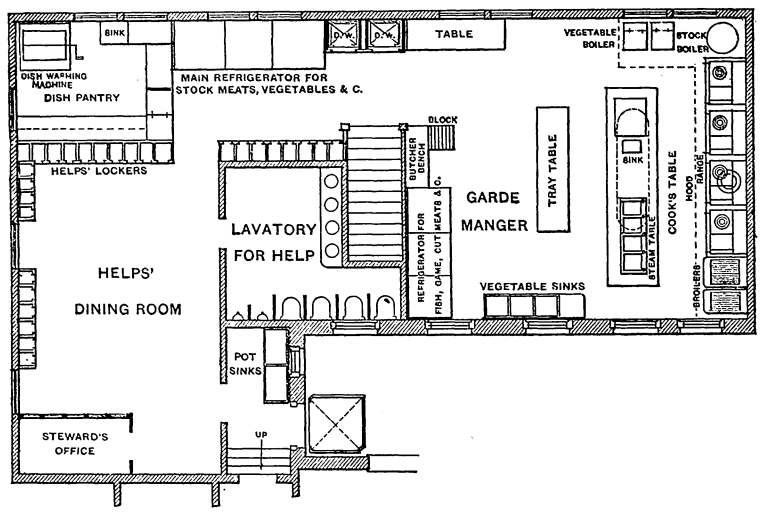
The coat, cloak and retiring rooms occupy the whole central wing of the building in which the two express elevators are. Here also are the lavatories, closets, &c. These conveniences are, it will be observed, ample. A freight elevator adjoining this wing will be devoted exclusively to the transportation of stores, packages, &c.

SERVING ROOM.

This room, it will be observed from an inspection of the diagram, is well situated for the uses for which it is intended. There are several means of ingress and egress, and a number of pantries for silver, glass, wine, &c. Two dumb waiters also will connect these rooms with the mezzanine floor and kitchen above.

MEZZANINE FLOOR.

The mezzanine floor is located just above the serving room and under the kitchen, but isolated from both except as reached by the staircase, by which access to the roof is also gained. This floor, as indicated, will be used mainly for storage.



The Hardware Club.—Kitchen.

KITCHEN.

The diagram of the kitchen practically explains itself. In a dining club the kitchen is, of course, of prime importance. An inspection of either the plan or the room itself will convince our readers that it is exceptionally complete. If things do not run smoothly in that department it will not be owing to the lack of modern labor saving devices and the requisite paraphernalia.

II. THE MANAGEMENT OF THE CLUB.

The foregoing description and the accompanying illustrations will make it evident that the premises of the club are a fitting home and center for the trade of New York and vicinity, as well as for manufacturers and merchants in other parts of the country. In this connection it is pleasant to report the hearty support which is given to the project not only by Hardwaremen doing business in the city, but also by many representative manufacturing and jobbing houses in other parts of the country and by not a few retailers. Manufacturers and jobbers of New England, Pennsylvania, New Jersey, and adjacent States are well represented, as are also some of the largest jobbing houses in the West. Among the members are also many identified with the extensive exporting interests which center in New York, and it is expected that this class of trade will be largely represented in the club. This membership is regarded as especially desirable, as it will tend to bring manufacturers directly into contact with the many resident buyers of foreign houses and with the great export commission houses who have so influential a part in the distribution of American products to all parts of the world. The presence in the club of representative bankers, lawyers, city officials and others in various branches of trade more or less closely related to Metal interests will give the club character and strength. While the number of members already exceeds 300, it should be remembered that comparatively little effort has been made to induce persons to join the club, and the limit which has been assigned to the membership will no doubt soon be reached.

FURNISHING THE CLUB.

The matter of furnishing the apartments of the club is now receiving the careful attention of the House Committee, which consists of Messrs. McCARTEE, VARICK, BISSELL, VAN GLAHN and W. H. WILLIAMS, *ex-officio*. This work will be recognized as one calling for exceptionally good judgment and taste and for which the committee is well qualified. The plans contemplate furnishing the club with an elegant and complete outfit. In the meantime the Finance Committee, consisting of Messrs. WALKLEY, OGDEN and HAYDEN, is giving attention to the financial side of the matter with a view to providing the ways and means for the carrying out of the project.

CLUB FACILITIES.

Many of the members connected with the trades to which the club is especially devoted unquestionably regard it with favor in good measure because of the opportunity it will afford for acquaintance with other persons in the trade, as it will bring them together in a very pleasant way. This, however, is only one of the advantages which the club will possess, and besides the very useful purposes which it will thus serve there are more substantial ways in which it will be of advantage to those connected with it. Many of the members will undoubtedly find their business interests promoted by the opportunity which the club will afford for meeting with the trade in the city and many outside of it who will make the club their headquarters while in town. Merchants in the city will also find the club a very convenient and pleasant place to take their customers and others with whom they may have business relations, who by their introduction may be made at home in the club and given the privileges of membership for a time. The rules relating to this matter have not been formally determined, but it is safe to assume that they will give the members all reasonable facilities in this direction, and thus make the club supply a want which has for a long time been felt. A similar privilege extended to non-resident members will enable them to introduce other members of their firm to the club, thus giving them an opportunity to enjoy its conveniences while they may be in the city. The carrying out of the plans which have been formed will render the club more and more a rendezvous for non-resident manufacturers and merchants who desire to keep in touch with the trade and appreciate the advantages offered by the organization. At the club can be received letters, telegrams, packages, samples, &c., appointments made and interviews had, with a certainty of always meeting at a common center a large number of persons who otherwise would have to be sought in their places of business. Arriving in town, hand packages, wraps and baggage can be left if desired, the soil of travel removed, and a meal partaken of at any time during the day. This may occupy much or little time at the convenience of the member, while pending the preparation of the meal the intervening time can be occupied in various ways not possible at hotel or restaurant. It has, indeed, been suggested by one who looks at the thing in a very practical way that the saving to those visiting the city frequently in their hotel bills will soon more than cover the amount of the dues. Those in charge of the interests of the club recognize the desirability of having as large a non-resident membership as possible with a view to making the club as thoroughly representative of Hardware and Metal interests as possible. The more adequately and fully the trade is thus represented in the membership the more attractive and useful the club will be made.

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THE DINING ROOM AND CAFÉ.

While the club will serve social purposes in a very pleasant way and be of practical business advantage, it must be remembered that it is primarily a dining club, and that it is at the noon lunch or dinner that the members will principally be brought together. Very much of the success of the club will unquestionably depend on the attention which is given to this matter and the practical way in which the views of the members in this regard are met. It is obviously desirable that the bill of fare should be sufficiently comprehensive to enable those who desire an elaborate dinner to obtain it of the very best quality and at reasonable charges, and that others who are accustomed to take a much less formal meal shall be able to obtain it as at least as moderate a price as elsewhere and amid all the comfort and elegance of the surroundings of the club. There is undoubtedly a wide difference in the practice of merchants in this regard, some devoting a considerable time and making a substantial meal at noon, while others prefer a very simple lunch, which is not infrequently hurried. Organized as the club is for the convenience of its members, it will be necessary for it to be conducted in such a way that these diverse views may be met and all be enabled to enjoy the privileges of the club without expending more than the usual amount for lunch or dinner.

If the plans of those in charge of the interests of the organization are carried out with the wisdom and success with which they have been elaborated, it is safe to say that after the club has been in operation for a time, the trade will wonder how they ever got along without it.

III. VIEWS OF WILLIAM H. WILLIAMS.

A representative of *The Iron Age* called on William H. Williams, the efficient president of the Hardware Club, and was favored with the following remarks in regard to the scope of the club and the position it will assume in the trade:

It is pretty good evidence of the desirability and utility of the scheme for having here in New York a representative Hardware club that your journal, which has never encouraged visionary or impracticable enterprises, has given to the club a consistent and unwavering support since the idea was first suggested. There are many reasons for the existence of such a club which will occur to your readers, a few only of which I will mention. Many of the great industries centered here in New York have their boards of trade or exchanges where those interested meet daily either for the transaction of business or for the exchange of useful information; but the Hardware trade, which certainly is a most important industry not only in New York, but throughout the country, has never enjoyed such advantages. For obvious reasons the products and commodities in which it deals cannot well be marketed through the medium of an exchange of the character of the Produce, Cotton or Stock exchanges, but those who conceived the idea of having a Hardware club were at the time deeply impressed with the desirability of having a common and daily place of meeting, where we could get better acquainted with each other, where information affecting the various interests relating to the trade might be exchanged, and members might meet their local customers or those with whom they have business relations who are temporarily stopping in the city; where, in fact, mutual interests might be organized effectively for the common benefit of all. The most practicable means of accomplishing this seemed to be through the medium of a lunch or dining club, and the more the idea has been considered, the more confidence those who have originated it have in its feasibility. At the outset two things became apparent: 1, That such a club would be useless, or nearly so, if conducted on any other than a first-class basis, and, 2, that as the center of our trade here in New York is in close contiguity to other departments of business it would be advisable to associate with us such of the leading bankers, professional and business men in our vicinity as would be willing to join our club for the purpose of having a comfortable and satisfactory place to lunch, at the same time retaining for the club in its name and purpose the essential characteristics of a trade organization. These objects, we confidently believe, we shall attain in the really palatial home which the club has secured for itself in the new Postal Telegraph Building. A competent and well qualified House Committee has given much attention to the details pertaining to all the appointments of the club, and I am sure the membership will be proud of their club when it is fairly settled in its permanent domicile. I am very glad to see that so many gentlemen connected with our trade who only visit the city occasionally are associating themselves with the club as non-resident members. They will certainly find it a convenient place for meeting their New York friends and acquaintances, while the advantages in other respects that it will afford them during their sojourn here will, I am sure, be keenly appreciated. As an evidence of how firm a hold the idea of having such a club has upon the Hardware trade I need only refer to the fact that during the trying season through which we have just passed, which has scarcely been paralleled in the history of the country, we have not only held, but have increased our membership, and that, too, without having any regular meetings or any place for holding such meetings. In common with all the members of the club, I feel grateful to *The Iron Age* for its hearty co-operation, and am pleased to think it will find its reward in the abundant success of the enterprise which it has so generously fostered.

Trade Items.

WILLIAM G. HIBBARD, president of Hibbard, Spencer, Bartlett & Co. of Chicago, sailed from San Francisco on the 17th inst., bound for a tour round the world. On his way across the Pacific Ocean he will make a brief stay at the Sandwich Islands. He is accompanied by his two sons. Mr. Hibbard has been closely confined to his desk for years, looking after the multifarious details of his great establishment, and has richly earned the recreation which he is now enjoying. His many friends in the Hardware trade wish him a most enjoyable trip and a safe return.

PARKHURST & WILKINSON of Chicago, jobbers of Heavy Hardware, have at length secured the discharge of their assignees, and state that all accounts made in the name of the latter will be settled by the firm. They have put in the hands of a trustee sufficient real estate and other outside property to meet all deferred payments, so that they have their stock of merchandise and accounts receivable clear, as a working capital. They will continue business in their old lines of staple Heavy Hardware, Iron, Steel, Carriage and Sleigh Goods, Bicycle Makers' Supplies, Miners' and Smelters' Goods and Railroad Supplies. The firm have had the sympathy of the trade in their financial misfortunes, and the news of their settlement will be received with pleasure.

THE PENNSYLVANIA BOLT & NUT COMPANY, Lebanon, Pa., are now making a specialty of refined Bar Iron, also of Electrical and Structural Forgings, in addition to their former lines. The line of Forgings include Arch Bars and Body Bolsters, Car Forgings, Anchor Bolts, Stirrups, Brake Levers, Link Pins, Punched and Bent Plates, Tie Rods for cable and electric roads, Forgings for electric railways, Arm Braces for telegraph poles, Bridle Irons and the various forgings incidental to structural work. Their product of Cold Punched Chamfered and Trimmed Nuts has also been largely increased during the past year.

E. C. STEARNS & Co., Syracuse N. Y., announce in their circular that customers can obtain Stearns' bicycles of 1894 models for the holiday trade. Reference is also made to the achievements of John S. Johnson on a Stearns wheel at Independence, Iowa, and letters are given from riders using these machines. In this connection the manufacturers remark that while Johnson rides a racer its model is not for his exclusive use, and that as many of a like pattern as are ordered will be promptly supplied at the regulation price.

GEORGE W. GRAHAM, 88 Chambers street, New York, is sole agent for Robinson's Cement, manufactured by the Robinson Cement Company, New York. This is a preparation for mending china, glass, crockery, stone, marble, ivory, wood, &c. It is said to be made according to the same formula used orignally 40 years ago. It is put up in glass bottles, packed one dozen in a suitable box. It is intended largely for family use, as a handy composition for repairing the numberless fractures incidental to housekeeping.

AMONG CYCLING CIRCLES it is expected that the six day race to be held at Madison Square, New York, during the holiday week, will be the greatest cycling contest ever held. It is understood that the programme for the short distance races has not yet been arranged, but that substantial prizes will be offered, and that there will be a number of races run each evening.

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KINSLEY IRON & MACHINE COMPANY, Canton, Mass., issue a circular which illustrates two patterns of Calking Vises, Kinsley and Skiff, which, it is stated, are made from best Iron and are furnished with one beveled and two plain jaws of a high grade of Steel, carefully tempered. The rocker bolt is of Steel, held in place by a Steel set screw. It is claimed that the Vises throughout are made in the best possible manner.

G. & H. BARNETT, Philadelphia, Pa., proprietors of the Black Diamond File Works, are sending, with their compliments, Aluminum Cigar Cases for pocket use. On both sides of the Case is a reproduction of their trade-mark —a File in a diamond of black enamel —together with name, address, &c. The Case holds four cigars and is a pleasant reminder of Black Diamond Files.

THE BILLINGS & SPENCER COMPANY, of Hartford, Conn., have opened a Chicago branch at 59 South Canal street, with W. A. Davis in charge as Western manager. This is in the same store with the Prentiss Tool & Supply Company, and the latter will attend to retail city orders, while Mr. Davis will devote himself to handling the business of the trade in general. They show a full line of samples of their specialties, including Machinists' Hammers, Pipe Wrenches, Ratchet Drills, Combination Pliers, Wire Cutters, Beam Calipers, Surface Gauges, Dies and Die Stocks, Machinists' Clamps, Screw Drivers, &c.

WILLIAM BAILEY, who had the distinction of being the oldest maker of Nails in the world, died at his home in Melrose, Mass., November 21, 1893. He was over 92 years of age, having been born in 1801, at Newburyport, Mass. When 12 years of age he apprenticed himself to a blacksmith and learned to make Nails by hand. This line of business he followed all his life, and at the time of his death was largely interested in the manufacture of Nails and Iron. He was the inventor of many improved machines for use in the manufacture of Nails.

IN THEIR ADVERTISEMENT in this issue the Clement Silver Flatware Company, Unionville, Conn., illustrate their ware, which is referred to as a substitute for solid silver. It is explained that there is no plating to wear off and no rusty edges, while the cost is no more than similar goods. A sample dozen will be sent on approval to any house in the United States with prices and discounts.

ANNOUNCEMENT IS MADE that the interest of F. M. Woolworth in the firm of Kelly & Woolworth, Niagara Falls, N. Y., has been purchased by H. W. McBean. The business will be continued by Kelly & McBean on an enlarged scale and with increased manufacturing facilities. It is intimated that a special effort will be made to fill orders promptly and at the lowest prices.

S. S. SURDAM of Oyster Bay, N. Y., has purchased of H. D. Heath, Candor, N. Y., his interest in the Hardware part of his business. Mr. Heath will continue the sale of Agricultural Implements, Phosphates, Lime, Cement, &c.

THE FIRM of Beato & Calle, agents for the sale of Hardware and Machinery, Matanzas, Cuba, were recently dissolved by mutual consent. Victoriano de la Calle is now carrying on the business under his own name.

THE NATIONAL MFG. COMPANY, Wilkesbarre, Pa., have opened an office and warehouse at 87 Liberty street, New York, which will promote the convenience of the trade in this vicinity.

S. R. DROESCHER, 58 Warren street, New York, quarrier and importer of Razor Hones, Oil Stones, &c., announces he has opened a new establishment at the above address. He alludes to the fact that he carries in stock a full and complete assortment of Razor Hones and Oil and Scythe Stones. He adds that through European connections he is able to bring out on importation orders any special articles of this nature at lowest rates.

Price-Lists, Circulars, &c.

BLAIR MFG. COMPANY, Springfield, Mass.: Lawn Mowers, &c. A handsomely printed catalogue illustrates with descriptions and prices the Easy, Archimedean high wheel, Hercules high wheel, Bay State, style B, Lawn Razor, style B, Leader, style B, Archimedean horse-power and the Mohawk, style B, Lawn Mowers; California Lawn Sprinkler, Revolving Turf Edger, Lawn Rakes, Model Lawn and Garden Roller and Lawn Sweepers. The manufacturers remark that for the first time during the 15 years they have been engaged in the manufacture of Lawn Mowers and Lawn specialties they now present under one cover a complete list of the different styles of Lawn Mowers, &c., of their production; and that their line of Mowers includes both front cut roller and rear cut side wheel machines of varying hight of wheels and number of revolving knives. The point is emphasized by the makers that in the manufacture of Mowers they apply the principle of exact duplication of different parts of the finished product, by tools and fixtures specially designed and adapted to the work to be done; and that as a result they are able to produce Mowers of superior mechanical construction at the lowest possible cost. It is further stated that they make but one quality—the best—and that any product of their works is warranted to be the highest grade of its kind; also that no order is too large or too small to receive their careful attention. Their European agents are Markt & Co., New York, London and Hamburg.

SILVER & CO., 20 Warren street, New York, and 304-310 Hewes street, Brooklyn: Household Inventions. Large illustrated circulars show Fruit Strainers, Egg Beaters, Soap Cups, Measuring Glasses, Flour Bin and Sifter, Gas Burner Stoves, Spirit Stoves, Steam Cookers, Cooking Crock, Display Stands, Yankee Roach and Beetle Trap, Coffee and Tea Pots, Novelty Gas Heaters, Royal Roasting and Baking Pans, &c.

GEORGE CHASE, 107th street and First avenue, New York: A reduced price-list, under date December 1, 1893, relates to best White Washita, Washita mounted in polished cases, Green Paper grade, and Arkansas Stone. In addition are Arkansas, Scotch and Hindostan Dental Wheels, Regarding Chase's Green Paper brand of Washita Stone, it is remarked that the Stone is carefully selected as to its cutting qualities, being of a soft, even, fast cutting grain.

FLORENCE DISPLAY FIXTURE COMPANY, Geo. H. Bennett, proprietor, 204 Lake street, Chicago, Ill.: Store Display Fixtures. One catalogue illustrates their regular line of standard fixtures, which are always carried in stock. These include Stands, Cutlery and Plate Glass Brackets, Post Bands for iron columns, over counter fixtures, fixtures in shape of letters, &c. Another catalogue shows new and accurate designs of fixtures, the leaves being secured by silken cords to allow the addition of extra leaves. The manufacturers state that their work is all first class and absolutely original. They are prepared to make designs for any style of window or display. The plates in this catalogue show elaborate and handsome designs of fixtures, many with electric lights in them.

THE COLUMBIAN SILVER FLAT WARE COMPANY, Unionville, Conn.: Solid Columbian Silver Flat Ware. The goods made of this substitute for solid silver include Knives, Forks and Spoons. The ware is described as being nearly as white as sterling silver and it is stated that with as careful use as sterling silver it will outlast any flat ware on the market. It is claimed that the knives are as good cutters as solid steel Knives, and that they never show any rust, and that they can be sharpened at any time. The manufacturers warrant the goods manufactured from the metal 25 years to wear as white as sterling silver, to hold a temper equal to silver, and never to show any signs of rust. Illustrations of the goods are shown in various patterns.

LUDLOW-SAYLOR WIRE COMPANY, St. Louis, Mo.: United States Wire Mats and Matting. The Mats are made in regular, circular and irregular shapes. The Matting is made in 50 and 100 feet rolls, 16 to 48 inches wide, or wider if desired. It is explained that rolls can be cut to any required lengths by cutting one wire in two places; that it rolls up close, is elastic, flexible, cleanly, of heavy wire, and that it is so woven as to form a good scraping surface in any position. The point is made that remnants can be worked into regular sizes of domestic Mats.

GRAND CROSSING TACK COMPANY, Grand Crossing, Chicago: New goods. An illustrated pamphlet is devoted to 5-cent goods put up by this company, including Hammer Carpet Tacks, Claw Handle Carpet Tacks, Bonnie Blue Tacks, Bill Nye Brad Box, Just Enough Brass Nails, Double Enough Cobblers' Nails, Wood Keg Carpet Tacks, Gilt Nails, Centum Carpet Tacks, Austral Steel Tacks and House Tacks.

HOLMES, BOOTH & HAYDENS, 25 Park place, New York: McGill's Patent Fasteners. Illustrated circulars show flat head, fancy capped shade and split shank Fasteners; Fastener and Staple Presses, Pin Fasteners, assorted Fasteners in caskets, card and calendar Suspending Rings, Adhesive Suspending Hooks and Eyes, round head, adhesive, H flat head and capped Fasteners, &c., also solid headed embossed Fasteners, gilt, silvered, bronzed and japanned. Over 200 patterns and sizes of these goods are made, designed for fastening and binding papers of all descriptions, sampling goods, &c., making paper and light wooden boxes, baskets and all descriptions of light binding.

Trade in Pittsburgh.

FROM Logan, Gregg & Co., Pittsburgh, Pa., we have the following advices in regard to the condition of the Hardware trade in that market:

There is a better feeling among the trade since the emphatic expression of popular opinion in favor of a protective tariff at our recent elections.

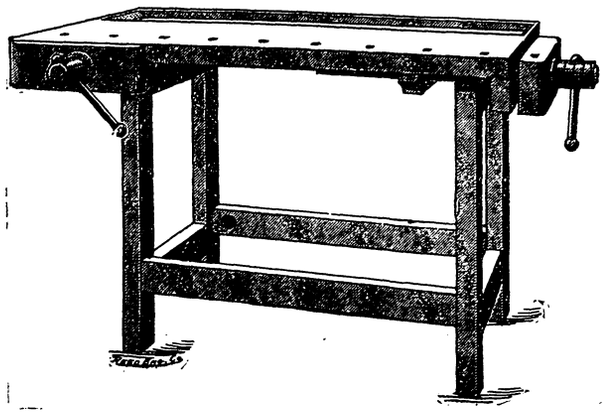
Gradually more men are finding employment as our mills and factories resume operations, and this is having a favorable effect on the purchasing power of the retail storekeepers, many of whom have had to carry their customers through the stoppage.

There is, however, a very conservative feeling, and orders, though more frequent, are for immediate wants. So far there have been very few failures among the Hardware trade in this vicinity.

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Youths' Bench.

The Grand Rapids Hand Screw Company, Grand Rapids, Mich., are offering a youths' bench, as shown in the



Youths' Bench.

accompanying illustration. The bench is 20 inches wide, with 13-inch glued up maple top, and is 4 feet 6 inches long over all. It has both front and tail vise and holes for stops. Its hardwood frame is securely put together with joint bolts. The bench is made in two hights—30 and 32 inches. The bench is specially designed for use in manual training schools, but we are advised by the makers that quite a number have been sold to hardware dealers, some of them intending to sell them for the holiday trade.

Pittsburgh Mammoth Lamp Fount.

The Pittsburgh Brass Company, Pittsburgh, Pa., with New York office 36 Park place, are offering the Mammoth lamp fount herewith shown. The lamps are made in three sizes, the largest size, known as No. 3, being shown in the cut. This fount, it is stated, holds over 8 pints of oil, sufficient to yield a brilliant white flame for over ten hours. All sizes of founts are furnished with an indicator, represented by the dial in Fig. 2. The pointer of the dial is attached to a spiral brass ribbon, incased within a brass tube. A float on the tube engages with the ribbon and turns the

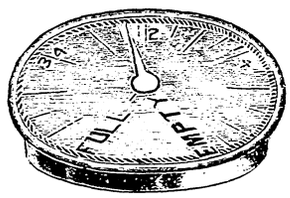


Fig. 2.—Indicator Dial.

pointer as it rises or falls with the oil. It is explained that the dial shows at a glance not only when the fount is full, thus removing danger of overflowing when filling, but also indicates the exact quantity of oil in the fount at all times. The founts may be stood on the base or used in connection with a harp. It is claimed by the makers that the lamp gives a large amount of light, that it is clean and easy to manage, that it does not break chimneys, and that it burns a long time without refilling.

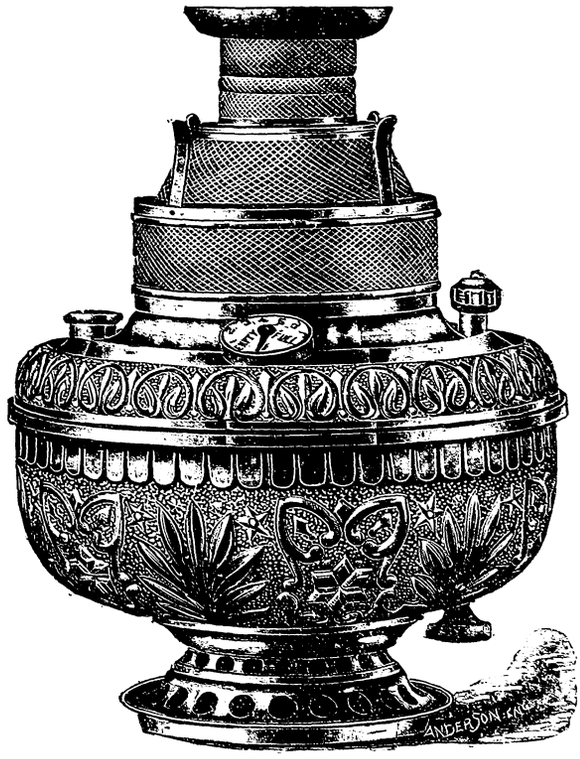


Fig. 1.—Pittsburgh Mammoth Lamp Fount.

The Willer Sash Lift.

Willer Mfg. Company, Fourth and Cedar streets, Milwaukee, Wis., are introducing the sash lift, a full size cut of which is shown in Fig. 1. Two lifts are screwed to the stiles of both the

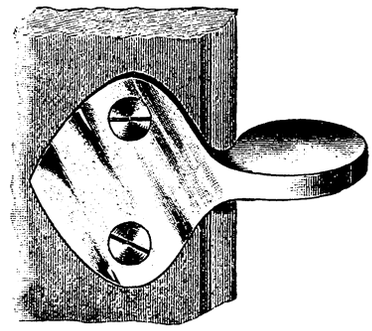


Fig. 1.—The Willer Sash Lift.

lower and upper sash in the positions shown in Fig. 2. The lower sash can be raised and moved as desired, while especial emphasis is placed upon the fact that by the aid of the lifts on the upper sash it can be lowered and raised up so as to shut tightly against the top jamb of the window, thus allowing the sash lock to be easily closed. The lifts

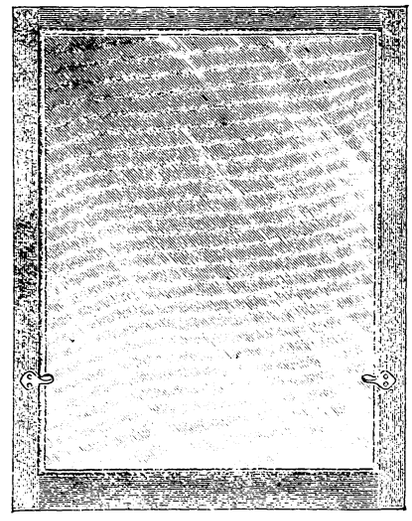


Fig. 2.—The Willer Lifts on Sash.

are furnished in Berlin bronze, brass, genuine bronze, old copper finish and nickel plated.

The value of real estate in New York City shows no signs of declension. A downtown surety company last week paid the enormous price of $387,500, or $273 per square foot, for a small lot at the corner of Broadway and Pine street. It should be stated, however, that special circumstances governed this transaction.

The Secretary of Agriculture in his report just submitted to the President states that there are in the United States 6,000,000 farms, upon which dwell more than 30,000,000 people, who furnish 74 per cent. of the value of exports of this country.

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Riding Horse Tricycle.

The cut herewith shown represents a riding horse tricycle, being introduced by the Riding Horse Tricycle Company, rooms 10 and 11 Grand Opera Block, Canton, Ohio. The body is stamped from sheet metal, and is mounted on rubber tired wheels. The rider, seated in the saddle 2 feet from the ground, guides the tricycle by means of the reins and propels the vehicle as he would a bicycle, the legs of the horse responding to each revolution of the pedals, giving, it is explained, an exact reproduction of the horse's action in trotting. The horse in described as being 36 inches high, painted in desirable colors, with neat saddle, bridle rein and neck collar, and as having natural mane and tail. The horse is designed for the use of children from three to ten years of age.



Riding Horse Tricycle.

Expansion Bolts.

The Steward & Romaine Mfg. Company of 123 North Sixth street, Philadelphia, have added to their line the new double and single expansion bolts herewith illustrated. Cut No. 1 shows a double parallel expansion bolt, consisting of an ordinary square headed bolt with upper and lower nuts and expansion cases. The nuts are round, with V-shaped ends. The upper nut is loose and without thread, while the lower nut is threaded. Each nut is provided with two small lugs which fit into holes of corresponding size in the casings. In use the article to be fastened is placed in position and the bolt inserted in the hole in the masonry or other material. By turning the head of the bolt the nuts are drawn toward each other with a parallel movement and expansion thereby effected. The nuts being locked to the expansion cases by means of the lugs, it is claimed there can be no slipping, and a perfectly firm and reliable fastening is obtained.

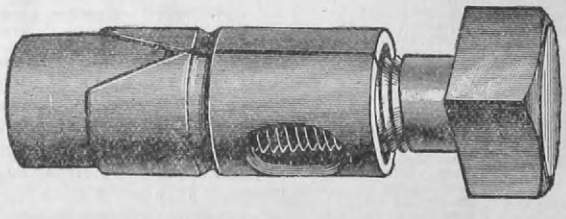


Fig. 2.—Single Expansion Bolt.

Cut No. 2 shows a single expansion bolt. In this bolt a threaded nut only is used. The casing is locked to the nut as in the double bolt, and expansion is effected at the bottom of the hole only.

Exhibit Stand.

Silver & Co. of 20 Warren street, New York, and 304-310 Hewes street, Brooklyn, are putting on the market wrought iron stands for the exhibition of whatever goods a tradesman may have for sale. The illustration presented shows one of the exhibition stands displaying their Royal roaster. The stands are made with three or four uprights and with different number of shelves. They are japanned in different colors and ornamented. The stands are adapted for the display of crockery, hardware, household goods, and, shown with a line of Britannia tea pots, present a handsome appearance. They are made in standard sizes, and are given to the trade in consideration of orders for an assortment of the Royal roasters and bakers. Special sizes can be furnished if ordered in sufficient quantity.

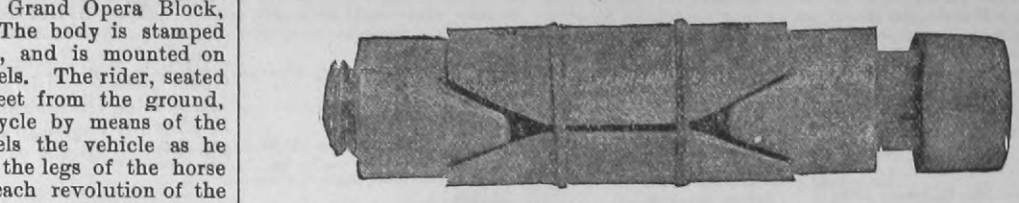


Fig. 1.—Double Expansion Bolt.



Exhibit Stand.

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Current Hardware Prices.

NOVEMBER 29, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓@33⅓&10%
Excelsior....₩ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Am. Wrought, Horse shoe brand.11@11½¢
Armitage's Mouse Hole.....10½@11¢
Eagle Anvils, ₩ ℔ 9¢.....15@15&5%
Moore & Barnes Mfg. Co 33⅓%
S. & H., machine finished..10½¢@11½¢
Trenton .....10@10½¢
Wilkinson's.....10½@11¢
Peter Wright's.....11@11½¢

Anvil Vise and Drill—

Allen Anvil and Vise $3.00.....40&10%
Cheney Anvil and Vise.....25%
Millers Falls Co., $18.00.....20%
Star .....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—

Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....50%
Common Augers and Bits.....70@70&10%
Cincinnati Bell-Hangers' Bits.....30&10
Forstner Pat. Auger Bits.....15%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
C. E. Jennings & Co., No. 10, extension lip 40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set 32½ quarters, No. 5, $5; No. 30, $3.50.25%
Russell Jennings' Augers and Bits.25&10%
Lewis' Patent Single twist.....45%
L'Hommedieu Car Bits.....15&10%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
Snell's Bits.....60&5%

Bit Stock Drills—

Cleveland .....50&10&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal .....45&10%
Morse twist Drills.....50&10&5%
Standard.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Steer's, No. 1, $26; No. 2, $18.....35@40%
Stearn's No. 2, $48.....20%
Swan's.....40%

Gimlet Bits—

Bee .....25@25&5%
Common .....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25....40&10%
Double Cut:
Shepardson's.....45@45&10%
Ct. Valley Mfg. Co.....30&10%
Hartwell's.....₩ gro., $10.00..40&10%
Douglass'.....40&10%
Ives.....60@60&10%

Hollow Augers—

Bonney's Adjustable, ₩ doz $48.....50%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%
Douglass'.....33⅓@33⅓&10%
French, Swift & Co. (Beecher).....33⅓@33⅓&10%
Ives' .....33⅓@33⅓&10%
Ives' Expansive, each $4.50.....50&5%
Stearns'.....20&10%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Snell's.....25@25&10%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%
Watrous'.....25@25&10%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@1.40
Awls, Handled Brad....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *ets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00	$7.50
First qual., other brands	6.50 to 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1.....3¼@4¢; 4½¢@5¢ } 3% cash
Nos. 7 to 14.....70%
Nos. 15 to 28.....47½%
Nos. 19 to 22.....70%
Concord Axles, loose collar.. 4½¢@5¢
Concord Axles, solid collar.. 5¢@6¢

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-in., $1.80; 12-inch, $2.00; 13¼-inch, $2.50; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Dover.....₩ doz $1.00@$1.20
Dover (Standard Co.).....₩ doz $1.00
Duplex (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)... ₩ doz. $3.50
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Improved Acme (H. & R. Mfg. Co.).... ₩ gro. $9.00
Silver & Co.....₩ doz $5.50
Spiral.....₩ gro $4.25 @ $4.50
Triple (H. & R. Mfg. Co.).....₩ gro $16.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Dodge, Genuine Kentucky....70@70&10%
Kentucky Durham.....70&10%
Kentucky, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Texas Star .....50&10@50&10&5%
Western, Sargent's list.....70&10%

Door—

Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Gong, Abbe's.....33⅓&10%
Gong, Barton's.....40&10@50%
Gong, Yankee.....45&10%
Lever, R. & E. Mfg. Co's.. .....50&10&2%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Pull, Brook's.....50&10&2%

Electric—

Bigelow & Dowse.....20%
Wollensak's.....20%

Hand—

Extra Heavy Brass.....70%
Light Brass.....70&10@70&10&5%
Silver Chime.....33⅓&10%
White.....70%
Globe Cone's Patent).....25&10@35%

Miscellaneous—

Call.....45@50%
Farm Bells.....₩ ℔ 3¢&3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Hand Bellows.....40&10@50%
Molders'.....40&10@50%

Belting, Rubber—

Common Standard.....75@75&10%
Extra.....60&10@60&10&10%
Standard.....70&5@70&10%
N.Y.B.&P. Co., Carbon.....60@60&5%
N.Y.B.&P.Co., Diamond.....50@50&5%
N.Y.B.&P.Co., Para.....40@40&5%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters..15%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron.60@60&10%
Moore's Novelty, Mal. Iron.....60%
Sure Grip Steel Tackle Blocks.....25%
See also *Machines, Hoisting.*

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....80&10@80&20%
Genuine Eagle, Norway, list Oct. '84..... 80&5@80&10%
Eagle, Norway, list Oct. '84 80&10@80&15
Phila. pattern, list Oct. 7, '84..... 80%
R.B.&W., old list.....70%
Bolt Ends, list Jan. 1, 1890.80&10@80&25%
Machine, list Jan. 1, 1890..80&10@80&25%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Cast Iron Shutter Bolts.....70&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wr't B. K.Flush. Common..... 55&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Shutter, all Iron, Stanley's..... 60&10@60&10&10%
Wrought Square.....70&10@75%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%

Stove and Plow—

Plow.....60&10&5@60&10&10%
Stove.....60&10@60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
American Screw Company
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16 '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Clark's.....33⅓@35%
Enterprise Mfg. Co.....20%
Ives' Tap Borers.....33⅓&5%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Boxes, Miter.

Spiiker's Excelsior, 3 in. $7.50, 4 in $8.50, 5 in. $13.00, 6 in. $15.00.....20%

Braces—

American Bit Brace and Tool Co.,
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber's.....50&10%
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Davis Patent.....50&10%
Fray's Genuine Spofford's...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15

Brackets—

Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting. { Inch..... 9 10 9x11
Per doz...$4.50 5.50 6.50
Morgan Odorless.....₩ doz. $12, 50%
New Haven.....50%
Queen City.....33⅓%
Wire Goods Co.....65&10%

Buckets, Well—

Galvanized—

Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00
Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers.*

Butts—

Brass—

Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%
Cast Brass, Tiebout's.....50%
Wrought Brass.....80@50&10%

Cast Iron—

Fast Joint, Broad.....50&10@60%
Fast Joint, Narrow.....50&10&5@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Loose Pin, Acorns.....75&5@
Loose Pin, Acorns, Japanned...75&10
Loose Pin, Acorns, Japanned, Plated Tips.....&5
Mayer's Hinges.....
Parliament Butts.....

Wrought Steel—

Fast Joint, Broad.....
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Inside Blind, Light.....
Inside Blind, Regular.....
Loose Joint, Broad.....
Loose Pin.....
Table Butts, Back Flaps, &c....
Bronzed Wrought Butts.....50@50&10%

List Jan. 2, 1893, 40@40&10%

Cages, Bird—

Hendryx, Brass or Enameled.....50&10%
Hendryx, Wood.....40&10%

Calipers—See *Compasses.*

Calks Toe—

Burke's, One Prong, Blunt.....5½@6¢
Burke's, One Prong, Sharp.....6½@7¢
Burke's, Two Prong, Blunt.....7½@8¢
Gautier, One Prong, Blunt.....5½@6¢

Can Openers—See *Openers, Can.*

Cans, Milk—

S S. & Co.: 5-gal., $3.00; 8-gal., $4 40; 10-gal., $4.75 each.....40&10

Cans, Oil—

Galvanized Blue Band, 1 gal., ₩ doz. $2.25
Galvanized Blue Band, 5 gal., Tip-Top, ₩ doz, $12.00
Galvanized Blue Band, 5 gal, Faucet, ₩ doz., $8.00
Glass Oil, Friend.....₩ doz. $2.75

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co. ₩ 1000
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire..$1 60
E. B. Grnd. Edge, Cent. Fire, 1-10's.....47@50¢
E. B. Trimmed Edge, 1-10's.....47@50¢
F. L. Waterproof, 1-10's.....35@37¢
G. D.....27@30¢
Musket. Waterproof, 1-10's.....50@53¢
S. B. Genuine Imported.....45¢

Primers—

Berdan Primers, $1.00.....2%
B. L. Caps (Sturtevant Shells) $1 00...2%
All other Primers, $1.20.....2%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....25%

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

B. B. Caps, Con. Ball, Swgd., $2.00.....2%
B. B. Caps, Round Ball, $1.75.....2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Cent. Fire, Military and Sporting 15&5&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Primed Shells and Bullets.....15&5&2%
Rim Fire Cartridges .....15&2&2%
Rim Fire Military.....15&2%

Carpet Sweepers—

See *Sweepers, Carpet.*

Casters—

Bed.....
Plate.....
Shallow Socket...
Deep Socket.....40&10%
Giant Truck Casters..... 35%
Gwinner's Common Sense.....45%
Gwinner's Hercules.....45%
Martin's Patent (Phœnix).45&10@50&10%
Payson's Anti-friction.....7¢@70&10%
Payson's Truck.....60@60&10%
Socket Truck Casters.....50@50&10%
Stationary Truck Casters.....50&10%
Tucker's Patent, low list..... 45%
Yale Casters, low list..... 45%
Yale, Gem.....70%

Brass.....55@55&10%
Others....60@60&10%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised May, 1893.....60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.60	3.40	3.25

Less than cask lots, add ½¢@½¢ ₩ ℔
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12, 1892. 60@60&10%
Barnes' Reinforced Sash.....60&10¢
Barnes' Victor Sash.....65¢
Covert Halter.....60&2%
Covert Heel Chain.....50&2%
Covert Traces.....35&2%
Galvanized Pump Chain.
5 ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.75
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔.....₩ 100 ℔ $7.00
Jack Chain, Iron and Brass, list July 10, 1893.....60&10%
Oneida Halter Chain.....60@60&5%

Chalk—

See also Crayons.
Blue, case lots...₩ gr 75¢; small lots 80¢
Red, case lots...₩ gr 67¢; small lots, 72¢
White, case lots, ₩ gr 50¢; small lots, 62¢

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Chalk Lines—See *Lines.*

Checks, Door—
Unity....50%

Chisels—
Socket Framing and Firmer
Mix, New Haven, Ohio Tool Co., P. S. & W, Witherby....75&10@75&10&10%
Buck Bros....30%
Douglass....75@75&5%
Merrill....60&10@60&10&5%
L. & I. J. White....30@30&5%

Tanged and Miscellaneous.
Buck Bros....30%
Butchers'....$4.75@$5.00 to £
Cold Chisels, fair quality, ℔ ...14@16¢
Spear & Jacksons'....$5 to £
Tanged Firmers....50@50&10%

Chucks—
Beach Pat....each, $8.00....20%
Danbury....each, $6.00,30@30&5%
Graham Patent....33⅓%
Morse's Adjustable, each, $7.00,20@20&5%
Syracuse, Balz Pat....25%
Skinner's Patent Chucks.
Combination Lathe Chucks....33⅓%
Drill Chucks....15%
Independent Lathe Chucks....40%
Universal Lathe Chucks....40%
Union Mfg. Co.
Combination....40%
Independent....40%
Universal....40%
Victor....$8.50, 25%

Churns—
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.

Clamps—
Adjustable, Cincinnati....15&10%
Adjustable, Hammers....15@15&5%
Adjustable, Stearn's....30@30&10%
Barnes' Machinists' Clamps....33⅓%
Cabinet, Sargent's....70&10%
Carpenter's, Cincinnati....25&10%
Carriage Makers', P., S. & W Co...40&10%
Carriage Makers', Sargent's...75@75&5%
Eberhard Mfg. Co....40&5@40&10%
R. I. Tool Co.'s Wrought Iron....25%
Saw Clamps, see Vises, Saw Filers'.
Stearn's Adjustable Cabinet and Corner....30@30&10%
Warner's....40&10@40&10&5%

Cleavers, Butchers'—
Beatty's....40@40&5%
Bradley's....25@30%
Foster Bros....30%
New Haven Edge Tool Co.'s....40%
P., S. & W....33⅓&5@33⅓&10%
Schulte, Lohoff & Co....40@40&5%
L. & I. J. White....20&5%

Clips—
Baker Axle Clips....25%
Norway, Axle, ¼ & 5-16....65&5&5%
Norway Spring Bar Clips, 5-16...60&5&5%
2d grade Norway Axle, ¼ & 5-16....65&5%
Steel Felloe Clips....℔ lb, 5¢
Superior Axle Clips....66⅔&5@70%
Wrought Iron Felloe Clips....℔ lb, 5½¢

Cloth and Netting, Wire
—See *Wire, &c.*

Cockeyes....50%

Cocks Brass—
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.)....60&2@60&10

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Brass, Pope & Steven's list....40%
Chapman Mfg. Company, new list....40%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list....40%
Medford Fancy Goods Co....40&10@50%

Combs Curry—
American Curry Comb Co....33⅓@40%
Fitch's....50&10@50&10&10%
Kohler's Humane....℔ doz., $1.75
Kohler's Magic Oscillating...℔ doz., $2.00
Rubber, per doz., $10.00....25%

Compasses, Dividers &c.
Compasses, Calipers, Dividers.70&10@75%
Bemis & Call Co.'s
Dividers....65%
Calipers, Call's Patent Inside....55%
Calipers, Double....65%
Calipers, Inside or Outside....65%
Calipers, Wing....60%
Compasses....50&5%
Excelsior....50%
Starrett's
Combination Dividers....25%
Lock Calipers and Dividers....25%
Spring Calipers and Dividers....25&10%
Stevens & Co.'s....25&10%

Coolers, Water—
S. S. & Co.: 2-gal., $2.00; 3-gal., $2.50; 4-gal., $2.75; 6-gal., $3.40 each....33⅓%

Coopers' Tools—
See *Tools, Coopers'.*

Cord— Sash—
Braided, Crown Drab and Fancy, ℔ lb, 55¢....30%
Braided, Crown White, ℔ lb, 50¢...50%
Cable Laid Italian Sash....℔ lb, 19@20¢
Common....℔ lb, 8½@9¢
Common Russia Sash....℔ lb, 12½@13¢
Egyptian, India Hemp, Braided....26¢
India Cable Laid Sash....℔ lb, 11½@12¢
Massachusetts, White....25¢
Ossawan Mills—
Braided, Giant, Drab and Fancy, ℔ lb 35¢....10%
Braided, Giant, White, ℔ lb 30¢....20%
Patent, good quality....℔ lb, 10@11¢
Patent Russia Sash....℔ lb, 13½@ 14¢
Samson—
Braided, Drab Cotton....℔ lb, 42¢
Braided, Italian Hemp....℔ lb, 40¢
Braided, Linen....℔ lb, 56¢
Braided, White Cotton....℔ lb, 37¢
Semper Idem, Braided, White....26¢
Silver Lake—
A quality, Drab, 55¢....25%
A quality, White, 50¢....25%
B quality, Drab, 35¢....10%
B quality, White, 30¢....10%
Sylvan Spring, Extra Braided, Drab..39¢
Sylvan Spring, Extra Braided, White.34¢
Tate's Solid Braided—
Economy, Drab....℔ lb, 27¢
Economy, White....℔ lb 22¢
Hercules, Drab....℔ lb, 30¢
Hercules, White....℔ lb, 25¢
White Cotton Braided, fair...℔ lb, 23@24¢

Wire Picture—
Braided or Twisted....80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers, Nut—
Acme.
Japanned, ℔ gro., $30....50%
Nickel Plated, ℔ gro. $30....10%
Blake's Pattern, ℔ doz., $2.00....10%
Table (H. & B. Mfg. Co)....40%
Turner & Seymour Mfg. Co....50%

Cradles—
Grain....50&2@50&5&2%

Crayons—
White Crayons, ℔ gross....7@8¢
D. M. Stewart Mfg. Co.:
Metal Workers', ℔ gross, $1.75....25%
Railroad, ℔ gross, 2.00....25%
Rolling Mill, ℔ gross, 2.50....25%
Soapstone Pencils, ℔ gross,1.00....25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—
See *Combs, Curry.*

Curtain Pins—
See *Pins, Curtain.*

Cutters—
Meat—
American....30%
Nos. 1 2 3 4 B 5
Each....$5 $7 $10 $25 $50 $60
Enterprise....25%
Nos. 10 12 22 32 42
Each....$3 $2.50 $4 $6 $15
Dixon's, ℔ doz.... ....40@40&5%
Nos. 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Draw Cut, each:
Nos. 5 2 6 8
$50 $75 $80 $225....20@25%
Hale's, ℔ doz....70%
Nos. 11 12 13
$27.00 $33.00 $45.00
Home No. 1, ℔ doz., $26.00....55&10%
Little Giant, ℔ doz....40&10@50%
Nos. 305 310 312 320 322
$35.00 $48.00 $44.00 $72.00 $68.00
Miles' Challenge, ℔ doz....45@45&10%
Nos. 1 2 3
$22.00 $30.00 $40.00
Triumph No. 505, ℔ doz., $21.00..25@30%
Woodruff's, ℔ doz....40@40&5%
Nos. 100 150
$15.00 $18.00
Beef Shavers (Enterprise)....20%
Chadborn's Smoked Beef Cutter, ℔ doz., $66.00

Slaw and Kraut—
Tucker & Dorsey Mfg. Co.:
Kraut Cutters....40%
Slaw Cutters, 1 Knife, ℔ gross...$21.00
Slaw Cutters, 2 Knife, ℔ gross... 30.00

Tobacco
Acme....℔ doz., $20.00. 40%
All Iron....℔ doz., $4.25
Champion....20&10@30%
Nashua Lock Co.'s..℔ doz., $18.00, 50@55%
Sargent's....℔ doz., $24.00, 55&10
Wilson's....55%

Washer—
Appleton's....℔ doz., $16.00, 60&10%
Bonney's....30&10%
Cincinnati....25&10%
Johnson's....℔ doz., $11.00, 33⅓%
Penny's..℔ doz.,, Pol. $14 ; Jap'd, $16, 55%
Smith's Pat....℔ doz., $12.00, 20&10&10%

Diggers, Post Hole, &c.—
Cronk's Post Bars, ℔ doz., $60.00, 50&5@50&10%
Eureka Diggers....℔ doz. $12.00@$13.00
Fletcher Post Hole Augers, ℔ doz., $36.00, 20@20&10%
Gem, Improved ℔ doz..,$9.00@$10.00 net
Gibbs' Columbia....℔ doz., $13.00
Gibbs' Imperial....℔ doz., $7.50
Gibbs' National....℔ doz., $12.00
Gibb's Post Hole Digger....℔ doz., $15.00
Kohler's Hercules....℔ doz., $14.00
Kohler's Invincible....℔ doz., $12.00
Kohler's Little Giant....℔ doz., $18.00
Kohler's New Champion....℔ doz., $8.00
Samson, ℔ doz., $34.00....25@25&10%
Scheidler....℔ doz., $13.00
Shimer's Hollow Handle..℔ doz., $24.00, 50%
Vaughan's Post Hole Auger, ℔ doz., $8.50@$9.50

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers.
Money, ℔ doz....$18@$20
Waddel's Improved, ℔ doz....$15.00

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Blacksmiths'....each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Automatic Boring Tools....$1.75@$1.85
Breast, Bartholomew's....each $2.50 25&10@40%
Breast, Millers Falls....each $3.00, 25%
Breast, P. S. & W....40&10%
Breast, Wilson's....30&5%
Chicopee Automatic Drill....20&10%
Goodell Automatic Drills....40&5%
Ratchet, Curtis & Curtis....30%
Ratchet, Ingersoll's....25%
Ratchet, Merrill's....20@20&5%
Ratchet, Moore's Triple Action...25&30%
Ratchet, Parker's....20@20&5%
Ratchet, Weston's....20@25%
Ratchet, Whitney's....20&10%
Whitneys Hand Drill, Plain, $11.00 ; Adjustable, $12.00....20&10%

Twist Drills—
Cleveland....50&10&10%
Diamond, W. & B....50&10&10%
Graham's Pat. Groove Shank.50&10&10%
Morse....50&10&10%
New Process....50&10&10%
Standard....50&10&10%
Syracuse (Metal list)....50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Allard's Spiral, new list....25%
Brace Screw Drivers....25&10%
Buck Bros....30%
Buck Bros.' Screw Driver Bits...27½&5%
Clark's Pat....30@33⅓%
Cincinnati....25&10%
Champion....25&10%
Disston's....50%
Douglass Mfg. Co....20@20&10%
Ellrich's Socket and Ratchet..25@25&10%
Fray's Hol. H'dle Sets...No. 3, $12.00, 45%
Gay & Parsons....35%
Goodell's Automatic....50%
Knapp & Cowles
No. 1....60&20@70%
No. 2....60&10&10@70&5%
No. 3....60&5@60&10%
Nos. 4 and 00, Acme and Ideal...50&5@ 50&10&5%
Kolb's Common Sense..℔ doz., $6.00, 25&10%
Mayhew's Black Handle....50%
Mayhew's Monarch....45&10%
P. S. & W....70%
Sargent & Co.'s
No. 1, Forged Blade....60&10&10%
Nos. 20, 40 and 60....66⅔&10&10%
Screw Driver Bits, Parr's..℔ gross, $6.25
Screw Driver Bits....℔ doz., 50@75¢
Stanley R. & L. Co.'s
No. 64, Varnished Handles....65&10%
No. 86....70&10%
Stearns'....25&10&5%
Syracuse Screw-Driver Bits....30&30&5%
C. T. Williamson Wire Novelty Co....50%

Egg Beaters—See *Beaters, Egg.*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F.FF.
10-℔ cans, 10 in case	6 ¢	6½¢	5 ¢
10-lb cans, less than 10	10 ¢	10 ¢	7½¢
Kegs, ℔ lb	4½¢	5 ¢	2½¢
½ kegs, ℔ lb	4½¢	5½¢	2½¢
¼ kegs, ℔ lb	5 ¢	5½¢	3 ¢

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—
Brass Thread....60@60&10%
Door Lock....Same dis. as Door Locks.
Wood....25%

Expanded Metal—
List No. 5.
Door Mats, Galvanized....25%
Fencing, Painted Sheets....20%
Lathing....10%
Netting, Painted Sheets....20%
Tree Guards, Paneled....15%
Window Guards, Paneled....15%

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Austin & Eddy No. 2008....℔ gr., $9.00
Mackrell's, ℔ doz., $1.00....20@20&10%
Security Gravity....℔ gr., $9.00
Van Sand's Old Pat., $15 ℔ gr....55&10%
Van Sand's Screw Pat, $15 ℔ gr..60&10%
Zimmerman's....50&10%

Faucets—
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Burnside's Red Cedar....50%
Burnside's Red Cedar, bbl. lots....60&10%
Boss Metallic Key....50%
Cork Lined....70&5@70&10%
Diamond Lock....40%
Fenn's....40%
Fenn's Cork Stops....33⅓%
Frary's Pat. Petroleum....60%
IXL, 1st quality, Cork Lined....50%
Metallic Key, Leather Lined....60&10@ 60&10&10%
No Brand, Red Cedar (in bbls.)....50&10%
No Brand Metal Key....60%
O. K. Western Pattern Cork Lined....50%
Perfection, Fla. Red Cedar (in boxes)..40%
Reliable Cork Lined....60%
Self Measuring
Enterprise, ℔ doz., $36.00....20%
Lane's ℔ doz., $36.00....25&10%
John Sommers'
Peerless Best Block Tin Key....40%
Star....60%
Star, Metal Plug, new list....40%
Lockport, Metal Plug, reduced list....60%
Western Pattern Metal Key....40%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—
Derby and Cincinnati....45&5%
Brewster....50&5%

Files—
Domestic—
American....66⅔&10@66⅔&10&5%
Arcade....60&10&5@60&10&10%
Eagle....60&10&10@70%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Nicholson Files, Rasps, &c.60&10&5@ 60&10&10%
Nicholson (X.F.) Files....25%
Nicholson's Royal Files (Seconds)....75% (extra prices on certain sizes.)
Other makers, best brands..60&10&5@70%
Fair brands....70&10@70&10&10%
Second quality....80@80&5%
Arcade Horse Rasps...60&10@60&10&5%
Chelsea Horse Rasps, Hand Cut...50&10%
Heller's Horse Rasps....50&10@60%
McCaffrey's Horse Rasps....50&10%
Trojan Horse Rasps....60&10&5%
Imported—
Butcher....Butcher's list, 20%
Stubs....Stubb's' list 75@80%

Fixtures Grindstone—
Moore's....55%
P., S. & W. Co....50&10%
Reading Hardware Co....30&10%
Sargent's Patent....70&10%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Hay, Manure, &c. Asso. List, 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—
Saw—
Red, Polished and Varnished....℔ doz., $1.50, 25%
White Vermont....℔ gro.. $9.00@$10.00

Screen, Window and Door—
Bonanza Window Screens..50&5@50&10%
Cortland....40@40&5%
Empire Fancy Screen Doors, ℔ doz ..$13
Phillips' Window Screen Frames....50@50&5%
Porter's Pat. Window and Door Frame, 33⅓&10%
Stearns' Frames and Corners.25@25&10%
Warner's Screen Corner Irons..33⅓&10%

Freezers, Ice Cream—
American....60%
Arctic....70@70&5%
Blizzard....70%
Boss and Pet....60&10&10&10%
Buffalo Champion....65@65&5%
Confectioners' Machine....50%
Crown....60%
Double Action Crown....60%
Gem....65%
Giant....60%
Good Luck....65@65&5%
Granite State....65@65&5%
Keystone, P., D. & Co., each, $1.50....20%
Model....60@60&5%
Peerless....60&10%
Shepard's Lightning....65@65&5%
Standard....60@60&5%
Standard Double Action....60@60&5%
Star....60%
White Mountain....60@60&5%
Zero....70%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fruit Pickers—
See *Pickers, Fruit.*

Fry Pans—See *Pans, Fry.*

Funnels—
Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro....30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz....25%

Furnaces, Soldering—
Burgess No. 3 Gem, Copper reservoir.$8.50
Burgess No. 3 Gem tin reservoir....$7.00
Clayton & Lambert No. 1 Fire-Pot, complete....$6.00

Fuse—Dis. 10@2% cash. ℔ M1000 ft.
Common Cotton Fuse, for dry gr'nd..$3.00
Common Hemp Fuse, for dry ground. 2.80
Double Taped Fuse, for very wet gr.. 5.60
Single Taped Fuse, for wet ground.. 4.75
Triple Taped Fuse, for very wet gr.. 6.40
Large Gutta Percha Fuse, for water.15.00
Small Gutta Percha Fuse, for water.10.00

Gates Molasses—
Boss, ℔ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10....60&10&10%
Lincoln's Pattern....70@70&10%
Stebbin's Genuine....60&10&10%
Stebbin's Pattern....80&10@80&10&5%
Stebbin's Tinned Ends....40&10%
Weed's....20&10%

Gauges—
Barrett's Comb. Roller Gauge....℔ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale....℔ doz.. $5.00
Without Scale....℔ doz.. $4.00
Marking, Mortise, &c....60&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge....20&10%
Starrett's Surface, Center and Scratch, 25&10%
Wire, Brown & Sharpe's....10@20%
Wire, Morse's....25%
Wire, P., S. & W Co....10&10%
Wire, Wheeler, Madden & Co....10%

Gimlets—
Nail and Spike....50&10&5%
Diamond Gimlets....℔ gr $5.00
Eureka Gimlets....60&10%
Double Cut, Douglass'....40&10%
Double Cut, Ives'....60@60&5%
Double Cut, Shepardson's....45@45&5%

Glue—
Dodd's Liquid Glue....25@25&5%
Improved Process....25@25&5%
Le Page's Liquid....25@25&5%
Upton's Liquid....35%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Axleine, tin boxes....℔ gross $12.00
Dixon's Everlasting...10-lb pails, ea. 85¢
Dixon's Everlasting, in bxs., ℔ doz 1 lb $1.20; 2 lb $2.00
English Coach, 5-lb tin pails. ℔ doz, $3.50
English Coach, wooden boxes....℔ gross $8.50
Fraser's....Keg ℔ lb 4¢, Pail ℔ lb 5¢
Fraser's, in boxes....℔ gr $9.50
Lower grades, special brands....℔ gr $5.50@$7.00
Tiger, 5-lb tin pails....℔ doz $2.85
Tiger, wooden boxes....℔ gross $7.00

Grindstones—
Family, regular list....60%
Family, Cleveland Stone Co....20%

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
Sewing, Brass Fer. ℔ gr....$1.75
Pat. Sewing, Long....℔ doz $1.20
Pat. Sewing, Short, ℔ doz....45@50%
Pat. Peg Leather Top, ℔ doz 45&5%
Pat. Peg, Plain Top, ℔ doz ....40@45%

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Halters—

Covert's Rope, Jute.....60&10&10&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ½-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Saddlery Works Halters...33⅓%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓%
Covert's Saddlery Works Handy Web Halters.....33⅓%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.....
Humason & Beckley.....
Atha Tool Co.....
Verree.....
....50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting..50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles, new list.....25&10
Peck, Stow & Wilcox.....35@40%
Sargent's.....40@40&10%

Heavy Hammers and Sledges—

3 ℔ and under...₩ ℔40¢
3 to 5 ℔.....₩ ℔36¢ } 75&10@75&10
Over 5 ℔.....₩ ℔30¢ } &5%
Wilkinson's Smiths.....10½¢@11¢₩ ℔

Handcuffs and Leg Irons

—See *Police Goods.*

Handles—

Cross-Cut Saw Handles—

Atkins', new list.....40%
Champion.....15%
Ely's Perfection.....₩ doz., $3.00
Sensible.....40%

Iron, Wrought or Cast—

Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.08	1.35	1.50

60&10&10%
Roggin's Latches.....₩ doz 30¢@35¢
Bronze Iron Drop Latches..₩ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Barn Door, ₩ doz $1.40.....10&10%
Chest and Lifting.....70@70&10%

Wood—

Saw and Plane.....40&10@50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Brad Awl.....₩ gr $2.00
Hickory Firmer Chisel, ass'd. ₩ gr 4.50
Hickory Firmer Chisel, large. ₩ gr 5.00
Apple Firmer Chisel, ass'd...₩ gr 5.00
Apple Firmer Chisel, large...₩ gr 6.00
Socket Firmer Chisel, ass'd..₩ gr 3.00
Socket Framing Chisel, ass'd. ₩ gr 5.00
J. B. Smith & Co.'s Pat File.....50%
File, assorted.....₩ gr 2.75
Auger, assorted.....₩ gr 5.00
Auger, large.....₩ gr 7.00
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....₩ set $1.25
Pat. Auger, Swan's.....₩ set $1.00
Hoe, Rake, Shovel, &c.....60@60&5%

Hangers—

Barn Door, old patterns.....70@70&5%
Barn Door, New England.....70@70&5%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Steel Track.....55%
Champion.....60&10%
Climax Anti-Friction.....55%
Zenith for Wood Track.....55%
Sterling.....50&10@60%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Kidder's.....50@50&10%
Boss.....60&10@60&10&5%
Best Anti-Friction.....60&10@60&10&5%
Duplex (Wood Track).....60&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Ideal.....50&10@50&10&5%
Terry's Solid.....50&10@60%
Terry's Shield.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Cronk's Patent, Steel Covered.....50&10%
Carrier Steel Anti-Friction.....50&10%
Richards'.....30@30&10%
Lane's New Standard.....50@50&5%
Lane's Standard.....50&5@50&10%
Lane's Parlor.....40%
Warner's Pat.....20&10&10%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Cincinnati Nos. 1, $2.25; 3, $2.50; 4, $2.50.
Paragon Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15. 40&10@50%
Chicago Anti-Friction.....30&10%
Star.....40&10@40&10&5%
Barry.....50%
Interstate.....50&10@60%
Pendulum, Payson's.....40@40&10%
Moody.....45%
Economy, $6.00.....50&10%
Perfection.....50&10@50&10&5%
Lundy, Steel Parlor.....40%
Matchless.....50&10%
Magic.....45&10%
Wild West.....45&10%
Moore's Elevator.....33⅓%
Moore's Baggage Car Door.....33⅓%
Moore's Railroad.....55%

Harness Snaps—See *Snaps.*

Hatchets—

American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's.....
Mann's.....
Peck's.....
Underhill's.....
Fayette R. Plumb.....
C. Hammond & Son.....
40 & 10 @ 40 & 10 &5%
Kelly's.....
Buffalo Hammer Co.....
Sargent's & Co.....
P. S. & W. Co.....
50 @ 50 &10%
Schulte, Lohoff & Co.....
Ten Eyck Edge Tool Co.....
Collins.....10%

Hay and Straw Knives

See *Knives.*

Hinges—

Blind Hinges—

Parker.....75&10%
Huffer.....50@50&10%
Clark's:
Nos. 1, 3, 5, "1868, Old Pattern.....75&10&5%
Nos. 1 and 3, "Tip" Pattern.75&10&5%
No. 1, "Diamond," for wood only.80&5%
No. 1, "Cottage," for wood only.80&10%
No. 50, "Buffalo Noiseless," 40, 60 and 65.....75%
No. 25, "Empire" Reversible...75&10%
Mortise Gravity, Nos. 2, 4, 4½, 6, 8, 9 and 10.....50%
Lull & Porter Nos. 3, 2½, 2, 1, 0, 00, 4 and 5.....75&10&2½%
"Dixie L. & S.," Nos. 3, 2½, 2, 1, 000, 4 and 5.....75&5%
"Buffalo Reversible," Nos. 3, 2, 1½, 1 and 0.....70& 5%
Sargent's Nos. 3, 5 11, 12, 13.....75&10@75&10&5%
Reading's Gravity.....75&10@75&10&5%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₩ doz $4.20, 60@60&10%
N. E.....₩ doz $7.80, 60@60&10%
N. E. Reversible ₩ doz..$5.60, 60@60&10%
Clark's, Nos. 1 2, 3.... 60&10@60&10&5%
N. Y. State.....₩ doz $4.90,60@60&10%
Automatic.....₩ doz $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts....40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's Japanned.....35%
Bommer's All other Kinds.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent Checking.....15%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem and Star.....20%
Oxford.....20%
Royal.....66⅔%
Reliable.....60%
Champion.....60%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ₩ gro., $30.....50&5%
Samson.....60@60&7½%
Wiles', No. 1, ₩ gro., $16; No. 2.....$13
Devore, No. L.....₩ gro., $13.00
Rex.....₩ gro., $13.00
Freeport.....₩ gro., $12.00
New Idea Nos. 1 and 10...₩ gross $13.00
New Idea Dbl. Acting.....45%
Ideal No. 3.....₩ gross $10.00
Stearns' Noiseless Floor Hinge, ₩ set, $5.00.....20&10@30%

Extra 5@10% often given.

Wrought Iron Hinges—

List February 14, 1891.
Strap and T.....50&10@50&10&10%
Corrugated Strap and T.....50&10&5%
Screw Hook and Strap.....6 to 12 in., ₩ ℔.. 4¢; 14 to 20 in., ₩ ℔..3½¢; 22 to 36 in., ₩ ℔.. 3¢
Screw Hook and Eye.....⅜ in., ₩ ℔ 7¾¢; ½ in., ₩ ℔ 5½¢; ⅝ in., ₩ ℔ 4½¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10¢
Plate Hinges "Providence" 8, 10 & 12 in., ₩ ℔.....5¢; over 12 in. ₩ ℔.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat } 60&5
Am. Axe and Tool Co., S. & O. Pat } @60&10%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70@70&5&2%
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%
Magic.....₩ doz $4.00

Hog Rings and Ringers—

See *Rings and Ringers—*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow-Ware—

See *Ware, Hollow.*

Holders—

Bag—

Sprengle's Pat.....₩ doz $18....60%

Bit—

Extension.
Barber's, ₩ doz $15.00.....40@40&10%
Ives, ₩ doz $20.00.....60&5@60&10%
Diagonal.....₩ doz $24.00, 40%
Angular.....₩ doz $24.00, 40&5%

File and Tool—

Bals Pat.....₩ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—

Motley's Adj. Sash, Medium Size..... ₩ doz $1.20, 40%

Hooks—

Cast Iron—

Bird Cage, Sargent's List ...
Bird Cage, Reading .....
Clothes Line, Sargent's list..
Clothes Line, Moore's.....
....60&10&10%
....70%
Clothes Line, Reading list 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading. 50&10@50&10&10%
Coat and Hat, Moore's.....70%

Wrought Iron—

Cotton.....₩ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg. Co....50%
Wrought Staples Hooks, &c. See Wrought Goods

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....80&15@80&20%
Atlas, Coat and Hat.....65%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Bright Wire Goods—See Wire.

Miscellaneous—

Grass, No. 2, $2.00; No. 3, $2.10; No. 4, $2.25
Nolin's Grass.....₩ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—

See *Shoes, Horse.*

Hose, Rubber—

Competition, Fair quality.....75@75&10%
Competition, Low Grade.....80@80&10
Standard.....70&10&70@10&5%
Extra.....60&10@60&10&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40&5@50%
N. Y. B. & P. Co., Dundee.....60@60&5%
Cotton Garden, ¾ in., coupled:
Fair Quality, ₩ ℔.....7¢
Good Quality, ₩ ℔.....8½¢

Huskers—

Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper.....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber Ware—

See *Ware, Indurated Fiber.*

Irons.

Sad—

From 4 to 10, at factory....₩ 100 ℔, $2.30@$2.40
Self-Heating.....₩ doz $8.00
Self-Heating Tailors'.....₩ doz $18.00
Mrs. Potts' Sad Irons, per set:

No.	50	55	60	65
Small lots	.90	.85	1.05	.95

Crown Improved.....60&10%
Ideal Irons, new list...50&10@50&10&10%
Salamander Irons.....25%
B. B. Sad Irons, ₩ ℔.....3@3½¢
Chinese Laundry (N.E.Butt Co.).8½¢, 15%
New England.....5¢, 20@20&5%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%
National Self-Heating.....30%

Soldering—

Soldering Coppers.....₩ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1888. 35&2%
Tinker's Dread..₩ doz $1.75; ₩ gro. $18

Pinking—

Pinking Irons, ₩ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—

Daisy.....33⅓%
Victor.....33⅓%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Stamped Brass Kettles.....₩ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—

Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.

Wilson's Butcher Knives, List Dec 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AA A1 Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....25@30%
Ames' Bread Knives, ₩ doz $1.50, 15@20%
Moran's Shoe and Bread.....20@20&10%
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—

Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—

Witherby.....
P. S. & W.....
Mix.....
New Haven.....
Merrill.....
Douglass.....
Weimer.....
....75@75&10&5%
....60&10@60&10&5%
....75&75@5%
....15&10@25%
L & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, from jobbers....$6.50@$7.50
Wadsworth's.....40&7½@40&10%
Carter's Needle...₩ doz. $11.00@$11.50
Heath's.....₩ doz. $13.00@$13.50
Nolin's Hay.....₩ doz. $7.00@$8.00

Mincing—

Am. (2d quality), ₩ gr., 1 blade, $7
2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₩ doz., Single, $2; Double $3 45@50%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable....₩ doz. $3.00, 33⅓%

Knobs—

Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nicke..l....$2.00@$2.25
Drawer, Porcelain....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885..40%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₩ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c....15%

Ladders.

Davies Extension and Single..... 20&5%

Ladies—

Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, P., S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Regular, with Guard.....₩ doz $3.50
O. K., with Guard.....₩ doz $3.75
Side Lift, with Guard.....₩ doz $4.00
Square Lift, with Guard.....₩ doz $4.25
Anti-Friction, with Guard...₩ doz $4.50
Brass Plated, Sq. Lift, Guard.₩ doz $5.50
Cop. Plated, Sq. Lift, Guard..₩ doz $5.50

Bull's Eye Police—

2¾-inch regular.....₩ doz $3.6 0
3-inch regular.....₩ doz $3.90
2¾-inch flash light.....₩ doz $4.00
3-inch flash light.....₩ doz $4.50

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Wollensak's:
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Class 3 and 4, Brass.....50%
Skylight Lifters.....25%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....60@60&10%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—

Cotton and Linen Fish.....50%
Chalk.....60%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....25%
Mason's Linen, No. 3½, $1.50; No 4, $2.00; No 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes..Nos. 18 19 20
100 ft.....$3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..₩ doz $7.50..20%
Ossawan Mills:
Twisted Chalk.....60%
Braided Chalk.....50%
Solid Braided Ventilator and Masons' Lines.....25%
Cotton Clothes Lines.....₩ ₩ 16¢

Links, Open—

Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List, March '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Champion Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&10%
Champion Cab. and Combin.....33⅓%
Yale.....net prices
Romer's.....25%

Door, Locks, Latches, &c.

R. & E. Mfg. Co., list Mar. 20, 1889..... } 60&10@70% Much lower net prices often made
Mallory, Wheeler & Co. list July, '88..... }
Sargent & Co., List Aug. 1, '88 }

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Britain, Graham & Mathes, list Jan. 1890 ..... 60&10&10%
Plate ..... 33⅓&2%
Barnes Mfg. Co. ..... 40@40&10%
Yale ..... net prices
Deitz Flat Key 30%
Romer's Night Latches 15%
Brooklyn Latches ..... 50&10%
Warner's Burglar Proof, ₩ doz. $8.00, 50%

Elevator—

Moore's 33⅓%

Padlocks—

List June 10, 1891 ..... 50&2%
Norwich Lock Mfg. Co., old list ..... 50&2%
Yale Lock Mfg. Co.'s ..... net prices
Eagle 40%
Eureka, Eagle Lock Co. ..... 40&2%
Romer's Nos. 0 to 91 ..... 30%
Romer's Scandinavian, &c., Nos. 100 to 505 ..... 15%
A. E. Deitz 40%
Champion Padlocks 40%
Hotchkiss 30%
Star 60%
Horseshoe ..... ₩ doz $9. 50@50&10%
Barnes Mfg. Co. ..... 40@40&10%
Nock's 30%
Scandinavian ..... 90&50%
E. T. Fraim's Keystone Scandinavian, 1010 line ..... 90&40%
120 line ..... 90&25%
109 line 65%
510 line ..... 70&10%
225, 610 and 209 lines 70%
All other numbers ..... 50&5%
Ames Sword Co. up to No. 150 ..... 40%
Ames Sword Co. above No. 150 ..... 50%
Slaymaker, Barry & Co.
No. 1010 line ..... 90&50%
No. 41 line 60%
No. 61 line 60%
No. 21 line 80%

Sash, &c.—

Clark's No. 1, $10; No. 2, $8 ₩ gr. ..... 33⅓&%
Ferguson's ..... 33⅓&%
Victor ..... 60&10&2%
Walker's 10%
Attwell Mfg. Co. ..... 25&33⅓&%
Reading ..... 66⅔&10@66⅔&10&10%
Hammond's Window Springs 40%
Common Sense, Jap'd, Cop'd and Br'zed ..... ₩ gr $4.00
Common Sense, Nickel Plated, ₩ gr $10.00
Universal 30%
Kempshall's Gravity 60%
Kempshall's Model ..... 60@60&10%
Corbin's Daisy, list Feb. 15, 1886 ..... 70%
Payson's Perfect ..... 60&10&10%
Hugunin's Sash Balances ..... 25&5&2%
Hugunin's New Sash Locks ..... 25&5&2%
Ives' Patent ..... 60&10&5@60&10&10%
Fish (Liesche's pat.), No. 100, ₩ gr., $8; No. 105, ₩ gr., $10 ..... 50%
Davis Bronze, Barnes Mfg. Co. 60%
Champion Safety list January, 1893. 70&5%
Security 70%
Giant, list Jan., 1892 ..... 70&5%
Wolcott's ..... 60&10&5%
Monarch 50%

Lumber Tools—

See *Tools, Lumber.*

Lustro—

Four-ounce bottles ..... ₩ doz, $1.75; ₩ gross $17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas	$5.50	$6.75		50%
Snell's, Rice's Pat.	5.50	6.75	40&10&10%	
Jennings'	5.50	6.75	50@50&5%	
Other machines	2.25	2.50		

Phillip's Patent with Augur ..... 7.00 7.50 .....
Millers Falls ..... 7.50 ..... 25%
Boss, Carpenters' 3.60
Boss, Ship Bldrs'. 3.85

Fluting—

Knox, 4½-inch Rolls ..... $3.25 each } 35%
Knox, 6-inch Rolls ..... $3.60 each }
Eagle, 3½-inch Rolls, $2.15 ..... 35%
Eagle, 5½-inch Rolls, $2.85 ..... 35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6 50 each 35%
Crown Jewel, 6 in. ..... $3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each 35%
Domestic Fluter ..... each, $1.50
Geneva Hand Fluter, White Metal, ₩ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25 ..... 30%
Shepard Hand Fluter, No. 85, per doz $15.50 ..... 40%
Shepard Hand Fluter, No. 110, ₩ doz $11.00 ..... 40%
Shepard Hand Fluter No. 95, ₩ doz $3.00 ..... 40%
Combined Fluter and Sad Iron, ₩ doz $15.00 ..... 30%

Hoisting—

Moore's Hand Hoist, with Lock Brake. 20%
Moore's Anti-Friction Differential Pulley Block 20%
Moore's Rope Differential Pulley Block 60%
Energy Mfg. Co.'s 25%
See also *Blocks.*

Washing—

Anthony Wayne, ₩ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American ..... ₩ doz $36.00
Western Star ₩ doz, No. 2, $36; No. 3 $39
Weisell ..... ₩ doz $54.00
Fair and Square ..... ₩ doz $42.00

Mallets—

Hickory ..... 20&10@20&10&10%
Lignumvitæ ..... 20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks—Regular list. 60&10@60&10&5%

Measures—

Standard Fibreware, No. 1, peck ₩ dozen, $3.50; ½-peck, $3.00

Meat Cutters—

See *Cutters, Meat.*

Menders, Harness—

Per doz $2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—

Box and Side, List, Jan. 1, 1888. 60@60&5%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893 ..... 20%
The Swift, Lane Bros. 30%
Waddell's New Box Mills, Ideal Brand, New List 60%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Best Machines: 10-in., $4; 12-in., $4.50; 14-in., $5; 16-in., $5.50; 18-in., $6.
Low-Grade Machines: 10-in. $3; 12-in., $3.25 14-in., $3.50 each

Muzzles—

Safety ..... ₩ doz, $3.00, 25%

Nails.

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92 ..... 85&5%
Tack Mfrs.' list ..... 70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

Nos.	6	7	8	9	10	
Putnam	23¢	21¢	20¢	19¢	18¢.	.15%
American	9½	9½	9½	9½	9½	net
Ausable	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	.30&5%
Essex	28¢	2¢	25¢	24¢	23¢	40&10@50%
Lyra	9½	9½	9½	9½	9½	net
Snowden	9½	9½	9½	9½	9½	net
Standard	23	21¢	20¢	19¢	18¢	35%
Vulcan	23¢	21¢	20¢	19¢	18¢.	.25%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	40%
A. C.	25¢	23¢	22¢	21¢	21¢	40&10%
Maud S.	25¢	23¢	22¢	21¢	21¢	50&10&5%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&2%
Champion	25¢	23¢	22¢	51¢	20¢	10&10&10%
Capewell.	19¢	18¢	17¢	16¢	16¢.	.10&5%
Anchor	23¢	21¢	20¢	19¢	18¢	35%
Western	23¢	21¢	20¢	19¢	18¢	50%
Empire Bronzed						13@14 ₩ ℔

Picture—

Brass Head, Sargent's list ..... 60@60&10%
Brass Head, Combination list ..... 50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent 40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.80¢	6.50¢ off list
Cold Punched	5.00¢	5.10¢ off list

In packages of 100 ℔, add 1-10¢ ₩ ℔, net; in packages less than 100 ℔, add ½¢ ₩ ℔, net.

Oakum—

Best or Government ..... ₩ ℔ 6¾@7¼¢
U. S. Navy ..... ₩ ℔ 5¾@6¢
Navy ..... ₩ ℔ 5¢@5¼¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Zinc and Tin ..... 65&10@70&5%
Brass and Copper ..... 50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list 45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass 50%
Olmstead's Tin and Zinc 60%
Olmstead's Brass and Copper 50%
Broughton's Zinc 60%
Broughton's Brass 50%
Steel, Draper & Williams 50%
Wilmot & Hobbs Mfg. Co., Steel Anti-Rust 60%

Openers, Can—

Messenger's Comet ..... ₩ doz $3.00, 25%
American ..... ₩ gross $2.75@$3.00
Duplex ..... ₩ doz 25¢, 15@20%
Lyman's ..... ₩ doz $3.75, 20%
No. 4, French ..... ₩ doz $2.25, 55@60%
No. 5, Iron Handle ..... ₩ gr $6.00, 45@50%
Eureka ..... ₩ doz $2.50, 10%
Sardine Scissors ..... ₩ doz $2.75@3.00
Star ..... ₩ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 66⅔&70%
Excelsior, No. 1 $2.50; No. 2, $1.50 ..... 40%
World's Best ₩ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00 ..... 50&10%
Universal, ₩ doz $3.00 ..... 55&5%
Domestic, ₩ doz $2.00 ..... 45%
Champion, ₩ doz $2.00 ..... 50%
Moore's 70%

Packing, Steam—

Rubber—

Standard, fair quality ..... 70@70&10%
Inferior quality ..... 75@80%
Extra ..... 60@60&5%
N. Y. B. & P. Co., Standard 50%
N. Y. B. & P. Co., Empire 60%
N. Y. B. & P. Co., Salamander 25%
Jenkins' Standard, ₩ ℔ 80¢ ..... 25@25&5%

Miscellaneous—

American Packing ..... 10@11¢ ₩ ℔
Russia Packing ..... 14¢ ₩ ℔
Italian Packing ..... 13@14¢ ₩ ℔
Cotton Packing ..... 15@17¢ ₩ ℔
Jute ..... 7@8¢ ₩ ℔

Pails—

Creamery—

S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 ₩ doz. 5%

Galvanized—

	Quarts	10	12	14	
Hill's Light Weight, ₩ doz.	$2.75	3.00	3.25		
Hill's Heavy Weight, ₩ dz.	3.00	3.25	3.75		
Sidney Shepard & Co.	2.50	2.75	3.00		
Central Stamping Co.	2.50	2.75	3.00		
Iron Clad	2.50	2.75	3.00		
Fire Buckets	2.75	3.25	3.50		

Buckets—See Well Buckets.

Indurated Fiber Ware

Star Pails, 12 qt. ..... ₩ doz $4.20 } 25%
Milk, 14 qt. ..... ₩ doz $5.40 }
Stable, 14 qt. ..... ₩ doz $6.00 }
Fire Pails, deep ..... ₩ doz $4.80 }
Fire Pails, round bottom ₩ doz $5.40 }

Standard Fiber Ware—

	Plain.	Deer'd
Water Pails, 12 qt., ₩ doz.	$3.15	$3.75
Dairy Pails, 14 qt., ₩ doz.	3.75	4.25
Fire Pails, No. 1, 12 qt., ₩ doz	3.75	
Fire Pails, No. 2, 14 qt., ₩ doz	4.25	
Sugar Pails	5.00	5.50
Horse Pails	4.00	
Buggy Pails	3.00	
Slop Jars (bal. trap)	7.50	8.50
Chamber Pails, 14 qt.	6.00	7.00

Pans—

Dripping—

Small sizes ..... ₩ ℔ 5½¢
Large sizes ..... ₩ ℔ 5¢
Silver & Co. (Covered) 40%

Fry—

Standard List:

No.	0	1	2	3	4
₩ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
₩ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods ..... 75@75&10%
Acme Fry Pans ..... 66⅔&%

Dust—

Steel Edge, No. 1 ..... ₩ doz $1.75

Roasting and Baking—

Columbian, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each ..... 60&10%

Paper and Cloth—

Sand and Emery—

List April 19, 1886 ..... 50&10@50&10&10%
Sibley's Emery and Crocus Cloth 30%

Parers—

Apple—

Advance ..... ₩ doz $4.75
Baldwin ..... ₩ doz 5.25
Bonanza ..... each 5.00
Daisy ..... ₩ doz 4.00
Dandy ..... each 7.50
Eclipse ..... ₩ doz 4.00
Eureka, 1888 ..... each 16.00
Family Bay State ..... ₩ doz 12.00
Favorite ..... ₩ doz 5.00
Gold Medal ..... ₩ doz 4.00
Ideal ..... ₩ doz 4.00
Improved Bay State ..... ₩ doz 27.00@30.00
Little Star ..... ₩ doz 4.50
Monarch ..... ₩ doz 13.50
New Lightning ..... ₩ doz 5.50
Oriole ..... ₩ doz 4.00
Penn ..... ₩ doz 3.00
Perfection ..... ₩ doz 4.00
Pomona ..... ₩ doz 4.00
Rocking Table ..... ₩ doz 6.00
Turn Table ..... ₩ doz 4.50
Victor ..... ₩ doz 13.50
Waverly ..... ₩ doz 4.00
White Mountain ..... ₩ doz 4.00
Reading 72 ..... ₩ doz 4.25
Reading 78 ..... ₩ doz 7.00

Potato—

White Mountain ..... ₩ doz $4.50
Antrim Combination ..... ₩ doz $5.50
Hoosier ..... ₩ doz $3.50
Saratoga ..... ₩ doz $5.50

Pencils, Soapstone—

See *Crayons.*

Pickers, Fruit—

Prize Fruit Pickers 50%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00 ..... 60&10&5@60&10&10&5%

Picture Nails—

See *Nails, Picture.*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s ..... 60&10%
Sargent & Co.'s, $17 and $18 ..... 60&10%
Peck, Stow & W. Co. ..... 50&10@50&10&5%

Escutcheon—

Iron, list Nov. 11, 1885. 50&10@50&10&5%
Brass ..... 60@60&5%

Pipe, Wrought Iron—

List April 13, 1893.

1¼ and under, Plain	57½&10%
1¼ and under, Galv.	50&10%
1½ and over, Plain	67½&10%
1½ and over, Galv.	57½&10%
Boiler Tubes, list Oct. 24, 1892	65&10%
Casing, list Nov. 16, 1892	52½&10%
Inserted Joints Casing, list Nov. 16, 1892	47½&5%
Steel Boiler Tubes	27½&5%
Cold Drawn Seamless Steel Tubing	50%

Planes and Plane Irons—

Wood Planes—

Molding ..... 40&10%
Bench, First quality ..... 45&10%
Bench, Second quality ..... 50&10%
Bailey's (Stanley R. & L. Co.) ..... 50&10%

Iron Planes

Bailey's (Stanley R. & L. Co.) ..... 50&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 25&10%
Steers' Iron Planes ..... 50@50&5%
Meriden Mal. Iron Co.'s ..... 50@50&5%
Davis' Iron Planes ..... 50@50&5%
Birmingham Plane Co. ..... 60@60&5%
Gage Tool Co.'s Self-Setting ..... 20&10&10%
Chaplin's Iron Planes ..... 50@50&5%
Sargent's ..... 60@60&10%
Standard Tool Co. ..... 50@50&5%

Plane Irons—

Butcher's ..... $5.00@$5.25 to a
Buck Bros. 30%

Auburn Thistle, Ohio, Sandusky } .30&10@30&10&10%
L. & I. J. White 25%
Stanley R. & L. Co. ..... 50&10%

Plates—

Felloe ..... ₩ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent 60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₩ doz. 40%
Humason & Beckley Mfg. Co. 50@50&10%
Lindsay's Giant ..... 33⅓&%
Gas Pliers 60%
Gas Pliers, Custar's Nickel Plated. 60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel 25%
P., S. & W. Cast Steel ..... 50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 6% 10%
Carew's Pat. Wire Cutters 20%
Morrill's Parallel, ₩ doz, $12.00 ..... 30&5%
Cronk's 3 in., $15.00; 10 in. $20
Cronk's Button Pattern ..... 50&10@60%
Cronk's Carrier Pliers ..... 60@60&5%

Plumbs and Levels—

Regular List ..... 75&10@75&10&10%
Stanley's Duplex ..... 20&10%
Stanley's Handy ..... 20&10%
Disston's 50%
Cook's ..... 40&10%
Pocket Levels ..... 70&10@70&10&10%
Davis Iron Levels 30%
Davis Inclinometers ..... 10&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₩ doz. No. 1, $6.00; No. 2, $9.00 ..... 33⅓&%
Silver & Co., 6-Ring, ₩ doz, $4.00; 8-Ring $2.00

Pokes, Animal—

Bishop s I. X. L. ..... ₩ doz $6.00
Bishop's Monarch ..... ₩ doz $4.50
Bishop's Pioneer ..... ₩ doz $4.00
Bishop's American ..... ₩ doz $3.00
Eagle, Double Stale ..... ₩ doz $5.75
Eagle, Single Stale ..... ₩ doz $3.75
Buckeye, Single Stale ..... ₩ doz $2.75
Bolding ..... ₩ doz $6.00
Metallic Horse Poke ..... ₩ doz $6.00

Police Goods—

R. I. Tool Co., Handcuffs, $15.00 ₩ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₩ doz 10%
Tower's 25%
Daley's Improved Handcuffs; 2 Hands, Polished, ₩ doz, $48.00; Nickeled, $57.00; 3 hands, Polished, ₩ doz, $72.00; Nickeled, $84.00 ..... 25%
J. P. Lovell's Police Goods 25%

Polish—

Metal—

Prestoline 30%
Prestoline Paste ..... 33⅓&%
Gaston's Silver Compound ..... 33⅓&%

Stove—

Joseph Dixon's ..... ₩ gro, $6.00, 10%
Gem ..... ₩ gro, $4.50, 10%
Gold Medal ..... ₩ gro, $6.00, 25%
Lustro ..... ₩ gro, $4.75
Ruby ..... ₩ gro, $3.75
Rising Sun, 6 gro lots ..... ₩ gro, $5.50
Dixon's Plumbago ..... ₩ ℔ 8¢
Boynton's Noon Day ..... ₩ gro, $13.00
Parlor Pride Stove Enamel, ₩ gro,
Yates' Liquid, 2 3 5 10 gal
₩ gal. .$0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ₩ ℔ 12½¢
Jet Black ..... ₩ gro $3.50
Japanese ..... ₩ gro $3.50
Fireside ..... ₩ gro $2.50
Diamond O. K. Enamel ..... ₩ gro $12.00
Bonnell's Liquid Stove Polish, ₩ gro $9.00
Bonnell's Paste Stove Polish, ₩ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans ..... 12½¢
Black Jack Water Paste, 5 and 10 ℔ cans ..... 12½¢
Nickel Plate Paste ..... ₩ gro $6.00
Crown Paste ..... ₩ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ₩ ℔ 12¢
Black Flag ..... ₩ gro $7.20
Black Flag, 5 and 10 ℔ pails ..... ₩ ℔ 12¢
Black Flag, liquid, in bottles, ₩ gro $8.00
Diamond Rock Nickel Cleaner ₩ gro $10 20
Raven Liquid, 6 oz. bottles ..... ₩ gro $8.00
Raven Liquid, 8 oz. bottles ..... ₩ gro $9.00
Raven Water Polish, large boxes ..... ₩ gro $7.20
Raven Paste in 5 lb. pails (cases of 6 pails), ₩ ℔ 10¢

Poppers, Corn—

Round or Square,
1 qt. ..... ₩ doz $1.00; ₩ gr $8.00
1½ qt. ..... ₩ doz $1.00; ₩ gr $9 00
2 qt. ..... ₩ doz $1.50; ₩ gr $14.00

Post Hole and Tree Augers and Diggers—

See *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Tinned ..... 40&10@40&10&5%
Enameled ..... 40&10@40&10&5%
Family, Howe's "Eureka" 40%
Family, L. F. C.'s "Handy" 50%

Powder—

In Canisters—

Fine Sporting, 1 ℔ each ..... }
Duck, 1 ℔ each ..... }
Rifle, 1 ℔ each ..... }
Rifle, ½ ℔ each ..... }

In Kegs—

Rifle, 25-℔ kegs ..... }
Rifle, 12½-℔ kegs ..... }
Rifle, 6¼-℔ kegs ..... }
Duck, 25-℔ kegs ..... }
Duck, 12½-℔ kegs ..... }
Duck, 6¼ ℔ kegs ..... }

For revised prices see Trade Report.

Presses—

Fruit and Jelly—

Enterprise Mfg. Co. 25%
Henis ..... ₩ doz $3.50
Shepard's Queen City 40%
Silver & Co. ..... ₩ doz $2.75

Pruning Hooks and Shears—See *Shears.*

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Pullers Nail—
Scranton.. ₩ doz., $18.00, 33⅓%
Giant, No. 1. ₩ doz., $13.00, 10%
Giant, No. 2 ₩ doz., $15.00, 10%
Pelican ₩ doz., $9.00, 25%
Eclipse ₩ doz., $24.00, 40%
Economy ₩ doz., $6.00

Pulleys—
Hot House, Awning, &c. 66⅔@70%
Japanned Screw 60&10&10%
Brass Screw 70%
Japanned Side 60&10&10%
Moore's Side, Anti Friction 50%
Moore's Ceiling or End, Anti-Friction 40%
Moore's Dumb Waiter, Anti-Friction 50%
Moore's Electric Light 33⅓%
Japanned Clothes Line 60&10%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5 70 50%
Hay Fork, "F" Common and Patent Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating 60%
Hay Fork, Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00 40%
Shade Rack 45%
Tackle Blocks—See Blocks.
Shepard's Niagara, No. 25.. ₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense 60%
Empire 60%
Ideal, Nos. 2, 4, 10 & 15 } 60% less 1¢ ₩
Acme } doz net.
Star }
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. .. ₩ doz. 22¢ net.

Pumps—
Cistern, Best Makers 60@60&10%
Pitcher Spout, Best Makers 67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddler's or Drive, good.. ₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Springfield Socket..65%
Spring, good quality.. ₩ doz., $2.50@$2.60
Spring, Leach's Pat 15%
Bemis & Call Co.'s Spring 50&5%
Bemis & Call Co.'s Check 55%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44 55%
Tinners' Hollow Punches, P., S. & W. Co 20&2%
Rice Hand Punches 15%
Avery's Revolving 40%
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches 20&2%
Niagara Solid Punches 55%

Rail—
Sliding Door, Wr't Brass.. ₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron.. ₩ ft., 7¢
Sliding Door, Iron, Painted.. ₩ ft., 4¢, 40%
Barn Door, Light..In. ½ ⅝ ¾
Per 100 feet $2.00 2.50 3.10, 10%
B.D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet $3.15 2.70 3.25 Net
Terry's Steel Rail ₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot 50&2%
Carrier, double braced, Steel Rail, ₩ foot 3½@4¢
Lundy Parlor Door, Planed Edge, ₩ ft.7¢
Moore's Steel Rail 25&10%
Moody Steel Rail ₩ ft., 5¢ 45%

Rakes—
Cast Steel, Association g'ds..70@70&5&2%
Cast Steel, outside g'ds, 70@70&5&2%
Malleable 70@70&5%
Gibbs' Lawn Rake ₩ doz., $4.90
Gibbs' Canton Lawn Rake.. ₩ doz., $3.75
Gibbs' Acme Lawn Rake.. ₩ doz., $4.75
Gibbs' Favorite Lawn Rake. ₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1. ₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake ₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00 25%

Razors—
J. R. Torrey Razor Co. Net prices
Wostenholm and Butcher, $10 to £.... 10%
Jordan's AAA1, new list. Net prices
Jordan's Old Faithful, new list. Net prices
Galvanic ₩ doz., $15.00
Electric Cutlery Co. Net prices
Campbell Cutlery Co. 60%

Razor Strops—
See *Strops, Razor.*

Registers —
Moore's Japanned 75%
Moore's Electroplated 75%
Moore's Bronze Finishes 70%
Moore's Solid Bronze 65%
Moore's Stove Pipe 33⅓%

Rings and Ringers—
Bull Rings—
Union Nut Co. 55%
Sargent's 75&10%
Hotchkiss' low list. 30%
Humason, Beckley & Co.'s 70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers ₩ doz $2.00
Top of the Hill Rings ₩ doz $1.25
Hill's improved Ringers ₩ doz $1.25
Hill's Old Style Ringers ₩ doz $1.12½
Hill's Tongs ₩ doz $3.00
Hill's Rings ₩ doz bxs $1.00
Perfect Rings ₩ doz bxs $1.50
Perfect Ringers ₩ doz $2.15@$2.25
Blair's Hog Ringers ₩ doz $2.00
Blair's Hog Rings ₩ doz 90¢@$1.00
Champion Ringers ₩ doz $2.00
Champion Rings, Double ₩ doz $2.25
Brown's Ringers ₩ doz $2.00
Brown's Rings ₩ doz $1.15@$1.25
Electric Hog Rings ₩ doz boxes $1.50
Electric Hog Ringers ₩ doz $2.00
Major Rings ₩ doz $1.25
Major Ringers ₩ doz $2.00

Rivets and Burrs—
Norway Iron, list Nov. 17, '87....60&10%
Second quality 70%
Copper 60@60&10%
Coppere Iron, Betina Brand 50&5%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—
Stair, Brass 25@30%
Stair, Black Walnut ₩ doz 40¢

Rollers—
Barn Door, Sargent's list. ....60&10&10%
Acme Moore's Anti-Friction 55%
Union Barn Door Roller.... 70%
Moore's Barn Door Stay 50%
Thompson Mfg. Co.'s Lawn Rollers ..30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ¼¢@½¢ on large lots; terms, 1½% for cash.

Manila, 7-16 in. diam. and larger	₩ ℔	8 @	8¼¢
Manila	¾ in. ₩ ℔	8½@	8¾¢
Manila	¼ and 5-16 in. ₩ ℔	9 @	9¼¢
Manila, Tarred Rope	₩ ℔	7½@	7¾¢
Manila, Hay Rope, Med'm	₩ ℔	8 @	8¼¢
Sisal, 7-16 in. and larger	₩ ℔	5¾@	6 ¢
Sisal	⅜ in. ₩ ℔	7¼@	7½¢
Sisal	¼ and 5-16 in. ₩ ℔	6¾@	7 ¢
Sisal, Hay Rope	₩ ℔	5¾@	6 ¢
Sisal, Tarred Rope	₩ ℔	5¼@	5½¢
Sisal, Medium Lath Yarn	₩ ℔	5½@	5¾¢
New Zealand, 7-16 in. and larger	₩ ℔		5¾¢
New Zealand	⅜ inch. ₩ ℔	5¾@	6 ¢
New Zealand, ¼ & 5-16 in.	₩ ℔	6¼@	6½¢
New Zealand, Hay Rope	₩ ℔	5½@	5¾¢
New Zealand, Tar'd Rope	₩ ℔	5 @	5¼¢
Cotton Rope	₩ ℔	13½@	16¢
Jute Rope	₩ ℔	6½@	7¢

Wire—
List February, 1892. All kinds 45%

Rules—
Boxwood.. 80&10&10@80&10&10&10%
Ivory 50&10%
Starrett's Steel Rules and Straight Edges 25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—
See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—
Note.—Extra 5@10% often given.

Disston's Circular 45@45&5%
Disston's Cross Cut, list Jan. 1, '93 40&10%
Disston's Hand 25%
Woodrough & McFarlin.
Hand, Panel and Rip 25&10%
Cross Cuts, list Jan. 1, 1893 45&10%
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip 30&10%
Cross Cuts, list Jan. 1, 1893 45&10%
Atkins' Circular 50&10%
Atkins' Cross Cuts, new list. 40%
Atkins' Mulay, Mill and Drag 60&10%
Atkins' One-Man Saw 40%
Atkins' Wood Saws 40%
Peace Circular and Mill 45@45&5%
Peace Hand Panel and Rip 25@25&5%
Peace Cross Cuts, list Jan. 1, '93 45&10%
Richardson's Circular and Mill 45@45&5%
Richardson's X Cuts, list Jan. 1, '93 45&10%
Richardson's Hand, &c 25@25&5%
C. E. Jennings & Co.'s 25%
Simonds' Circular Saws 45@45&5%
Simonds' Crescent Ground Cross Cut Saws 30%
Simonds' Gang, Mill, Mulay and Drag Saws 45@45&5

Hack Saws—
Griffin's, complete 40&10@50
Griffin's Hack Saw Blades 40&10@50
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—
Lester, complete, $10.00 25%
Rogers, complete, $4.00 25%
Barnes' Builders' and Cab Makers' $15,25%
Barnes' Scroll Saw Blades 35%

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—
Hatch, Counter, No. 171, good quality, ₩ doz $18.00@$19.00
Hatch, Tea, No. 161 ₩ doz $6.50@$7.00
Union Platform, Plain $2.10@2.20
Union Platform, Striped $2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls 80@30&10
Riehle Bros.' Platform 40%

Scale Beams—
See *Beams, Scale.*

Scissors, Fluting 45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.00 30&10%
Box, 1 Handle ₩ doz $2.00
Box, 2 Handle ₩ doz $3.00@$4.00
Defiance Box and Ship 20&10%
Foot 50&10@60%
Ship, Common ₩ doz $3.50
Ship, R. I. Tool Co. 10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—
See *Drivers, Screw*

Screws—
Bench and Hand—
Bench, Iron 55&10@55&10&10%
Bench, Wood, Beech ₩ doz $2.25
Bench, Wood, Hickory 20&10%
Hand, Wood 25&10@25&10&5%
Hand, Grand Rapids, list 35%

Coach, Lag and Hand-Rail—
Lag, Blunt Point, list Jan. 1, 1890 80&10@80&25%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 80&10@80&20%
Hand Rail, Sargent's 70&10%
Hand Rail, H. & B. Mfg. Co. 70&10@75%
Hand Rail, Am. Screw Co. 75%

Jack Screws—
Jack Screws, Millers Falls list. 50@50&10%
Jack Screws, P., S. & W. 35%
Jack Screws, Sargent 70%
Jack Screws, Stearns' 40@40&10%

Cork—
Humason & Beckley Mfg. Co. 40&10@50%
Williamson's 33⅓@33⅓&5%
Williamson's Forged Worm, Apple-wood Handle, ₩ doz., $5.00; Rose-wood, $5.50 40%
Detroit Cork Screw Co. 33⅓%

Machine—
Flat Head Iron 65%
Round Head Iron 60%

Wood—
List January 1, 1891.
Flat Head Iron 70%
Round Head Iron 65%
Flat Head Brass 70%
Round Head Brass 65%
Flat Head Bronze 70%
Round Head, Bronze 65%
} Extra 10& often given.
Rogers' Drive Screws 82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—
Grain 40&5@40&10%
Grass 40&10&50%

Scythe Snaths—
See *Snaths, Scythe.*

Sets—
Awl and Tool—
Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00 60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9 45%
Millers Falls Adj. Tool Hdls., No. 1, $12; No. 4, $12; No. 5, $18 25%
Henry's Combination Haft.. ₩ doz $6.50
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50..70&10&5%

Nail—
Square ₩ gr. $4.00@$4.25
Round ₩ gr. $3.25
Buck Bros. 27½%
Cannon's Diamond Point.. ₩ gr. $12, 20%

Rivet—
Regular list. 70%

Saw—
Stillman's Genuine.. ₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $6.50 55@55&10%
Common Lever ₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00 40&20%
No. 11, $16.00 40&20%
Nos. 3 and 4, Cross Cut, $23.00 40&20%
No. 5, Mill, $31.00 40&20%
No. 10, $15.50 40&20%
Leach's. No. 0, $8.00; No. 1, $15.. 15@20%
Nash's 20&10@40%
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 45%
Bemis & Call Spring Hammer 30&5%
Bemis & Call Co.'s Plate 20%
Bemis & Call Co.'s Cross Cut 30&5%
Aiken's Genuine $13.00, 60@60&10%
Aiken's Imitation ₩ doz $3.00@$3.25
Hart's Pat. Lever 20%
Disston's Star 25%
Leopold 40&10@50%
Atkin's Lever ₩ doz No. 1, $6.00
Atkin's Criterion ₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 40&10@50%
Avery's Saw Set and Punch 50%
Kohler's Royal ₩ doz $7.00
Kohler's Giant Royal ₩ doz $12.00
Crescent ₩ doz $3.00
Lloyd's Acme ₩ doz $15, 40&10%
Taintor Positive ₩ doz $18, 50%

Sharpeners, Knife—
Larkins'.
Applewood Handles.. ₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%

Shaves, Spoke—
Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) 40&10%
Stearns' 30&10%
Cincinnati 25&10%
Goodell's ₩ doz. $9.00 25%

Shears—
American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers.. ₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears 33⅓%
Cast Steel Trimmers:
First quality 80@80&10%
Second quality 80&10@80&10&10%
Acme Cast Shears 10&10%
Diamond Cast Shears 10%
Clipper 10&10%
Victor Cast Shears 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Hatch Cutlery Co., Solid Steel Forged 60%
Davenport Cutlery Co. 60@60&10%
Clauss brand, Japanned 70%
Clauss brand, Nickeled, same list 60%
Galvanic 3½ to 0 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co. Net
Campbell Cutlery Co., Jap'd 75%
Nickel Plated 65%

Tinners' Snips—
Wrt. Handles, Steel Blades, .20@20&10%
Niagara Snips and Shears, 20&10%
Cast Handles, Laid with Steel 40%

Pruning Shears and Hooks—
Disston's Combined Pruning Hook and Saw ₩ doz. $18.00, 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 20&10%
E.S. Lee & Co.'s Pruning Tools. 50&10@70%
Pruning Shears, Henry's Pat. ₩ doz., $3.50@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₩ doz $12.00
Dunlap's Saw and Chisel, ₩ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co. 60%
Levin Pruner No. 1, $15.00 ₩ doz. 40&3%
Levin Pruner No. 2, $21.00 ₩ doz.. 40&3%

Tinners', &c.—
Shears and Snips (P. S. & W.) 20@25%
Snips, J. Mallinson & Co 33⅓%

Sheaves—
Sliding Door—
M. W. Co., list July 1888....50&10@60&5%
R. & E., list Dec. 18, 1885 55&20%
Corbin's list. 60&10&2%
Patent Roller 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 60&2%
Moore's Anti-Friction 50%

Sliding Shutter—
R. & E., list Dec. 18, 1885 60&10&2%
Sargent's list 70%
Reading list 60&10&10%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list) .20&10&2%
Prize 40&2%
Star, Club, Rival and Climax Brands... 33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge..33⅓&10&2%
Selbold's Comb. Shot Shells 15&2%
Brass Shot Shells, 1st quality 60&2%
Brass Shot Shells, Club, Rival, Climax 65&2%

Shells, Loaded—
Standard List, July 19, 1890 40&10&10@40&10&10&5%
7% cash, 10 days.

Ship Tools—
L. & I. J. White 20&5

Shoes, Horse, Mule, &c.
Horse—
Burden's, Perkins', Phœnix, Standard, Diamond State, Bryden's Boss and Crescent, at factory $4.00
Bryden's Frog Pressure, at factory. $5.00

Mule—
Add $1 ₩ keg to above prices.

Ox Wrought—
Ton lots ₩ ℔ 9¢
1000 ℔ lots ₩ ℔ 9½¢
500 ℔ lots ₩ ℔ 10¢

Shot—
	Small lots.
Drop, up to B, 25-℔ bag	$1.45
Drop, up to B, 5-℔ bag	.35
Drop, B and larger, 25-℔ bag	1.70
Drop, B and larger, 5-℔ bag	.40
Buck and Chilled, 25-℔ bag	1.70
Buck and Chilled, 5-℔ bag	.40
Dust Shot, 25-℔ bag	2.00
Dust Shot 5-℔ bag	.45

In ton lots a discount of ½¢ ₩ bag (25 ℔) is made, and 2½% for cash.

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron 50&10%
Griffith's C. S. 60@60&5%
Griffith's Solid C. S. R. R. Goods. 20%
St. Louis Shovel Co. 20@20&7½%
Hussey, Binns & Co. 15@25%
Hubbard & Co. 20@20&7½%
Lehigh Mfg. Co. 50&10%
H. M. Myers Co. 30%
Payne Pettebone & Son 33⅓ &5%
Remington's (Lowman's Pat.) 40&10@50%
Rowland's Black Iron.. 50&10@50&10&5%
Rowland's Steel 60&5@60&10%
Terra Haute Shovel & 25%

Shovels and Tongs—
Iron Head 60&10@60&10&5%
Brass Head 60&10&10%

Sieves and Sifters—
Mann's Tin Rim 50&25%
Buffalo Metallic, S. S. & Co.... 50&25&20%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $21 00
Electric Light.. ₩ doz $1.50; ₩ gro $15.00
A. & W. Sifters ₩ gr $15.00
Hunter's Genuine.. ₩ doz $1 75, ₩ gr $16.50
Hunter's Imitation ₩ doz $1.75; ₩ gr $15.00

Sieves, Wooden Rim—
	Iron	Plated
Mesh 18, Nested, ₩ doz	$0.80	$1.00
Mesh 20, Nested, ₩ doz	.95	1.10
Mesh 24, Nested, ₩ doz	1.15	1.25

Sinks, Wrought Steel—
Columbus, Painted or Unpainted 30@30&10%
Columbus, Galvanized and Enameled. 50@50 &10%
New Era, Painted 40&10@50&5%
New Era Galvanized and Enameled 60&10&10@70&5%

Skeins, Thimble—
Western list 7&5@75&10%
Columbus Wrt. Steel. Special net prices
Coldbrookdale Iron Co. 60%
Seneca Falls Pattern 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

Slates—
School, by case 40@40&10%
Large lots 40&10&5@50%

Slaw Cutters—See *Cutters.*

Sleds Hand—
Tubular Steel ₩ doz. $24&50%.00, 40 (Lots of 6 doz. 50%)

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Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss 10%
Andrews 50%
Sargent's Patent Guarded.....70&10&10%
German, new list .....40&10%
Covert.....50&10&5&2%
Covert, New Patent.....50&10&5&2%
Covert, New R. E.....60&10&5&2%
Covered Spring.....60&10&10%
Covert's Saddlery Works' Triumph.33⅓&%
John Protz Snaps.....75@75&5%
Kelley & Woolworth's Steel Harness..
50&10@60%

Snaths—

Scythe .....50&2@50&5&2%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₩ doz., No. 5, $8; No. 5X, $9.
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list.....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list .....70&10%
Buffalo, S. S. & Co.....33⅓&2%

Silver Plated—

4 months or 5% cash 30 days:
Meriden Brit. Co., Rogers.....40&15%
Rogers & Hamilton.....40&15%
C. Rogers & Bros.....40&15%
Rogers & Bros.....40&15%
Reed & Barton.....40@40&5%
Wm. Rogers Mfg. Co.....40, 15&5%
Simpson, Hall, Miller & Co.....40, 15&5%
Holmes & Edwards Silver Co....40, 15&5%
L. Boardman & Son.....60&12½&%

Miscellaneous—

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10&5%
No. 30 Silver Metal.....50&10&5%
No. 24 German Silver.....50&10&5%
No. 50 Nickel Silver.....50&5%
No. 48 Nickel Silver.....50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal.....50&10&6%
18% Rogers' German Silver.....60&6%
22% Rogers' Nickel Silver.....50&6%
Rogers & Hamilton:
Steel Goods.....40&10%
Cimetar, Flatware.....40&15&5%
Cimetar, Steel Goods.....40&10%
Crown Hamliton, Flatware and Cutlery.....30%
German Silver.....60@60&5%
Nickel Silver .....50&5@50&10&5% cash
Brittannia .....60@60&5%
Boardman's Nickel Silver, list July 1, 1891 .....60&7½&5%
Boardman's Brittannia Spoons, case lots .....60&5% cash

Springs—

Door—

Torrey's Rod, 39 in.....₩ doz $1.20@1.2
Warner's No. 1, ₩ doz $1.50; No. 2, $3.40 .....55@55&10%
Gem (Coil), list April 19, 1886.....20%
Star (Coil), list April 19, 1886.....20&10%
Victor (Coil) .....60&10@60&10&5%
Champion (Coil).....60&10@60&10&10%
Cowell's, No. 1, ₩ doz $18.00; No. 2, $15.00 .....50@50&10%
Rubber, complete, ₩ doz $4.50.....55&10%
Hercules .....50@50&10%
Phœnix.....33⅓&%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll.....
60&10@60&10&10&10 or net prices
Cliff's Bolster Springs.....25%

Squares—

Steel and Iron, Nickel-Plated.....80&10&10@80&25%
Try Square and T Bevels.....60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor.....50%

Squeezers—

Fodder—

Blair's .....₩ doz $2.00
Blair's "Climax".....₩ doz $1.25

Lemon—

Porcelain Lined, No. 1....₩ doz $6.00 25&30%
Wood, No. 2.....₩ doz $3.00, 35%
Wood, Common.....₩ doz $1.70@1.75
Dunlap's Improved.....₩ doz $3.75, 20%
Sammis ..No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz .....25&10%
Jennings' Star.....₩ doz $2.50
The Boss .....₩ doz $2.50
Dean's..No. 1, ₩ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant .....50@50&5%
King .....40&5%
Hotchkiss Straight Flash....₩ doz $12.00
Silver & Co..Glass .....₩ gro. $9.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Barbed Blind, ½ in. and larger.₩ ℔ 7@7½&%
Barbed Blind, ¾ in.....₩ ℔ 8@8½&%
Fence Staples, Galvanized. } Same price as B'rb Wire
Fence Staples, Plain..... } See Trd. Rep
Grand Crossing Tack Co.'s list....75&10%

Steelyards .....40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods 35%
Butterfield's Goods.....35%
Lightning Screw Plate .....25@30%
Reece's New Screw Plates.....25@30%
Reversible Ratchet 30%
Gardner 25%
Green River .....25@30%

Stops Bench—

Morrill's, ₩ doz, No. 1, $10.00; No. 2, $11.00 .....40&20%
Hotchkiss'.....₩ doz, $5, 10@10&10%
Weston's, No. 1, $10, No. 2, $9, 25&10&5%
McGill's, ₩ doz $3.....10%
Cincinnati.....25&10%
Terrell's Nos. 1 and 2, ₩ doz., $3; No. 3, $3.60.....30%
Millers Falls.....25%
Stearns' .....20&10%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892.....33⅓&%
Cleveland Stone Co., list Nov. 1892..33⅓&%

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₩ ℔....8¢
Sand Stone.....5¢
Turkey Oil Stone, 4 to 8 in .....80¢ } 40 @ 40& 10%
Turkey Slips.....$2.00
Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....60¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 3 to 5½ in., $2.80 } 33⅓@33⅓&10%
Arkansas Stone, No. 1 5½ to 8 in., $3.50
Lake Superior.....₩ ℔ 13¢
Lake Superior Slips.....₩ ℔ 20¢

Stove Polish—

See *Polish, Stove.*

Stretchers Carpet—

Cast Steel, Polished .....₩ doz $2.2
Cast Iron, Steel Points.....₩ doz 75@80¢
Socket.....₩ doz $1.75
Bullard's.....25@25&10%

Strops, Razor—

Genuine Emerson.....60@60&5%
Imitation " ..₩ doz $2.00. 20&10&5%
Torrey's.....Net prices
Badger's Belt and Com.....₩ doz $2.00
Lamont Combination.....₩ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89. 50%
Electric Cutlery Co .....Net prices
Campbell Cutlery Co.....Net prices

Stuffer, Sausage—

Miles' Challenge, ₩ doz $20.....50@50&5%
Perry....₩ doz, No. 1, $15.00; No. 0, $21.00.....50&5@50&10%
Draw Cut No. 4, each $30.00.....20%
Enterprise Mfg. Co., list Jan 17, '93..25%
Silver's.....40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5.....₩ doz $17.00
Bissell No. 8.....₩ doz $20.00
Bissell, Grand.....₩ doz $36.00
Standard.....₩ doz $24.00
Domestic.....₩ doz $21.00
Domestic, No. 2.....₩ doz $22.00
Grand Rapids.....₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic.....₩ doz $15.00
Improved Parlor Queen, Nickeled.....₩ doz $27.00
Japanned.....₩ doz $24.00
Excelsior.....₩ doz $22.00
Garland.....₩ doz $18.00
Parlor Queen.....₩ doz $24.00
Housewife's Delight.....₩ doz $15.00
Ladies' Friend.....₩ doz $15.00
Ladies' Friend No. 2.....₩ doz $16.00
Advance.....₩ doz $18.00
Our Leader.....₩ doz $19.00
Triumph.....₩ doz $20.00
Supreme .....₩ doz $22.00
Easy..Jap'd, ₩ doz $22.00; Nickel, $24.00
Gilt Edge.....₩ doz $24.00
Acme.....₩ doz $26.00
Imperial.....₩ doz $26.00
Grand Republic.....
Jap'd, ₩ doz $30.00; Nickel, $33.00
Banner.....
Jap'd, ₩ doz, $22.00; Nickel, $24.00
The Star.....₩ doz $21.00
Reliable.....₩ doz $22.00
Rapid..Jap'd, ₩ doz, $22.00; Nickel, $24.00
Our Own.....₩ doz $27.00
Model.....₩ doz $27.00
Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months.....₩ doz $1.00
10 dozen in 6 months.....₩ doz $2.00
Except on L.F., when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co.....30%

Swings—

Davies Lawn.....25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued.....66⅔&%
American, Tin'd and Cop'd.....70%
Steel, Bright and Blued.....66⅔&%
Steel, Tinned and Coppered.....70%
Swedes Iron, Blued.....72½&%
Swedes Iron, Tinned.....75%
American Iron Tacks, Domestic.66⅔&%
Swedes Iron Tacks—
S. S., Blued.....66⅔&%
S. S., Tinned.....70%
Lanc., Blued.....55%
Lanc., Tinned.....60%
Gimp and Lace Tacks—
S. S., Blued.....62½&%
S. S., Tinned.....66⅔&%
Lanc., Blued.....55%
Lanc., Tinned.....60%
Basket and Trimmers' Tacks—
Lanc.....52½&%
S. S.....55%
Hungarian Nails.....60%
Common and Patent Brads.....55%
Leathered Tacks.....10%
Brush Tacks, S. S.....60%
Looking Glass Tacks, S. S.....35%
Picture-Frame Points, S. S.....35%
Finishing Nails.....60%
Trunk and Clout Nails—
Black.....65%
Tinned or Coppered.....67½&%
Basket Nails.....60%
Chair Nails.....62½&%
Cigar Box Nails.....45%
Tin Capped Nails.....50%

Extra discount 25&2%

Miscellaneous—

Double Point .....90&10@90&10&10%
Wire Carpet Nails .....50&10%
Claw Handle Carpet.....₩ gross $4.00
Bonnie Blue .....₩ box $1.50
Bill Nye Brad Box.....4 00
Parisian Gilt Nails, cartoon.....50
Home Tacks, No. 50 ₩ case (12 cartons), $36.00; No. 100, ₩ case (12 cartons), $72.00. } 50@2%
Home Nails, No. 200, ₩ case (12 cartons), $30.00; No. 400, ₩ case (12 cartons), $60 00.
Upholsterers' Nails.....50&10%

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list 50&10%
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each.....50&10&5%

Tapes, Measuring—

American.....40@40&10%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887.....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White .....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves Cincinnati Tool Co.....20%

Lumber—

Ring Peavies, "Blue Line"..₩ doz $20.00
Ring Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mall. Iron Socket Peavies...₩ doz $19.00
Cant Hooks, "blue Line"....₩ doz $16.00
Cant Hooks, Common Finish..₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes....₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks.....₩ doz $18.00

Saw—

Atkins'. new list..... 40¢
Simonds'.....33⅓&%

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse.....40@40&5%
Oneida Pattern.....75@75&10%
Game, Blake's Patent.....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₩ doz holes, 9@10¢
Mouse, Round Wire.....₩ doz $1.50 10%
Mouse, Cage, Wire.....₩ doz $2.50 10%
Mouse, Catch-'em-alive..₩ doz $2.50 15%
Mouse, Bonanza.....₩ doz 0.90@$1.00
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 75¢; in full cases, ₩ doz.60@65¢
Hotchkiss Imp. Rat Killer...₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00
Dandy.....₩ doz., $1.75
Waddel's Go Bang, ₩ gro.....$12.50

Fly—

Harper, Champion or Paragon.....
₩ doz. $1.75, ₩ gro. $16.50
Balloon, Globe or Acme .....
₩ doz. $1.50, ₩ gro. $13.50

Triers—

Butter and Cheese.. .....25%

Trimmers, Spoke—

Bonney's.....₩ doz $10.00, 50%
Stearns' .....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. 55&10%
Douglas'.....₩ doz $9.00, 20%
Cincinnati 25%

Trowels—

Lothrop's Brick and Plastering, ...20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.25@25&10%
Peace's Plastering.....25@25&5%
Clement & Maynard's.....20@20&5%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%
Cleves' Angle Trowel, ₩ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Thompson Mfg. Co 40%
Barnes' Barrel Trucks.....40%
Daisy Stove Trucks, Improved pattern, ₩ doz. $18.00

Tubes. Boiler—

See Pipe.

Twine—

Flax Twine—

	BC.	B.
No. 9, ¼ and ⅜ ℔ Balls	25¢	31¢
No. 12, ¼ and ⅜ ℔ Balls	22¢	30¢
No. 18, ¼ and ⅜ ℔ Balls	20¢	29¢
No. 24, ¼ and ⅜ ℔ Balls	20¢	29¢
No. 36, ¼ and ⅜ ℔ Balls	18¢	28¢

No. 264 Mattrass, ¼ and ⅜ ℔ Balls, 52@54¢
Chalk Line, Cotton, ½ ℔ Balls.....25¢
Mason Line, Linen, ½ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅜ ℔ Balls (Spring Twine).....15½¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls.....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔..15¢@16¢
2, 3, 4 and 5 Ply Jute, ½ ℔ Balls 10¢
Wool.....6½¢@6¾¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz.18¢

Vises—

Solid Box .....50&10@60%

Parallel—

Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....50%
Millers' Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Hollands'.....35@40%
Sargent's.....70&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
Massey Quick Action.....20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00....40&10@50%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Hopkins'.....₩ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Economy, ₩ doz., Nos. 110, $10.00; 120, $15.00.....50&10&10&5¢

Miscellaneous—

Phœnix Vises.....33⅓&%
Phœnix Hand Vises....₩ doz $3.60, 33⅓&%
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises.....each $3.00, 40%
Massey Combination Pipe Vise.....40%

Wads—Price Per M.

U.M.C.&W.R.A.—B. E., 11 up.. 68¢
U.M.C.&W.R.A.—B. E., 9&10.. 82¢
U.M.C.&W.R.A.—B. E., 8..... 96¢
U.M.C.&W.R.A.—B. E., 7..... $1.10
U.M.C.&W.R.A.—P. E., 11 up 1.15
U.M.C.&W.R.A.—P. E., 9&10. 1.50
U.M.C.&W.R.A.—P. E., 8..... 1.70
U.M.C.&W.R.A—P. E., 7 ..... 1.80
Eley's B. E., 11 and larger.... $1.70@$1.75
Eley's P. E., 12 to 20.....$3.00@$3.25

Dis 20&2%

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow-

Stove Hollow-Ware—
Ground .....60&10@60&10&10%
Unground.....65&10@70&5
White Enameled Ware—
Maslin Kettles.....70&10@75%
Boilers and Saucepans.....60@60&5%
Tinned Boilers and S'pans.....60@60&5%
Rustless Hollow Ware.....50@50&5%
Gray Enameled Ware—
Stove.....50%
Maslin Kettles.....60@60&10%
Boilers and Saucepans.....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889.....33⅓&% } Extra 10% on many leading articles.
Ironclad Enameled Ware.....dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch	6	7	8	9
Each	55¢	60¢	65¢	75¢

Standard Fiber

	Per Doz. Plain.	Decorated.
Wash-Basins, 10¼ in.	$1.80	$2.00
Wash-Basins, 12 in.	2.00	2.50
Keelers, 11½ in.		3.00
Cuspidors		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure	3.50	
Half-peck Measure	3.00	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₩ doz. $6.00
Basins, Ringed, ₩ doz., No. 2 ..2.80
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), ₩ nest..... $5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest..... $2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest..... $1.50
Liquid Measures, pt., qt., 2 qt. and funnel (4 pieces), ₩ set.....$1.20

25%

See also Pails.

Silver Plated, Hollow

4 mo. or 5% cash in 30 days.
Reed & Barton.....
Meriden Britannia Co..... } 40&5%
Simpson, Hall, Miller & Co..... }
Rogers & Brother..... }
Hartford Silver Plate Co..... } 40&5&5%
William Rogers Mfg. Co..... }

Washers—

Size hole..... 5-16 ⅜ ½ ⅝ to 1¾
Washers..... 5½ 4½ 3½ 2¾
In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Washer Cutters—

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Iron.....₩ ℔ 3¼¢@3½¢
Steel.....₩ ℔ 3½¢

Weights, Sash—

Solid Eyes.....₩ ton, $18.00@19.00

Well Buckets Galvanized—See *Buckets, Well Galvanized.*

Wheels, Well—

8 in., $2.00; 10 in. $2 50· 12 in 75 82.

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Whips

	Length.	4½	5	5½	6	6½	7	7½	8 ft.
American Whip Co.:									
X. L. Whalebone Driving		$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone.		....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whale bone		....	....	11.00	12.00	13.00	15.00	....	....
American Standard		8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center		6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors		....	....	....	6.00	....	....	....	....
Americus, 93 Pen Whip		....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111		....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106		....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No.103		....	....	3.75	4.00	....	....	....	....

Per dozen.

A large variety of cheaper grades.....50@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....₩ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Wire and Wire Goods—

Iron—

Market,

Br. & Ann., Nos. 0 to 18, 75&10@75&10&5%
Cop'd, Nos. 0 to 18, 75&5%
Galv., Nos. 0 to 18, 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18, ..70@70&10%

} Extra 5@10% often given and low net prices often made on large lots.

Stone,
Br. and Ann'd,
Nos. 16 to 18.... ....80%
Nos. 19 to 26.... ..80&5%
Nos. 27 to 36....82½&5%
} Extra 10% often given.

Tinned Broom Wire, 18 to 21, ₩ ℔....4½¢
Galvanized Fence .....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Ossawan Mills, An'ld and Tinned on Spools.....60&10%
Ossawan Mills, Brass and Copper on Spools.....50&10%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported.... 60@70¢ ₩ ℔
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....85&10@85&10&10%

Wire Cloth and Netting—

Painted Screen Cloth ₩ 100 ft.....$1.50
Galvanized Wire Netting..... 75&10@75&10&5%

Wire Barb—

See Trade Report.

Wire Rope—

See *Rope, Wire.*

Wrenches—

American Adjustable 40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50@50&10%
Coes' "Mechanics'".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
W. & B. Diamond.....
} 75&10@80%

Bemis & Call's:
Pat. Combination Bright .....40&5%
Pat. Combination Black.....40&10%
Merrick's Pattern.....45%
Brigg s Pattern.....30&10%
Cylinder or Gas Pipe.....45&5%
No. 3 Pipe.....55%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz., $4.00, 40%
Webster's Pat. Combination 25%
Boardman's.....30%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Eagle.....50&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70@70&5%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

Am. Wringer Co.'s list, July 1, '93..2% cash
Colby Wringer Co., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list July 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw, per gal.	..	@	40
Linseed, City, boiled	..	@	43
Linseed, Western, raw	38	@	40
Lard, City, Extra Winter	76	@	77
Lard, City Prime	75	@	76
Lard, City, Extra No. 1	..	@	50
Lard, City, No. 1	..	@	45
Lard, Western, prime	..	@	75
Cotton-seed, Crude, prime	..	@	30
Cotton-seed, Crude, off grades	27	@	29
Cotton-seed, Summer Yellow, prime	38	@	39
Cotton-seed, Summer Yellow, off grades	34	@	36
Sperm, Crude	65	@	..
Sperm, Natural Spring	66	@	68
Sperm, Bleached Spring	71	@	73
Sperm, Natural Winter	71	@	73
Sperm, Bleached Winter	76	@	78
Whale, Crude	..	@	..
Whale, Natural Winter	..	@	45
Whale, Bleached Winter	..	@	48
Whale, Extra Bleached	..	@	50
Sea Elephant, Bleached Winter	..	@	..
Menhaden, Crude, Sound	35	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed	39	@	40
Menhaden, Bleached W'ter	..	@	43
Menhaden, Extra Bleached	..	@	46
Tallow, City, prime	..	@	55
Tallow, Western, prime	..	@	50
Cocoanut, Ceylon	5½	@	5¾
Cocoanut, Cochin	6½	@	6¾
Cod, Domestic	38	@	40
Cod, Foreign	42	@	45
Red Elaine	44	@	46
Red Saponified ₩ ℔	4¼	@	4¾
Bank, per gal	38	@	..
Straits	39	@	..
Olive, Italian, bbls	58	@	62
Neatsfoot, prime	50	@	65
Palm, prime, Lagos ₩ ℔	7¾	@	8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test, per gal	7	@	7½
Black, 29 gravity, 15 cold test	7½	@	8
Black, 29 gravity, summer	6	@	6¼
Cylinder light, filtered	14	@	16
Cylinder, dark, filtered	10	@	13
Paraffine, 23½ @ 24 gravity	11	@	12
Paraffine, 25 gravity	10	@	11
Paraffine, 28 gravity	7½	@	8
Paraffine, red	6½	@	10½

Paints and Colors—

Barytes, Foreign, ℔ ton	$22.00	@	24.00
Barytes, Amer. floated	29.00	@	32.00
Barytes, Amer. No. 1	16.00	@	18.00
Barytes, Amer. No. 2	13.00	@	15.00
Barytes, Amer. No. 3	11.00	@	12.00
Blue, Celestial ₩ ℔	6	@	8
Blue, Chinese	40	@	50
Blue, Prussian	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½	@	1
Brown, Vandyke, Amer	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk	2.75	@	..
Carmine, No. 40, in boxes or barrels	2.85	@	..
Carmine, No. 40, in ounce bottles	3.75	@	..
Chalk, in bulk ₩ ton	1.75	@	2.00
Chalk, in bbls. ₩ 100 ℔	33	@	40
China Clay, English ₩ ton	18.00	@	18.00
Cobalt Oxide, prep'd	9.00	@	11.00
Cobalt Oxide, black, lots 100 ℔	1.90	@	....
Cobalt Oxide, black, less 100 ℔	1.96	@	....
Green, Paris, in bulk	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs	10½	@	11
Green, Paris, small pack	12	@	17
Green, Chrome, ordinary	6	@	12
Green, Chrome, pure	22	@	25
Lead, Eng., B.B. white	8½	@	10
Lead, Amn. White, dry or in oil:			
Kegs, lots less than 500 ℔	7	@	7¼
Kegs, lots 500 ℔ to 5 tons	6½	@	6¾
Kegs, lots 5 tons to 12 tons	6¾	@	6⅞
Kegs, lots 12 tons and over	6¼	@	6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price	..	@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	..	@	2¼
Lead, Red, bbls. and ½ bbls	6	@	7
Lead, Red, kegs	6¼	@	7¼
Litharge, kegs	6¼	@	7¼
Litharge, bbls. and ½ bbls	6	@	7

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35	@	1½
Ocher, French Washed	1½	@	2½
Ocher, German Washed	1½	@	3
Ocher, American	½	@	1½
Orange Mineral, English	8½	@	9
Orange Mineral, French	10	@	10½
Orange Mineral, German	8½	@	9
Orange Mineral, American	8¼	@	8¾
Paris White, English Cliff-stone	1.00	@	1.15
Paris White, American	65	@	75
Red, Indian, English	5½	@	7
Red, Indian, American	2	@	6½
Red, Turkey	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American ₩ 100 ℔	1.00	@	1.10
Red, Venetian, English	1.20	@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔	4	@	5
Sienna, Ital., Burnt Lumps	1½	@	3½
Sienna, Ital., Raw, Powd	4½	@	5½
Sienna, Ital., Raw, Lumps	1¾	@	3½
Sienna, American, Raw	1½	@	1¾
Sienna, American, Burnt and Powdered ₩ ℔	1½	@	1¾
Talc, French	..	@	1¼
Talc, American	1¼	@	1⅜
Terra Alba, Fr'ch. ₩ 100 ℔	95	@	1.25
Terra Alba, English	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered ₩ ℔	3½	@	4
Umber, Turkey Bnt. Ln	2¾	@	3
Umber, Turkey, Raw and Powdered	3¼	@	....
Umber, Turkey, R'w Lumps	2¼	@	2¾
Umber, Turkey, Bnt. Amer	1¼	@	1½
Umber, Turkey, R'w Amer	1¼	@	1½
Yellow, Chrome	10	@	25
Vermilion, American Lead	11¼	@	12
Vermilion, Quicks'er, bulk	53	@	..
Vermilion, Quicks'er, bags	54	@	..
Vermilion, Quicksilver sm'r pkgs	62	@	..
Vermilion, English Import	85	@	90
Vermilion, Imitation, Eng	8	@	35
Vermilion, Trieste	90	@	92½
Vermilion, Chinese	92½	@	95
Whiting Common, ₩ 100 ℔	37½	@	42½
Whiting Gilders'	45	@	55
Zinc, American, dry ₩ ℔	3½	@	4¼
Zinc, French, Red Seal	7½	@	..
Zinc, Frech, Green Seal	9	@	..
Zinc, Frech, V. M. X	..	@	7
Zinc, Antwerp, Red Seal	7¼	@	..
Zinc, Antwerp, Green Seal	7¾	@	..
Zinc, German, L. Z. O	6¾	@	7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over	10¾	@	11½
lots less than one ton	11	@	11½
Zinc, V. M. in Poppy Oil, Red Seal	..	@	..
lots of 1 ton and over	10	@	10½
lots of less than 1 ton	10¼	@	10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort	25	@	30
Black, Drop, English	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory	8	@	15
Blue, Chinese	35	@	40
Blue, Prussian	20	@	45
Blue, Ultramarine	12	@	18
Brown, Vandyke	7	@	12
Green, Chrome	8	@	13
Green, Paris	16	@	18½
Sienna, Raw	7	@	14
Sienna, Burnt	7	@	14
Umber, Raw	7	@	10
Umber, Burnt	7	@	10

Putty—

In barrels and ½ bbls	.013½	@	.013¾
In tubs	.015½	@	.013¾
In tin cans	.01½	@	.02½
In bladders	.01⅞	@	.02½

Spirits Turpentine—

In regular bbls	30	@	30¼
In machine bbls	30	@	30½

Glue—

Low Grade ₩ ℔	8	@	10
Cabinet	12	@	14
Medium White	13	@	15
Extra White	17	@	20
French	10	@	22
English	10	@	15
Irish	12	@	..

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

NOVEMBER 29, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:	
¾ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in....	₩ lb 1.80 @ 1.90¢
Refined Iron:	
¾ to 2 in. round and square. 1 to 4 in. x ⅜ to 1½ in..... 4½ to 6 in. x ⅜ to 1 in.	₩ lb 1.90 @ 2.00¢
1 to 6 in. x ¼ and 5-16.....	₩ lb 2.10 @ 2.20¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.00 @ 2.10¢
Bands—1 to 6 x 3-16 to No. 12....	₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price.	₩ lb.... ...3.00¢
Burden's "H. B. & S." Iron, base price.....	₩ lb.. .....2.80¢
"Ulster".....	₩ lb.....3.00¢
Norway Bars.....	3.75 @ 4.00¢
Norway Shapes...	4.50 @ 5.00¢

Merchant Steel from Store—

	Per lb
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.....	2½¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

Black—

Best Refined Iron.

Nos. 14 to 20.....3	@ 3⅛¢
21 to 24.....3¼	@ 3⅜¢
25 to 26.....3⅜	@ 3½¢
27.....3½	@ 3⅝¢
28.....3⅝	@ 3¾¢

Common ¼¢ less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 16.....	2½ @ 2⅝¢
" " " 18 to 20.....	2⅞ @ 3¢
" " " 21 to 24.....	3¼ @ 3¼¢
" " " 25 to 26.....	3⅜ @ 3⅜¢
" " " 27 to 28...	3⅝ @ 3⅝¢

Best Bloom Sheets, ¼¢ extra over above prices.
Best Bloom, Galvanized, jobbing dis. 70 @ 70&5%
Ordinary Bessemer, ⅛¢ @ ¼¢ lower than above prices.

Russia, Planished, &c.

Genuine Russia, according to assortment.....	₩ lb 12¢ @ 13¢
Patent Planished	₩ lb A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel.....	₩ lb, 8½¢

Foreign Steel from Store—

Best Cast.....	₩ lb 15 ¢
Extra Cast.....	₩ lb 16½ @ 17 ¢
Swaged, Cast.....	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality.....	₩ lb 12 ¢
German Steel, Best.....	₩ lb 10 ¢
2d quality....	₩ lb 9 ¢
3d quality.....	₩ lb 8 ¢
Sheet Cast Steel, 1st quality.....	₩ lb 15 ¢
2d quality.....	₩ lb 14 ¢
3d quality.....	₩ lb 12½¢
R. Mushet's "Special".....	₩ lb 48 ¢
" " Annealed.....	₩ lb 75 ¢
" " "Titanic"	₩ lb 30 ¢
Eicken's Special No. 8.....	₩ lb 30 ¢
" Extra.....	₩ lb 15 ¢

METALS—

Tin—

	Per lb
Banca, Pigs	22¢ @ 22½¢
Straits, Pigs.....	21½¢ @ 22¢
Straits in Bars.....	22½¢ @ 23¢

Tin Plates—

Duty: 2.2¢ ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade.	IC, 10	x14..	@ $6.50
" " "	IC, 12	x12..	@ 6.75
" " "	IC, 14	x20..	@ 6.50
" " "	IC, 20	x28..	@ 13.00
" " "	IX, 10	x14..	@ 8.50
" " "	IX, 12	x12..	@ 8.75
" " "	IX, 14	x20..	@ 8.50
" " "	IX, 20	x28..	@ 17.00
" " "	DC, 12½	x17..	@ 6.00
" " "	DX 12½	x17..	@ 8.00
Allaway Grade.....	IC, 10	x14..	@ 6.00
" "	IC, 12	x12..	@ 6.25
" "	IC, 14	x20..	@ 6.00
" "	IC, 20	x28..	@ 12.00
" "	IX, 10	x14..	@ 7.50
" "	IX, 12	x12..	@ 7.75
" "	IX, 14	x20..	@ 7.50
" "	IX, 20	x28..	@ 15.00
" "	DC, 12½	x17..	@ 5.50
" "	DX, 12½	x17..	@ 7.00

Coke Plates—Bright—

Steel Coke.—IC, 10 x 14, 14 x 20..	$5.40	@	$5.50
10 x 20..		@	8.50
20 x 28..	11.50	@	12.00
IX, 10 x 14, 14 x 20..		@	7.00
BV Grade—IC, 10 x 14, 14 x 20..		@	5.50

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC, 14 x 20.....	@	$5.65
20 x 28.....	@	11.00
IX, 14 x 20.....	@	6.40
20 x 28.....	@	12.80
Abecarne Grade.—IC, 14 x 20... ..	@	5.55
20 x 28....	@	10 75
IX 14 x 20....	@	6 40
20 x 28....	@	12.80

Tin Boiler Plates—

IXX, 14x 26.....112 sheets.....	@	$13.35
IXX, 14 x 28.....112 sheets.....	@	14.50
IXX, 14 x 31.....112 sheets	@	16.00

American Terne Plates.—Apollo.

IC, 14 x 20.....	$6.25
IC, 20 x 28.....	12.50
IX, 14 x 20	7.25
IX, 20 x 28	14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot—

Lake.....	@ 11 ¢
Ansonia grade Arizona.....	@ 10½¢
Ansonia grade Casting.....	@ 10 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 25 %, according to size of order. Stubs' gauge standard.

Not wider than	Not longer than	And longer than	Weights per sq. foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	...
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	.. ..	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	..	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅜ inch diameter and over, ₩ lb 22¢
Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per lb.
14 ounce to square foot and heavier.....	26¢
12 ounce and up to 14 ounce to square foot...	27¢
10 ounce and up to 12 ounce.....	29¢
Lighter than 10 ounce.....	32¢

Circles less than 8 inches diameter, 2¢ ₩ lb additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned.....	₩ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each.....	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each.....	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each.....	12¢
Tinning sheets on one side, other sizes, per square foot.....	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier.	24¢ ₩ lb
14 oz.....	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

July 6, 1892. Net.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional

Brazed Brass Tubing. (To No. 20 inclusive.)

Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive.....	35¢
Plain, above 3 inch.....	45¢
Plain, 5-16 inch.....	45¢
Plain, ¼ inch.....	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch.....	$1.50
Fancy Tubing, Brass, to No. 20, inclusive.....	43¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list.....	30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 / 10	in. 10 / 12	in. 12 / 14	in. 14 / 16	in. 16 / 18	in. 18 / 20	in. 20 / 22	in. 22 / 24
To No. 20 -inclusive .	.21	.23	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24.	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26.....	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28.....	.23	.24	.2	.28	.30	.32	.34	.36
Common High Brass: Wider than and including	in. 24 / 26	in. 26 / 28	in. 28 / 30	in. 30 / 32	in. 32 / 34	in. 34 / 36	in. 36 / 38	in. 38 / 40
To No. 20, inclusive..	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24.	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26.....	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28.....	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive.....	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20.....	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22.....	$0.26	$0.28	$0.30	$0.34
No. 23.....	.28	.30	.32	.36
No. 24.....	.30	.32	.34	.38
No. 25.....	.32	.34	.36	.40
No. 26.....	.35	.37	.39	.43
No. 27.....	.38	.40	.42	.46
No. 28.....	.42	.44	.46	.51
No. 29.....	.45	.47	.49	.54
No. 30.....	.48	.50	.52	.62
No. 31.....	.51	.53	.55	.67
No. 32.....	.55	.57	.59	.73
No. 33.....	.59	.61	.63	.82
No. 34.....	.64	.66	.68	.95
No. 35.....	.70	.72	.74	1.30
No. 36.....	.76	.78	.80	1.50
No. 37.....	1.00	1.02	1.04	1.70
No. 38.....	1 30	1.32	1.34	2 00
No 39.....	2.00	2.02	2.00	3.25
No. 40....	2.60	2.62	2.60	5.75

— % discount.
Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

	Per lb.		Per lb.
No. 5.....	49¢	No. 11.....	56¢
No. 6.....	49¢	No. 12.....	58¢
No. 7.....	49¢	No. 13.....	60¢
No. 8.....	50¢	No. 14.....	65¢
No. 9.....	52¢	No. 15.....	70¢
No. 10.....	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive.....	17¢ ₩ lb
Over 3½ to 5 inches inclusive.....	18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive...	18¢ ₩ lb
Over 3½ to 5 inches inclusive	19¢ ₩ lb

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb

Western Spelter.....	4½¢@4¾¢
Bertha (pure).....	8¢@8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.

600 lb casks.....	5½¢@5¾¢
Per lb..... ...	6½¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig.....	4¢@4.10
Bar.....	4½¢
Pipe, subject to discount 20%.....	6¼¢
Tin-Lined Pipe, subject to discount 20%...	15¢
Block Tin Pipe, subject to discount 20%.....	37½¢
Sheet, subject to discount 20%..... ...	7¢

Old Lead in exchange, 3½¢ ₩ lb.

Solder—

½ @ ½	13½¢ @ 14½¢
No. 1.....	11¾¢ @ 12½¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson...	₩ lb 11 ¢
Hallett's	10½¢

Aluminum—

Duty: 15¢ ₩ lb.

No. 2 grade metal, in to a lots.....	₩ lb .75
No. 1 (guaranteed to be 98 % pure and over), in ton lots.....	₩ lb .90
Lots less than 1 ton.....	10¢ ₩ lb additional

Old Metals—

Prices Paid in New York.

Heavy Copper.....	₩ lb	7½¢
Light and Tinned Copper.....	₩ lb	6½¢
Heavy Brass.....	₩ lb	5½¢
Light Brass.....	₩ lb	4½¢
Lead.....	₩ lb	3 ¢
Tea Lead.....	₩ lb	2 ¢
Zinc.....	₩ lb	2¾¢
No. 1 Pewter.....	₩ lb	14 ¢
No. 2 Pewter.....	₩ lb	7 ¢
Wrought Scrap Iron.....	₩ gross ton	$9.00
Heavy Cast Scrap.....	₩ gross ton	7.00
Stove Plate Scrap.....	₩ gross ton	4.50
Burnt Iron.....	₩ gross ton	3.00

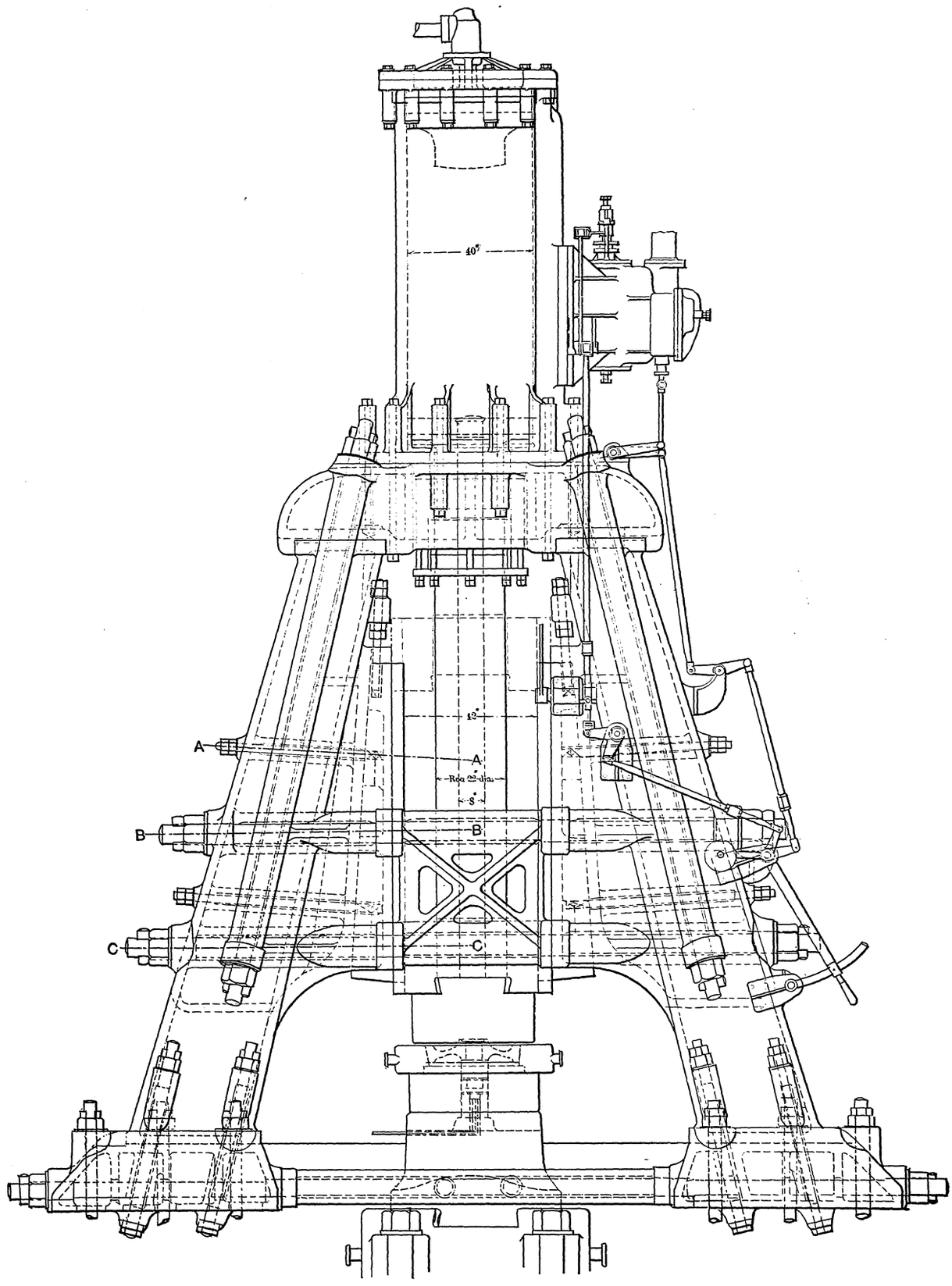
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THE IRON AGE

THURSDAY, DECEMBER 7, 1893.

The Pearson Car Wheel Forging Machine.

The accompanying engravings show a new car wheel forging machine invented and recently patented by W. A. Pearson, formerly of Scranton, Pa., and now mechanical engineer of the General Electric Company, Schenectady Works. This machinery is now in successful operation at the works of the Boies Steel Wheel Company, Scranton, Pa. The hammer was built by the Morgan Engineering Company, Alliance, Ohio. It is double acting and has a stroke of 8 feet. The cylinder is 40 inches in diameter and weighs 15 tons. The entablature weighs 12 tons,



THE PEARSON CAR WHEEL FORGING MACHINE.

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the housings 56 tons, the bed plates 30 tons. The piston head and rod are made in one forging and this was made by the Bethlehem Iron Company. It was made of steel similar to gun jackets, has a 6 inch hole through it, and was oil tempered and annealed. It is 22 inches in diameter and weighs 12 tons. The tup is also a steel forging and weighs 3 tons. There are some 20 tons of steel bolts. This hammer is constructed on the long bolt principle, all set up to a tension of 20,000 pounds per square inch. The hammer weighs, in round numbers, 150 tons. The anvil block weighs 250 tons, 50 tons of which is steel and 200 tons cast iron. Each block fits snugly over the projection on the top side of them. Both the top and bottom sides of all are planed accurate and then bolted together with four 6-inch steel bolts. The whole mass rests on three layers of oak timber, 12 x 12 inches, as shown in Fig. 5. These timbers were planed on the sides before being bolted together and then faced off on a boring mill. The bottom plate that rests on the concrete foundation was planed on the top side, making the whole thing mechanically correct. All corners of the under side of bottom plate were made round, so that it would not allow the foundation to crack from the corners. The size of the bottom plate is 11 x 13 feet and the base of foundation 26 x 32 feet.

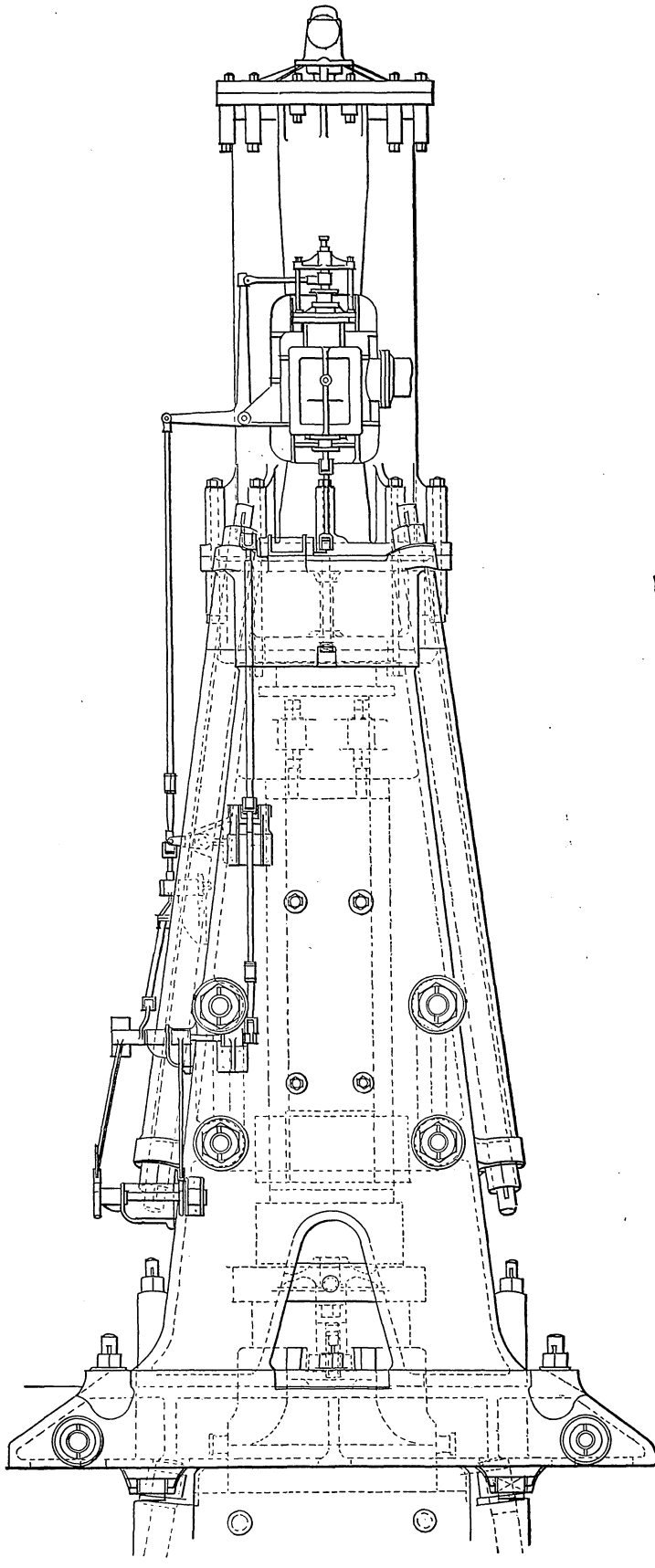


Fig. 2.—Side Elevation.

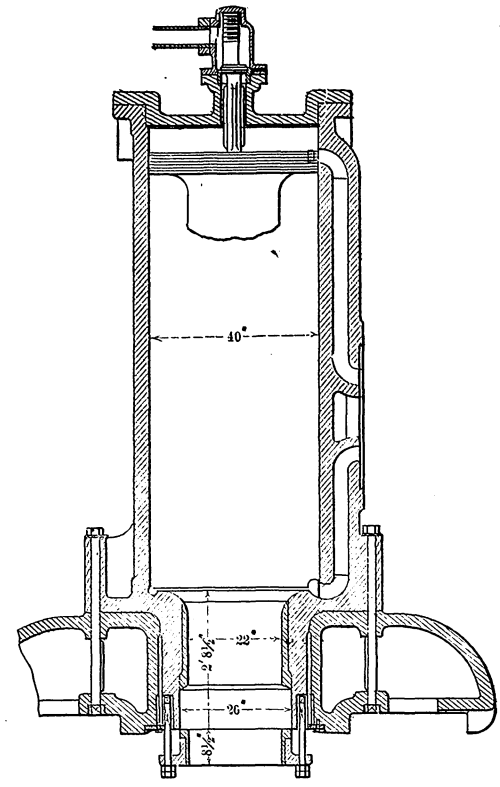


Fig. 3 —Vertical Section of Cylinder.

Fig. 1 is a front elevation of the machine. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical section of cylinder. Fig. 4, horizontal sections of Fig. 1. Fig. 5, vertical sections of foundation. Fig. 6, vertical section of dies and wheel blank. Fig. 7, vertical section of dies, punch and wheel. Fig. 8, vertical section of hydraulic lift for removing the portion punched from the hub of the wheel.

This machine is adapted for forging articles which require considerable force and great accuracy. It has been common in steam hammers, steam forges, &c., to use a light piston rod and concentrate the necessary weight in the tup or the end of the piston rod which carries the die, or in the hammer head, the tup or hammer head being guided throughout the stroke. It has been found in practice that such an arrangement is both costly and inconvenient, for the reason that every stroke of the hammer or die imparts a shock and a quivering motion to the piston rod, causing it to crystallize and finally to break, thus entailing heavy expense for renewal, besides considerable delay to the works.

Another old construction is that in which the necessary weight for strik-

THE PEARSON CAR WHEEL FORGING MACHINE.

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ing the blow is in the piston rod, which is made of large diameter, and the hammer head or tup and the piston are made comparatively light. In this variety of hammer the piston rod is relied upon to guide the hammer or die to the proper point. For the purpose of making correct wheel centers and other forms requiring great accuracy in the application of the die it has been found that such a piston cannot be depended upon unaided by guides. This hammer has a comparatively light piston and tup or die holder with a strong and heavy piston rod, and guides are provided for the tup or die, which guide it during its entire stroke, so that the blow of the die is delivered with the utmost accuracy, while at the same time the piston rod is practically indestructible, and the blow is more effective because the weight is concentrated directly above the blank in the piston instead of overhanging the blank, as is the case where the weight is in the tup.

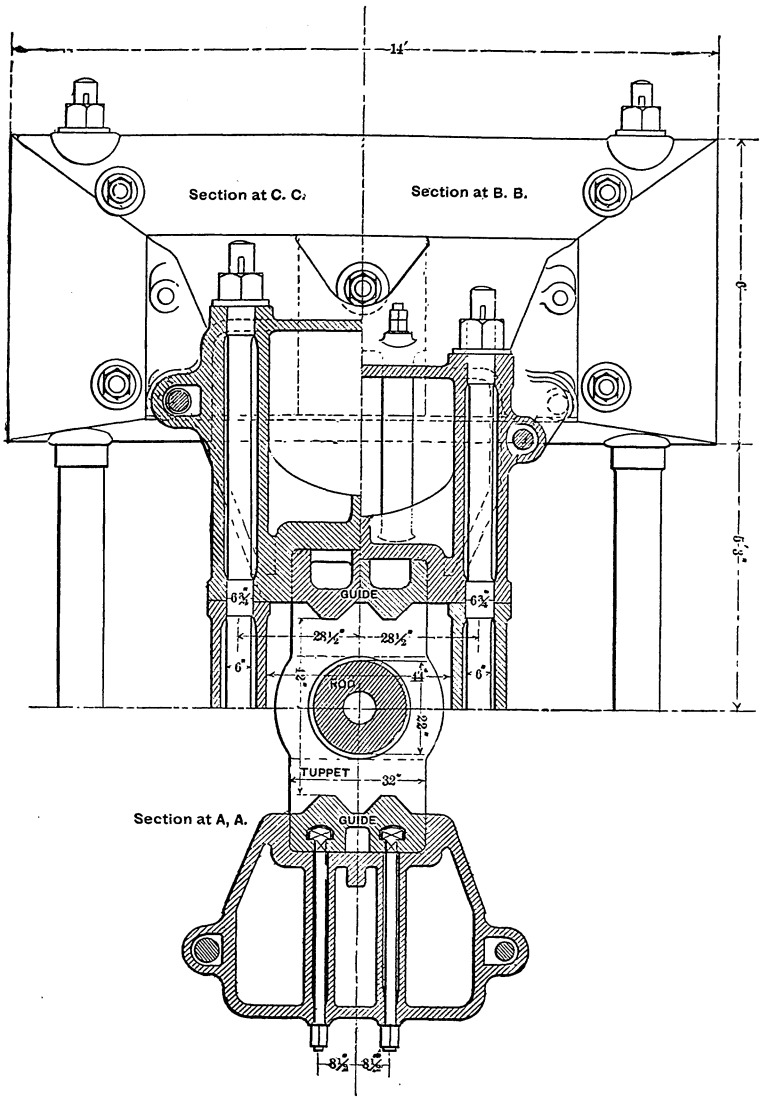


Fig. 4.—Horizontal Sections, Fig. 1, as Indicated.

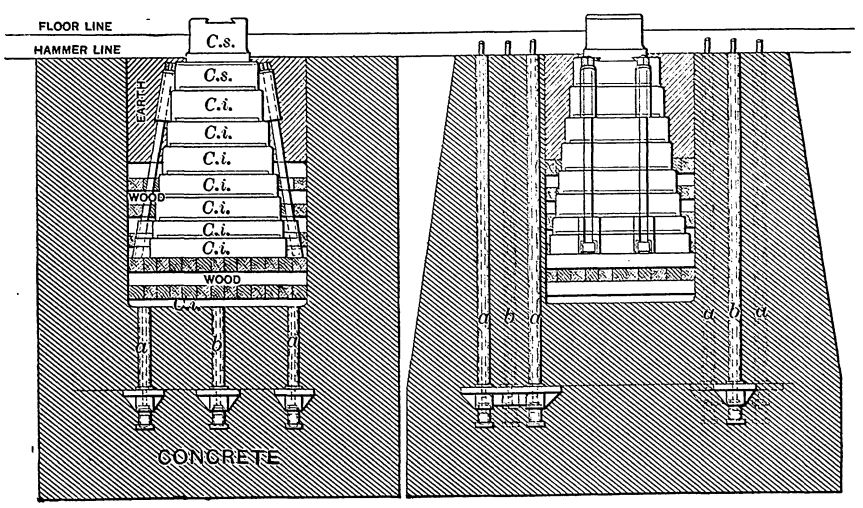


Fig. 5.—Vertical Sections of Foundations.

THE PEARSON CAR WHEEL FORGING MACHINE.

A novel feature of the upper die is a central teat or projection upon the face of the die, which forms a corresponding depression in the hub of the blank, adapted to center and hold the punch, which is afterward used to form the hole through the hub. The wheel center is formed within an annular matrix, the inner face of which is tapered and conforms exactly to the peripheral surface of the finished wheel center. This matrix rests upon the shoulders of the lower die. The lower die has a vertical well directly beneath the hub of the blank and about equal in diameter to the hub, as indicated in Figs. 6 and 7. Within the well and suitably supported is a solid disk, upon which the hub of the wheel center is formed and which really forms a part of the lower die when in place. The disk rests upon a second cup shaped disk, which in turn rests upon a cylindrical support having a broader base, which rests upon the anvil block. The solid and cup shaped disks fit closely within the well, but are removable therefrom. The other parts in the well are not designed to be removable except for repairs. The upper end of the cup shaped disk has a peripheral flange and the lower end of the punch die and solid disk are reduced so as to fit within the flange and accurately center the die and disk. Beneath the cup shaped disk and within the cylindrical support is a hydraulic lift, shown enlarged in Fig. 8, of peculiar construction. The piston of the lift is stationary and supported by a hollow piston rod which rests upon the anvil block. The opening in the piston rod extends nearly to the lower end of the rod and at its lower end it is connected with a pipe which conveys water under pressure to operate the lift. The piston follower is screwed into the threaded recess in the upper surface of the piston and a packing ring of asbestos is confined between the flange and piston proper. Fitting loosely within the cylindrical support and surrounding the piston is a cylinder closed at the upper end. Upon the lower end of the cylinder is a nut screwed on or otherwise attached thereto, having an inwardly projecting flange or shoulder adapted to engage the under side of the piston when the cylinder is forced upward, and this limits its motion and prevents it from being forced off of the piston. The cylinder at the lower end of the travel rests upon the follower.

The Howe Scale Company of Rutland, Vt., have purchased the entire stock of the Harrison Conveyor Company of Chicago, who for the past seven or eight years have been doing business throughout the West to a large extent and to a more limited degree in the East. The manufacture of the Harrison conveyer will now be prosecuted at the works at Rutland. The company have already completed three large contracts and have several others in view. The Harrison conveyor is a device for the transferring of coal, grain, ice, &c. In connection with the transferring of grain it is stated that it can handle different kinds of grain without cleaning out the trough or mixing the grain; and the grain can be

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conveyed in opposite directions at the same time, all with the same conveyor. It is especially adapted to use in connection with breweries, in transferring barley, and has been used for the icing of trains or refrigerator cars and for the loading of gravel trains from gravel pits. It is also adapted for use in tanneries, paper mills, sewer pipe manufactories and in foundries.

Mechanical Engineering the Basis for the Electrical Engineer.

In a recent issue of the *Stevens Indicator* we find an article by C. J. Field on the electrical engineer and his relation to mechanical engineering. The question confronts the young student who desires to take up the study of electrical engineering as to which course is best suited for his requirements. Stevens Institute has tried to answer this by taking the stand that her course of mechanical engineering qualified and equipped the student to enter the ranks of electrical engineers, this stand being taken on the assumption that three-fourths of electrical engineering is mechanical engineering. From his own experience, Mr. Field indorses these views in every respect. This is explained in the following way:

Electrical science to-day is in a more active stage of development and progress than the older and more established branches of engineering—civil, mining, marine and mechanical. The electrical engineer, therefore requires, in order to fully enter the lists with his co-workers in this line and make that progress which all young engineers are desirous of doing, to be qualified to take part in the designing and construction of apparatus and works which are going on now the world over in connection with his profession. This we consider to be the real basis for what has proved to be the requirements in this line. There is hardly any department of the profession of electrical engineering in which questions are not continually arising in a day's work which can only be answered by a knowledge of mechanical engineering; that is, in the designing of all the apparatus which is now being manufactured in the different branches and departments of this profession, in their working, and in the building and equipment of the works, plants, roads and machinery in which this apparatus is entering so largely and playing such an important part. The young engineer who is not prepared and ready to take it up in this sense will find his field of progress and development restricted to a much narrower channel, and to be much slower in every respect; and he will be compelled, as we have seen many of them do, to qualify himself more fully as a mechanical engineer in order to keep up with others who have started along with him.

We will take, for instance, a few examples which come more prominently before us of what the electrical engineer may be called upon to do in this line on some of the few things which he is liable to encounter. For instance, in the designing and building of electric power generators and motors, experience has shown, in every apparatus of this kind which has been built by the different companies, that the calculation and determination of the electrical quantities and parts of the apparatus have, in the few short years in which they have been in a stage of development, become so perfected that they show to-day in this part a higher efficiency than any other generator or transformer of power.

It is, however, in the designing of the apparatus that the greatest difficulty has been experienced, to secure their proper working from a mechanical standpoint, and we have had in this line a number of examples of the brilliant electrical design of apparatus, which has failed utterly in its working caused by a lack of proper knowledge and experience in the designing of its mechanical parts.

We may take as another example the building of an electric railway plant. Let us look for a moment into the different qualifications which an electrical engineer must have, and the difficulties he has to encounter, to properly qualify himself and meet the requirements and expectations which are placed on him in many works of this kind. They cover not only a full knowledge and experience with all classes of generators and motors, but also of cars, their framing, equipment, trucks, wheels, rails, steam plant of the best and most efficient type to meet the varied requirements and conditions found in different cases, capacity to design power stations and car houses complete in every respect, with a knowledge of foundations required for the machinery and its operation, the building of road bed complete, and the paving of the streets in connection with the same, installation of underground conduits and feeder wires in connection therewith, and erection of overhead structures.

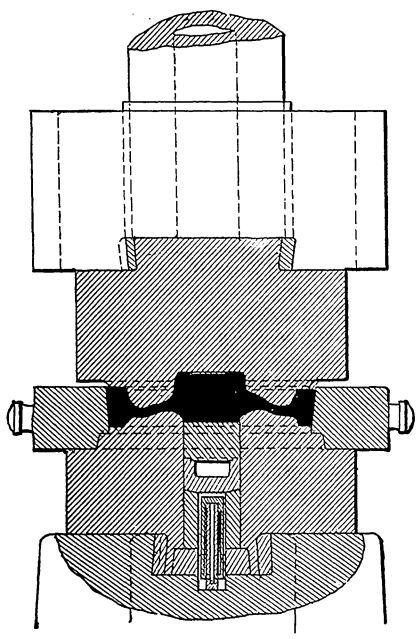


Fig. 6.—*Vertical Section of Dies and Wheel Blank.*

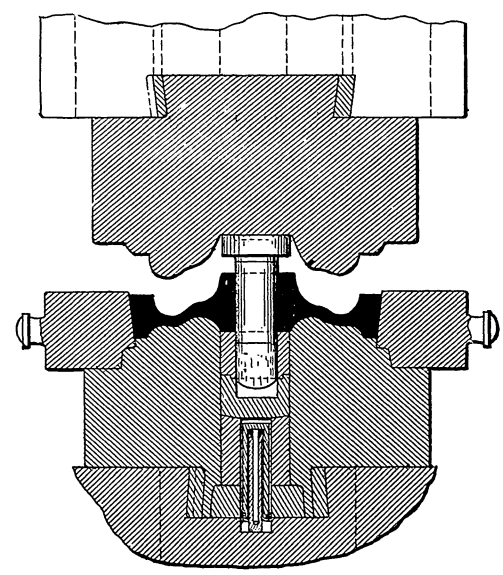


Fig 7.—*Vertical Section of Dies, Punch and Wheel.*

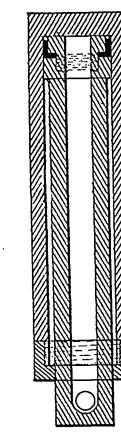


Fig. 8.—*Vertical Section of Hydraulic Lift.*

THE PEARSON CAR WHEEL FORGING MACHINE.

Transferring orders from the recently burned sheet mills of Wheeling to the mills at near by points in Ohio has made business lively in that line. The demand for galvanized sheets continues to hold good, the orders received being from all parts of the United States. This is regarded as a sure indication that building is going on at a lively rate. The use of this material for cornices and furnishings of buildings shows a steady increase.

California's Midwinter Fair, to be opened at San Francisco on January 1, gives promise of being a highly successful venture. Twenty-five nations have appointed commissioners and will be represented by important exhibits, and many of the most striking objects from the Chicago World's Fair are being transferred to Golden Gate Park. So many applications for space have been received that the directors are hard put to it to find accommodation for all who desire to exhibit there.

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Notes on the Machinery of the New Vessels of the U. S. N. *

BY GEO. W. MELVILLE, ENGINEER-IN-CHIEF, U. S. N.

The earliest of our ships were gunboats and protected cruisers, and in order to get the machinery below the protective deck the engines were of the horizontal type. When vertical armor around the cylinders was introduced vertical engines were used.

One of the most important considerations for high power ships is the matter of economy at ordinary cruising speeds. In the old days, where the maximum speed was perhaps 12 knots, it was a very easy matter to run at 8 knots with at least the same and probably greater economy than at full power, but in our modern ships, built to make 18 and 20 knots, it is a very different thing to reduce the speed to 10 knots. The friction alone of moving the immense pistons and other moving parts of the 16,000 horse-power engine when it is developing perhaps only 1500 deducts a very large amount from the gross horse power and leaves the net a very small fraction. Besides the matter of friction, there is to be taken account of the immense cylinder condensation in these large engines running at greatly reduced power and with high grades of expansion. This would reduce the economy very decidedly.

One of the earliest attempts to solve this problem was to have two sets of engines on the same shaft, one of which could be thrown out at reduced powers.

Another method, which naturally suggested itself when the number of cylinders was multiplied in the adoption of the triple expansion engine, was the cutting out of the low pressure cylinder at reduced powers and running as a compound engine with the two smaller cylinders of the original triple expansion engines. This would then work up to somewhere near the full power of the cylinders of that size with a reduced pressure, so that, while not nearly as economical as well designed triple expansion engines for the power which was actually being used, it would, nevertheless, be more economical than the large triple expansion engines working at very much reduced power. This method we have adopted on our armored cruiser, the "Maine."

The next method was in subdividing the very large power among three engines instead of two, giving us the triple screw ship, so that at very low speeds only the central engine need be used, the propellers of the side engines being disconnected and allowed to revolve freely. In this case we have a single engine working up to pretty nearly its full power, when the steam economy would be good, while in the case of the two large engines working at very reduced powers the steam economy reduced by condensation would be very low. The first of our triple screw cruisers, the "Columbia," has just had her official trials, which have been a great success as far as working at maximum power is concerned.

Another method of combining an engine which shall be fairly economical at full power with one having good economy at moderate powers is the engine assigned for the gunboat No. 7. In this case more than two-thirds the boiler power is in the shape of tubulous boilers, whose weight is only about one-half that of the ordinary cylindrical boiler. The special novelty in the design consists in having the engine designed as a quadruple expansion engine for full power, taking steam to the high pressure cylinders from the coil boilers, while the remainder of the boiler power, which consists of two cylindrical boilers, will furnish steam to the first receiver, a reducing valve being fitted so that the pressure in the receiver will be just equal to the pressure of the steam discharged from the high pressure cylinder. Of course, while this is entirely novel, it is really an extension of the idea which has obtained for some time of exhausting from the auxiliaries into the receivers. This provides for full power. At reduced powers the engines will be made triple expansion by disconnecting the large low pressure cylinders, leaving the triple expansion engines composed of the three smaller ones, and the cylinders have been designed so that they have good proportions for economical working as a triple expansion engine with steam at 160 pounds. The cylindrical boilers are designed to furnish steam at this pressure, while the coil boilers will furnish to the high pressure cylinders of the quadruple expansion engine steam at 250 pounds pressure.

Auxiliaries.

Doubtless we have all thought of the fact that the multiplication of auxiliaries, independently of the main engine on board ship, has involved considerable steam consumption which was not applied directly to propulsion, but, so far as I am aware, the matter had never been considered in great detail until Professor Hollis, then a passed assistant engineer in the navy, discussed it about a year ago in some lectures he delivered at the Naval War College. I have inserted a table which he gives, based on the performance of machinery with which he had had personal experience, showing the percentage of steam developed by the boilers applied to propulsion and to auxiliaries at various speeds, and you will notice at a glance that at low powers the proportion expended in auxiliaries is very large.

Taking one case from this table, we find that the "Charleston" when steaming 4 knots required 107 horse-power and her air pumps 23.7 horse-power. At 18 knots her main engines developed 6120 horse-power, while air pumps only required 43.7 horse-power. The paper referred to the air pumps designed by Passed Assistant Engineer Frank H. Bailey, U. S. N., which we illustrated and described in our last issue.

Forced Draft.

The boilers have always been the heaviest part of the machinery, and here naturally the greatest efforts have been made to reduce weight. The one with which we have all become so familiar in the last 10 or 15 years has been forced draft.

I am a firm believer in the benefits of forced draft when intelligently applied, and have no patience with the people who blow hot and blow cold on the subject (as I have unfortunately been compelled to experience during the last ten years), who, because an accident occasionally happens with forced draft, immediately say that it is an invention of the evil one and that it ought to be abolished altogether. The same line of argument would probably prevent our using any modern methods in any line of work.

As between the two methods of forced draft in most common use, that by closed fire rooms and by closed ash pits, I am decidely in favor of the latter when it can be applied. I make this proviso for the reason that some may at once ask why, if I am a believer in ash pit forced draft, nearly all of our large vessels recently designed have forced draft on the closed fire room system. It is simply because in a war vessel with a protective deck and minute water tight subdivision it is extremely difficult where there are a number of large boilers to so arrange the blowers for closed ash pit forced draft as to ventilate the fire room thoroughly. This is a point which is sometimes forgotten, but if it is the fire room would simply become intolerably hot, and while the boilers themselves will work admirably the men will simply be killed by the heat. The "San Francisco" of our navy has ash pit forced draft, and all who have had experience on her and on other vessels speak in the highest terms of praise of the greater facility, convenience and comfort which attends this method.

With this method of forced draft leaky tubes in the combustion chamber are unknown, while with the closed fire room forced draft they are not at all uncommon.

There is another method of forced draft which is very old, but which has only been used on board ship within the last year or two—that of high smoke pipes. Tall chimneys are the most common method on shore for getting a strong draft, but prejudice or conservatism has until recently prevented the application of this practice to use on board ship. When we were designing the "Brooklyn" and "Iowa" I asked to have the smoke pipes made 100 feet high, in which I was heartily seconded by the Chief Constructor of the Navy; but a gentleman in the Navy Department who was entirely ignorant of technical affairs so represented the matter to the Secretary that the latter asked me to submit the reasons why I desired to use these high smoke pipes. These reasons Mr. Melville embodied in an appendix to his paper. They may be summarized as follows: The high pipe increases the speed without injury to anything. Increases the life of the boiler. Increases the economy of combustion at moderate powers. Saves coal lost by radiation from extra boilers used with short pipes. Saves in repairs to boilers. Saves in repairs to blowers. Saves extra coal needed to run blowers.

Induced Draft.

Another method of forced draft now coming into vogue is that known as induced draft, where, instead of closing in the fire room or the ash pit and forcing air in, the products of combustion are exhausted from the chimney by large fans. Of course this is only another way of getting the same effect that we get by the use of the steam jet and with which we have all been familiar for many years, the advantages in this case being that there is no loss of fresh water, which is a precious commodity on board ship. At a hasty glance one would not be prepared to expect very much from this method, but the experiments which have been making for some years past in England by John Brown & Co. seem to show that this method is very promising, and I understand it is to be fitted to some or all of the large vessels which are now building for the International Navigation Company.

Boilers.

The discussion thus far of reduction of weight assumes that the boilers them-

* Abstract of paper presented at the first session of the Society of Naval Architects and Marine Engineers.

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selves are not changed materially otherwise than for the fitting of the forced draft appliances, but the question has been a very vital one for some time past and is now of extreme importance whether we shall not entirely abandon the present types of boilers and adopt a very much lighter one by using what are called coil or tubulous boilers. This matter has been discussed so much by so many able minds that it is unnecessary for me to go into the matter at length here. We all know the great advantages of these boilers in the way of immense reduction of weight, safety against disastrous explosions, rapidity with which steam can be raised, absolute safety against injury from any amount of forcing, and the ease with which, if necessary, a boiler can be removed and replaced. Almost the only objection appears to be the fear that they will not be durable because of the fact that they are composed almost entirely of very thin tubes, and our experience with these tubes in ordinary boilers has not been such as to lead us to expect a very long life from the coil boilers. However, some coil boilers have been in use for five or six years without showing appreciable deterioration, and a few have been used with fresh water entirely for more than ten years.

The Decrease in Weight of the Engines

themselves has been due to three causes: An increase of steam pressure, an increase of piston speed, and the use of stronger materials. Piston speeds have more than doubled in the last 15 years, and our larger vessels are now running with piston speeds of about 950 feet per minute, while some of the smaller ones, like the torpedo boats, are designed for a piston speed of over 1000 feet. If materials should go on improving so that we can reduce the weight of our reciprocating parts, I see no reason why piston speeds should not be increased still more, which, of course, would result in still further reducing weights. If we adopt the coil boiler generally we shall also carry very much higher steam pressures, because we already are carrying pressures of 250 pounds in some of our torpedo boats with great success. We have greatly reduced the weight of most of the engines by the use of forged steel for piston and connecting rods, valve stems and shafting, and cast steel for pistons, valves, bed plates and frames, but there does not at present seem to be much prospect of displacing cast iron as the metal for cylinders. If this should come about, we could still further reduce our weights, and if nickel steel should within the next ten years become as commonly used as mild steel is now we would have a big reduction in weight all around.

Trials of Vessels.

The early vessels for our navy were contracted for with the understanding that they were to develop a certain horse power. The contractors felt that with an agreed steam pressure to start with, and known sizes of cylinders, they could confidently guarantee that they would develop a certain horsepower; but we had at that time no reliable data on which to base our speeds, all our information being of foreign ships, and while I do not for a moment pretend to say that their trials are not conducted with every effort to secure fairness, we, of course, did not know all the circumstances, as we have since about our own ships, and so might be pardoned for feeling a little uncertain. In connection with the contract it was provided that for each horse-power in excess of the guarantee there should be a certain premium, usually $100, and for every horse-power below the contract requirement there should be a fine of the same amount. This made it very important that the horse-power should be determined accurately.

All the indicators used are tested at the New York Navy Yard, where there is the most elaborate and accurate testing apparatus in the world.

It may possibly not seem strictly germane to the title of this article to bring in the matter of speed trials, but I do so merely to call attention to a methed which I had the honor to bring to the attention of the Navy Department, and which was unanimously approved by the Board of Construction of that department, and was used with great success in the trial of the "Bancroft" early in this year. It consisted in a series of progressive trials for the purpose of standardizing the screw and determining accurately the number of revolutions corresponding to a particular speed. Then having laid a curve to show the relation of speed to revolutions, the vessel could be taken to sea anywhere and the continuous endurance trial run off and the speed at once determined as soon as the average revolutions for the entire period were known. Doubtless many of you are aware that the fast Argentine cruiser, the "Ninth of July," was tested in this way, and I believe several other foreign vessels also have been. This method enabled the speed to be accurately determined with less difficulty than any other which had been suggested.

Gas Engines in Germany.

The last report of Frank H. Mason, Consul-General at Frankfort, Germany, contains the following:

Prominent among the economies which have been introduced during recent years in Germany is the use of gas motors in place of steam engines in all the smaller forms of manufacture where the motive force required does not exceed 75 to 100 horse-power. At the Frankfort electrical exposition of 1891 most of the dynamos were driven by gas and caloric engines, and the display of these motors at that time was almost as varied and interesting to the general public as that of the electrical apparatus to which they were technically subsidiary.

The statement is made that there were in operation in Germany at the time referred to, about 18,000 gas motors, aggregating a motive force of about 60,000 horse-power, since which time, by the gradual cheapening of gas as a result of careful saving of tar, ammonia, and other subsidiary products of coal distillation, the number has increased to about 25,000. The improvement in economy in these motors has been remarkable. The Lenoir machine, the best known as late as 1861, used 1235 cubic feet of gas per horse-power per hour, while at the present time small motors only consume 28 feet, and large motors as little as 23.75 feet. As the cost of gas ranges from 95 cents to $1.36 per 1000 feet, and 21.2 feet of gas will run a 16 candle incandescent lamp an hour, which figure is reduced to 17.6 feet in large plants, it readily appears that this motive power is very economical for the smaller forms of manufacture, and especially for electric lighting by isolated plants.

Duluth News.

Iron ore shipments from Lake Superior were over at the close of last week at all the ore ports except Duluth, and there they have since ceased. For the season the record is about as follows:

	Tons.
Escanaba	2,000,000
Marquette and vicinity	1,200,000
Ashland	1,117,000
Two Harbors	894,000
Duluth	545,000
Total	5,756,000

These figures are estimates for Escanaba and Gladstone, Marquette and L'Anse. The total production for 1892 was 9,047,000 tons, nor has it been so low as now since 1888.

Early last June *The Iron Age* estimated the Mesaba range shipments for the year at 700,000 tons, which was a middle ground between the figures of those who expected to see the leases that had been made all carried out, with a good deal of ore from the mines, meaning an output of over 1,500,000 tons, and the ultra pessimists in Cleveland who talked 300,000 or 400,000 tons. As a matter of fact the range has shipped 630,000 tons; all but 20,000 tons by lake.

Late developments indicate that the new range will be able to mine, if its railroads can handle, a third of the Lake Superior output in 1894. There is mining equipment in the Lake Superior region for the production of 12,000,000 tons, could any such quantity be used in the market, and of the 7,000,000 to 9,000,000 that will likely be mined, if the year is any way favorable, the new range can easily mine 2,500,000 to 3,000,000 tons. There is, of course, a very serious question as to whether any such quantity could be handled by the two roads now reaching this range, but as both talk of large increase in track facilities they may do it. Still any speculation at this time is mere idle gossip.

The Mesaba, as a range, has not only beaten the world's record for a first year, but it has three mines which have never been equaled as first season producers. These are the Biwabik, which produced 153,500 tons, the Missabe Mountain, 130,000 tons, and the Commodore, 67,000 tons. The Mountain Iron, with a production of 125,000 tons, was the only mine on the range in 1892, sending out 4240 tons that season.

The Minnesota Iron Company, at Tower, has put a large force of men at work and is stock piling at the rate of 50,000 tons monthly for next season. The Chandler put 200 men on this week and is expected to mine nearly 500,000 tons in the year. On this range, the Vermilion, little else will be done.

At the Biwabik mine stripping contracts aggregating 600,000 yards of earth have been let and are begun; the largest of them requires the removal of 300,000 yards, 80,000 of it this winter. Six locomotives, four steam shovels and 300 men are stripping at the Mountain Iron.

The Marquette, Menominee and Gogebic ranges are gradually resuming work, the latest mines to start being the Norrie and Carey, on the Gogebic. These ranges are looked on for a possible production of 1,200,000 tons, 1,000,000 tons and 1,700,000 tons for 1894.

An important deal on the Mesaba has just been closed in the lease to the Thomas Iron Company of the Pennsylvania anthracite regions of the Hale mine, out of which it is to take some 250,000 tons in the next two years. The Hale is a high grade non-Bessemer mine and is stripped for surface mining.

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Work in Hot Pressed Steel.

In *The Iron Age* of May 26, 1892, we described and illustrated very fully the method of making solid drawn steel projectiles for the Government as practiced by the United States Projectile Company, Fifty-third street and First avenue, Brooklyn, N. Y. We now have the privilege, through the courtesy of Arthur T. Porter, manager of the company, of describing work of an unusual character which is now being performed at the same establishment in the shape of hot pressed steel work. The steel bottle shown in Fig. 1 and work of similar character, such as heavy U-shaped cups, heads and disks, are made from plate steel up to 1 inch or more in thickness, and are handled with surprising facility. The heads for the Whitehead torpedoes, of which a large quantity have been furnished for the Government, were made by this company. Intricate shapes used for centrifugal machines are also made from this material by hydraulic pressure.

The pressure vessels shown in Fig. 2 are made by a process very similar to that used in the manufacture of projectiles, the solid billet being first heated, and then by successive passes through powerful machines being brought to the form shown. They are made in one piece without any seam or weld. Fig. 2 shows: 1, The billet; 2, the vessel before closing the end; 3, the vessel after closing the end; and, 4, section of the vessel cut in half. These vessels are used for holding gases, air, &c., under pressure, their small compass and great strength making them superior to every other method of manufacture. A large quantity of these have been furnished to the Navy Department to be used as air accummulators for charging the Whitehead torpedoes on the naval vessels, and stand a working pressure of air of 100 atmospheres. Tests of these vessels have shown that the metal has been increased in strength to a marked degree; that it is free from imperfections of any kind, and that it will stand an enormous pressure before showing even a slight degree of expansion. For instance, a vessel 40 inches long, 6½ inches in diameter and having a thickness of side wall of $\frac{3}{16}$ inch has been tested up to 5000 pounds per square inch, and would probably stand double this amount without undue straining of the material.

As a knowledge gained in the handling of steel in making cylindrical articles, the idea was still further extended in the formation of hot pressed pinions, as shown in Figs. 3 and 4, for which letters patent have been granted. The billet shown in Fig. 3 is at one operation pressed into the form of the pinion shown alongside of it. The billet is 7½ inches in length and 3⅝ inches in diameter. The pinion is 4½ inches pitch diameter, 4½ inches in length, and has 13 teeth. The machine used for this work is a press having a pressure of over 1,000,000 pounds. The above size is one that is largely used in street railway service. These sizes can, of course, be modified when other types of gears are required; the only limit is the power of the machine to make the article. In actual service on electric motors in street railway service these pinions have shown a life far exceeding that of the best cut steel pinions. It is very evident that the process of manufacture compresses the metal, imparts to it an exceedingly fine and tough texture, and as the pinion leaves the mold in so perfect a condition as to require no machining whatever beyond the facing of each end, boring the hole and key seating, the surface left on the teeth is extremely hard and well adapted to withstand the severe usage it receives in electric motor service. These pinions have been tested on the Brooklyn electric roads for several months, and they have made a record for durability beyond any ever attained by other processes.

The device shown in Fig. 4 is intended for testing the accuracy of the



Fig. 1.—Steel Bottle.

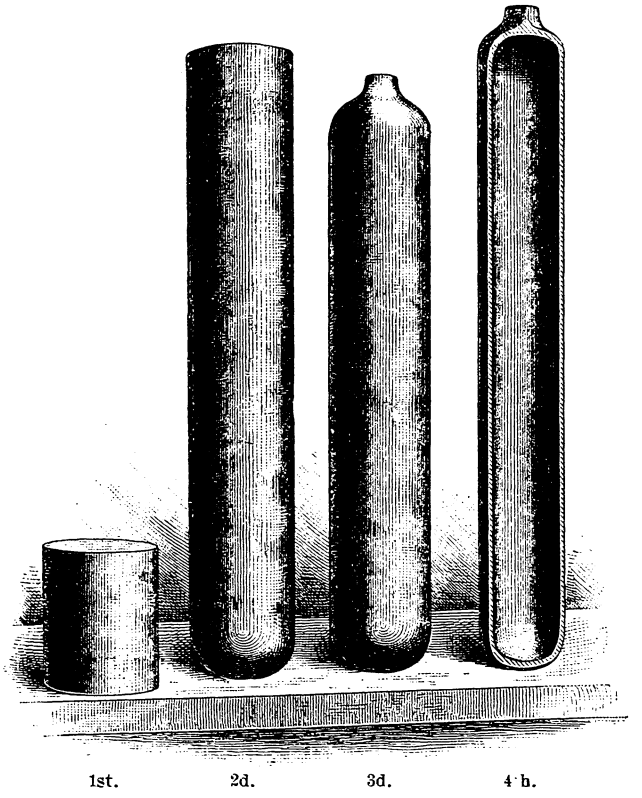


Fig. 2.—Billet and Steel Pressure Vessels.

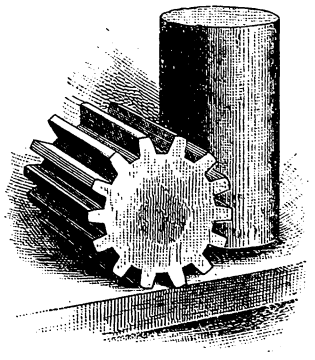


Fig. 3.—Billet and Hot Pressed Steel Pinion.

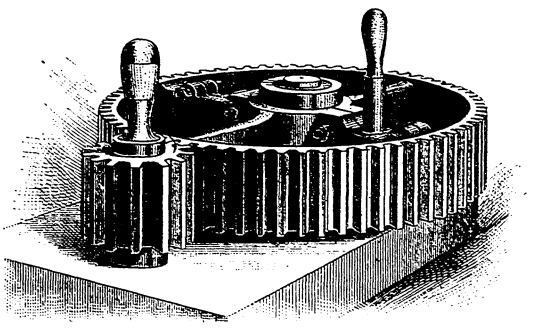


Fig. 4.—Device for Testing Accuracy of Hot Pressed Steel Pinion.

WORK IN HOT PRESSED STEEL.

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pinions after they have been finished. It consists of a spindle mounted on a base and adapted to carry the pinion. A large cut steel gear is so mounted as to engage with this pinion, and provided with a handle by means of which it can be rotated. Pinions direct from the press, and the teeth of which have received no attention whatever, are placed upon this machine and tested. It has been found that they mesh perfectly with the large gear, and if in a few instances they do not mesh, it is but the work of a few minutes to remove any slight swell that might be caused by the wear of the die.

The field for this class of work is widening year by year, as it is impossible to do under the drop hammer what can be done by hydraulic pressure. The decrease in the wear and tear of dies and tools and the ease with which steel can be handled give great promise for the future.

Steel Plate Rolling in Great Britain.

At a recent meeting of the British Iron and Steel Institute a paper was read on "Suggested Improvements in the Manufacture of Steel Plates." The author does not state what kind of steel is to be used in his proposed process, but as the scene of his experiments was Scotland it may be assumed that whenever ingots or blooms are mentioned the quality is soft open hearth.

From an American point of view, the paper presents many amusing features, the principal one being the earnestness and gravity with which a process of rolling steel plates is discussed, which has been a success, to the writer's knowledge, since 1881 in the United States, was tried in Scotland in 1884 and abandoned as a failure. It is now, in the year 1893, brought up for discussion before the most celebrated body of iron and steel manufacturers.

Plainly stated, the paper discusses at considerable length, and in a manner difficult to thoroughly understand at first reading, whether or not it is possible to roll a perfect ship or boiler plate direct from a steel ingot without first rolling the ingot into slabs or blooms and reheating them. In his introduction, the writer of the paper says that he expects to be told that there is nothing new in the idea or suggestion which he offers, so far as a direct process is concerned, but he does claim novelty in his manner of doing the work. In the absence of drawings it is difficult to understand the details of the proposed process, but with all due respect to the author it may be truly stated that to Americans there is nothing new in the method, which has, under slightly different conditions, long been a success in this country. The new method discussed by the British ironmasters consists in rolling the ingot into a bloom, and after shearing to specified lengths to make plates of a required weight, complete the process of rolling without reheating. This, it is claimed, reduces the loss from waste in trimming the plates to a point below the loss incurred when the ingot is rolled direct into a large plate without being cogged and afterward sheared to specified dimensions. This method makes it necessary to use both a blooming mill and a finishing mill, and it is herein that the difference lies between the proposed British plant and the already established and successful American method. In American practice only one stand of rolls is used. The plate mill seen in operation by the writer in 1881 contained one stand of rolls 30 inches diameter, 120 inches long. The mill was equipped with hydraulic cranes on both sides of the rolls and automatic carriers. Ingots weighing 3000 to 6000 pounds were started down the carrying table to the rolls, which were operated by a reversing engine coupled direct, and passed through the rolls forward and backward with such rapidity that plates when finished and thrown off to the leveling floor were often cherry red. In shearing the utmost care was used to consume as much as possible of the plates in rectangular shapes, and in marking, the sizes of small plates were added together in such a careful manner that very little scrap was left. If it did happen that there was a long end or side piece left over they were cut to specified sizes from 5 to 14 inches in width and used for rolling into light sheets. Upon this point the saving in scrap was greater than in the proposed British method, for the reason that in the British plan it would be necessary to trim the four sides of a number of small sized plates and lose the scrap, while in the American method the scrap from the four sides of one large plate only is lost. It is very seldom that a piece of plate is left over having a superficial area of more than 8 feet, while the complete area of a single plate is often 400 feet. This being the case, the blooming mill and vertical bloom shear suggested for the British mill are not necessary. In the United States the much discussed result is accomplished with a plant half the size, employing less than half as many men and at only half the cost. In regard to quality, the American plan has been so successful that the reputation of a brand of steel made in this manner grew to such an extent that it was not an uncommon thing, a few years ago, to mention in specifications that the quality of plate used should be that special brand or something equal to it. The ingots were carefully chipped before being rolled and plates were seldom found to have an imperfect surface. The custom of stipulating that a special brand of steel shall be used has since died out and almost any make of American plates made either in the manner described or with the intermediate process of hammering or slabbing would successfully pass the tests of Lloyd's or the Admiralty.

To further illustrate how far behind some Britishers are in their ideas regarding progressive rolling mill practice, the writer of the paper under discussion states, in effect, that it was not without some little hesitation that he departed from old lines and ruts and adopted the method of coupling engines direct, instead of using gears. There was no need for any hesitation; Americans have long ago proved that coupling a roll train direct to the engine shaft and operating at a high speed is not only perfectly safe, but much more effective in rolling blooms, billets or other heavy sections and plates than if gear wheels were used. It can be quickly demonstrated that on the point of tonnage from a given power or financial outlay Americans are far in the lead. The results are mainly due to the efforts of engineers and rolling mill builders who have taken the place of the old school of managers and they tell a wonderful story of progress, but the author of the paper under criticism warns his British brethren in the following words: "I consider it a mistake to give too unlimited scope to the purely engineering element, with its invariably good spending capacity." It is such extreme conservatism as this that retards progress in British practice. For instance, in the paper referred to, the following words are printed: "It will be observed, on looking at the plan, that the arrangement consists of a train of cogging rolls and the usual roughing down and finishing rolls, which could be driven by one pair of engines, but by preference by two pairs of engines." This complicated mass of machinery is what is proposed to produce a result—viz., rolling ship plate direct from ingots at one heat—which has been accomplished in the United States for at least 12 years past with one stand of rolls and one engine.

In conclusion, the British writer on the subject says: "I have attempted to lay before you some views which at least, I trust, have a little freshness about them, if nothing else." It is the lack of freshness and the extreme differences between British and American practice that have caused this article to be written. American iron and steel men always extend the utmost courtesy to foreign visitors and free access is afforded to plants where these differences are forcibly illustrated whenever Britishers desire to avail themselves of such opportunities and thus avoid the possibility of publicly discussing as new ideas matters already grown old on this side of the Atlantic.

Two of the great German steel works have just made their annual reports. Phœnix of Laar, near Ruhrort, made a gross profit of 2,578,443.69 marks. After writing off 1,160,600.29 marks, there was paid out in dividends 1,296,000 marks, or 8 per cent. on one series of stock, 6 per cent. on another and 2 per cent. on old coupons. It is interesting to note that the company paid 218,250.46 marks as their contribution for the funds for accidents to workmen and providing for their old age. Besides, the concern disbursed 177,737.18 marks for state and local taxes. These figures indicate what heavy burdens German ironmasters must bear. The concern employed 4201 men and foremen, who received in wages 5,041,097.07 marks, or an annual average of 1199 97 marks, equal to $292. The second establishment is Union of Dortmund, which made a net profit of 1,884,363.92 marks, of which 409,519.56 marks was available for dividends. These were paid to the holders of stock series A, the amount being 1 per cent., or 388,647 marks. The company paid into workmen's relief funds 342,930.90 marks, or nearly as much as they distributed in dividends. The total wages paid to 7585 men was 7,735,307.01 marks, or an annual average of 1019 82 marks, equal to $247.82 per annum.

Fried. Krupp of Essen has issued an exceedingly handsome souvenir of the great exhibit at the World's Columbian Exposition. It consists of a series of beautifully finished engravings of the Krupp pavilion and the principal exhibits it contained.

As the result of a stormy series of meetings of the General Assembly of the Knights of Labor, held in Philadelphia, Grand Master Workman Powderly has resigned the position which he has held for so long at the head of that decaying organization. J. R Sovereign of Iowa was elected as his successor.

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Canadian Notes.

In this country, as in the United States, a national insolvency law is being agitated, and also, as in the United States, the legislative fates have been unkind. A bill has been presented for Government sanction and adoption on the eve of three successive sessions of Parliament, but has never got before the House.

The development of electric railroads in Canadian cities has been altogether subsequent to our last tariff revision, and a duty of $6 a ton on steel rails tends to check that development. This duty is not imposed on steam road rails. Delegations have waited on the Government to ask the removal of the duty, which was intended only for horse-car lines. The matter is under consideration, but it is expected the duty will be removed.

Proceedings have been begun to wind up the business of the Polson Linders Company, Toronto and Owen Sound, who succeeded the Polson Iron Works Company in 1892. The assets of the company amount to $150,000.

Wood, Vallance & Co., Hamilton, one of the largest wholesale hardware houses in Ontario, now occupy two spacious new buildings, very elegantly ppointed.

Burrow, Stewart & Milne, Hamilton, foundrymen, have moved into their new premises.

The Thos. McDonald Mfg. Company, Montreal, manufacturers of tinware, &c., narrowly escaped the total loss of their factories and contents by fire. As it was, they suffered a loss of about $20,000, which was covered by insurance.

The directors of the Hamilton Iron & Steel Company have elected the following officers: President, W. Foster, Jr., New York; vice-president, J. H. Tilden; treasurer and general manager, J. J. Morehouse, New York; secretary, H. N. Curtis, New York.

The style of the Doty Engine Works, Toronto, has been changed to that of The Bertram Engine Works Company. A steel conduit, 7 feet in diameter and 60 feet long, has recently been turned out from the works for the new Sault Ste. Marie Canal.

The Canada Tool Works, Dundas, have turned out for the Nova Scotia Steel Company, New Glasgow, N. S., what is said to be the largest turning lathe ever built in Canada, to be used for turning heavy steamboat shafts and forgings. It weighs 34 net tons.

T. D. Graham of the Graham Nail Works, Toronto, suddenly left his place of business some time ago and has not turned up since. He was supposed to be doing a flourishing business. His departure appears to have been premeditated, judged by the precautions he took to dispose of movable property and secure what money he could. H. S. Howland & Co., the chief creditors, took possession of the works.

The Ontario Malleable Iron Company, Oshawa, Ont., have made considerable extensions to their premises and plant.

At their annual meeting in Toronto the Canadian Brass Manufacturers' Association re-elected Robert Mitchell, Montreal, as president, James Morrison, Toronto, first vice-president, and A. W. Glassford, Montreal, secretary. The annual agreement was renewed. It was decided to ask the Government to withdraw the present 10 per cent. duty on raw material, as that is deemed a hindrance to an export trade.

Of Ontario's manufacturers who received awards at the World's Fair may be mentioned John Bertram & Sons, Dundas, for drilling, planing and shaping machines; the Central Bridge Works, Peterborough, for power hammer; Stevens, Hamilton & Co., Galt, for attachment for drilling machine and shaping machine; the McClary Mfg. Company, London, for tinware.

The Minnesota Moline Plow Company are credited with the intention of erecting a large warehouse in Winnipeg, from which they purpose to distribute their implements through our Northwest.

Alex. Rankine is now in possession of the St. John Bolt Works, St. John, N. B. He is making some improving alterations.

New machinery, notably several of Miller's torpedo nail pickers, is being introduced into the works of S. R. Foster & Son, St. John, N. B., manufacturers of wire and steel nails, tacks, &c.

The Trottier Axe & Edge Tool Company, Three Rivers, Quebec, have rebuilt their factory, which was burned down some time ago. At the company's annual meeting the other day the following officers were elected: R. W. Williams, president; N. L. Denoncourt, vice president; A. T. Pothier, secretary and manager; N. Carignon, treasurer.

For the three months beginning August 1, the shipments of ore from Kaslo, B. C., amounts to $133,325.

The anthracite coal mines near Calgary are now putting out about 1000 tons daily and shipping it chiefly to the East.

The increased production of pig iron in Canada has had the good effect of lowering prices from $3 to $4 a ton in recent years. Formerly the prices of imported pig were a matter of competition between British and American brands, in which both were on equal terms in respect to duty, but in which the American had an advantage in regard to the interior demand in the matter of freight. But the product of Nova Scotia furnaces has been forcing these outside competitors down to still lower prices. The Londonderry, the New Glasgow and the Ferrona works in Nova Scotia produce a very acceptable iron, and the last named in particular having pushed business very actively this season as far west as Montreal. Foundrymen and importers have for some time been expecting a lowering of the duty on pig iron, and in anticipation of such change have been keeping reserve imports in bond for the last six weeks. That check to importation has benefited domestic producers of pig.

The Drury Nickel Company, in Algoma, after expending about $150,000 for the development of their nickel property, have not kept up with the demands upon them on liability account and are to be wound up.

The collection of minerals which filled the Ontario section of mines and minerals at the World's Fair is to be preserved, but divided up. Part goes to the Toronto School of Practical Science and part to the Toronto School of Technology. Selections have been made for the International Fair at Antwerp. The exhibit carried off 35 awards at Chicago.

Is Crude Oil a Cheap Fuel?

The use of crude oil as a fuel for manufacturing purposes has claimed a great deal of attention for many years past. It has been used extensively on the Continent of Europe, particularly on steamers plying the trade of the Black Sea. Experiments without number have been made both in Europe and America and the practical application of the fluid for generating heat has been demonstrated a success beyond doubt. Methods of burning and styles of burners are counted by hundreds, but there is a lack of data for the use of beginners in making their estimates of probable cost of the fuel after the plant is properly installed as compared with coal.

It has been the privilege of a correspondent of *The Iron Age* to visit and inspect many plants where crude oil is extensively used. The various methods of its application are an interesting study, but figures regarding cost vary to such an extent that it is found to be a difficult matter to ascertain the actual value of the fuel in various localities. If a plant is carefully designed and properly attended to its convenience and cleanliness soon become apparent. There is no residue to remove and the oil is inexpensively conveyed to the burner. Repairs are slight and much less labor is required than if coal were used, but there are no records available showing the quantity of oil consumed under varying conditions from one year to another. Statements can be found showing the consumption during one to six months, but what is wanted by those who would become users of oil as fuel is a record for at least one year. The reason for this is that during warm weather the oil will keep at a temperature in the storage tanks which makes it fluid enough to pass freely through the pipes without being heated, consequently the cost of conveying oil to the burners is less than during winter, when a pipe containing live steam must be placed alongside the pipe containing oil so as to keep it in a fluid state; a coil of steam pipe must also be placed in the storage tank, and, further than this, steam must be passed through the tank car before the oil can be pumped to the storage tank. There are bursting pipes and general repairs to be contended with during the winter which the plant is exempt from during hot weather, and the items of cost vary materially during the year. For these reasons none but figures of a year's consumption should be accepted to establish the relative cost of the fuel as compared with coal. For instance, if good coal for use in a heating furnace or for generating steam in a boiler is worth $1.75 per ton at a given point, at what price is oil equal to it in economy as a fuel? This is a question which interests many readers of *The Iron Age*, and the person who can and will satisfactorily answer it will render a valuable service.

The Tennessee Coal, Iron & Railroad Company have authorized the construction of an experimental concentrating works of 125 tons daily capacity. The plan is to calcine the lean ore of the district and concentrate it by magnetic concentration.

Bolling & Lowe of 2 Laurence Pountney Hill, London, the well known iron merchants and contractors, have issued a very interesting table of foreign weights and prices based on the English ton.

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The Coxe Furnace.

Eckley B. Coxe of Drifton, Pa., described in a paper read at the Chicago congress, before the American Institute of Mining Engineers, a furnace designed by him, with automatic stoker, traveling grate and variable blast, intended especially for burning small anthracite coal. We quote as follows from the paper in question :

Having determined, in a general way, what seemed to me the proper conditions for burning small anthracite economically, I started to design a furnace which would, as far as possible, fulfill the required conditions, which were :

1. To ignite the coal and burn it up without mixing it with fresh fuel; that is, that fresh fuel would not be added to the already partially consumed coal.

2. To have the furnace so arranged that the combustion should be continuous and uniform; that is to say, that when the furnace was in use the condition of the fire would be practically the same at any hour of any day of any week of the year.

3. To make the work of firing as easy as possible, so that a minimum number of firemen would be employed, and that the whole operation of the furnace would be controlled by an intelligent man, who would have more use for his brains than for his muscles. The idea being that in a large and complete plant the coal would be brought from the source of supply by elevators or drags, and fed to the furnace without hand labor, and that the ashes would be carried to or dumped into a pocket, where they could be easily loaded into cars in the same way. No pokers, slice bars or other similar tools should be needed.

The illustrations which will be referred to in the description of the process are as follows:

Fig. 1.—Diagram illustrating the process and furnace for burning the small sizes of anthracite coal.

Figs. 2 and 3 —A reduction of the working drawing from which the iron work of the automatic stoker furnace for the Stirling boilers at No. 3 Colliery, Oneida, Schuylkill County, Pa., was built.

Figs. 4 and 5.—Side and transverse elevation of the Stirling boiler plant at No. 3 Colliery, Oneida, Pa., showing the manner in which the grate is placed under the boilers; also the arrangement for moving the grate and supplying air to the furnace.

The furnace consists essentially of a traveling grate moving from the right toward the left. The coal, which is brought to the hopper 20, Fig. 1, by a drag, spout or any other convenient method, feeds down by gravity over the fire brick 14 on to the traveling grate. The coal is carried slowly at the rate of from 3½ to 5 feet per hour toward the other end. In the beginning of the operation the coal on the right hand side of the furnace is ignited, the other part being covered with ashes or partially consumed coal After the furnace is heated, the fire brick 14, which we call the "ignition brick," becomes hot, and the coal, passing down under the regulating gate 21, becomes gradually heated, and by the time it reaches the foot of the ignition brick is incandescent. In some cases the coal becomes hot enough to ignite soon after it passes the regulating gate 21. Under the grate there are a number of chambers made of sheet iron which are closed on all sides except on top. The blast from the fan which is used to furnish the air is blown into the large air chamber, which is the second one from the right. These air chambers are open on top, but the partitions are covered by plates 27, 28, 29 and 30. These plates are of such width that no matter what may be the position of the grate bars 18, there is always one resting upon this plate, so that the air cannot pass from one chamber to another except by leakage along the bar. The result of this arrangement is that if we are blowing into the large air chamber with a pressure, say, of 1 inch water gauge, the pressure in the next air chamber to the left would be about ¾ inch, the next to that ½ inch, and the next to that ¼ inch. Of course, these figures are not strictly correct, and are used merely for the purpose of illustrating. The pressure in the air chamber to the right would be, say, ¾ inch. The result of this state of affairs is that the coal when it arrives on the grate is subjected to a pressure of blast sufficient to ignite it, but not too strong to impede ignition.

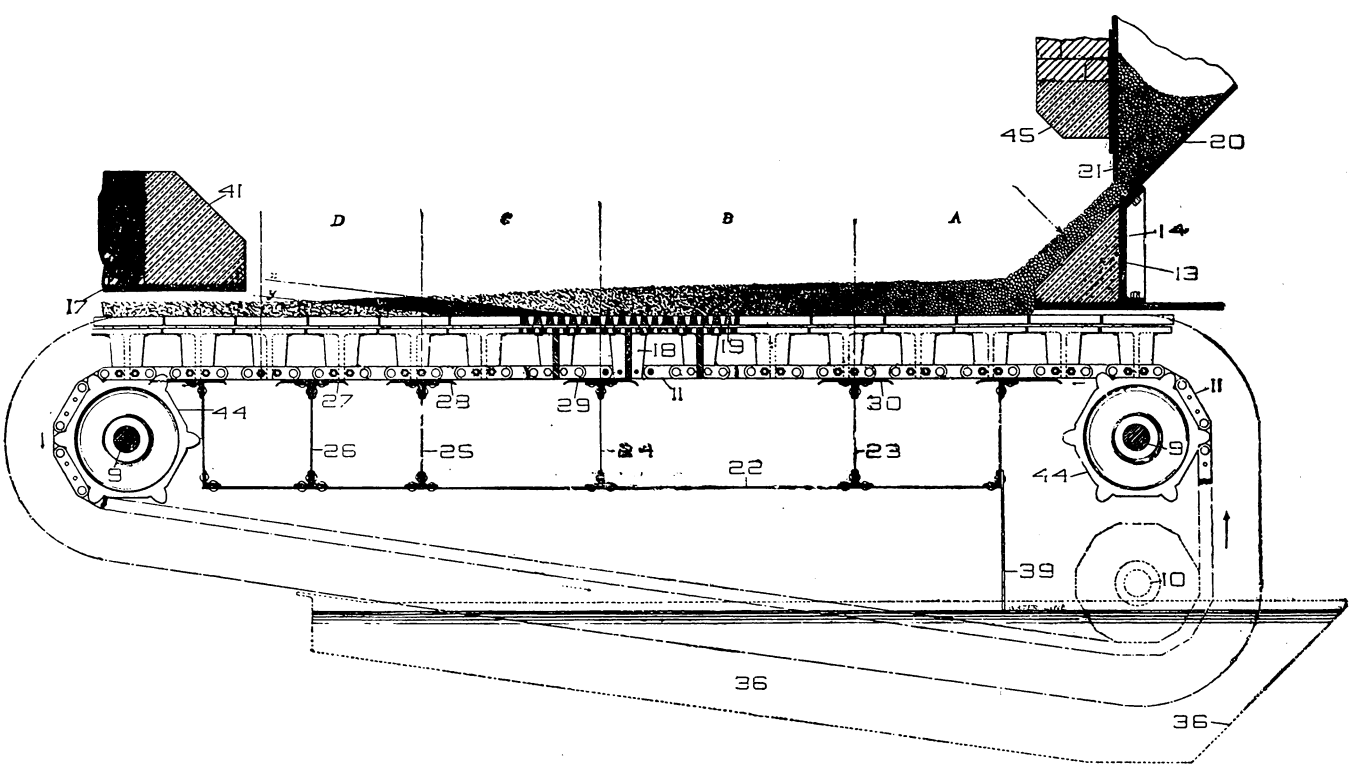


Fig. 1.—Furnace for Burning Small Size Anthracite Coal.

THE COXE FURNACE.

In order to regulate exactly the pressure of the air in each of the compartments the partitions are provided with registers, by the simple opening and closing of which the pressure in the air chambers can be varied to suit the conditions.

As the thoroughly ignited coal passes slowly over the second compartment (where the air pressure is a maximum), it burns briskly, and then slowly passes over the third compartment, where the air pressure is less and better suited to the combustion of the thinner layer of partly consumed coal. The bed continues to diminish in carbon, and to be subjected to less blast, until, finally, the hot ashes are cooled off (before being dumped) by a very gentle current of air, which is heated and mingles with the carbonic oxide produced in the zone of intense combustion B and converts it into carbonic acid, the object being to subject the coal as soon as it arrives on the grate to a pressure of blast which is

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the proper one to ignite it; then burn it with a blast as strong as will produce good combustion, and as the carbon is eliminated and the thickness of the bed becomes smaller, to diminish the blast to correspond to these conditions. The mass of coal remains all the time in practically the same position and condition in which it was placed on the grate, except so far as altered by the combustion. It is evident that there would be a tendency of the air to pass out between the brick rest 13 and the top of the grate bars 19, which have no coal on them, and if no provision was made to prevent it the air would pass under the air chamber along the line of travel of the grate and enter the furnace through the ash exit at 17, thus forcing a large excess of air into the space under the boiler and causing a loss in two ways: 1, In the power necessary to furnish the air, and 2, in the heat carried off by the surplus of air going out the stack. This is avoided by having the returning line of grate pass into a water pan, 36. By means of the partition 39, which passes down below the surface of the water, a water seal is obtained which absolutely cuts off all connection between the front and back ends of the lower portion of the furnace along the line of travel of the grate. The ash pit, which is practically the part to the left of the plate 39, is closed by a door out of which the ashes are taken and the front end of the boiler is closed by a sheet iron casing, which passes down into the water in the water pan, thereby preventing the air from passing out between the brick rest 13 and the grate bars into the free air. There is space enough between the extreme right hand end of the water pan and the vertical wall of the casing to allow any ashes or dirt that may accumulate in the water pan to be taken out very easily.

From this brief description the continuous action of the furnace can be easily understood. The coal passing continuously down from the ignition brick is ignited gradually, burned out, and the ashes are carried off or dumped by the grate bars as they descend.

The coal burns out from the bottom; that is, the first thin layer of complete ash forms on the bottom and gradually becomes thicker until it reaches to the top. At first the ash is very hot, but the gentle current of air passing through it gradually cools it off, and when it is dumped into the ash pit it is not very hot. Ths shaded portion beginning in C and extending into D represents the gradual formation of the ash, and the part to the left of that shows the ash practically cooled or cooling.

A certain portion of air from which the oxygen is not removed passes through and cools the ash, but in the first sections of the bed of fuel near A a certain amount of carbonic oxide is formed, due to the fact that the amount of air blown through is not sufficient to properly consume all the carbon and the incandescent carbon decomposes the carbonic acid, forming carbonic oxide, very much as in gas producers. This carbonic oxide is burned in the furnace by the air which has passed through the ash. Our experiments have shown us that if we allow the gases to pass through the furnaces with a velocity that will permit the carbonic oxide to burn completely before reaching the parts of the furnace too cool for the combustion to take place, we get a better result, and in one of our plants we have found an increase in efficiency and economy by putting a damper in the stack and checking the flow of gases. Of course, there is a velocity for each furnace above or below which you have less economy and less efficiency, provided you are burning a certain number of pounds of coal per hour. Having thus briefly described the process, I will now give some details as to the construction of the grate and the method of placing it under the boilers.

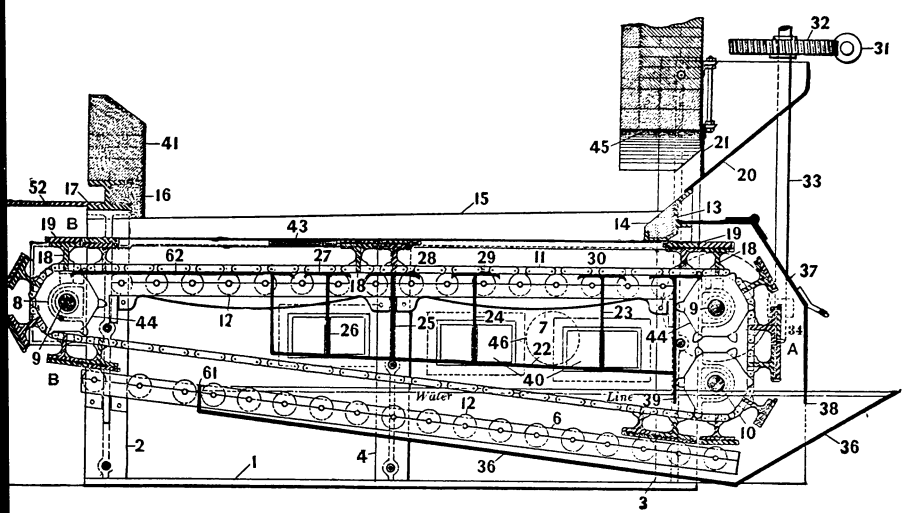


Fig. 2.—Section of Automatic Stoker.

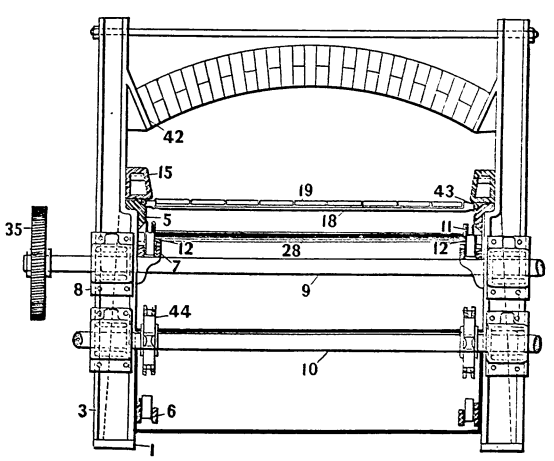


Fig. 3.—Cross Section Automatic Stoker.

One of the first difficulties we encountered in our experiments with the traveling grate was the fact that if we had a fire brick side wall there would be a tendency to form clinker along it. This clinker would retard the coal that should be carried forward, and have a tendency to break up the fire near the walls and allow the air to escape, giving considerable trouble. This has been avoided by making the sides of a hollow cast iron bar, called the water back. This bar is horizontal on the bottom, but the upper part rises at the rate of $\frac{1}{4}$ inch to the foot toward the front end, which is also the hottest end. The water is fed in at the back end and flows out at the top at the front.

Our experiments with the Stirling boilers show us that if we pass the feed water which is necessary to supply the boilers through this water back on each side the water leaves the water back at a temperature of 110° to 120°. This goes directly to the feed pump, and the heat is all utilized. We also found that the coal had a tendency to burn a little more rapidly along the water backs, so that the layer of partially consumed coal became thinner there more quickly than in the center, thus allowing a too free passage to the air at that point. This has been avoided in two ways: 1, By having no holes in the grate bar at that point; 2, by making the water back narrower at the top than at the bottom, which gives a larger quantity of coal to be consumed along the water back, so that, if anything, the tendency is to have the layer of ashes there a little thicker than in the center. It is also important that there should be practically a tight joint between the end of the bar and the side along which it slides. This is accomplished by having a casting, 5, a portion of which, forming an inclined plane, makes the fixed side. The joint is made by round bars of iron cut in sections about 1 foot long. This bar of iron rests on the inclined plane and rolls against the end of the bar 18. If one bar, 18, protrudes more than another it simply pushes this iron bar, 43, back; if it recedes the iron bar follows it down. If the bars 43 were all cut off square at their ends, the moving grate bars, if not exactly of the same length, might catch upon them if one projected a little beyond the other; the bars 43 are, therefore, rounded off at the end. Since we have adopted this plan we have had no trouble whatever with the leakage of air.

The grate is formed of two parts; the

THE COXE FURNACE.

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lower, 18, which is T-shaped, consisting of the vertical rib and the horizontal plate. The horizontal plate is perforated with a number of conical shaped holes, wider at the bottom than at the top, as shown in the drawing. At each end is a lug, which fits into the chain 11. There are two holes cast in the bar, and two holes drilled in the alternate or long links of the chain, and by means of two bolts each end of the bar is fastened to the chains. The upper part of the bar 19 consists of square plates, which are about 7⅛ inches square. The holes in these are wider at the top than at the bottom. They are simply placed upon 18, being separated ¼ inch from it by three little stops, 55, which makes an air space about ¼ inch high between the plates. The holes are so arranged that the lower ones are immediately under the center of the solid parts of 19. In this way it is impossible for the coal, no matter how fine, to roll through, as the natural slope of the coal will not reach the openings in 18. In order to hold them in their places two clinch pins, 54, of soft iron are cast into 19. The plates 19 are simply placed in position over 18, and, with a couple of strokes of the hammer, the soft iron cinch pins are bent, as shown, thus holding the upper part of the bar firmly in its place and allowing it to be removed easily when necessary. It will be observed that 19 projects a little over 18 on the left hand side and that 18 projects beyond 19 on the right hand side, so that when two complete bars are together they overlap and close the joints so that no coal can fall through. By constructing the grate in this way the only parts exposed to the hot fire are the small square plates 19 on top. The main or carrying bar 18 is pretty well protected from the intense heat, does not warp or twist, and shows, so far, no sign of giving out; this is very important. The expansion is also taken care of.

Figs. 4 and 5 show the plant at Oneida No. 3. It consists of two 150 horse-power Stirling boilers of the ordinary type to which this grate has been applied. In this case the fire brick arch 60 covers almost the whole of the grate, and the gases from the entire grate mingle at the outlet. The result of having this fire brick arch is to keep up an intense heat over the grate, giving a chance for most of the carbonic oxide to unite with the oxygen of the free air before the gases become cold by contact with the heated surface of the boiler. It appears probable that it will be an advantage to remove the heating surface of the boiler from the combustion chamber, so that the gases will not come in contact with the cooler iron surface until the carbonic oxide has been entirely burned and a thorough mingling of all the gases has taken place. In this case the plant, which will consist eventually of several batteries of boilers, is so arranged that a drag will carry the coal into a coal hopper in front of each boiler, and that the ashes will drop into an ash pit, 50, in each battery, from which they will be loaded into a car when the pit is full by simply opening the gate at the end of the pit and scraping them out.

This drawing also shows the method by which the engine drives the fan 59 and the shaft upon which the cone pulleys 49 are situated. These cone pulleys drive the cone pulleys 48 by which the worm gearing is actuated. They enable us to change the speed of the grate without changing that of the fan, and to change the speed of the fan without that of the grate, as the relation between these two speeds varies with the character and size of the coal.

The main shaft of the engine by means of worm gearing drives the drag that is to carry the coal into the coal hopper.

The method by which the air is carried from the fan into the middle compartment of each grate is also shown on this plate. In this case the coal is fed in front and the ashes taken out at the back of the boilers.

We have been running successfully the oldest plant about eight months. We have made many improvements, principally in the line of simplification and elimination of unnecessary parts.

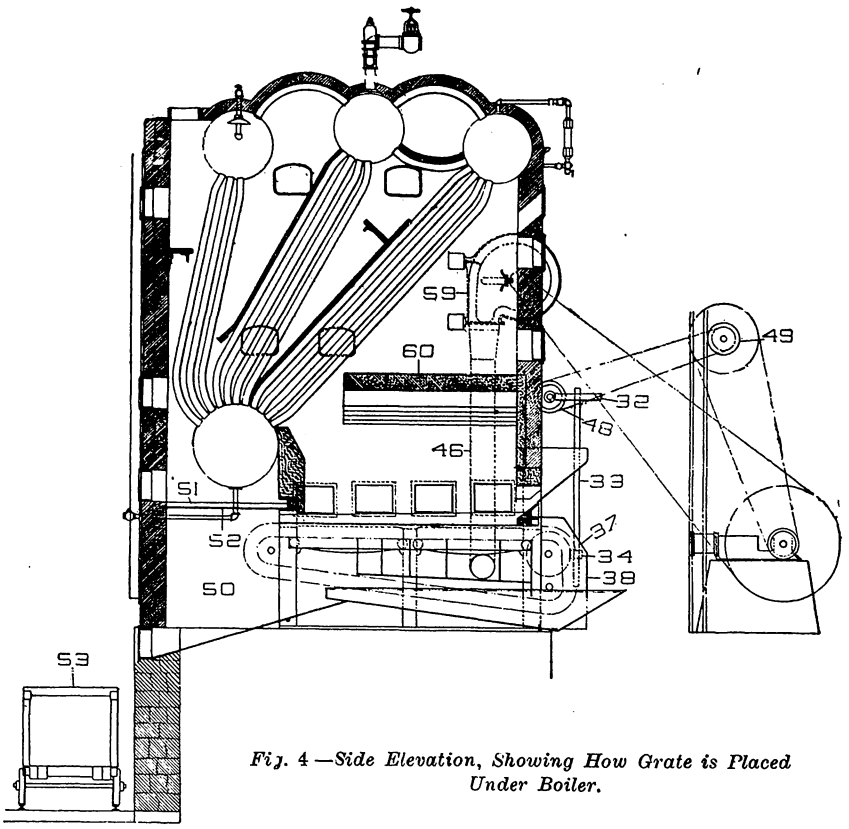


Fig. 4.—Side Elevation, Showing How Grate is Placed Under Boiler.

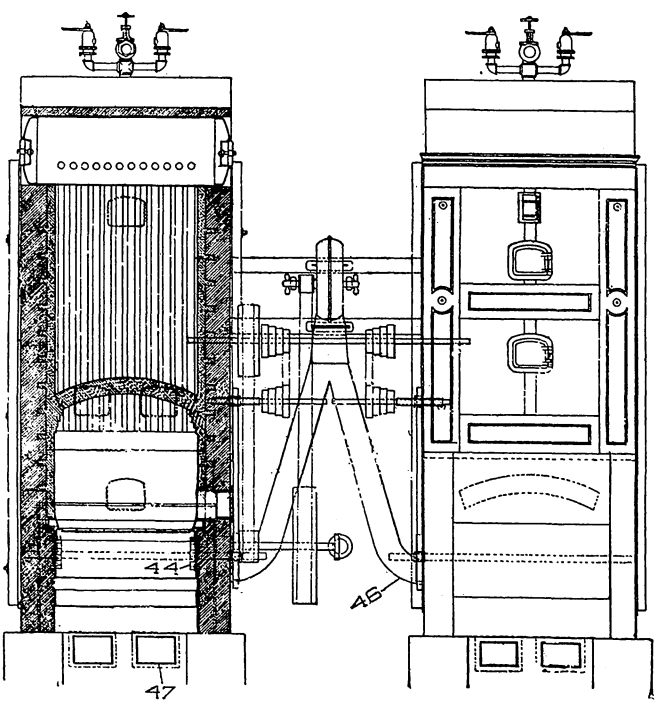


Fig. 5.—Cross Section of Fig. 4.

THE COXE FURNACE.

Since we erected the Stirling boilers, some six weeks ago, we have been making experiments with them, using different sizes of coal. We do not claim that these results are complete and absolutely accurate. They are correct as far as they could be under the circumstances. We have not as yet arranged

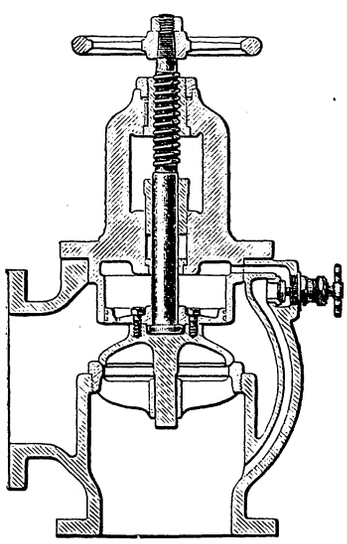
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to analyze our stack gases or determine to our own satisfaction the moisture in our steam. We are engaged in this at present, but we do not wish to give the results until we have verified them by repeated experiments and checked up the calorimeter. The moisture is about 2 per cent. We have, we think, established one fact, and that is that the size of the coal does not materially affect the number of pounds of water evaporated per pound of combustible. It does affect the number of pounds of water evaporated per square foot of heating surface.

In the course of these tests it has been shown to our satisfaction that the best results would probably be obtained by extending the air chambers to as near the dumping end of the grate as possible, and regulating by the registers the pressure (which may be very slight) in the last air chamber, so that a small amount of air may pass through the ash as near to the dump as possible. The amount of carbon in the ash can, we think, be diminished materially by attention to this point. In the new plants now under construction we are extending the air chambers further toward the dump than we did with those with which the experiments were made.

The Schutte Balanced Steam Valve.

This valve, made by L. Schutte of Philadelphia, is here shown in section. The balancing feature in heavy valves



The Schutte Balanced Valve.

is designed to facilitate the operations of opening and closing them while under heavy steam pressure, and to relieve the strain or friction on the screw spindle. The balance in the Schutte valve is obtained by means of a small auxiliary valve inserted in the body of the main valve, having a separate steam way leading to the piston plate above the valve, which plate is made to fit loosely. By opening this side valve the pressure below the valve and above the plate will be even, no matter whether live steam is exerted below or above the valve. The valve and piston plate being of even diameter, the valve becomes practically balanced and the main valve is opened or closed with little effort. The small auxiliary valve is sometimes placed on top of the main valve, with a passage through it, in which case the valve forms part of the spindle, with sufficient lost motion, and is operated by the spindle. This arrangement, however, is practicable and desirable only when the steam pressure is on the top of the valve, leaving a small overpressure downward. The valves are made in both globe and angle patterns.

THE WEEK.

The Manchester Ship Canal will be formally opened for traffic on December 7.

By a recent decision of the Supreme Court of the United States the great lakes are comprehended within the term "high seas." Justice Field, in delivering this opinion, stated that there has been an advance and development as respects the doctrine of high seas, and that as used in the act of Congress it means water over which no particular State has jurisdiction.

The growth of the shipping interests of the great lakes during the past six years has been of a very striking character. From the annual report of the Commissioner of Navigation just issued it is shown that the tonnage which passed through the Detroit River during the year 1892 amounted to 34,785,000 tons, whereas the tonnage which passed through the Suez Canal during the same year amounted to only 7,712,028 tons. The Lake Superior tonnage, which passes through the St. Mary's Falls Canal, increased from 5,130,659 tons in 1888 to 10,647,203 tons in 1893. The cost of transporting grain from Chicago to New York by lake, canal and Hudson River fell from 28¼ cents in 1862 to 7¼ cents in 1893.

The total strength of the United States army on September 30, 1893, was 2144 officers and 25,778 enlisted men. For various causes the army lost 9456 enlisted men during the year and gained 9074 recruits.

The Commercial Cable Company have signed a contract with Siemens Bros. for a new Atlantic cable, to be laid next spring, between Ireland and Nova Scotia. It will be 2200 miles in length and will have the greatest known carrying capacity.

The Bishop of Urgel, in the European republic of Andorra, recently prohibited and anathematized the installation of telephonic apparatus and other supernatural and diabolical electrical necromancy.

Work was begun last week on a new steel bridge to be erected over the Monongahela River at Brown's Station, near Pittsburgh, Pa. The bridge is being built in order to afford facilities for connecting Pittsburgh and Homestead by means of two electric railroads.

Lord Charles Beresford claims that England needs to expend at least $100,000,000 on her navy within the next three or four years in order to bring it up to an equality with that of any other two powers. The naval force of France, his Lordship asserts, is already superior to Great Britain in some directions, notably in the matter of torpedo vessels.

Sir Edward Watkin, the English railway magnate and promoter of the English Channel tunnel, the great Watkin tower—now rising near London—and other gigantic schemes, is now actively engaged in pushing a project for cutting a canal across Ireland, from Dublin to Galway Bay, in order to shorten the route from England to the United States.

Idle miners in Northern Michigan are said to be becoming desperate. Thousands of them, who have had no work since spring, are, with their families, in a state of destitution; cold and disease having lately added to their sufferings. Governor Rich has invited the mayors of the principal cities in Michigan to meet in Detroit with the view of taking action to relieve the distress. From indications it is believed that 10,000 to 15,000 will have to be fed and clothed until spring, as none of the mines can start much before that time.

An interesting feature of the International Exhibition to be opened at Antwerp in May, 1894, will be the exposition, or competition for prizes, of the packing of goods in cases. It is intended to bring out the best methods of packing for various kinds of merchandise.

A San Francisco firm have just ordered 25,000 tons of coal from Tonquin for use by California railroads. Tonquinese coal has for some time been in use in the French navy with excellent results.

Dispatches from the Pacific Coast report that the new United States cruiser "Olympia" in her official run, November 27, made for 30 miles an average speed of 22.25 knots an hour, while for 13 miles of the distance a speed of 25.59 knots per hour was recorded by the patent log. The "Olympia" will evidently be a worthy mate for her Eastern built sister the "Columbia."

November's fire losses show a continuation of the enormous figures recorded for each month of this year. The total fire waste of this country will probably pass the $150,000,000 mark before the end of the year; a state of things unparalleled since the big Chicago conflagration.

Destitution among negroes, which is so marked in many parts of the country, discloses the fact that, owing to the general distress, white men are this winter doing work that only negroes did a year ago.

The Colorado Irrigating Company have projected a canal to irrigate 1,200,000 acres of land in the Salton Desert of that State. The water will be conveyed from the Colorado River, the total length of the canal being about 400 miles, and the estimated cost $5,000,000. Should water be placed on the tract in question, its value would be raised to about $20,000,000.

Sudden cold in the West has caused great suffering, owing to the scarcity of coal which exists in nearly every part of the interior. In many parts of Kansas and Oklahoma coal is entirely unobtainable.

The California Midwinter Fair will have a Ferris Wheel of its own, the necessary castings for which have been made at the Fulton Engineering & Shipbuilding Works, San Francisco. The wheel will be 120 feet in diameter, and will form one of the attractive features of the Golden Gate Park this winter.

A circumstance, which is quoted as an illustration of the effects of hard times, is that the sales of postage stamps in New York in November were less by nearly $50,000 than those in November, 1892.

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The Iron Age

New York, Thursday, December 7, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Western Freight Discrimination.

Adverse discrimination by local railroads has been a long standing complaint of Northern producers. Some of the Eastern railroad systems have yielded to the pressure steadily applied by their local patrons and have made equable rates on commodities manufactured along those lines, but Western managers have been stubborn, and such concessions as they have made up to this time have only been aggravations. There are signs now, however, of a radical change in this policy. Intimations have been given from influential quarters that on at least important business originating at Chicago the interests of the local producers are to be more carefully regarded than has thus far been the case. Whether the policy thus to be changed will have a wider bearing and will characterize Western roads generally cannot now be foretold, but there is good reason to expect a movement of this kind to be somewhat general within the limits of the great traffic associations having their headquarters at Chicago. A change in this respect may bear heavily on the distant producers who are now favored with disproportionately low freight rates on through shipments, but they will have no real ground of complaint if the change is made, especially if local producers are merely put on a perfect equality with themselves.

The persistent refusal of Western managers to put local producers on an even footing with outside competitors in reaching markets further west or northwest shows how deep seated a certain practice can become in railroad management. The growth of manufactures has been very rapid at Chicago and other Western points within the past five years. Commodities are now manufactured in abundance which at that time were largely supplied from other sections of the country. Having supplied local requirements, these commodities seek a market for the surplus, which is naturally further west and northwest. They are confronted, however, with the fact that under certain moss-grown arrangements their own local roads prorate with lines from competing producing districts on such terms as to give their competitors a much lower rate than they can secure to the same points. This is particularly true in pig iron, but also applies to bar iron, nails. and in fact to iron and steel commodities generally. To reach Western or Northwestern markets manufacturers at Chicago or other points in that vicinity must pay from 25 to 50 per cent. more freight than their competitors on such business pay for that part of their haul over the same track and, perhaps, in the same train, drawn by the same engine. This policy is a relic of the days when manufactures in Indiana and Illinois were confined to the local demands of the community and those States were almost exclusively consumers of staple goods. Freight rates were then devised to meet the conditions existing in the local jobbing trade and, perhaps, were satisfactory at the time. Now, however, both jobbing and manufacturing interests have outgrown the arrangements then made and have long since been ripe for a change.

The plea for fair treatment made by these interests is one that appeals to everybody's sense of justice. There are territorial advantages which ought to inure to the benefit of those located in that territory. A distant producer must expect to be handicapped to some extent in endeavoring to secure business in competition with them. Perhaps he may have compensating advantages in cheaper materials or labor, so that he can overcome the natural difference in freight and offer his product at an even or lower rate at the very door of the local manufacturers. Surely he ought not to complain if he is obliged to pay the same freight rates as those manufacturers when he goes further on and competes with them in territory beyond. This is the point for which many Northern manufacturers have been long contending. The day may come when they will expect their local roads to go further and give them special rates so as to exclude outside manufacturers. Their attitude would then be indefensible from a rational standpoint. But their present demand to be placed on merely an even footing with distant competitors is just and reasonable.

A good deal of serious thought is being given to the very grave question of how to take care of the unemployed during the coming winter. In every community there are many men who are initiating measures looking toward relief. Naturally the different boards of trade are taking the matter into their hands. While, of course, local circumstances must govern the action of such bodies, it would seem that some interchange of opinions ought to take place between their representatives. A good many very important questions of common interest might be very profitably discussed. Delegates of the boards of trade of the great divisions of the country should assemble at such convenient points as Philadelphia, Chicago, Denver and Nashville, to exchange estimates of the magnitude of the misfortunes which they must soon alleviate, and discuss the best and safest methods of reducing distress among the worthy to a minimum. It needs only the invitation of a few leading chambers of commerce or boards of trade to bring about such gatherings, which might do so much good.

The Mesaba Range and Next Year's Prices.

One of the most important factors which will shape the course of prices for steel during the next year will be the Mesaba ore range. The situation is so complicated and is so largely influenced by purely personal considerations that the probable course of events cannot be readily foreseen. Large buyers of ore argue that next year must be one of exceptionally low values. The ore miners, on the other hand, insist that they do not propose to throw away money and that they will be in a position to demand fair prices.

There can be no doubt concerning the ability of the leading Mesaba range mines to put good Bessemer ore into lower lake ports at very low prices, say $2.75 per ton. It is well known that some of the large mines can do even better than that. In fact, with a 65-cent rate from the mines to Duluth, which will be next year's figure, and a $1 lake rate, which may be attained, there is at least one mine which can lay down ore at $2.10, lower lake ports. for standard Bessemer. The mine in question is the Mountain Iron, a fee mine, which has no royalty to pay. It is understood that the Rockefeller interest has purchased next season's output of this mine at 50 cents on cars, which would place the cost at, say, $2.35 delivered. The Rockefeller interest is identified with the syndicate which controls the Mountain Iron mine, the Duluth, Mesaba & Northern Railroad and the fee in a number of other large properties originally held by the Merritts. The syndicate, as such, makes a profit on the haul on the Mountain Iron ore. The Standard Oil party can set the market pace with its block of ore, if it be thought desirable to crowd the other Mesaba mines, which have to pay a royalty of 25 to 65 cents per ton. In some instances the leases of those who now control some of the big mines call for the extraction of a minimum quantity of ore. In one conspicuous case it is 300,000 tons, at 65 cents per ton.

There is a good deal of diversity of opinion on the point to what extent minimum tonnage under the leases prevails. Some authorities estimate it at 2,000,000 and over. Leon Merritt puts it at only 1,000,000 tons. He states that many of the State land leases allow seven years before the payment on a minimum quantity becomes peremptory. In the case of the oldest of these leases there is still two years leeway before the provision in question is in force. Others still have five years of grace. It is claimed that therefore the pressure upon producers will not be as great as is claimed. The point is made that the same mines had the same obligation this year and did

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not go under. While this is true, it cannot be denied that the Mesaba mine owners were in very sorry financial straits during the past depression. They may be in possession of great prospective wealth, but were then, and partly are now, closely squeezed. Very little cash was in circulation, the only currency being labor checks, which are now being paid off gradually.

A considerable part of the Mesaba ore brought down this season is still unsold, going to swell the very large quantity of ore at lower lake ports which must still find a purchaser, and which is even to-day a heavy load for the Cleveland banks. These accumulations are a menace to prices for the next season.

On the other side of the question are the following considerations: The capacity of the Mesaba range for production is limited by the ability of the existing roads to handle the tonnage, It is not believed that the two roads will have all the tonnage they can handle, with what one of them does in the way of hauling Vermillion, if they are called upon to carry 2,500,000 tons of Mesaba ore. Such an amount is inadequate, even with the stocks at lower lake ports, to cover the requirements of the Western market, even though consumption be much restricted. The new road which the Minnesota Iron Company propose to build into the Mesaba, in order to avoid the heavy grades on their present branch, cannot be completed in time to relieve the situation in 1894. Therefore, it is argued, prices will not be as low for the next season as they have been during this year's financial panic.

Some of the Mesaba interests talk of going a good deal further than the mere mining, transportation and marketing of iron ore. They hint that they are perfectly able financially to take care of all the profits until the finished steel goes into the hands of the consumer. In other words they are considering the plan of putting up blast furnaces and following that up with steel works and rolling mills. With the very latest appliances, and a very cheap ore to start with, they claim to be able to meet any competitor.

That, of course, is a still somewhat distant contingency. What interests the iron trade more at the present moment is what will be the basis of values next year. The principal interests in the Mesaba range are undoubtedly in a position to dictate low prices if that should happen to suit them. It is certain, however, that the producers of the older ranges are not going to stand aside without striking a blow for their share of the markets. If low prices for ore prevail, the pressure which the Western rolling mills and steel works have exerted on the Eastern markets during the present year will continue unabated.

If there be one article upon which a specific duty is absolutely necessary, it is scrap iron. We believe that even Mr. Wilson himself will recognize that it is as difficult to value this article as it would be to perform a similar operation with the accumulations in a Yankee garret. Scrap iron is collected in all quarters of the globe, and in markets distant from rolling mills or steel works is very low in value. A proper appraisal would be a matter of the greatest difficulty and there might be a very wide difference of opinion among honest men. But if any effort to defraud by undervaluations were made the Goverment would be practically helpless. Unless a change is made we expect to witness an approach, in the Eastern iron trade, to the condition of affairs in the Dominion, where the finished iron trade is based almost entirely on the rerolling of scrap.

Taking Stock.

The usual time for taking stock and making up the final balance sheet for the year in many kinds of business is fast approaching. With its approach, a growing anxiety to know just what the year has brought forth of prosperity or adversity will possess the minds of men to whom the memorable commercial events of the year have already brought anxiety enough. Some of these will undoubtedly have to face a very unsatisfactory result in the aggregate of the year's trade, and very few will be able to congratulate themselves upon large profits gained in 1893. The majority will esteem themselves worthy of congratulation if they have paid all expenses and come out even. All who have been able to do this may feel sure that, with improved conditions of trade certain to come, they can compensate themselves for the trials from which the business of the country is emerging.

Nothing exceeds the annual inventory in importance as related to good business methods. But with oversanguine or timorous men it often is made the source of gross self deception. A man who deceives himself about anything is the most complete of dupes. The man of true courage and commercial ability, however much he may be willing that others may deceive themselves as to what he may be worth financially, is most reluctant to hide from himself the exact condition of his affairs. Therefore, in estimating the value of his assets, if any uncertainty exists as to what any particular asset may be worth he rather estimates it at its lower than its higher possible value.

In manufacturing business where iron founding is a prominent element, assets frequently much overrated are the patterns, flasks, core boxes, &c. These things often cost a great deal of money in the aggregate, and in valuing them from year to year there is a tendency to put down patterns in particular at their original cost, even after they have ceased to be of that value either on account of deterioration, or because the goods they were made for have become more or less unsalable. An element in the value of a pattern is its present utility as one of the appliances for conducting business. It may, and often does, become merely so much lumber, and, as such, of no value whatever as an asset. As to core boxes and flasks, especially if these be of wood, they deteriorate rapidly in use, and an underestimate of wear and tear may lead to erroneous conclusions in the profit and loss account. An exaggerated valuation of assets has often proved a rock upon which commercial enterprises have been wrecked.

The Cost of Billets.

A rough estimate of the items of cost of converting $11 pig iron into 4 x 4 soft steel billets is given in the following, on the authority of an experienced steel maker:

Cost of Ingots.

Pig iron	$11.00
Waste, deducting value of scrap	1.65
Labor	1.00
Ferromanganese	.30
Refractories	.30
Molds and stools	.30
Fuel	.25
Repairs	.50
Total ingots	$15.30

The cost of rolling ingots to billets is figured as follows:

Ingots	$15.30
Waste, deducting value of scrap	.75
Labor	.50
Fuel	.25
Repairs	.25
Total	$17.05

It will be observed that this covers only the bare cost of conversion, without any allowance for general expenses and interest on plant. The figures seem to justify those who claim that the cost of conversion is close to $6 per ton.

It may be well in this connection to call attention to the fact how large a share of the cost is the item of waste. In the figures quoted it aggregates $2.40. This figure, of course, varies with the first cost of the raw material, so that every statement bearing on the cost of conversion should always be coupled with a report on the price at which the pig iron has been put in. We need hardly state that $17 billets can only leave the most moderate margin to those who produce their own pig iron at a cost below the market price now ruling, say $11. The very closest figuring which we have observed lately brings down the cost of pig to the most favored producers to a shade over $10. When it is considered that this is based on Mesaba ore at $2.75, lake port, on coke at $1.10 and on all items down to the lowest point it will be clear that such values have not in them the elements of permanency. Profits all along the line cannot be utterly squeezed out indefinitely. When they do begin to creep back into the accounts their cumulative effect at the end of the line may be easily reflected in jumps of dollars.

Some time since we had the privilege of examining two machines built to special design and intended to do practically the same work. They differed widely, both in design and

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construction, and especially in the workmanship. One machine, A, was pronounced by the foreman of the shop to be of most excellent design, to be easily understood and requiring little or no attention—in fact, as he expressed it, he could put any man in the shop in charge of the machine without instruction. The other machine, B, was more complicated in design, required more time in the adjustment of the work and called for the services of one of the best men in the shop and considerable study on his part to run it. The workmanship on this machine was of the highest grade. The cost of the two machines was about as 1 to 2, machine B being the costlier, and the output was in favor of the latter machine in the proportion of about 2 to 3. The point to be brought out is that had the makers of machine B made machine A it would have been, in the opinion of the foreman, perfect, the workmanship on machine A being decidedly inferior; but had machine B been constructed by the builders and designers of machine A, it in all probability would not have worked at all. The whole thing shows that machines of excellent design may originate in shops incapable of doing first-class work, while at the same time establishments noted for accuracy in their workmanship may fail once in a while in the design.

One of the most extraordinary features of the Wilson tariff bill, which is claimed to be the perfection of scientific balancing, is the lack of gradation of duties from the raw to the finished article. Steel billets have a 30 per cent. rate. Wire rods, a step further in manufacture, are the same. Wire, with all its many intricate products, and highest class of material for some purposes, rests on the same basis, although manufactures not otherwise specified take the 35 per cent. rate. Wire nails, which are made from wire, duty 30 per cent., drawn from rods, 30 per cent., rolled from billets, 30 per cent., are put down to 25 per cent., or lower than the whole line of intermediate products from the pig iron, on which the duty is 22½ per cent. Steel billets and slabs, the raw material for a long line of products, have a higher rate of duty than the latter, including cut nails and tacks, fish plates and horseshoe nails, which are put down at 25 per cent. Yet common bars and plates are to carry a duty of 30 per cent. The saw makers have apparently roused the particular ire of the tariff experts. Their product, which requires so much judgment, skill and labor, is supposed to stand up against a 25 per cent. rate, while Mr. Wilson's idea of a proper adjustment gives machine cut files 35 per cent. ad valorem.

A curiosity in corporate literature is the following announcement in a recent list of applications for corporation licenses in Illinois: "Towaxystwo Porzyczkowe I Budowincize M. Kopernika, at Chicago; capital stock, $1,000,000; incorporators, John Bank, Frank J. Karch, Bernard Makiowicz, Adam Piasczynski, Frank Marcankowski, Frank Sowadzki and Kaziwinski Zychlinski." The population of Chicago is so cosmopolitan that foreign names appear very frequently in applications for licenses to incorporate, but this is, perhaps, the most striking specimen of an unfamiliar dialect to American readers that has thus far graced the official papers of the State of Illinois.

OBITUARY.

JOSEPH D. POTTS.

Joseph D. Potts, who died at Milton, Pa., on the 3d inst., was born at Springton Forge, Chester County, December 4, 1829, and his early life was spent at Pottstown and at Isabella Furnace, Chester County. He drifted away, however, from the occupation of his ancestors and became a civil engineer, as such being connected with various railroads, beginning in May, 1852, upon the Sunbury & Erie. There are two sons living, William M. and Francis L. Potts, each married. Subsequently he was made vice-president of the Steubenville and Indiana Railroad, superintendent of the Western Division of the Pennsylvania Railroad and president of the Western Transportation Company. Upon the breaking out of the civil war Governor Curtin appointed him lieutenant-colonel upon his active staff and chief of the Transportation and Telegraph Department of the State. He held this position from May to December, 1861, at which time the labor of this department was transferred by the State to the Federal Government. Colonel Potts, while serving in 1862 with the militia of the State, called out in consequence of Lee's Antietam expedition, was detailed by General Reynolds as military superintendent of the Franklin Railroad, and performed prompt and valuable service in that capacity.

The next few years constituted the most active and responsible period of an ever busy career. During 1862–65 Colonel Potts served as general manager of the Philadelphia & Erie Railroad for its lessee, the Pennsylvania Railroad Company. From 1865 to 1877 he was president of the Empire Transportation Company, and on February 20, 1871, was elected president of the Erie & Western Transportation Company, the latter still owning and operating a fleet of propellers upon the Great Lakes.

In 1874 he became a managing director in the National Storage Company, and in 1879 president of the National Docks Railway Company, both corporations under the laws of New Jersey. He held these positions until 1884, when he resigned them both. He was elected president of the Enterprise Transit Company in 1871, which position he held until his death. For some years prior to 1885 he was president of the Girard Point Storage Company. He was from their establishment a large owner and a director in the International Navigation Company, who operate the Red Star Line, the Inman and International Line and American Line of ocean steamers.

Of late years Colonel Potts, with the old time family predilection, became interested in the production of iron, he becoming part owner of the Potts Brothers' Iron Company, Limited, of Pottstown, who own and operate a rolling mill in that place. In 1890 he purchased the Chester Pipe & Tube Works, at Chester. In 1880 he bought the Isabella Furnace property, in the northern part of Chester County, formerly owned by his father.

COL. JOHN L. BROWN.

Col. John L. Brown died at Charlotte, N. C., on the 25th ult., the immediate cause of his death being pneumonia. He had, however, for several years been in feeble health, but was able to be up and about until six weeks before his death. From that time his decline was rapid, and for a week his death was hourly expected. John L. Brown was born in Rowan County, N. C., January 8, 1829. His parents, both of whom were of German lineage, came to Charlotte when Colonel Brown was yet an infant, and he was thus reared in that place. Early in life he began the mercantile career in which he eventually amassed a handsome estate. He established himself in business in 1852, conducting a general merchandise establishment. In 1874 he entered into partnership with the late Col. T. H. Brem, J. H. Weddington and John Van Landingham in the hardware business, the firm name being Brem, Brown & Co. In 1875 this partnership was dissolved and another formed, consisting of Col. Brown and Mr. Weddington, who conducted the business for several years under the style of Brown & Weddington. P. M. Brown, the Colonel's son, was subsequently admitted to the firm, and the style became Brown, Weddington & Co., as at the present time. As a business man, Colonel Brown had the full confidence of his fellow men, and he was in every way regarded as one of the representative business men of Charlotte. As an evidence of the esteem in which he was held, he was thrice called on to represent his county in the State Legislature. Colonel Brown was also a member of the city's Board of Aldermen for 18 years, being also a member of the Board of County Commissioners for several years. He was president of the Mutual Building and Loan Association, a director of the First National Bank, and when the Chamber of Commerce was organized was made its first president. He was appointed by Governor Scales a delegate to the commercial convention held in Atlanta in 1885, and was elected vice-president. In June, 1887, he was elected president of the Board of Trustees of Davidson College, which institution in him always had a warm supporter and friend.

At the new mill of Hughes & Patterson, Philadelphia, the Ridgway steam-hydraulic system is largely used and the latest application of it, which is now being put in place, is one of interest to all owners of bar mills. A section of floor, or hot bed, about 6 x 4 feet is taken out and a Ridgway steam-hydraulic elevator is set in the ground. The elevator is of the direct acting type, and on the ram is placed a platform scale in which the beam is below the platform. The elevator has a lift of about 4 feet. The cast frame on top of the ram of the elevator which supports the scale is rigged with a latch and is made to swing round in any direction. When the iron is rolled it lies upon the hot bed until cold, when it is dragged upon that part of the hot bed over the scale. The elevator is then put in operation and the scale rises, carrying the iron with it. It is but a few seconds' work to read the weight, and the iron being 3 to 4 feet above the floor level is easily and quickly rolled off on to trucks or wagons.

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American Society of Mechanical Engineers.

The fourteenth annual convention of this society began last Monday evening at the house of the society, 12 West Thirty-first street, New York. Among those in attendance were the following:

Archer, Edward R., Chief Engineer Tredegar Company, Richmond, Va.
Baker, Charles F., Boston, Mass.
Baker, Chas. Whiting, Associate Editor *Engineering News*, New York City.
Baldwin, Stephen W., New York Agent Pennsylvania and Maryland Steel Companies, New York City.
Ball, Frank H., Vice-President and General Manager Ball & Wood Company, Elizabeth, N, J.
Barnaby, Charles W., Superintendent Phœnix Iron Works, Meadville, Pa.
Barr, John H., Assistant Professor Mechanical Engineering, Sibley College, Cornell University, Ithaca, N. Y.
Bates, Edward P., Manufacturer Heating Apparatus, Syracuse, N. Y.
Bayles, Robert Nelson, New York City.
Bowen, Ernest S., Assistant Superintendent McIntosh, Seymour & Co., Auburn, N. Y.
Bristol, W. H., Assistant Professor Mathematics Stevens Institute Technology, Hoboken, N. J.
Brown, Robert A., President and Treasurer New Haven Mfg. Company, New Haven, Conn.
Burden, James A., President Burden Iron Company, Woodside, Troy, N. Y.
Camp, Geo. E., Washburn & Moen Mfg. Company, Worcester, Mass.
Capen, Thomas W., Chief Engineer Fraser & Chalmers, Chicago, Ill.
Cartwright, Robert, Constructing Engineer, Rochester, N. Y.
Cary, Albert A., Civil and Mechanical Engineer Abendroth & Root Mfg. Company, New York City.
Cheney, Walter L., Secretary Meriden Machine Tool Company, Meriden, Conn.
Christensen, August C., Superintendent Snow Steel Plate Works, Buffalo, N.Y.
Christie, W. Wallace, Consulting Engineer, Paterson, N. J.
Clarke, Samuel J., Superintending Engineer Providence & Stonington Steamship Company, New York City.
Cremer, James M., Brooklyn, N. Y.
Cruikshank, Barton, Superintendent Roberts Cash Register Company, Harriman, Tenn.
Darling, Edward A., Superintendent Buildings and Grounds Columbia College, New York City.
Davis, Lewis Ketcham, M. E. National Lead Company, New York City.
Davis, Isaac H., Westinghouse, Church Kerr & Co., New York City.
Dodge, James M., President Link Belt Engineering Company and Chief Engineer Dodge Coal Storage Company, Nicetown, Philadelphia, Pa.
Durfee, W. F., Consulting Engineer, West New Brighton, N. Y.
Fladd, Frederick C., Mechanical Inspector E. W. Bliss Company, Limited, Brooklyn, N. Y.
Gobeille, Jos. Leon, General Manager and Treasurer the Gobeille Pattern Company, Cleveland, Ohio.
Gould, W. V., Secretary C. B Rogers & Co., New York City.
Granger, Albert Sanford, Foreman Machinery Department C. W. Hunt & Co., West New Brighton, S. I., N. Y.
Hamilton, James V., Krajewski & Pesant, Brooklyn, N. Y.
Hartness, James, Assistant Manager and Superintendent Jones & Lamson Machine Company, Springfield, Vt.
Henderson, Alexander, Chief Engineer United States Navy, Navy Yard, Boston, Mass.
Henning, Gustavus C., Consulting Engineer, New York City.
Hill, George, Chief Engineer and Manager Carrere & Hastings, New Brunswick, N. J.
Hillmann, Gustav, Naval Architect, Brooklyn, N. Y.
Hoffecker, W. L., Superintendent M. P. Central Railroad of New Jersey, Elizabethport, N. J.
Holloway, J. F., New York City.
Hunt, Chas. Wallace, New York City,
Hutton, Frederic R., Professor Mechanical Engineering School of Mines, Columbia College, and Secretary of the Society, New York City.
Idell, Frank E., Mechanical Engineer, New York City.
Jacobus, D. S., Assistant Professor Experimental Mechanics and Shop Work Stevens Institute, Hobokon, N. J.
Kafer, John C., Passed Assistant Engineer United States Navy, Superintendent, Morgan Iron Works, New York City.
Kent, William, Consulting Engineer, New York City.
Kerr, Walter C., Westinghouse, Church, Kerr & Co., New York City.
Kirchhoff, C., Editor *The Iron Age*, New York.
Klein, J. F., Professor Mechanical Engineering Lehigh University, Bethlehem, Pa.
Laforge, Frederick Henry, Chief Inspector Connecticut Mutual S. B. Inspection & Insurance Company, Waterbury, Conn.
Lyal, William L., Mechanical Engineer and Superintendent J. W. Lyal Mfg. Company, New York City.
Meatz, John T., Superintendent Mason Machine Works, Taunton, Mass.
Metcalf, Wm., Pittsburgh, Pa.
Miller, Alexander, Brown & Miller, Jersey City, N. J.
Miller, Fred J., Associate Editor *American Machinist*.
Mitchell, Albert E., Superintendent Motive Power N. Y., L. E. & W. Railway, New York City.
Montgomery. H. M., Chief Draftsman the Babcock & Wilcox Company, New York City.
Morse, Chas. M., Mechanical Engineer, Buffalo, N Y.
Mumford, Edgar Huidekoper, Henry R. Worthington, Foundry Department, Elizabethport, N. J.
Nason, Carleton W., President Nason Mfg. Company, New York City.
Odell, Wm. H., Mechanical Engineer, Yonkers, N. Y.
Parsons, Frederick W., Superintendent B. W. Payne & Sons, Elmira, N. Y.
Pentz, Albert D., Elizabeth, N. J.
Platt, Jos. C., Consulting Engineer, Waterford, N. Y.
Pusey, Chas W., President the Pusey & Jones Company, Wilmington, Del.
Rankin, Thomas L., Engineer De La Vergne Refrigerating Company, New York City.
Raqué, Philip E., Vice-President and Engineer Atlas Iron Construction Company, New York City.
Raynal, Alfred H., Superintendent Sam. L. Moore & Sons Company, Elizabeth, N. J.
Richards, Frank, New York City.
Roberts, William, Paper Manufacturer, Waltham, Mass.
Rockwood, Geo. I., Consulting Engineer, Worcester, Mass.
Roelker, H. B., Mechanical Engineer, New York City.
Rogers, Winfield S, Mechanical Engineer, Troy, N. Y.
Scheffler, Theo. Francis, Chief Draftsman Erie City Iron Works, Erie, Pa.
Sewall, M. W., Superintendent Engineering Department Babcock & Wilcox Company, New York City.
Sinclair, Geo. M., Midvale Steel Company, Philadelphia, Pa.
Smith, Chas. F., Mechanical Engineer, Brooklyn, N. Y.
Spies, Albert, Associate Editor *Cassier's Magazine*, New York City.
Strangland, B. F., Superintendent Machine Ventilation Howard & Morse, New York City.
Stillman, Francis Hill, New York City.
Suplee, Henry Harrison, Mechanical Engineer Yale & Towne Mfg. Company, Stamford, Conn.
Taylor, John T., Superintending Engineer W. & J. Sloane, New York City.
Thomson, John, President Neptune Meter Company and John Thomson Press Company, New York City.
Thorne, Wm. H., Wm. Sellers & Co., Incorporated, Philadelphia, Pa.
Thurston, Robert H., Director Sibley College, Cornell University, Ithaca, N. Y.
Tremaine, E. G., Assistant Superintendent Machinery Department P. Lorillard & Co., Jersey City, N. J.
Wagner, John R., Coxe Bros. & Co., Drifton, Luzerne County, Pa.
Watson, Wm., Secretary American Academy Arts and Sciences, Boston, Mass.
Webster, John H., Superintending Engineer American Sugar Refining Company, Boston, Mass.
Weickel, Henry, Chief Draftsman Yale & Towne Mfg. Company, Stamford, Conn.
Wellman, Samuel T., President Wellman S. & I. Company, Thurlow, Pa.
West, W. Frank, Morris Heights, New York City.
Winship, J. G., Mechanical Engineer Geo. F. Blake Mfg. Company, New York City.
Wolff, Alfred R., Consulting Engineer, New York City.
Zehnder, Chas. H., President Jackson & Woodin Mfg. Company, Berwick, Pa.

The election of officers for the ensuing year resulted as follows:

President, Eckley B. Coxe.

Vice-presidents, C. E. Billings, Percival Roberts and H. J. Small.

Treasurer, Wm. H. Wiley.

The annual report of the council showed the society to be in a most flourishing condition in every way. The receipts for the year were $35,663, and the expenditures $23,019.

The president, Eckley B. Coxe, chose for his address the subject:

The Use of Small Sizes of Anthracite Coal for Generating Steam.

Elsewhere in this issue we give a portion of a paper by Mr. Coxe, presented at the Chicago convention, in which will be found a description of the method of burning small coal. We quote from the address as follows:

When I first remember the anthracite coal business all the sizes below stove coal were considered of little or no value. Chestnut coal was used to a greater or less extent about the collieries for making steam, but much of it was thrown away. It gradually became a domestic fuel, and pea coal took its place for generating steam. This size is gradually coming into use for domestic purposes, and buckwheat coal is taking its place for steam. Two smaller sizes, known as rice and barley, are already being used to a large extent for the same purpose. The value or cost of these coals decreases very rapidly with the size. I append herewith a table showing the size and approximate cost at mines, and the sizes of mesh over which or through which they are made.

Table 1.

Size.	Made through.	Made over.	Approximate price at mines.
	Inch.	Inch.	
Chestnut.....	1½	⅞	$2.75
Pea.	7-8	9-16	1.25
Buckwheat....	9-16	⅜	.75
Rice	3-8	3-16	.25
Barley..... .. .	3-10	3-32	.10

NOTE.—The above meshes are all round punched, and are the standards adopted by Coxe Bros. & Co. at the Cross Creek Collieries.

Another important point to be noted is that the cost of transportation of the small sizes is less than that of the large. From the mines to tide, pea coal is charged 30 cents and buckwheat, rice and barley 50 cents less per ton than the domestic sizes.

One great difficulty encountered in the introduction of these smaller sizes was the fact that, as they were of comparatively little value, but little attention was paid to their preparation, and parties who began to use them did not erect furnaces specially constructed for the purpose, but generally burned them in their old plants, sometimes changing the construction of their grate bars a little.

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While the size of the domestic coals made by the different companies are practically the same, there has been a great difference in that of the small coals and in the amount of impurities contained in them. Formerly a large amount of culm was employed where it could be obtained cheaply, but its use is diminishing for the following reason: What was formerly known as culm contained the buckwheat, rice, barley, and in some cases the pea coal. Now, however, the pea, buckwheat, rice, and in some cases the barley, are taken out; and the dust that remains, which forms what is now called culm, although it may still be used by mixing with bituminous coal, or in a special furnace in which it is burned as dust after being thoroughly pulverized, or by making briquettes or compressed fuel, yet it is at present of no value alone and in its natural state for generating steam.

As is well known to all those who burn anthracite, sizing is of great importance. The coal burns only on the surface, and therefore, if the size is not uniform, the smaller particles clog the passages between the larger and thereby prevent a sufficient quantity of air from passing through the furnace. Some of those who have attempted to use buckwheat, rice and barley have given them up, because of the great want of uniformity in the results obtained. The difficulty may be due to one of two causes, or both: 1, To bad sizing, and, 2, to the presence of a large quantity of impurities. Experiments we have made have proved that the percentage of carbon when small anthracites are burned under proper conditions, and not the size, is what determines the amount of water evaporated per pound of coal, but the amount of water evaporated per square foot of heating surface decreases with the size of coal.

Of course it is not practically possible to have the size of the coal absolutely uniform, but the producer should at least guarantee that a certain percentage of the coal sold as rice should be of such size that it would pass through a mesh of a specified diameter and over a mesh of another specified diameter. In other words, with the present light I have upon the subject, if I was in charge of a large steam plant burning, say, 100,000 tons of rice coal per year, I would try to make a contract which would require the coal to contain not over a certain percentage of water and not less than a certain percentage of carbon, or, what is practically the same thing for anthracite, not over a certain percentage of ash, and that a certain percentage of the average daily sample of the coal would pass through a mesh of a certain size and over a mesh of another size, and that the coal should not contain more than a certain percentage of dust—dust being what would pass through a mesh of, say, $\frac{1}{16}$ inch in diameter.

Having reached these conclusions some time ago, I have with my assistant, John R. Wagner, been studying the question of how to determine in a rapid, simple and effective manner, by methods which do not require scientific work except for the analysis of the coal, the actual commercial value of any shipment of these small sizes.

I shall now proceed to describe our methods for doing this work.

As we are producers to a much larger extent than we are consumers of the small anthracites, although we burn between 100,000 and 150,000 tons per year at our collieries and works for generating steam, we have taken up the subject with the view of controlling our production as well as controlling our consumption, and I shall describe our methods of doing the work, which can easily be adapted by any one receiving coal in cars or boats to their special case.

The foundation of all such work is the obtaining of fair average samples. This is done as follows:

At each of the collieries where the pea, buckwheat, rice and barley are shipped samples of each size are taken several times a day from the loading lips as the coal is running into the cars. These are put into four separate bins, one for each size. At the end of the week the coal in each bin is thoroughly mixed, and is then sampled by quartering down until we obtain about 30 pounds, which is sent in a strong canvas bag to the laboratory, thus obtaining from each breaker an average sample of each of the four sizes each week.

The work of taking samples is under the direction of the coal inspector (one being stationed at each colliery), who inspect all the coal shipped. When cars of small capacity are loaded, of which there are not many now, the samples are sometimes taken from the top of the cars instead of taking them from the lips as the coal runs into the cars. With cars of larger capacity the samples are always taken as the coal runs from the lips, getting in each case a very fair average. In taking samples from the top of the smaller cars, eight or ten ordinary buckets of coal are taken from different parts of the car without paying any special attention to character of the coal at the place it is taken. The coal from the buckets is placed on a platform and quartered down until about one bucketful is obtained, which is put in the bin. In the other case, where the samples are taken as the coal runs from the lips, they are also put in a bucket and carried to the proper bin. Each of the samples obtained may be used for any of the five following operations:

1. Determination of size.
2. Determination of the slate.
3. Determination of the ash, involving in some cases an analysis of the ash.
4. Determination of the water.
5. Rapid commercial determination of the specific gravity of the coal.

Determination of Size.—The object of this operation is to determine the exact size of coal which makes up the sample, as distinguished from its nominal size. The apparatus consists essentially of a cubical box, the top and one side of which are open and into which slides a series of drawers. We generally use five or six. These drawers are wooden frames $1\frac{1}{4}$ inches deep, about 12 inches wide and 14 inches long.

The bottom is a sheet of perforated metal. The box rests upon a circular base of wood, which is coned at the bottom and has in its center a pin with a spherical head, which works in a spherical hole in the center of the wood base. When the pin is placed in the center hole the box can be revolved easily, and in such a way that the axis of the box describes a cone. This shakes the coal and causes it to move from one side of the screen to the other, and, as it can be moved very rapidly, soon sizes the coal. When the drawers have been placed in the box a stick of wood is inserted to prevent the drawers from sliding out. The sizes of the perforations which we usually employ are:

For the upper screen, $\frac{7}{8}$ inch round.
For the next lower, 9-16 inch round.
For the next lower, $\frac{3}{8}$ inch round.
For the next lower, 3-16 inch round.
For the next lower, 3-32 or 1-16 inch round.

This makes with the dust six sizes. Of course the number of drawers and the size of the perforations can be varied to suit each special case. If the coal is of the ordinary character we can screen about 15 pounds, or about one-half the regular sample brought to laboratory, which is quartered down to obtain the amount necessary to make the determination. It is not necessary to weigh the part to be tested; it is, however, necessary that the entire sample obtained by quartering down should be screened, otherwise you would not have an average sample.

The coal is gradually poured upon the screen while it is revolving. When the operator is satisfied that the coal is thoroughly screened, each drawer is taken out and the quantity in each drawer is weighed, and by simply adding together these weights, the total weight of the sample is obtained. In this way the average percentage of each size is easily found.

Determination of Slate.—While in large coal the percentage of slate can easily be determined by taking the average sample, weighing out, say, 100 pounds of it, picking it over by hand and weighing the amount of slate and bone found, it becomes very difficult to do this with the smaller sizes of coal, as a magnifying glass must be used. This is very trying on the eyes and requires a great deal of time. We sometimes resort to it, but only for the purpose of checking our other process. The method adopted depends upon the difference in the specific gravity of the coal and slate. The specific gravity of a piece of coal increases with the amount of ash that the coal proper contains, and also with the amount of bone or slate attached to it.

We first determine by analysis the composition of the coal, bone and slate from the mine we wish to study, and also find in the usual way the specific gravity of the specimens analyzed. We thus fix a limiting specific gravity, the particles lighter than which may be considered coal, and those heavier, slate or bone; and we make a solution of chloride of zinc of the same specific gravity. This limiting specific gravity, of course, varies with the nature of the coal and the nature of the impurities. The coal from the Lehigh region and some parts of the Schuykill region is much heavier than that of the other parts of the anthracite field, and the specific gravities of the bone and slate also vary with the locality and vein. We use for our mines a solution with a specific gravity varying from 1.70 to 1.72.

The simplest form of the operation would be to take a large beaker glass nearly filled with the solution of chloride of zinc, and pour slowly into the coal to be examined, stirring it from time to time. The coal floats and the slate goes to the bottom. When the floating coal, which is generally much greater in quantity than the slate, begins to cover the top of the vessel, a portion of it is skimmed off and put in a dish; and this is continued until all the coal to be tested has been poured into the vessel. The remaining coal which is floating is skimmed off with a great deal of care, the chloride of zine solution poured off, and the slate placed in another vessel. The coal and slate are then washed and dried and weighed, and the percentage of each calculated. This, of course, does very well if only a few determinations are to be made, but where it is necessary, as with us, to make a large number of tests, an apparatus devised to simplify the work may be used with advantage.

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As we have constantly occasion to dry coal, which in the ordinary way takes considerable time, a simple apparatus was erected to do the work. It consists essentially of a rectangular iron case about 4 feet long, 26 inches wide and 4 inches high, cast hollow and as thin as possible. This is kept filled with steam; on top of this is placed a box made of wood, in the bottom of which there are two drawers 18 inches long and 16 inches wide. The sides of these drawers are of wood and the bottom of 24-mesh wire gauze. The bottom of the box, which is about 1 inch thick, covers the whole iron plate, and extends about 1½ inches beyond the edge all around. From the outer edge of the cover a canvas curtain about 8 inches long is hung. The drawer is about 1 inch above the iron plate, leaving space for the hot air to pass through. The bottom of the case is cut out where the bottom of the drawer is covered with the gauze, and the whole box rests upon the plate, so that air passes around and over the plate and up through the gauze. The top of the box is closed, with exception of one hole, in which is inserted a sheet iron pipe, which connects with a suction fan. The result is that a constant supply of air passes around the iron plate, through the holes in the wood cover, and then through the gauze to the suction fan; by means of which a very rapid drying at a comparatively low temperature is brought about. In order to dry the coal and slate from the chloride of zinc apparatus, the pipe between the drying apparatus and the fan is enlarged, so that, by removing the cap on the upper part of the enlarged portion of the pipe, the cylinders can be inserted in the enlarged portion, the cover put on, and the drying of this coal and slate carried on without interfering with the drying in the other part of the apparatus. This apparatus is very simple and inexpensive, and is very satisfactory and thorough in its work.

Analysis of the Ash.—The sample which comes from the colliery in the canvas bag, on reaching the sample room of the laboratory is divided into two parts, one of which is dried (should it be wet) in the apparatus already described, and then goes to the pulverizer. The pulverizer consists of a cast iron cylindrical shell, 12 inches long and 16 inches in diameter (both inside), through the center of which passes an iron shaft, and inside of it are 16 chilled cast iron balls 3 inches in diameter. The cylinder makes from 70 to 150 revolutions per minute, according to the number of samples to be prepared. Along the surface of the cylinder, and parallel to the axis, runs a slot which is ¼ inch wide on the inside and 1½ inches wide on the outside. This is closed by a wrought iron wedge, which is held by two clamps placed near each end. The coal is introduced by bringing the slot to the top and pouring it in, and is removed by bringing the slot to the bottom and allowing it to run out, the cylinder being oscillated backward and forward in order to remove all the stuff, which is received in a Russia iron pan 24 inches long and 18 inches wide. In this way practically the whole of the pulverized product can be rapidly removed. We generally put about 15 pounds into the pulverizer at once. Running at a moderate speed it takes about 1½ hours to pulverize 15 pounds of pea coal thoroughly; but, by crushing it in a mortar so that the coal will pass through a $\frac{9}{16}$ round mesh, this time can be very materially reduced. Buckwheat, rice and barley are pulverized without any previous hand crushing. Rice and barley require only about three-quarters of an hour.

The pulverizer is a very simple, cheap and effective machine. The surfaces of the slot are planed, as is also the wedge, making a perfectly tight joint, and not allowing any dust to escape.

The pulverized coal received in the pan is quartered down to about 1 pint, which is screened on a No. 60 mesh sieve; 90 per cent. generally passing through; and that which does not pass through is crushed finer by hand on a rubbing plate, requiring but a few minutes.

But attention having been called to the discrepancies in analysis where we attempted rapid crushing, we made a series of careful experiments (the results of which are given in the following table) to satisfy ourselves as to the facts. The first column gives the sizes of coal, the second column gives the percentage of ash when the proper method of sampling is adopted, the third column gives the results when the rapid method of sampling was adopted, and the fourth column gives the difference in each case:

Results of Comparison of Two Methods of Obtaining the Powdered Samples, for Analysis.

Size.	Method "A." Per cent. of ash.	Method "B." Per cent. of ash.	Difference. Per cent.
Lump coal	5.00	6.65	1.65
Broken coal	7.52	9.97	2.47
Egg coal	8.50	11.12	2.62
Stove coal	8.39	10.15	1.76
Chestnut coal	9.50	12.87	3.37
Pea	11.45	14.95	3.50
Buckwheat	9.87	11.27	1.40
Rice	13.85	17.95	4.10
Barley	13.05	23.95	10.90

It will be observed that the difference was as much as 84 per cent. in the last case. The reason of this is probably that a large portion of the impurities in coal, such as iron pyrites, silica and substances of a clayey nature, occur in very light incrustations upon the surfaces of fracture of the coal.

Proximate Analysis of the Coal.—For commercial purposes, which is the point of view from which I am treating this subject, only a proximate analysis of the coal is generally necessary—that is, an analysis by which the moisture, volatile combustible matter and ash are determined, the carbon being determined by difference. It is necessary only occasionally to determine the sulphur, and more rarely the composition of the ash, as the sulphur and the composition of the ash do not vary in the coal from one colliery as much as the percentage of ash. It would not be necessary to determine very often the moisture and volatile combustible matter were it not that without them the amount of fixed carbon cannot be arrived at.

The sample, which has been pulverized and quartered down until it will about fill a pint measure, is sent to the analytical room, where it is subjected to the following operations:

1. Determination of ash.
2. Determination of moisture.
3. Determination of volatile combustible matter.
4. Determination of sulphur.
5. Analysis of ash.

Moisture Determination. — This is done in a very simple apparatus constructed as follows:

Two 1-inch boards, 12 inches wide and about 8 inches high, with the upper corners rounded off, form the back and front. In each of these boards there is cut an opening 10 inches wide and 4½ inches high, also rounded, in which there is placed a copper muffle made of sheet copper $\frac{1}{16}$-inch thick, simply bent in the form desired and riveted at the joint, and open at both ends. This is tacked to the two boards. Both the front and back of this muffle are closed by a piece of asbestos board supported on two tacks. Another piece of asbestos board is bent around so as to form the sides and top, leaving a space between it and the muffle about 1 inch wide. Underneath the muffle are three very small gas jets formed by making three small perforations in ⅛-inch gas pipe. These give the heat which keeps the muffle hot. A thermometer passes through the top of the muffle and the asbestos board top, and shows the heat in the muffle. The piece of asbestos board at the back is not taken off; that in front is removable in order to allow the sample to be put in. By means of these gas gets the temperature is kept at about 225° F., and remains remarkably constant with but very little attention. Any ordinary mechanic can construct this apparatus in a few hours.

The sample when weighed out is placed in the muffle, and remains at a temperature of 225° for about one hour, experience having shown us that this time and this temperature are best suited for determining the moisture in our anthracites. Notwithstanding the extreme simplicity and low cost of the apparatus, it gives results which are very satisfactory.

Determination of Volatile Combustible Matter.—For this determination, the method usually adopted is to heat the sample in a covered platinum crucible for 3½ minutes by an ordinary Bunsen burner, and then, without cooling, for 3½ minutes more with a blast burner. We find it very convenient to adopt a crucible of special shape provided with a flanged sleeve. The crucible is 1 inch in diameter, 2¼ inches deep, and cylindrical for the length of 1⅞ inches. It has a wire rim at the top, and fits loosely into a sleeve which bears against the rim. The sleeve is beaded on top to keep it cylindrical, and ⅛ inch below the top of the sleeve there is a thin annular disk of platinum, which is fused to the other part of the sleeve. The crucible, with this thin sleeve, is supported by a platinum wire triangle placed over a clay cylinder, and which in its turn is supported by a ring of the filter stand at a hight suitable to the hight of the burner. The clay cylinder is 3½ inches high, with a hole 2 inches in diameter at the top, and tapering down to $1\frac{3}{16}$ inches at 1 inch from the bottom, and from there down widening out again to 1⅛ inches. The sleeve prevents the crucible from slipping through the wire triangle or the holes in the desiccator and from tilting over on the wires. It also helps in heating it to the highest possible temperature for the full length, as it baffles the flame. This sleeve is also very convenient for lifting the crucible from the cylinder into the desiccator, and from thence into the scale pan, as the operator simply grasps the disk of the sleeve with an ordinary pair of forceps. It weighs 9 grams. We also use the same crucible and sleeve for fusions when making complete analyses of the ash.

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Determination of Sulphur.—This is done by Eschka's method, with one exception; that is, we use a different form of crucible, in the shape of a small lipped and wire rimmed beaker of platinum, holding about three and one-third times as much as the ones usually employed. It is 2¼ inches high, 2 inches in diameter, and tapering slightly toward the bottom. By using a larger crucible all the operations of oxidation, acidulating, oxidizing with bromine, and driving off excess of the latter, &c., can be performed without transferring or washing the beaker, this saving considerable time.

Analysis of the Ash.—This, of course, is a comparatively long operation, and is done in the ordinary way.

Rough Determination of Specific Gravity.—This, though a comparatively simple and to all appearances rough operation, promises to be of value to producers and users of anthracite coals. The apparatus we employ is constructed as follows:

It consists of four parts, an ordinary sheet iron bucket such as is used about the works for sand or ashes, and holding about 25 pounds, an ordinary washtub, a Fairbank's market beam scale and a cylindrical tin pan about 14 inches in diameter and 7 inches deep.

The weighing beam is attached to the post by means of a small crane, which throws it out from the post. The ordinary hook used for suspending material to be weighed carries a yoke, from which the tin pan is suspended by two wires. The bucket is also hung on the same hook.

The tub is then filled with water until the tin pan is covered, and the whole is then balanced by means of a weight hung on the outer end of the beam, which weight remains constant. The poise used for weighing moves along the beam in the ordinary way. The beam is divided into pounds and quarter pounds, each notch representing ¼ pound when the ordinary poise is used. In order to weigh to $\frac{1}{100}$ pound, a little rider made of sheet metal, and of such a weight that each notch represents $\frac{1}{100}$ pound, is used; so that by placing the poise in the notch corresponding to the even pound, which is just less than the actual weight, and then moving the rider until the beam balances, and reading off the number of notches, the actual weight in pounds and $\frac{1}{100}$ pounds is obtained. If, for example, the rider is in the second notch to the right hand of the 10-pound notch, it would read $\frac{42}{100}$ pounds; that is, the 10 pounds would represent 40 notches, which with the other two would make 42.

When the average specific gravity of a shipment of coal is to be determined specimens are taken from all parts until a fair average sample is obtained. This is spread on a platform and quartered down until the material is reduced to about 20 pounds, which is then put into the bucket.

If we know the average specific gravity of the sizes below egg coal from a certain colliery, and their average percentage of ash, by merely getting the specific gravity of the coal in a number of cars we can determine satisfactorily (we are inclined to think) the percentage of ash by the following formula:

$$y' = y + (x' - x) \times a;$$

in which

x = the standard specific gravity,

y = the standard percentage of ash,

x' = the specific gravity of coal determined by our apparatus,

y' = the percentage of ash to be determined,

a = a constant for coal from same mine.

We have become so thoroughly impressed with the importance of having the specific gravity of all samples of coal which we analyze that, whenever the sample sent to the office is large enough, we obtain the specific gravity in the rough way given above, and find that it adds very materially to the value of the data obtained by analysis.

It seems to me that in all important boiler tests not only the coal used should be analyzed, and a special determination made of the amount of moisture in the coal when it is actually fired, but also that the ashes should be carefully analyzed. The sample for both the analyses should be obtained by quartering down all the coal to be used, and quartering down all the ashes made.

There is another question of very great importance to users of coal, on which I am not, however, ready to say much—that is, the clinkering. It depends undoubtedly upon two points: the temperature at which the coal burns, and the composition of the ash. The fact that a coal does not clinker may be due to its impurity; that is to say, the coal may be so impure that it will not make a fire hot enough to melt the ash, although the composition of the ash may be such that were it contained in a pure coal it would melt easily. On the other hand, the coal may clinker because it is very pure and burns at a very high temperature.

The first paper read Tuesday morning was by Albert K. Mansfield, of Salem, Ohio, on "The Buckeye Valve Gear." As we described this engine in our issue of October 5, 1893, it is not necessary to reprint the paper.

Professor R. H. Thurston of Cornell University read a paper

On the Maximum Contemporary Economy of the High Pressure Multiple Expansion Steam Engine.

We quote as follows:

With improving thermo-dynamic conditions and decreasing wastes in the engine, starting from the 5,000,000 duty of the Savery engines still existing in the time of Watt, the 12,000,000 of Smeaton's Newcomen engine of the same period, and the first figures of Watt, perhaps averaging 20,000,000 foot pounds per pound of fuel, and tracing the improvement through the most flourishing period of Watt's work, when he attained about 30,000,000, and his final perfection of the later Cornish engines, which, still later, attained in ordinary operation 60,000,000 to 80,000,000, we come to the period of successful introduction of the modern forms of the high pressure multiple expansion pumping engine, from 1860, giving duties ranging up to about 100,000,000 to 110,000,000, and to 120,000,000 in the succeeding generation and to date.

The improving thermo-dynamic conditions which have made these results possible have been, first, the gradual elevation of the steam pressure from 5 pounds per square inch in 1800, to 20 pounds in 1840, to 50 at the middle of the century, 75 a quarter of a century later, to 120 and to 150 and 175 in contemporary stationary and marine practice, and even to above 15 atmospheres in some instances. The second and no less essential element of this progress has been the simultaneous rise in the ratio of expansion from the time of Watt to the present, and from unity in his earliest practice to 4 for the late Cornish form of the Watt engine, to 6 and 8 a generation ago and to 15 and even 20 and more in the latest multiple expansion machines. A terminal absolute pressure of about one-third of an atmosphere probably represents the limit to which expansion has been successfully carried. A higher rather than a lower terminal pressure is usual in the best practice of the day. The third element of improvement has been the increase of speed of piston and of rotation; although this has been less observable in steam pumping engines than in other types. Beginning with 200 to 300 feet per minute speed of piston, the figure has gradually risen to 500 and 600 in later years, and to above 1000 in many cases to-day. These three have been the essential elements of improvement in the real engine; the latter supplementing the two others, which give thermo-dynamic gain. Improvements in design and construction have completed the advances thus made possible.

The latest and highest record of efficiency and duty, one which may very possibly long stand as the highest record—the passage of the date at which the quantity of steam used per hour and per horse-power below 12 pounds (5.5 kg.), constituting an important era in the history of the steam engine—is, on the customary American basis of 100 pounds of fuel, 143,306,470 foot pounds. On the old British basis of 112 pounds (1 hundredweight) it becomes 152,630,000, and on the proposed bases of 1000 pounds feed water converted into dry steam, and of 1,000,000 B. T. U., is 152,448,000 and 137,656,000, respectively. For kilogrammeters of work per kilogram of fuel, the figure becomes 429,110. These figures, compared with those of the preceding paragraph, will complete the record of progress to date, and perhaps indicate practically the limit of advance for the nineteenth century in this department of human achievement. It still leaves us a margin of nearly 20 per cent. between the ideal and the real case for further gain; the thermo-dynamic case, assuming similar pressures and ratio of expansion, demanding nearly 10 pounds of steam per horse-power per hour and giving a duty of close upon 175,000 on the first named basis and about 200,000,000 on the highest standard. The ideal and the real efficiencies correspond, respectively, to fuel consumptions of 1.1 and 1.8 pounds per horse-power per hour with good boilers.

Our "real case," the Milwaukee pumping engine, built for that city by the E. P. Allis Company, from the designs of Mr. Reynolds, has been in operation since August, 1891, doing continuously so high a duty as to place it among the most remarkable constructions of its class and time, and probably to make its record the highest on record to date. It draws water from Lake Michigan and forces it into the city mains under a head of about 160 feet, into a reservoir, from which other engines raise it into a still higher level, so far as needed for consumption at greater elevations. The engine here under consideration is at the North Point station, at the level of the lake, very nearly. The station contains also a pair of compound engines, built in 1874, which gave a duty, originally, without cut off on the low pressure cylinder of 77,000,000 on 100 pounds of coal. After fitting this cylinder with cut off gear, the duty rose to above 85,000,000. The pump-

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raises about 900 gallons per minute, with a slip of 2 per cent. There is also, besides these, a compound engine by Allis & Co., built in 1884, delivering 12,000,000 gallons per day against a head of 150 feet, and with a duty reported by Mr. Benzenberg, the city engineer, from test, of 104,820,431 foot pounds per 100 pounds of best coal. The latest of the collection is that here to be examined—a triple expansion engine built to raise 18,000,000 gallons per day of 24 hours, guaranteed by its builders to perform a duty of not less than 125,000,000 per 1000 pounds of dry steam.

The design of the engine embodies some special features regarded by the designer and builder as important, and as contributing effectively to the attainment of this exceptional economy. According to the statement given by Irving Reynolds, to whom the writer is indebted for many facts of interest and useful information, the designer was guided to a certain extent by these considerations:

"Starting with the proposition that an outside packed plunger pump is the simplest, and under most conditions the best form of pump, the next step is to use the least number that will give a uniform flow of water—viz., three, set at equal angles (120°). Having three plungers, they can as well be single as double acting, as the flow of water is practically constant and the single acting is much the simpler form of pump."

The Milwaukee engine was designed by Irving Reynolds, under the general supervision of the superintendent of the Allis Works, Edwin Reynolds.

The engine is of the vertical triple expansion type, with steam cylinders and parts above the bed plate arranged somewhat similar to those of the modern marine engine. The capacity of the engine is 18,000,000 gallons in 24 hours, raised 160 feet, and the speed is 20 revolutions per minute, or 200 feet piston speed. The cylinders are three in number, one high pressure, 28 inches diameter, one intermediate, 48 inches, and one low pressure, 74 inches diameter, all having a stroke of 60 inches. The cylinders are mounted on cast iron A-frames, which rest on heavy bed plates carrying the main shaft journals. The cylinders are steam jacketed, having the working barrels inserted as separate pieces. The steam and exhaust valves are located in the cylinder heads, their chests thus jacketing the latter.

The pumps are entirely below the floor. The fly wheels perform the office simply of aiding in the regulation of the engine. Between each two cylinders is a receiver, heated by high pressure steam. The volumes are, respectively, high pressure, 101.3 cubic feet, intermediate, 151 cubic feet. In the high pressure and intermediate cylinders the jackets are supplied with live steam at boiler pressure; but on the low pressure cylinder the jacket is supplied with steam which passes through a reducing valve, and which has a constant pressure of 34 pounds. The steam is supplied to the high pressure jacket by a pipe leading directly from the main steam pipe; the exhaust from this jacket supplies the jacket of the intermediate cylinder, and this is led into a trap, the overflow of which ordinarily passes into the suction of the feed pump for supplying the boilers. The exhaust steam from the low pressure cylinder jacket is similarly received into a steam trap and discharged into a feed pipe.

The exhaust valves of the low pressure cylinders, when closed, are flush on the inside of the cylinder head, thus eliminating clearance due to exhaust ports. All the valve ports are located in the cylinder heads.

The valve gear is of the Corliss type on the high and intermediate cylinders, and a combination of Corliss steam valves and poppet exhaust valves on the low pressure cylinder. The clearances in the cylinders and ports are: High pressure, $1\frac{4}{10}$ per cent.; intermediate pressure, $1\frac{1}{10}$ per cent.; low pressure, $\frac{77}{100}$ of 1 per cent.

The cut offs of the high pressure cylinder are under the control of a speed governor combined with an adjustable hand cut off. The cut offs of the intermediate and low pressure are controlled by a hand gear only, the point of cut off in these cylinders being set usually in the inverse ratio of the cylinder volumes. Each steam piston has two rods connecting to a forged steel cross head; from this cross head extend four tie rods to the head of the pump plunger, thus transmitting the motion direct from the steam pistons to the pump plungers, without passing through links or beams of any kind, making the machine direct acting in the best sense of the term.

The upper ends of the connecting rods take hold of the cross head in the space between the two piston rods, the lower end connecting to its crank pin. There are three cranks set at angles of 120°, and the motion of each pump plunger being controlled by its own crank, tends to secure uniform flow of water through the pumps.

The center crank—intermediate—is considerably larger than the others, and is fitted with drag boxes, to prevent the breaking of the shaft in case it gets out of alignment. There are two fly wheels, 20 feet diameter and weighing 50,000 pounds each.

The pumps deliver only on the down stroke, but the plungers are balanced to one-half the head, so that the work in the steam cylinders is uniform on both the up and down strokes, and the only load passing through the crank shaft is that which is given to and taken from the fly wheels, at the beginning and end of each stroke.

The pumps are three in number, one located beneath each engine. The plungers (32-inches diameter) are of the single acting outside packed plunger type, each plunger being driven from a cross head. The valve chambers are cylindrical, and extend above the discharge valves, forming air chambers, on which rest one end of the engine bed plates, this latter arrangement saving foundations, and at the same time rendering the pumps easily accessible. The pump valves are rubber, of small diameter ($3\frac{1}{2}$ inches), and are mounted in groups of 28 on "cages." There are seven of these cages (196 valves) in the suction and discharge of each pump, with an area about equal to that of the plunger.

The engine is fitted with a surface condenser, the air, feed and circulating pumps being driven by an arm extended from the low pressure plunger. The air pump is 22 inches diameter by 60 inches stroke and is single acting. . .

Steam is supplied by a battery of five horizontal tubular externally fired boilers, with ordinary brick setting.

The 12,000,000 compound, put in in 1881, cost $65,000 with boilers, or $5400 per 1,000,000 gallons; the guaranteed duty being 97,000,000 foot pounds. In 1890 the triple expansion engine was put in for $76,000, including boilers, or $4400 per 1,000,000 gallons, or exclusive of the boilers, $66,000, equal to $3666 per 1,000,000 gallons capacity.

Thus the 18,000,000 engine of 1893 cost practically the same as the 12,000,000 of 1881, with 29 per cent. better guaranteed duty; and the compound 16,000,000 engine of 1873 cost more than twice as much, with one-half the guaranteed duty of the 18,000,000 triple expansion of 1893. These figures are the more interesting from the fact that all three of these engines are by the same builders.

Cost of Pumping 1,000,000 *Gallons for the Year* 1892.

	100 ft. high.	1 ft. high.
Cost, including fuel, labor, repairs, interest and depreciation.....	$7.34	4 58-100 cts.
Cost as above, but exclusive of interest and depreciation	5.40	3 37-100 cts.
Cost per 1,000,000 gallons, for coal only....	3.15	1 96-100 cts.

The figures are for all coal burned, for all purposes, during the year, including starting and banking fires, heating the building, furnishing steam to a small engine which is in constant operation during the day driving the water works machine shop, and at night driving a dynamo, lighting the building.

The preparations for and method of test were as nearly as practicable in accordance with the plan indorsed by a committee of the American Society of Mechanical Engineers, and as follows:

Indicator diagrams were taken every fifteen minutes. Temperatures of feed water, discharge jacket water, external air, engine room, and flue gases were taken. The total consumption of water is obtained by measurement of the feed water supplied the boilers. This was taken from the hot well of another engine, and the condensed steam from the engine under test was, during the trial, discharged from the overflow and wasted. The steam used to supply the jacket was measured by receiving the overflow from the jacket traps into weighing tank No. 3, and was returned to the boilers as a portion of the feed water.

During the test two observers, one of whom was supplied by the builders of the engine, the other by the party from Cornell University, kept independent logs of the water supplied to the boilers.

The following table gives some of the results of the test:

Fuel.

Total coal consumed, pounds.....	18,234
Moisture in coal, per cent.....	5.25
Dry coal consumed.	17,277
Total ash, dry, pounds...	255
Total ash, dry, per cent. of dry coal...	1.47
Moisture and ash, per cent. of wet coal	6.65
Total combustible, pounds.....	17,022

Feed Water.

Total weight of water used, pounds...	162,864
Excess of water in boiler at end of run, pounds.....	151
Total evaporated dry steam, pounds.	161,023.2
Factor of evaporation (equivalent value of 1 pound wet steam to 1 pound dry steam from and at 212° F.)	1.154
Total equivalent evaporation from and at 212° F., pounds.....	187,794

Evaporation per Pound of Coal, Pounds.

*Apparent: feed water, 97°; steam, 121.4.....	8.906
†Actual, to dry steam	8.81
Equivalent from and at 212°.....	10.27

* Uncorrected for calorimeter.
† Corrected for calorimeter.

Frederick A. Scheffler of New York described a

Curve Delineator,

by means of which arcs or circles 50 feet radius to 1000 feet or more could

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be drawn. In a few seconds the adjustment of the instrument can be set at such an angle that it would describe an arc of a circle anywhere from 3 feet radius to infinity, and a straight line may be drawn with it. The design of the instrument consists of simply two straight edges, joined at a common center, with a simple device for changing the angle of the straight edges in relation to each other; the device also carrying an attachment for adjusting and fixing a pen or pencil to bear upon the drawing paper at the point of juncture of the two straight edges. The use of the instrument is based upon the fact that the versed sine of any particular chord is always constant if the radius is constant. To use the instrument, two pins are required to be placed at the extremities of the chord selected, for the points through which the arc is to pass. A table is given with the paper, giving the requisite angles to set the instrument at, with the fixed chord of 24 inches and for any radii between 2 feet and 300 feet.

The report of the

Committee on Gauges

stated that they had carefully considered the matter referred to them and "they recommend that the thickness and diameter of pieces to be measured shall be expressed in decimals, which would imply the use of the micrometer screw gauge. The committee is divided in its opinion as to whether the decimal should be thousandths of an inch or hundredths of a millimeter." The committee are of opinion that all the engineering and scientific societies of this country will join this society if they adopt a decimal gauge. The committee was continued with power to act and will confer with European societies in the endeavor to obtain an international system.

Secretary Herbert on Tuesday awarded the contract for building the three new gunboats authorized by the last Congress to the Newport News Dry Dock & Shipbuilding Company, at their bid of $280,000 for each vessel. Two of these gunboats will be of an entirely new type. They are designed for navigation of shallow streams, particularly on the China station, and are required to develop a speed of 14 knots an hour. The third vessel will be of heavier draft, and is intended for service in the tropics, 13 knots being the required speed. The contract calls for their completion within two years. The bid of the Newport News Company was nearly one-third less than that of the other competing firms.

At the opening of the bids on Tuesday at the War Department for the supply of 10,000 pounds of smokeless powder for the use of the army four tenders were recorded—namely, from the Pneumatic Torpedo & Construction Company of New York, for a powder containing 60 per cent. of nitro-glycerine, 70 cents per pound; no nitro-glycerine, 80 cents per pound; Herman Waltoreck of Newark, N. J., $2.20 per pound, and for 10,000 pounds additional $2 per pound; Bernard Peyton, Santa Cruz, Cal., $1.25 per pound; Leonard Smokeless Powder Company, New York, 75 cents per pound, in lots (the price to be graded by initial velocity, 50 cents per pound for a velocity of 1960 feet, to be increased 1 cent per pound for each additional 10 feet of velocity per second).

Washington News.

(From our Special Correspondent.)

WASHINGTON, D. C., December 5, 1893.

The special plea made in behalf of the tariff revision bill by the President in his annual message to Congress places that measure before the majority in both the House and Senate as distinctively under the patronage and support of the Administration. In that character, even if there should be any doubts in the minds of any member of either House as to its expediency, it will be expected that every member of the majority will give it his vote.

The general tenor of this part of the message, however, has not been of a tone calculated to stiffen that class of Representatives and Senators who are greatly perplexed as to which shall hold the prior and paramount claim, the interests of their constituents, which they are supposed to protect, or the demands of their party on a general line of public policy.

In the comments of the President's friends, who are inclined to read the measure between the lines, they think that they discover in it a degree of timidity and hesitancy which has not heretofore been characteristic of its author. They say that the appalling magnitude of the partisan majorities in the great States of New York, Massachusetts, New Jersey, Pennsylvania and Ohio, not to speak of the lining up of the less important States of Nebraska and Montana, hitherto supposed to have drifted from their party moorings, whether caused by local issues or public uneasiness, must have raised an ill disguised doubt.

In the first flush of the late elections, when the managers of the tariff revision were in a very panicky condition, the President renewed their courage by declaring that no step backward must be taken; but subsequent developments in the general disturbance of business and industry, and the enforced idleness of masses of wage workers all over the country, have made a deeper impression than the ballots of last November.

The moderate tone of the Presidential message on the subject does not, however, modify his personal interest in the prompt passage of the bill in the exact form in which it was made public by the Chairman of the Committee on Ways and Means.

It was very soon evident that the Administration would do its share in strengthening it among the men who would have in their hands the part of its adoption at the Capitol. The word was passed around and every member of the Cabinet took every opportunity to give the bill a good word when Senators and Representatives called at the Departments on other business.

A few days ago Senator Faulkner called at the Post Office Department. The big bodied good natured chief impatiently disposed of the Senator's business and then put the question flatly: "Senator, what do you think of the new tariff bill?" "I would like it better if it made coal 45 cents a ton instead of 75 cents, as now, or free, as proposed to be."

"You are now aiming at Nova Scotia coal. Now, let me tell you that that coal is of a very inferior quality, and I do not think would be a factor against our American coal. For all purposes American coal is infinitely superior to Nova Scotia."

The Senator replied: "If that be so I can support the whole bill."

The Kentuckians are complaining that the bill will sadly affect three of the staple industries of their State—flax, coal and iron ore. In Michigan iron ore, salt and lumber. In Virginia coal, iron ore and iron. Not to mention the injury to the diversified and enormous industrial interests of States like New York, Pennsylvania, New Jersey and Ohio.

A consensus of opinion, however, among the majority in both Houses indicates that the bill will pass by a full party vote. As yet none have declared a determination to vote against the bill, and a very large number have signified their purpose to vote for it.

As yet no formal canvass has been made, but it is accepted by the President, Secretary Carlisle and Chairman Wilson that the bill will pass.

It is now possible that the bill will not more than get under way by the time of the Christmas holiday, on account of the delay in determining the sources of taxation from which the loss of $43,000,000 from articles placed on the free list and the existing deficiencies of $50,000,000 in the Treasury shall be made up.

Allowing the ten days to be accorded the minority for the preparation of their report, the bill could not, at the closest calculation, get into the House before the 15th. The Republican leaders were in conference to-day and decided upon their course.

It was conceded among them that the bill would pass when it reached a vote. That in the House, under the parliamentary methods of that body, it could be carried through in a very brief space of time.

Therefore it became a question whether it would not be the better policy for them to pursue to simply make a few speeches in support of the minority report, thus placing themselves as a party on record for campaign purposes, and then let the vote be taken, thus avoiding a protraction of the present industrial prostration and uncertainty.

In the Senate the bill has been talked over by the minority of that body in the same line. The members of the majority who were expected to eliminate some of the worst features of the bill have been ominously quiet. The conclusion reached is that not a single one of them will be found voting against the measure on its passage.

The Senators of the minority would have it in their power to indefinitely protract the discussion of this measure in their body. They have agreed, however, with their friends in the House that the interests of business and industry demand that the question should be settled promptly so that the industries affected may know what to expect and can make their plans accordingly. From an industrial point of view they also propose to act on suggestions from the manufacturers that if the bill is certain to pass in the shape in which reported then the quicker the better, so that they can make their arrangements to meet the production required for next year's demand, taking into account the competition of the foreign importations in the same line.

Therefore in the Senate the minority simply propose to speak a reasonable time against the bill and its underlying policy and then let the vote be taken.

There are some who think that the tariff bill as it now stands before the country will become a law before February 1.

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MANUFACTURING.

Iron and Steel.

The stock in the Andrews Brothers Company, operating the Haselton Rolling Mills, at Haselton, Ohio, owned by the late James Neilson, has been purchased by John A. Logan, Jr. The annual meeting of the stockholders of the Andrews Brothers Company will be held in Haselton in January next.

In the United States Circuit Court in Pittsburgh last week, arguments were heard on a motion for an injunction by H. W. Oliver, receiver for the Oliver Iron & Steel Company, against Anderson, Du Puy & Co., steel manufacturers, of that city. The allegations are that certain stock of a natural gas line held in common by both companies was attached as collateral for a note given by the Oliver Company to Anderson, Du Puy & Co. When the note matured the holders sold the collateral at an inadequate price. Mr. Oliver claims an unfair advantage was taken of his company, and he now seeks to restrain the defendants from shutting off the gas supply to the Oliver mills.

Wallace, Banfield & Co., operating the Irondale Rolling Mills, at Irondale, Ohio, have placed an order with the Ellwood Iron Works of Ellwood, Ind., for two additional tinning pots and also two additional cleaning machines. When the erection of these has been completed the tinning department of the above plant will consist of six Morewood, two Thomas & White and two Ellwood tinning machines. The addition of these two tinning machines will increase the tinning capacity of the plant about 25 per cent., and it is the intention of the firm in the future to tin their entire output of black sheets.

The Alabama Rolling Mill Company of Birmingham, Ala., will resume in all departments double turn on Monday, December 11. Improvements have just been completed which will give the mill an output of from 2000 to 2200 tons of finished iron per month.

The closing of navigation has caused a demand for bar iron sufficient to justify the Duluth Mfg. Company of Duluth, Minn., in starting a portion of their rolling mill. The plant has not started in full, but one mill will run at a time, alternate days.

The Reeves Iron Company, Canal Dover, Ohio, are running their large plant to its full capacity, having a fair demand for their bar iron and galvanized sheets.

Shipments of armor plate for the new gunboats "Monadnock," "Terror" and "Oregon" are now being made by the Homestead Steel Works, at Homestead, Pa. Shipments of armor plate from the above plant during October amounted to about 275 tons. Wages of laborers employed at the Homestead Steel Works have been reduced from $1.40 to $1.20 per day of ten hours.

About 1200 employees of the Cambria Iron Company, at Johnstown, Pa., in the mechanical department have agreed to accept a reduction of 10 per cent. in wages, with the expectation that the firm will be able to secure sufficient orders to keep in full operation, or nearly so, during the winter months.

Macungie Furnace, at Macungie, Pa., operated under lease by the Crane Iron Company, was banked down last week on account of the strike of the employees of the Lehigh Valley Railroad.

The Carrie Furnace Company of Pittsburgh, operating the Carrie Furnaces, at Rankin, Pa., have placed an order with the Crane Elevator Company of Chicago for a large furnace hoist, which will be built at the above furnaces. The hoist will have a lifting capacity of 6000 to 9000 pounds.

The blast furnace of the Raney & Berger Iron Company, at New Castle, Pa., which has been idle for some time, has again resumed operations.

Furnace D of the Edgar Thomson plant, at Bessemer, Pa., was badly wrecked by an explosion last week. A mass of iron and cinder containing many tons, which had been hanging in the furnace for some time, fell, causing the explosion. The furnace is now undergoing necessary repairs.

At the Sligo Rolling Mills of Philips, Nimick & Co., Pittsburgh, the puddling department is occasionally operated three turns per day of eight hours each. It will be remembered that the refusal of the Amalgamated Association to allow this to be done at the Elba Iron Works Department of the Oil Well Supply Company in Pittsburgh was the cause of the strike at that plant last year.

The New Philadelphia Iron & Steel Company, New Philadelphia, Ohio, have been running three sheet mills for a few weeks past and will at once put others into operation.

On December 15 next application will be made for a charter of incorporation by the H. W. Minnemeyer Mfg. Company of Pittsburgh. The incorporators are Christian E. Wolff, Paul C. Wolff, Henry W. Minnemeyer, Henry W. Minnemeyer, Jr., and Charles E. Minnemeyer. The new concern propose to engage in the manufacture of iron and steel.

The plant of the Coleman-Shields Company of Niles, Ohio, is in operation to nearly full capacity, giving employment to about 250 men.

At Cleveland last week an appeal was made to the courts for the adjustment of the claims and suits of the partners who formerly composed the firm of Cleveland, Brown & Co. Captain Frank Wilson commenced suit against Peter M. Hitchcock, A. M. Wilcox and Richard Brown. In his petition he avers that the four persons mentioned were associated in business on July 1, 1885, with a capital stock of $406,180. The real estate and certain other propetty of the concern was, he says, inventoried at $106,000. He alleges that in the following year the books were made to place the same property at a value of $60,000, and that a loss of $39,508 was announced, whereas a profit of $16,491 29 was made. The petition contains various other statements and allegations concerning the business of the firm prior to the dissolution of the partnership on February 1, 1891. Captain Wilson is not satisfied with the conduct of affairs, and claims that he has not received his due portion of the assets and profits. He therefore asks for an accounting at the hands of the court.

The following departments of the plant of the Brown-Bonnell Iron Company, at Youngstown, Ohio, resumed operations this week: The two 10-inch mills, hoop mill, 12-inch mill, 8-inch mill, sheet mill and Nos. 1, 3 and 4 bar mill and the Williams bar mill.

Nearly all departments of the plant of the Andrews Brothers Company, at Haselton, Ohio, are now in full operation. At the plant of the Mahoning Valley Iron Company, also at Youngstown, nearly every department is on in full.

It is reported that the sheet mills of the Britton Iron & Steel Company, known as the Lake Shore Mills, at Cleveland, Ohio, will be put in operation at once. It is intended to run the mills non-union.

A recent issue of the *Inland Ocean*, published at Superior, Wis., says: "There is but little doubt that the plant of the West Superior Iron & Steel Company will pass into the hands of the Rockefellers, although it may not be put in operation much before spring. John D. Rockefeller has for the past two weeks been dealing directly with Warner Van Norden, president of the land company, for the purchase of the plant. For several months past the Rockefellers have been increasing their holdings in the American Steel Barge Works, and will probably conduct the steel plant in connection with the barge works. It is also reported that they have opened negotiations with a view to securing the York charcoal iron furnaces, on which construction was stopped some time ago owing to the sudden collapse in health of President Gale of Minneapolis. The details of the deal are understood to be: The bondholders of the steel company, chiefly the Rockefellers, will take hold of the plant if the land company will assume the indebtedness, which, aside from the amount owing the land company, is less than $200,000. On the other hand, the Rockefellers agree to take the plant, operate it and put at least $2,000,000 in improvements, making the plant second to none in the country. Should the deal go through, and there now seems but little doubt that it will, work will be commenced this winter on the proposed improvements."

The sudden rise in the Ohio River last week will prove to be a blessing to the cut nail manufacturers in the Wheeling district. As is well known, a large part of the demand for cut nails comes from the South, and shipments to Southern points are nearly always made by river. Owing to the low stage of water in the Ohio River for a number of months very few shipments have been made. Now that a navigable stage of water has come, it is expected that large shipments of cut nails will be made by the various concerns located in Wheeling and other points in the Ohio Valley.

The cut nail factory and plate mill of the La Belle Iron Works, at Wheeling, W. Va., were in full operation last week.

A number of additional sheet mills of the Ætna-Standard Iron & Steel Company, Bridgeport, Ohio, were started up last week.

The galvanizing department of the plant of the Whitaker Iron Company, at Wheeling, W. Va., which was not destroyed by the recent fire, is in full operation. As soon as the insurance on the destroyed buildings of this firm has been adjusted they will be rebuilt on a larger scale than before.

We are advised that the report that a boiler of the Climax type, in the plant of the Riverside Iron Works, at Wheeling, W. Va., exploded recently, is without foundation. There have been no boiler explosions at any of the works of the above firm for some years.

Some excellent records for production have recently been made at the Bessemer steel plant of the Shenango Valley Steel Company, at New Castle, Pa. On Tuesday of week before last the night turn made 350 tons of billets, while the output for the entire 24 hours was 641 tons.

The sheet mill department of the works of the Moorhead-McCleane Company, at Pittsburgh, which has been idle for some time, will resume operations within a few days, as a result of the agreement reached between the sheet manufacturers and the Amalgamated Association.

The Mahoning Valley Iron Company, Youngstown, Ohio, have started up their bar and guide mills, their blast furnace, plate mill and spike factory remaining idle. On account of the unsatisfactory outlook for any improvement in business before spring it is possible that the idle departments of this plant will not be started up for some time.

The mills of the Akron Iron Company, at Akron, Ohio, are running only one or two days per week to fill accumulated orders. This firm have not puddled any pig iron since June 24 last, and the prospects for the starting up of their boiling department in the near future are not encouraging.

Nearly every department of the Homestead Steel Works, Homestead, Pa., is in operation this week. The 119-inch plate mill was put on triple turn last week for the first time in some months. With the exception of the 32-inch mill and the converting mill all other departments of this plant are on double turn.

In one day recently there were turned out in the wire nail department of the HP Nail Company, at Cleveland, Ohio, 5652 kegs of wire nails. This is claimed to be the largest day's record ever made in wire nail production in one establishment.

The sheet rollers and other tonnage men of the Newport Iron & Steel Company's works, at Newport, Ky., went out on strike last week for the alleged reason that they claimed that the general reduction of 10 per cent. in sheet mill wages did not apply to them. About 24 men went out and 300 were compelled to follow. The matter has since been satisfactorily adjusted.

All non-union sheet mills have followed the action of other mills by reducing tonnage wages 10 per cent. W. Dewees Wood Company of McKeesport are among the number.

A press report states that the National Tube Works Company, McKeesport, Pa., have asked their puddlers to work for $4 per ton, on the understanding that no more steel is to be used. There must be a serious mistake in this report, as it is hardly probable that the above named company can afford to allow their Bessemer steel plant to remain idle for such a consideration. This plant was recently completed and described in *The Iron Age*, November 16.

Van Alen & Co.'s rolling mill and nail factory, at Northumberland, Pa., are now running on double time, employing 300 men.

Phœnix Furnace, owned by the Brown-Bonnell Iron Company, Youngstown, Ohio, will resume operations in about a week. The stack is now banked.

Emma Furnace, Union Rolling Mill Company, Cleveland, is now in blast.

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Spearman Furnace, at Sharpsville, Pa., has resumed blast.

Rosena Furnace, at New Castle, Pa., which started November 12, is now running satisfactorily, having made 275 tons of No. 1 iron in one day recently. E. D. Reis, superintendent, has resigned his position as manager at Edith Furnace, Allegheny, Pa., in order to devote all his time to Rosena.

Middletown, Ind., is to have a rolling mill, but it will not be the Irondale Mill of Anderson, to which the former city had been holding out inducements ever since the mill was burned. It is stated that a contract has been signed with a new company, which provided that work shall begin on the building on or before January 10 next, and that the plant shall be in operation, employing 400 men, July 1, 1894. The subsidy is $40,000 in cash.

A bill has been filed in the federal court of Chattanooga, Tenn., seeking to set aside the recent action of the United States Circuit Court at Louisville, Ky., in placing the Malleable Iron Works of Chattanooga in the hands of receivers. The complainants seek the relief on the grounds that the representations made were fraudulent and collusive, and that the stockholders had no notice of such intended action.

At Duluth, Minn., the West Duluth Mfg. Company and the Duluth Mfg. Company have resumed operations. The York Iron Company, at Black River Falls, Wis., have also started up.

The employees of the rolling mill and tube works of the Reading Iron Company, Reading, Pa., have accepted a reduction of 10 per cent. in wages.

There is a probability that the Bristol Furnace, at Bristol, Va., will be leased. A proposition is said to have been made to the owners, which, if accepted, will insure the starting of the furnace by January 1.

It is stated that the Low Moor Iron Company of Virginia are preparing to start their furnace at Low Moor.

The furnace of the Cherry Valley Iron Company, at Leetonia, Ohio, which has been rebuilding for some time, has been completed and blown in after an idleness of four months.

At the Albany Iron Works, Troy, N. Y., last week the hammers at the water mill were in operation.

At the Burden Iron Works, Troy, N. Y., the winter schedule has gone into effect, and the puddling furnaces now light up Sunday nights instead of Monday.

The Bethlehem Iron Company, Bethlehem, Pa., shipped last week 132 tons of Harveyized armor for the battle ship "Maine."

It is announced that Belmont Furnace, at Wheeling, W. Va., has been prepared for an early resumption

The Lehigh Iron Company of Allentown, Pa., have announced a reduction in wages of 10 per cent.

The Blandon Rolling Mill Company, Reading, Pa., have reduced the wages of their puddlers from $3.25 to $3 per ton.

The Elk Rapids Iron Company of Antrim, Mich., have steadily operated their blast furnace, saw mill, grist mill, &c., despite dull times and reduced demand.

The rolling mill at Laramie, Wyoming, is now in operation. The mill has recently been greatly improved. A puddling department has been added for the purpose of making a higher grade of bar iron. The prospects are reported good for a full winter's run.

The Ironton Structural Steel Company of Duluth, Minn., are reported by Duluth papers to have started up their works the past week. It is understood that the company have secured the contract for furnishing building plates, beams, &c., for the new building to replace the Fargusson Block and that sufficient work will probably be secured from other sources to keep the new works busy during the winter.

The rolling mill at the Duluth Car Works was put in operation on the 27th ult.

The unsecured creditors of the Pennsylvania Steel Company held a meeting at Philadelphia last week and authorized the appointment of a committee of seven gentlemen to confer with N. Parker Shortridge, J. L. Erringer, Henry N Paul, Edmund Lewis and Joseph M. Shoemaker, a committee of the stockholders, in regard to the reorganization of the company. C. Stuart Patterson, chairman of the meeting, will appoint the committee, of which three are to be chosen at large and one each is to represent Boston, New York, Philadelphia and Baltimore.

The Detroit Bridge & Iron Works, at Detroit, Mich., are increasing their capital stock to $300,000.

It is stated that a radical change will soon be made in the method of making rails at the Edgar Thomson Steel Works, Bessemer, Pa. It is understood that the direct process in operation at this plant for some time is to be discarded, and the same method in vogue during the time when Capt W. R. Jones was superintendent of the plant will again be adopted. If carried out this will necessitate the erection of new heating furnaces, giving employment to a large number of men, whose services were dispensed with about a year ago.

Additional departments of the plant of the Cleveland Rolling Mill Company, at Cleveland, Ohio, which have been idle since last July, will be put in operation during this week, giving employment to about 300 men.

We are advised that there is "not a shadow of truth" in the statement that A. French and John M. Patterson of the A. French Spring Company, at Pittsburgh, would establish a large iron plant at Raleigh, N. C. The report stated that the new plant would manufacture car springs for the Pullman Palace Car Company.

The plant of the Falcon Iron & Nail Company, at Niles, Ohio, has been in operation only about half time for some months past. Unless there is a large increase in orders in the near future, the firm do not expect to be able to operate to even half capacity.

The blast furnace of the Bellaire Nail Works, at Bellaire, Ohio, went in operation on November 23, after an idleness of about three months. The Bessemer steel plant of this concern has been in operation from one-half to two-thirds time since last August. Their sheet bar mill has also been in operation part of the time, running only when sufficient orders were received to justify putting it in operation. For the balance of this year the firm expect to operate their different departments as they have been doing for the past three or four months. It is the intention to keep their blast furnace in continuous operation.

The Tudor Iron Works, East St. Louis, Ill., have closed down in part on account of a decrease in the number of orders received.

The Pottsville Iron & Steel Company, Pottsville, Pa., have started up their fishback mill after an idleness of a week and a partial idleness of three days a week for the past four months.

Machinery.

The Richmond Locomotive & Machine Works, Richmond, Va., have secured an order for the building of 20 new engines for the Atchison, Topeka & Santa Fé Railroad, and are rebuilding ten engines for the Peoria & Eastern Railroad.

Another decision has been handed down in the United States Circuit Court in New York City sustaining the patents of the Westinghouse Air Brake Company of Pittsburgh. This last decision denies the motion of the defendants, the New York Air Brake Company, for leave to sell, subject to a royalty, 3000 sets of infringing air brakes, which they claim to have on hand, and making the injunction in favor of the Westinghouse Air Brake Company absolute. Officials of the New York Air Brake Company say they will take an appeal, and if they succeed in reversing the judgment their works at Watertown, N. Y., which have been closed by the injunction, may be started up again.

The Spicer Mfg. Company, New Philadelphia, Ohio, have recently equipped the new plant of the New Castle Steel & Tin Plate Company, New Castle, Pa., with their sheet metal trucks.

The Michigan Peninsular Car Company, who paid a dividend on the common stock last spring, have recently passed the dividend on the preferred stock.

The new plant of the Woonsocket, R. I., Electric Machinery & Power Company is about completed and will be in operation shortly. Water is the motive power for driving the dynamos, two pairs of 36-inch turbines, developing 600 horse-power, being used. Three generators, each of 150 horse-power, will be installed.

Thirty-five employees of the Warren Foundry & Machine Works, Phillipsburg, N. J., have struck because of a system adopted by the company which the men claim greatly increases their hours of labor per day without increasing their pay. By the new order the men are compelled, to do about 12½ hours' work in ten hours' time. A hundred men are out of work by reason of the strike. The company claim that the new arrangement was made necessary in order to compete with the cheap labor of the South.

The Donaldson Iron Company, pipe manufacturers at Emaus, Pa., announce a reduction of 10 per cent. in wages, affecting all men except laborers, who get 90 cents a day.

Notwithstanding the general depression in the foundry trade the Danville Foundry & Machine Company of Danville, Ill., find themselves obliged to enlarge their plant. They are just finishing a large addition to their foundry, and are equipping it with the Ridgway steam-hydraulic cranes, and one of the Ridgway steam-hydraulic elevators is used for taking the stock up to the cupola platform. Before deciding upon the crane for the new works, the Danville works about a year ago ordered a small Ridgway crane for their old works.

W. A. Blakeslee, proprietor of the Blakeslee Foundry, in Allentown, Pa., who recently failed has issued a statement, in which his liabilities are given at $27,340, and the assets at $37,036, of which amount $35,000 is alleged to be real estate, buildings, machinery, patterns, tools, &c.

The King Press Drill Company are erecting a foundry at Hebron, Iowa, to manufacture drills.

The Tyler Foundry & Machine Company have been chartered at Fort Worth, Texas; stock, $30,000. Incorporators, A. L. Clark, J. F. Christian, John A. Bonner, J. P. Patterson and I. Cahen, all of Tyler.

The Winkler Machine Mfg. Company have been organized at Kansas City, Mo., with a capital of $40,000.

A new boiler works is to be built at Escanaba, Mich.

The Wilmot & Hobbs Mfg. Company, Bridgeport, Conn., are running their hot rolling mill, plating, grinding, buffing, soldering and tool making departments full time, and the cold rolling mill 48 hours per week, with a prospect of the latter department also being run full time.

The Chas. Berghoefer & Lupinski Company, millwrights and machinists, at Milwaukee, Wis., have made a voluntary assignment. The assets of the company are in the neighborhood of $58,000, while the liabilities, it is said, will not amount to more than $33,000. The cause of the failure was the inability of the firm to get ready money with which to meet the claims of pressing creditors.

It is reported that a stock company, composed of Oshkosh, Wis., capitalists, will be formed to operate the Northwestern Car & Machine Company's plant, for which a receiver was recently appointed.

The new plant of Reeves Brothers, boiler manufacturers, at Alliance, Ohio, has not been fully completed, but has been put in partial operation. The erection of the second building, which will be equal in size to the main building, has been postponed until spring.

The American Road Machine Works of Kennett Square, Pa., which have been idle for some time, have started up with a full force.

The New Iberia Foundry, recently burned at New Iberia, La., will be rebuilt on a more extensive scale.

The wages of the employees of the Portsmouth Machine Company, Portsmouth, N. H., have been reduced 10 per cent.

The Piqua Boiler Works, Piqua, Ohio, have gone into the hands of a receiver upon the application of the Third National Bank, which is the largest creditor.

Some weeks ago we published an item stating that the large new foundry being built by the J. I. Case Mfg. Company, at Racine, Wis., would be equipped with electric cranes. We have since learned that electricity will not be used at all for the cranes. The cranes that have been adopted are the Ridgway steam-hydraulic. Quite a large number of them will be used, and the order for same has been placed. For the lighter work direct acting air hoists will be used of 1-ton capacity. These latter, as well as the steam-hydraulic cranes, will be furnished by Ridgway & Son of Coatsville, Pa.

The Fischer Foundry & Machine Company of South Side, Pittsburgh, have re-

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cently done a large amount of repair work at the Wheeling Steel Works of the Wheeling Steel & Iron Company, at Wheeling, W. Va.

The Montague Iron Works, at Grand Rapids, Mich., have resumed with a full force of men

The Columbiana Pump & Machine Works, Columbiana, Ohio, have started up after a shut down of one month.

The machine shops of the Pennsylvania Railroad located at Altoona, Pa., which for the past three months have been working only five days a week and nine hours per day, have gone on full time and in the future will work ten hours per day and six days per week.

Plans for the new works to be erected by the Westinghouse Electric & Mfg. Company, at Brinton, Pa., on the line of the Pennsylvania Railroad, about 12 miles from Pittsburgh, were on exhibition in the Westinghouse Building, Pittsburgh, last week. As already stated in these columns, it is the intention of the company to concentrate the various Westinghouse interests at Brinton when these buildings have been completed. Bids for a machine shop 754 x 231 feet and a warehouse 754 feet long and 76 wide are asked for. The contracts for these two buildings will be closed December 16. The other buildings, which will be built later, are a foundry, 700 x 150 feet; a punch department, 250 x 76; a carpenter shop, 300 x 75; a paint shop, 100 x 50, and a power house, 76 feet wide and 300 feet long. All of these buildings will be two stories high. A three story office building, 200 x 50 feet, is also to be built, but the plans for it have not yet been completed. Railroad tracks will extend along the side of the warehouse, and an elevated track will also extend the entire length of the building, from which material can be loaded or unloaded into the second story. Five bridges will connect the second story of the machine shop and warehouse. A dozen traveling electric cranes will be used in handling the heavy castings. The plans were designed by Thomas Rodd and drawn by W. A. Hawley. The estimated cost of the machine shop and warehouse buildings is over $500,000.

Among the recent sales of the National heater, manufactured by the National Pipe Bending Company of New Haven, Conn., are one of 2000 horse-power to the American Linen Company, Fall River, Mass.; 800 horse-power to Harris Woolen Mills, Woonsocket, R. I.; 1000 horse-power to Union Street Railway Company, New Bedfore, Mass., and 2000 horse power to the Electric Light & Power Company, Syracuse, N. Y.; 500 horse-power to Boston Rubber Shoe Company; 300 horse-power to Edison Electric Company, Tamaqua, Pa.; 300 horse-power to Meriden Street Railway Company; 500 horse-power to Portland, Ore.; 200 horse-power to Valdosta, Ga.; 1000 horse-power to Jersey City & Bergen Street Railway Company; 600 horse-power to Halifax Electric Company, Halifax, Nova Scotia; 500 horse power to Brooklyn Heights Railroad Company, Brooklyn, N. Y., and many others of smaller sizes.

The Huyett & Smith Mfg. Company, makers of heating and ventilating apparatus, Detroit, Mich., report a material improvement in their business. For the last three weeks their works have been running on full time in every department and the company are even behind with their orders. The prospects for a good winter trade are very promising.

The Winkler Machine Mfg. Company, capitalized at $50,000, have filed articles of incorporation at Kansas City, Mo. The company have been formed for the purpose of manufacturing the Winkler ice machines, the Winkler hose coupler, the multiple piston engines and other machinery in Kansas City. The incorporators are Ehergott T. Winkler, Theodore Stegner and Frank W. McMillan, all of Kansas City.

At the Pullman repair shops at Wilmington, Del., 300 men have resumed work in addition to a like number already employed. A cut of 20 per cent. was announced, but after the first of the new year the men will work on piece work, so that the reduction is only temporary.

The New York Locomotive Machine Works of Rome, N. Y., have been destroyed by fire. The property was valued at $500,000, and was insured for about $300,000. The fire is thought to have been of incendiary origin.

Hardware.

The Southington Cutlery Company, Southington, Conn., are now running eight and one-half hours a day.

The Winchester Repeating Arms Company, New Haven, Conn., are running on full time and in some departments are working overtime. This is owing to the manufacture of arms for use in the troubles in Africa and Brazil, and the plant will have all the work it can handle for some time to come.

The Bridgeport Crucible Company, Bridgeport, Conn., whose factory was recently destroyed by fire, are erecting a temporary structure in which they will carry on the business for the present.

The John Russell Cutlery Company, Turner's Falls, Mass., are running eight hours a day.

The Stanley Rule & Level Company, New Britain, Conn., will shut down December 21 for inventory. All contracts between employers and employees will be void after that date. The employees are fearful that the directors may conclude to let the factory remain closed until the tariff question has been definitely settled.

A company has been established at Faribault, Minn., for the manufacture of the Doran automatic band cutter and self feeder, with officers as follows: W. E. Blodgett, president; F. A. Berry, treasurer: W. E. Blodgett, F. A. Berry, D. W. Grant and Stephen Jewett, directors.

The nail mill of the Carnegie Steel Company, at Beaver Falls, Pa., has been shut down for an indefinite period. About 300 men are thus out of employment. This action on the part of the company was a great surprise, as the nail mill has been running full force for some time. The company have assigned no cause for the action, except that the present price at which nails are sold would not justify them in continuing to run their works.

The Hammond Buckle Company, Rockville, Conn., have purchased the plant of the Chapman & Armstrong Mfg. Company, at Waterbury, and will remove their business to that point.

The Blair Lamp Adjuster Company of Omaha, Neb., have filed articles of incorporation. The company have an authorized capital of $50,000. The directors are W. J. C. Putnam Cramer, H. F. Robertson and William Whitmore.

The new bolt shop of the Peck, Stow & Wilcox Company, Southington, Conn., will be ready in about a week.

D. M. Osborne & Co., manufacturers of implements, Auburn, N. Y., state that they propose to continue the manufacture of their entire output in that city as long as present conditions of labor and freight continue, although handsome inducements have been made to them for the transfer of all or part of their business to points in the West.

The Eaton, Cole & Burnham Company, Bridgeport, Conn., are running full force on half time.

Keystone Lock Works, Lancaster, Pa., for whom Surpless, Dunn & Alder, 97 Chambers street, are agents, have largely increased their facilities for making special padlocks, and now believe themselves to be among the largest producers of this class of goods. With their new foundry now in operation they are now making all their own castings.

The plain wire and barb wire departments of the plant of the Baackes Wire Nail Company, at Cleveland, Ohio, will probably be started up during this week, giving employment to about 100 men The affairs of this concern have been in the hands of J. Q. Riddle, receiver, for some months past.

The Union Metallic Cartridge Company, Bridgeport, Conn., are running full time and full force.

The Torrance Iron Company of Troy, N. Y., have been reorganized. G. L. French has been elected president, C. A. McLeod vice-president, and N. H. Squires secretary and treasurer. The company make a specialty of malleable iron castings for stove trimmings and tinners' hardware.

The nail mill of the Atlantic Iron Works, Sharon, Pa., has resumed operations.

An accident to the engine in the chisel works of Charles Buck, Millbury, Mass., has caused a shut down of about a week.

The T. C. Richards Hardware Company, West Winsted, Conn., are working 50 hours a week.

The Kinsey Implement Company and the Henry Lee Implement Company of Denver, Col., have been consolidated under the style of the Lee-Kinsey Implement Company. The new company are incorporated, with a capital of $250,000. The directors are Henry Lee, Charles Reed, Joseph Kinsey and Eugene Conant.

As already noted in these columns, S. P. Husselman of Wooster, Ohio, has purchased the entire interest of J. H. Logan, Geo. B. Logan and Edward P. Logan of Pittsburgh in the Logan & Strobridge Iron Company, New Brighton, Pa., and the interest of J. H. Logan in the old New Brighton Cutlery Building Association, the building of the latter now being occupied by the Robingson Mfg. Company. The consideration of the purchase is said to be about $50,000. The plant of the Logan & Strobridge Iron Company consists of six lots, occupying the square between First, Second, Butler and Locust streets in the center of New Brighton, upon which are located the brick foundries, machine shops, planing mill, warehouse, office, &c., of the company. In these buildings are manufactured a varied line of coffee, corn and spice mills, builders' and house furnishing hardware, light gray iron castings, &c., the firm having been manufacturing these goods for the past 20 years. In addition to this line, with the advent of Mr. Husselman, will be manufactured railroad, farm and yard fencing under the Husselman patents. The company at present employ about 100 men, which force will be increased when the fence trade opens up in the spring. The plant of the Robingson Mfg. Company, who recently purchased all the effects of the Cutlery Building Association, and are included in the deal, is located on the bank of the Beaver River, at the foot of Mill street, New Brighton, and occupies an entire square, on which is located a large two-story frame building, which contains power, machinery, furnaces, &c., necessary for the manufacture of brass castings, Babbitt metal and solder. In addition to this is an electroplating plant. There will be no change in the management of the Logan & Strobridge Iron Company, excepting that Mr. Husselman takes the place of J. H. Logan as a director. Every effort will be put forth by the management to increase the business of both concerns. The Logan & Strobridge Iron Company is a close corporation, the stockholders being Turner Strobridge, L. Roggen Strobridge, C. C. Robingson and S. B. Husselman.

Joseph Dixon Crucible Company, 63 Reade street, New York, manufacturers of pencils, crucibles and graphite products, note signs of improvement lately in their business, although not to so great an extent as could be wished. They have instituted some improvements and betterments at their works, and are prepared to promptly execute orders.

The new plant of the United Indurated Fiber Company, Lockport, N. Y., has commenced operations. The plant will soon be running full force and will employ 300 men.

Stoughton Rubber Company, Boston, Mass., are manufacturers of rubber clothing, and in connection with their own product handle druggists' sundries and mechanical goods. They are also agents for the New York Belting & Packing Company.

The American Wire Nail Company, at Anderson, Ind., are enlarging their galvanizing department. Reports are in circulation that the company are about to secure control of the nail plant of the Hazen Company.

The *Times* of Alexandria, Ind., states that arrangements have been completed for the location of the Kelly Axe Company's factory at that point. Those interested are confident that the works will be in operation by March.

The plant of the spoke and handle factory of Gurley is to be removed to Huntsville, Ala., and the capacity is to be greatly increased.

The E. Warren Axe & Tool Works, Warren, Pa., have been succeeded by the Warren Axe & Tool Company, incorporated with a capital of $25,000, and with a capacity of 50 dozen axes a day. They have improved machinery and call special attention to the quality of their goods.

Ellwood Shafting & Tube Company, Ellwood City, Pa., are now in a position to execute orders for seamless cold drawn tubes, made from genuine Swedish steel. At present the range of sizes is from ¼ inch to 1¾ inches, inclusive, 18 feet lengths. Reference

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is made to the tubes being perfectly smooth inside and out, while it is said the variation between inner and outer walls is within 1-1000 part of an inch. The buildings of the plant are two in number, each 250 x 160 feet in dimensions.

Yale & Towne Mfg. Company, 84-86 Chambers street, New York, on the afternoon of December 2 commenced the removal of 4000 old lock boxes in the New York Post Office, which have done duty since 1870. By working continously they finished replacing them by the afternoon of the next day with 3100 new boxes fitted with Paracentric locks and keys, which are made of this particular kind for the United States Government only. The new boxes have a bronze front, beveled glass windows and perforated bottoms to prevent the accumulation of dust.

The Colebrookdale Iron Company, Pottstown, Pa., whose New York office is at 103 Reade street, in charge of Duncan K. Major, advise us that while they have not run full handed on their other work, such as japanned castings, rolling mill castings, &c., they have done so on their sad irons since the beginning of the year, which they refer to as an exceptional experience. They state that they have no stock of any account at the present time, but they expect to have a fair stock of irons by the first of January for next season's orders.

Miscellaneous.

The Manhattan Rubber Mfg. Company have been incorporated under the laws of New Jersey, with a capital stock of $150,000. The incorporators are Peter Reid of Reid & Barry Company, Passaic, N.J.; Samuel Watson of the Watson Machine Company, Paterson, N. J.; Frank Cazenove Jones, recently of the New York Belting & Packing Company, Limited, New York; W. W. Dashiell of W. W. Dashiell & Co., New York; A. F. Townsend, New York, and George Woffenden, Passaic, N. J. The company will manufacture all kinds of mechanical rubber goods including belting, packing, hose, emery wheels and bicycle tires, and will make a specialty of molded goods. Offices and warerooms have been opened at 64 Cortlandt street, New York City, and the company have leased the entire premises for five years. The plant is at Passaic, N. J. The officers of the Manhattan Rubber Mfg. Company are: Frank Cazenove Jones, president and general manager, and A. F. Townsend, secretary and treasurer. George Woffenden will have entire charge of the factories and Julius Kahn will be selling agent for the new company.

The State Street Horse Railway Company, at New Haven, Conn., have placed the contract for the roof on their new power house with the Berlin Iron Bridge Company of East Berlin, Conn. The building will be 84 feet wide and 250 feet long, the roof trusses being of iron, covered with slate.

The citizens of New London, Conn., have not yet relinquished their effort to get the Bath Iron Works of Bath, Maine, removed to that city. It has been suggested that a public subscription be started with this end in view.

The Ducktown Sulphur, Copper & Iron Company, Limited, have resumed operations at their works at Ducktown, Tenn.

The entire night force of the Elmira Bridge Works, Elmira, N. Y., has been laid off. The cause is believed to be but temporary. The trouble is said to be mainly caused by the specifications in the contracts which call for work to be commenced at certain dates. For instance, the date of the beginning of the works on the $1,250,000 New York Central viaduct contract is next March.

The Consolidated Car Heating Company's plant, Van Tile & Co.'s boiler shop and James McKinley & Sons' architectural iron works, at Albany, N. Y., are now running overtime.

The Committee on Manufactures of the Albany, N. Y., Business Men's Association has secured another industry for that city in the shape of the Oneida, N. Y., Spring Bed Mfg. Company.

It is reported that the Shuler Spring Works of Amsterdam, N. Y., which have been running a few days each week, will shut down again.

The Aluminum Smelting & Refining Company will shortly put in operation their smelting works, at Turner, in Kansas, a few miles west of Kansas City. It is stated that they will manufacture aluminum from native clay.

TRADE REPORT

As expected, the whole Iron and Steel trades are in a very comatose condition, nor is much improvement expected until the future is revealed, so far as the tariff is concerned. Reports are very conflicting, but on the whole tend in the direction that the Wilson bill will be forced through without serious amendment. Still, this circumstance deserves consideration on the other side, that the Washington correspondents proved pretty poor prophets lately when they foreshadowed the provisions of the Wilson bill and may be found erring again this time.

Welcome as an improved tendency would be, it is useless to deny that the incipient bull movement fathered by one of the Birmingham companies arouses little enthusiasm with other sellers and is not frightening buyers to any considerable extent. While it is to be sincerely hoped that it not a false start, the general situation does not encourage sanguine views very much. It is true that there have been speculative purchases, say 18,000 tons in all, 5000 tons of warrants having been transferred to England from New York and the rest having been bought in Philadelphia, also for English parties. Then the large Pipe contracts lately placed have led to covering, so that the sales have been heavy. But they have not filled up many sellers, who continue to offer Iron at the old rates. It is a fact, however, that further liberal Cast Iron Pipe contracts are in the market, say about 25,000 tons in all. On the other hand, the general foundry trade is very dull, and, for instance, in Chicago there have been requests for delaying deliveries of Iron.

Our Philadelphia correspondent puts finally at rest all doubts concerning the Steel Rail arrangement by showing from the court records that the Maryland and Pennsylvania have received bonds to the aggregate amount of $380,000 as a forfeit on orders for 400,000 tons. Some people may be able to guess who the buyers are. When the history of the last six weeks of the Rail trade is written it will be acknowledged to be among the most checkered recorded in the Iron industry.

In Soft Steel the markets have been quiet, there being relatively little new business coming up. In Finished Material the struggle for work continues, with its attendant extremely low range of prices. An interesting event during the week has been the first appearance as a bidder on bridge work of the Illinois Steel Company, the occasion being the 3500-ton contract for the Milwaukee viaduct.

Heavy pressure has been put on the Plate market lately by a Pittsburgh firm whose order book had been swept clear for present delivery of a number of large contracts by postponement.

There is more activity in Girder Rails. It is estimated that there are in sight new orders for about 20,000 tons of Rails, and that about 10,000 tons of deferred work is on the eve of being taken. The latest order for about 2200 tons, for Indianapolis, went at a low figure.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., December 5, 1893.

The situation in the Iron and Steel trade shows no improvement, and in view of the tariff agitation and the near approach of the holidays no improvement ought to be expected. It is a long, dreary road to travel, and while the immediate outlook is the reverse of encouraging, there can be no doubt that the turn will come some of these days. Meanwhile with such changes as are proposed in the new tariff there is no possibility of any new business beyond what is indispensable for immediate requirements. Low as prices are, they will have to be still lower if foreign competition has to be met, and as that appears to be the object of legislation, there is no alternative but to wait and see what will be done. Is it any wonder, therefore, that the last month of one of the worst years that the Iron trade has ever known is the worst in the entire series? Business is duller, prices are lower, and the outlook appears to be gloomier than at any time during the whole year, and yet for aught that any one knows to the contrary, it may be just the time when things may take a turn; the very reverse of what everybody expects. If it is the unexpected that happens it could hardly come at a better time than right now.

Pig Iron.—There is no perceptible change in this department. The reported 50¢ advance by one of the Southern companies falls very flat, and does little more than provoke a smile. Anybody can ask an advance, and it is entirely proper to do so at such prices as have been ruling during the past two or three months, but whether any one will pay it or not is another thing entirely. In this market the supply, while perceptibly smaller, is nevertheless as large in proportion as at any time during the whole year. There is very little Iron wanted, and what is wanted can be easily secured at the old prices, and in some cases at a little less than that. Consumption is very light, and will be still lighter during the next 30 days, so that there is no incentive for placing orders ahead, and especially so while the tariff is unsettled. To-day's asking prices are about as follows, with sales chiefly in small lots:

No. 1 Foundry	$13.75 @ $14.25
No. 2 Foundry	13.00 @ 13.25
Standard Gray Forge	12.00 @ 12.50
Ordinary Gray Forge	11.50 @ 11.75

Steel Billets.—No business of any account has been done during the past week or ten days. Small lots have been taken at $19.50 @ $19.75, delivered, but good buyers would have no difficulty in placing 1000-ton orders at $19.25, perhaps less than that on the right kind of an offer.

Steel Rails.—There is some inquiry for fair sized lots, and intimations that orders would be placed if special rates were named. The price is $24, however, and there will be no deviation from that figure on standard sections. From the court records it appears that the Maryland Steel Company have accepted an offer for 300,000 tons Rails and the Pennsylvania Steel Company 100,000 tons at $25 per ton. The buyers give bonds for the payment of $300,000 to the Maryland Steel Company in case that they fail to take delivery during 1894, and for $80,000 to the Pennsylvania Steel Company if they fail to take theirs, but the companies are also bound to accept no orders for

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this class of Rails until the lots as above named have been taken. The companies will therefore either get the business or the forfeit of $300,000 and $80,000 respectively.

Finished Material.—There is little or no change to note, business being slow and for small lots, at the lowest of the low figures heretofore ruling. There are no large orders in the market, and even those for shipbuilding that seemed likely to go through last week are either postponed or withdrawn. In point of fact, there is nothing but small orders around, and those that look for anything else meet with nothing but disappointment. Mills that look after the smaller trade are doing fairly, but at the same wretchedly low prices as before, which are nominally as follows, but on good sized lots there is no difficulty in securing liberal concessions:

Grooved Skelp, delivered.	1.45¢	@	1.50¢
Best Refined Bars	1.45¢	@	1.55¢
At interior points	1.35¢	@	1.40¢
Tank Steel	1.45¢	@	1.55¢
Heavy Plates	1.50¢	@	1.60¢
Shell	1.60¢	@	1.75¢
Flange	1.90¢	@	2.00¢
Angles	1.60¢	@	1.70¢
Beams and Channels	1.75¢	@	1.90¢

Old Material. — Market extremely dull, and prices less firm than they were a week ago. Asking prices are about as follows, but under pressure to realize, lower figures have to be accepted:

No. 1 Wrought Scrap, delivered	$11.50	@	$12.50
Machinery Cast, delivered	10.00	@	11.00
Heavy Steel Scrap, delivered	11.50	@	12.50
Old Iron Rails, delivered.	14.00	@	14.50
Old Street Rails, delivered	15.50	@	16.00
Wrought Turnings, delivered	10.00	@	11.00
Cast Borings, delivered	6.50	@	7.00
No. 2 Light Scrap	6.50	@	7.50

St. Louis.

(By Telegraph.)

Office of *The Iron Age*, Bank of Commerce Building, St. Louis, December 6, 1893.

Pig Iron. — There is not much demand and prices are unchanged. There is practically no cheap Iron in the market at present and consumers cannot be induced to stock up on to-day's prices. For the past six months certain users of Iron, generally carload buyers, have been making their purchases only when cut prices were the inducement. Now that these prices have been withdrawn, they are not in the market. A hand to mouth trade is the report from all furnace agents. Quotations are unchanged, as follows, which are for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	$13.25	@	$13.50
Southern Coke, No. 2 Foundry	11.50	@	11.75
Southern Coke, No. 3 Foundry	10.75	@	11.00
Southern Gray Forge	10.25	@	11.50
Southern Car Wheel	17.25	@	18.25
Lake Superior Car Wheel	16.50	@	17.00
Ohio Softeners	16.00	@	16.50

Bar Iron —Local jobbers state that trade is exceedingly dull, and prices range between 1.70¢ and 1.75¢, according to quantity. Mills are only running about half time, and are making some very low prices. Nominal quotations from mill are 1.40¢ @ 1.45¢, but these prices are shaded.

Barb Wire.—The demand for Barb Wire is moderately active. Mills quote $2 for carload lots of Painted to jobbers, and Galvanized at $2.40. Locally jobbers quote Painted at $2.10 @ $2.15, and Galvanized at the usual advance of 40¢ ℔ hundredweight.

Wire Nails.—There is a lively trade reported by the mills, but prices are unsatisfactory. Sales are reported as low as $1.35 for lots of from 3000 to 5000 kegs. Mills quote $1.40 @ $1.45 for carload lots to jobbers. Store price is $1.50 @ $1.55.

Rails and Track Supplies.—Track Supplies are dull and prices inclined to weakness. We quote as follows: Splice Bars, 1.65¢ @ 1.70¢; Spikes, 2¢ @ 2.05¢; Bolts, Square Nuts, 2.40¢ @ 2.45¢; with Hexagon Nuts, 2 50¢ @ 2.55¢; Links and Pins, 1.90¢. Old Rails are dull at $13.50. Steel Rails are unchanged at $27 @ $27.50.

Pig Lead. —The offerings of this metal have been quite free, and 3.17½¢ @ 3.20¢ has been made during the past week. Considerable uneasiness exists regarding the effect of the proposed tariff, which, it is pretty generally conceded, will have the effect of causing a decided slump in prices.

Spelter.—The demand for Spelter has been fairly good since our last report, and prices have improved somewhat. Sales have been made at 3.45¢ @ 3.50¢, the closing transactions to-day being made at the latter figure. Choice brands commanded 3.60¢.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, Chicago, December 6, 1893.

The market continues quiet, notwithstanding the efforts to force business by sellers in various lines. The attempt by Southern Pig Iron manufacturers to advance prices is persisted in, but it does not frighten consumers into buying.

Pig Iron.—While there is some movement in small lots of local and Southern Coke Iron, it is confined entirely to the absolute necessities of consumers. Inquiries for good sized lots of Southern Iron have led to no business, on account of the high prices asked by nearly all the Southern companies. Buyers seem to consider the upward movement only a bluff and will wait to see whether it can be maintained or is only a temporary incident. A discouraging feature of the situation at present is the decrease in shipments to consumers, who are to a considerable extent asking for postponement of deliveries on contracts. This shows a falling off in the foundry business, which for the past month or six weeeks had materially improved. Some sales of Charcoal Iron are reported at prices a shade under our quotations. Quotations are now as follows for cash:

Lake Superior Charcoal	$15.50	@	$16.00
Local Coke Foundry, No. 1	13.50	@	14.00
Local Coke Foundry, No. 2	12.75	@	13.00
Local Coke Foundry, No. 3	12.25	@	12.75
Local Scotch	14.00	@	14.50
Ohio Strong Softeners No. 1	15.50	@	16.00
Southern Silvery, No. 1		@	13.75
Southern Silvery, No. 2		@	13.25
Southern Coke, No. 2	12.15	@	12.40
Southern Coke, No. 3	11.65	@	11.90
Southern, No. 1, Soft	12.40	@	12.65
Southern, No. 2, Soft	11.65	@	11.90
Tennessee Charcoal, No. 1	16.00	@	16.50
Southern Gray Forge	10.60	@	10.85
Alabama Car Wheel	18.25	@	18.50
Jackson County Silvery	16.00	@	16.50
Other Ohio Silvery	15.00	@	15.50

Bars.—Manufacturers report a fair week's trade, but the most of it has been secured by sacrificing prices. Sales are confined to moderate quantities only and consumers are buying for quick delivery. The mills which were favored with season contracts are now in not much better shape than those without such contracts, as specifications are coming in slowly, involving a chase for new business. The only redeeming feature of the market is the fact that jobbers and consumers generally are short of stock and are obliged to purchase frequently. Quotations on mill shipments range from 1.35¢ to 1.40¢ Chicago, half extras, on Bar Iron, and 1.40¢ to 1.45¢ on Soft Steel Bars. Bar Iron quotations, however, are subject to shading on favorable specifications. Jobbers continue to report a good demand from stock, but prices are weak, although nominal rates are continued at 1.60¢ @ 1.70¢ for Bar Iron and 1.65¢ @ 1.75¢ for Soft Steel Bars.

Structural Material.—The Milwaukee viaduct, which will require some 3500 tons of material, has not yet been placed. Bids were received from 16 companies, among them being the Illinois Steel Company, whose advent as bridge builders is a new departure for them. The lowest bid was $182,000, but the matter will have to be approved by the City Council. Very little other business is either reported or in sight, although expectations are entertained of a considerable amount of elevated railroad work to come up at an early day. Quotations are as follows, Chicago delivery: Beams, 1.65¢ @ 1.75¢; Tees, 1.90¢ @ 2¢; Angles and Universal Plates, 1.60¢ @ 1.65¢. Small lots are sold from stock at an advance of 10¢ @ 15¢ ℔ 100 above these prices.

Plates.—Business in this line is very quiet; dealers are now doing very little from stock. Boiler and other consumers are seldom getting new work. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.60¢ @ 1.70¢; Shell Steel, 1.80¢ @ 1.90¢; Flange Steel, 2¢ @ 2.10¢; Fire Box, 2.75¢ @ 5¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2¢ @ 2.10¢; Tank Steel, 1.90¢ @ 2¢; Shell Steel, 2 20¢ @ 2.40¢; Flange Steel, 2.50¢ @ 2.65¢; Boiler Tubes, 70 and 5 % off.

Sheets.—A few sales of Black Sheets have transpired; the largest of them was for 50 tons. Mill shipments of No, 27 Common are selling at 2.65¢ @ 2.70¢, Chicago, while Steel commands an advance of $1 @ $2 ℔ ton. Small lots of Iron from stock are selling at 2.90¢ @ 3¢. stock. Galvanized Iron is moving in very small quantities at about 75 % off for Juniata on mill shipments and 70 and 5 % for small lots from stock. The low price of Galvanized Iron is causing it to be substituted quite considerably for Black Sheets in roofing, as well as in other lines of large consumption. Copper Sheets are advancing on account of the higher prices of Ingot Copper. They are now quoted at 25 and 5 % off @ 30 %, according to quantity.

Merchant Steel.—Specifications are not being received by mill representatives in as large quantities as a couple of weeks since, but are still coming forward fairly well. A few consumers have placed season contracts within the past week, but it is now believed that about all the large concerns have covered their requirements. Those who came in lately for the purchase of Steel specialties have profited by their long delay, as they were able to contract at much lower prices than ruled early in the season. Quite a good business has recently obtained in small lots for quick delivery. Mill shipments, Chicago delivery, are quoted

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as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel, 1.90¢ @ 2¢; Ordinary Bessemer Machinery, 1.60¢ @ 1.65¢; Ordinary Bessemer Tire, 1.55¢ @ 1.60¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Billets.—Nothing new has occurred under this head, and quotations are unchanged at $19.25 @ $19.50, Joliet.

Rails and Track Supplies.—Inquiries are improving for small quantities of Steel Rails, which the local manufacturers are not always able to meet, as they have but a limited stock on hand. There are indications that some of the large buyers may soon come into the market, but thus far nothing has occurred on which to base an estimate of next year's probable business. Quotations range from $25 to $26 75, according to the size of the order. Fastenings are unchanged at 1.50¢ @ 1.60¢ for Splice Bars; 2.55¢ @ 2.60¢ for Track Bolts with Hexagon Nuts, and 1.90¢ @ 1.95¢ for Spikes.

Old Rails and Car Wheels.—Old Iron Rails are weaker, as the railroads are more anxious to sell. The near by mills are now being supplied at $14, delivered, and are not obliged to buy in large quantities to get this price. Old Steel Rails are quoted at $7.25 @ $10, according to length, on the basis offered by Pittsburgh dealers. Old Car Wheels are wholly neglected.

Scrap.—There is demand for all kinds of Scrap, but dealers are not looking for heavy business at this time, with the end of the year approaching. Our quotations fairly represent the condition of the market, sales being made occasionally at lower and sometimes higher prices than those given. Quotations are maintained at old figures: No. 1 Forge, $10; No. 1 Mill, $8; Sheet Iron, $4.50; Pipes and Flues, $8; Axles, $16; Horseshoes, $11; Fish Plates, $12; Spikes and Bolts, $10; Cast Borings, $4.50; Wrought Turnings, $6.50; Axle Turnings, $8; Heavy Cast, $9.50; Stove Plate, $7.75; Malleable Cast, $8; Mixed Steel, $7, gross ton; Leaf Steel, $14 50.

Metals.—Lake Copper is now quoted at 11¢ for carload lots and 11¼¢ for less than carloads. The advance is caused wholly by the export demand, as the domestic movement continues light. Casting Copper is also advancing, carload lots now being quoted at 10¢. Inquiries from consumers of this grade are considerably larger than they were. Spelter is quiet, but quoted at 3.50¢ @ 3.55¢, according to brand. Lead is weak. Refiners are quoting 3.20¢, but are selling very little at that price, as consumers are holding off for still lower figures.

A. H. Dunham & Co., Pig Iron merchants, have removed from the Monadnock Block to room 44 in the Illinois National Bank Building, 115 Dearborn street, Chicago.

The blooming train in the plant of the Wheeling Steel Works, owned and operated by the Wheeling Steel & Iron Company, at Wheeling, W. Va., has recently been increased from 60 feet to 180 feet in length. Tests of the new train were made last week and were highly satisfactory. It is probable that this plant will resume operations about the first of the year.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, December 5, 1893.

The indorsement of the Wilson tariff bill by the President in his message to Congress will no doubt have considerable influence on that measure and largely increase the chances of it going through without material revision. That this will add to the demoralization now existing in the Iron and Steel trades is generally admitted, as everybody, whether a large or small buyer, will purchase just as little as he can until it is actually known what will be done with the measure. Since our issue of last week the trade have had opportunity to thoroughly digest the bill, and now that the radical changes proposed are fully comprehended the opposition to its being made a law becomes stronger. The Tinned Plate Manufacturers' Association is in session in this city to-day, and it is probable that a committee will be appointed to go to Washington and endeavor to have the present duty of 2 2/10¢ ℔ lb on Tin Plate retained, or at best only slightly reduced. Makers of other materials seriously affected will also doubtless have representatives in Washington to guard their interests as much as possible. The Iron and Steel trades remain in the same condition as noted last week. Demand is very limited, and prices show no improvement whatever; on the contrary, have shown a weaker tendency in certain directions. Foundry Coke has been cut 20¢ ℔ ton, and there are some who predict Furnace Coke will be affected to some extent, but in view of the already low price at which Furnace Coke is selling this is not thought probable.

Pig Iron.—The market is practically in the same condition as noted in our report of last week. The amount of metal changing hands is small and prices are showing signs of weakness, especially on Bessemer. The trouble with the market just now is that not enough Iron is being consumed and too much is being made. Of course we take into account the fact that production has been cut in half and all that, but at the same time consumption has been reduced just as much and perhaps more. Where one consumer of Pig Iron can be found who is running his plant full time, ten can be found who are running to half capacity or less. Then, again, the stocks of Pig Iron on hand are very heavy, and as long as these conditions confront the market any betterment in price is out of the question. We quote as follows:

Neutral Gray Forge	$10.50 @	cash
All-Ore Mill	10.50 @ $10.75	"
Bessemer	11.00 @ 11.25	"
No. 1 Foundry	12.50 @ 13.00	"
No. 2 Foundry	11.50 @ 12.00	"

We note a sale of 1000 tons of Bessemer for December and January delivery at $11, Pittsburgh. Also 1500 tons of Bessemer, same delivery, at $11.10, Pittsburgh. Reports are going of sales of Bessemer at somewhat below our lower quotation.

Ferromanganese—We note a sale of 50 tons of domestic at $52.50, delivered at buyer's mill. We quote the market at $52 @ $52 50, delivered.

Billets.—No material changes in the Steel market have occurred within the last week. All the Steel plants in the Pittsburgh district are in operation and all have more or less business. In the Wheeling district the mills are also in operation, with the exception of the Wheeling Steel Works of the Wheeling Steel & Iron Company, and it will probably start about the first of the year. We quote the market at $17 @ $17.25 at maker's mill.

Plates.—Tank Steel is in good demand, but prices are as low as ever. We quote as follows: Tank Steel at 1.35¢ @ 1.40¢; Flange Steel, 1.65¢ @ 1.75¢; Shell, 1.55¢ @ 1.60¢; Fire Box, medium quality, 2½¢ @ 3¢, best quality, 3½¢ @ 4¢.

Structural Material.—Pittsburgh has taken the contract for Beams for a new court house to be erected in a far Western State and a fairly large tonnage is involved. The price is said to have been somewhat below our lower quotation. We repeat quotations of last week, as follows: Beams up to 15 inches, 1.50¢ @ 1.60¢. For desirable orders our lower quotation would be shaded. Angles and Universal Plates, 1.50¢ @ 1.60¢; Tees, 1.70¢ @ 1.75¢.

Muck Bars.—The demand is very light and prices are unchanged at $20.50 @ $21 for best grades, delivered at buyer's mill.

Steel Rails.—The local mill went on again yesterday morning on Rails. The report that it has secured an order for 40,000 tons from the Lake Shore road has been officially denied. Very little new business has been placed, but several contracts are expected to be let after the first of the year.

Bars.—Some mills report that orders are holding up pretty well, while others say a dropping off has occurred. As we are now so near the close of the year it is not improbable that a good many buyers will hold off placing their orders until after the first of the year. The report that the puddlers of the National Rolling Mills of the National Tube Works Company, at McKeesport, Pa., had agreed to accept $4 ℔ ton for boiling is untrue. No request for such a low rate has been made by the firm. The Valley mills are running to a greater or less extent, but none of them to full capacity, as has been stated. Bars are held at 1.30¢, half extras, by the Valley mills, and a determined effort is being made to maintain that price. Steel Bars are held at 1.30¢ @ 1.40¢, with Bar Iron extras, the price depending altogether on the nature of the order.

Wire Rods.—The market is active, and Rods are held at $24.50 @ $25, at maker's mill. Very few Rods for this month are to be had, and for this delivery our higher quotation is obtained. It is the impression that higher prices for Rods will soon prevail.

Barb Wire.—Inquiries for Wire for delivery next spring are now coming in, and some business has already been placed. The Barb Wire department of the plant of the Baackes Wire Nail Company, at Cleveland, started up on the 4th inst. on double turn. We quote Four-Point Galvanized at $2.20 in carload lots, and $2.30 @ $2.35 in less quantities. For round lots our lower quotation would probably be slightly shaded. We quote Plain Wire at $1 45 for Nos. 6 to 9 in carload lots. This price would be shaded for desirable business.

Wire Nails.—On Monday, the 4th inst., freight rates on Wire Nails from Pittsburgh territory to Texas common points were advanced from 42¢ to 84¢ ℔ 100 lb. In one day recently the HP Nail Company of Cleveland turned out 5652 kegs of Wire Nails. This is

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claimed to be the largest record for production in any one day ever made by one concern. There is a good demand, and inquiries for delivery into the first quarter of next year are plentiful. However, makers generally are refusing to take such contracts at present prices. We quote Wire Nails at $1.20 in carload lots and $1.15 in round lots, for close delivery. The rise in the river has allowed large shipments of Cut Nails to be made to Southern points by the Wheeling mills. We quote Cut Nails at $1 in carload lots and 95¢ for larger sized orders with desirable specifications.

Pipe and Tubes.—It is said that the demand for Pipes and Tubes is equal only to about 45 % of the capacity of the mills for production. Prices are no better, and on some lines are somewhat lower.

Skelp Iron.—The market is without change, and we continue to quote Grooved Skelp at 1.37½¢ @ 1.50¢ and Sheared at 1.45¢ @ 1.60¢, according to order.

Coke.—Under date of December 1, the H. C. Frick Coke Company announced a reduction of 20¢ ℔ ton in Foundry Coke, and this cut has been promply met by other makers. It is expected that additional contracts for Furnace Coke will be closed before the first of the year. For the week ending Saturday, November 25, there were 7480 active and 10,039 idle ovens, with a total estimated production of 68,145 tons. We quote as follows: Furnace Coke, $1.10; Foundry Coke, $1.30 to dealers and 1.45 to consumers. Crushed Coke, $1.75 to consumers, all in tons of 2000 lb, on board cars in Connellsville region.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, December 6, 1893.

There has been a cessation of Pig Iron buying during the week and no large contracts have been made for either long future or early delivery, but there have been liberal shipments on contracts recently made. The proposed new tariff, as published, seems to have restricted buying of Pig Iron, and while this may be greatly modified and seems almost sure to be before it can become a law, there is a disposition to hold off for the present at least. No business of importance is anticipated during the remainder of the month, and it is not improbable that the dullness may be greatly prolonged. There is, therefore, more willingness to sell at the prices recently accepted for delivery until next April, or even longer, but it is useless to make the tender when there are no buyers, while, in fact, the recent sales have made the furnaces comparatively independent and there is no such urgency to sell as would cause lower prices to be accepted. There have been few sales in this district beyond carload lots, but there have been some orders from the East of 500 to 1000 tons. There is little movement in Charcoal Iron, but it is not pressed for sale. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$12.25 @ $12.50
Southern Coke, No. 2	11.00 @ 11.25
Southern Coke, No. 3	10.50 @ 10.75
Ohio Soft Stone Coal, No. 1	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2	14.50 @ 14.75
Lake Superior Coke, No. 1	15.00 @ 15.25
Lake Superior Coke, No. 2	14.00 @ 14.25
Hanging Rock Charcoal, No. 1	18.50 @ 19.00
Hanging Rock Charcoal, No. 2	17.50 @ 18.00
Tennessee Charcoal, No. 1	14.00 @ 14.25
Tennessee Charcoal, No. 2	13.00 @ 13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @ 18.00
Lake Superior Car Wheel and Malleable	17.00 @ 17.25

Forge.

Gray Forge	10.00 @ 10.50
Mottled Coke	9.75 @ 10.00

Financial.

It would not be easy to point out any particular direction in which the financial situation displays either improvement or the reverse, as compared with the situation of a week ago. The business world in general is again waiting for Congressional legislation to relieve uncertainty, just as it did in the early fall while the fate of the silver purchase repeal billwas hanging in the balance. The present session of Congress has an unusually important task before it in the decision of the tariff, internal revenue and other equally pressing questions intimately affecting the financial and commercial interests of the country. On the outcome of legislation in these matters will depend largely the course of business in the immediate future. Merchants, manufacturers, and bankers will naturally await the result with anxiety, and until the course of legislation is assured the establishment of confidence and any material expansion of trade cannot reasonably be expected.

The overstocked money market at present existing is strong evidence that obligations are being curtailed instead of increased. It shows a great shrinkage in the volume of trade and an absence of enterprise and speculation almost unparalleled. Nearly $198,000,000 idle cash lies in the banks of New York alone, being $76,000,000 more than legal requirements, by far the largest surplus on record; and this condition is repeated in all the important money centers of the country. Meanwhile the volume of money in general circulation was increased last month by $8,500,000, bringing the total circulation of the country, on December 1, up to $1,726,094,290. The increase has been $45,500,000 in the past three months; and the present circulation is about $112,000,000 greater than it was a year ago. At the same time the volume of business, as shown by Clearing House exchanges, during the last two weeks of November is 23.3 per cent. smaller than a year ago. There is, moreover, no indication of an early cessation in this accumulation of idle capital, and the situation only serves to prove how extensive has been the business upheaval of this year. One more favorable feature of Saturday's bank statement was an increase in loans of $4,288,400; but this expansion is explained as being largely due to advances on grain and cotton, which will be canceled shortly on the exportation of the commodities. Part of it also represents renewals of purely speculative accommodations; and but little indicates permanent extension of credit. The glut of unemployed money is having its natural effect in lowering rates of interest and to a certain extent stimulating speculative buying, but the latter is far below the average in extent. So great has been the congestion in bank reserves that bankers are willing to loan money on almost any terms, and the spectacle of borrowers begging for loans, which was seen in August, is now entirely reversed. Borrowers are few and lenders many.

So pronounced has become the ease of the loan market that the banks and trust companies are considering the reduction of interest on permanent deposits, which have usually commanded by large depositors from 2 % to 2½ % easily. With the immense reserve funds at present held, however, these deposits are being largely carried at a loss, and some steps will have to be taken to relieve the pressure. As it is, very few banks or trust companies will open new deposits subject to any interest whatever. The call loan market is abundantly supplied with funds, 1 % being the usual basis and 1½ % the outside figure asked. Time loans are offered far in excess of demand, rates being 2 % for 30 days, 2½ % for 60 days, 3 % for 90 days to four months and 3½ % @ 4 % for five and six months. Even these rates are shaded for choice securities. Commercial paper is in active demand at 3½ % @ 4 % for best indorsed receivables and 4½ % @ 5 % for single names, the supply being light.

The annual report of the Controller of Currency, just issued, shows 3976 national banks to have been in operation at the close of the report year, with a capital stock of $695,558,120, represented by 7,450,000 shares held by 300,000 shareholders. During the year 119 banks were organized and 158 suspended. Of this number 86, with a capital stock of $18,205,000, resumed, and 65 passed into the hands of receivers, with a capital stock of $10,885,000. At the close of the year seven remained in the charge of examiners pending resuumption. A comparison of the history of the banks for the year 1893 with that of 1892 shows the following changes: Banks organized decreased 44, receiverships increased 48, voluntary liquidations decreased 7, corporate extensions decreased 47, expirations of corporate extensions decreased 7. The total gain of active banks was 8, and the increase in capital stock was $1,689,455. The Banking and Currency Committee of the House are to meet this week for the purpose of framing a bill for repealing the State bank tax.

The stock market was encouraged toward the close of last week by a better feeling in London in respect of American securities. Some large purchases of railroad shares for foreign account were made on Friday and Saturday. This circumstance tended, together with some favorable returns of Western earnings, to tone the market for railroad stocks in general. Several denominations, notably St. Paul, Atchison, Union Pacific and Louisville, scored material advances accordingly. The last named stock rose on the news of the company having succeeded in paying off the loan which they secured in London some time ago. The unsatisfactory feeling in regard to the Wilson bill, which operated to depress most of the "industrials" last week, served, however, to give a tone of hesitancy to the general stock market, which closed somewhat weak and irregular on Saturday, and opened depressed on Monday. Some foreign selling of "Americans" and decreased railroad earnings reported by Eastern trunk lines, together with one or two other discouraging features, caused a general weakening, both of railroad and industrial securities, which, notwithstanding a rally late in the afternoon, closed all round generally lower, Western Union and a few specialties suffering particularly. Tuesday's market was dull, Atchison bonds and stocks declining sharply on rumors from London of the failure of the company in an attempt to borrow $2,000,000 in that city in order to make up their January interest. An emphatic denial was, however, given to the re-

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port by the president of the company, but the general stock market failed to rally to any extent, closing moderately firm, but generally lower, especially in the "industrial" lines or securities. A plausible explanation as helping the decline in prices is given in the disappointment of Wall street in finding no definite and comprehensive financial policy announced in the Presidential message made public on Monday afternoon. The extreme fluctuations in the principal stocks since December 1 are shown in the following table, together with the closing prices on December 6:

	Highest.	Lowest.	Closing. Dec. 6.
Am. Sugar Ref.	84	80	83
Atchison, T. & S. Fé	22	18¼	18⅛
Balt. & Ohio	74½	72	72¼
Chicago Gas	69⅛	67¼	67⅞
Chic., B. & Q.	81½	79½	79½
Chic., Mil. & St. Paul	66⅞	64¼	64⅝
Chic., Rock Isl. & Pac.	71¼	69½	69⅝
Del. & Hudson	136½	134	134½
Del., Lack & Western	168¼	167	167
Gen. Electric	37⅞	32½	33¾
Lake Shore	129	126⅛	127½
Louisville & Nashville	53⅛	51⅛	51⅝
Manhattan	129	127	127
Missouri Pacific	27⅞	24⅜	24½
National Lead, Common.	23¾	21	21¼
New Jersey Central	118	117¾	118
New York Central	103½	102½	102¼
N. Y., L. E. & Western.	16	14⅞	15
Northern Pacific, Pfd.	24½	22½	22½
Philadelphia & Reading.	21⅞	20⅞	21¼
Richmond & West Pt., Terml	3⅜	2⅞	3¼
St. Paul & Omaha	40½	37¾	37¾
Union Pacific	23½	20⅞	21½
Western Union	92¼	88⅝	88¾

Railway and miscellaneous bonds have been active during the greater part of the week. The investment demand for first-class bonds has been so large that they have become nearly exhausted, and purchasers are now turning their attention to the lower grades, many of which have advanced in price of late. The general bond market has, however, subsided into dullness this week, in sympathy with the decline in stocks. Government bonds are steady. A sale call of $500 4s coupon at 114¼ is noted. Closing prices were quoted as follows:

	Bid.	Asked.
2s, 1891, registered	95	.....
4s, registered	113	114
4s, coupon	114	115

Sterling exchange has been strong and higher, owing to an active demand from remitters and comparative scarcity of bills. Actual business was done on Wednesday at $4.84¼ @ $4.84½ for sixty days; $4.86¾ for demand; $4.87 @ $4.87¼ for cables and $4.83½ for commercial.

Domestic exchange on New York is quoted as follows: New Orleans, commercial 200 discount, bank par; Charleston, buying par, selling ⅛ premium; San Francisco, sight 5, telegraph 20 premium; Savannah, buying ⅛ discount, selling par @ ⅛ premium; Chicago, par; St. Louis, 75 premium.

Bar silver has declined in price. Latest quotations in London were 32 1/16 pence and in New York 70¼¢ ℔ ounce. Large shipments continue to be made to Europe.

The plant of the Coleman-Shields Company, Niles, Ohio, manufacturers of pipe, casing and tube iron, is in operation, though not to full capacity. Unless a material increase in orders takes place, this firm do not expect to increase their running time to any extent.

The Harrisburg Boiler & Mfg. Company, Harrisburg, Pa., are in the hands of the sheriff, an execution for $25,000 being issued against the firm last week.

Metal Market.

Copper.—Sales have been made recently of several million pounds of Lake Superior Ingot for future delivery, at 10½¢. The estimates range all the way from 3,000,000 to 5,000,000 ℔, exclusive of what may have been done *sub rosa*, as not uncommon, by the Calumet & Hecla Company, whose agents seem to prefer "mystery" to a plain statement of facts. If the truth were known, it would probably be found that the estimate given is below the actual amount of metal involved. In any event there is strong circumstantial evidence that the smaller producers have not been the only sellers and that consumers have not been the only buyers. In other words, there is some indication of speculative movement and reason for supposition that Boston operators in mining shares have made the most of every advantage in their favor. On the Metal Exchange there has been a feeble effort in the direction of counteracting the effect of outside influences and a few "sales" were recorded there at considerably under the "street" prices. Waiving all the speculative doings, it seems very clear that 10½¢ is extremely inside price and that 10¾¢ @ 11¢ fairly reflects market value from sellers' point of view. Not as much as a rumor of large dealings in other Copper comes to notice, but the line of valuation has been raised to 10¢ upward for Electrolytic, and 9½¢ @ 9¾¢ for ordinary casting brands. It is denied that there is any speculative combination in the market, but circumstantial evidence to the contrary is very strong. In fact, it looks as though special effort is being made to carry prices upward on the enhanced cost of transportation consequent upon the closing of navigation, and to make the most of every condition calculated to work up sentimental or more substantial firmness to the market.

Pig Tin.—Hardly anything has been done in the speculative branch of the market, and prices have remained almost stationary throughout the week. The uncertainties connected with the proposed revision of the tariff seem to be greatly responsible for the lack of animation. General trade conditions, however, are not without influence, since they suggest very conservative action. As near as can be calculated, the consumption here is well up to the average for this season, and it is calculated that spot stocks have been cut down to about 2500 tons, or less than the average amount. Purchases by jobbers and consumers have been on a moderate scale, however, and the demand at this writing is of very ordinary character. Late dealings were at 20.60¢ @ 20.65¢, which prices seemed to have fairly reflected market value at the close of the week.

Pig Lead.—The market has remained almost stationary. New tariff proposals exerted a certain amount of sentimental influence, the bearing of which was in the direction of lower prices, but sellers have thus far made hardly any revision in their prices, and consumers are extremely indifferent. There is no difficulty in buying carload or larger lots at 3.40¢, delivery here this month or next. Bids above 3.30¢, the bullion quotation, are few and far between. In short, the market is looking rather weak and is positively dull at the present time.

Spelter.—There is hardly the snap to the demand that prevailed a week ago, and the market is, if anything, a shade easier. A few carloads of special brands were placed here at about 4¢, and reports from primal markets had it that Western consumers have purchased there recently at full figures, or the basis of 3.80¢ @ 3.85¢, Eastern delivery, for ordinary Western brands. There is no evidence of any particular pressure to sell, but the relation of supply and demand is slightly abnormal, and the prices above quoted would seem to fairly reflect present market value for ordinary brands.

Antimony.—There has been fair jobbing movement at about former prices, otherwise the market remains flat, and prices are barely steady at 9⅝¢ @ 9¾¢ quoted for Hallett's and 10½¢ @ 10¼¢ for Cookson's.

Tin Plate.—The demand for spot goods has been small, and no difficulty was experienced in placing orders at former prices. For that matter, concessions were granted in several instances. Except for special sizes few contracts have been made for future deliveries and interest in all directions is momentarily very tame. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $5.30; J. B. grade, do., $5.35; Bessemer full weight, $5.35; light weights, $4.90 for 100 ℔, $4.80 for 95 ℔, $4.62½ for 90 ℔. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60; Siemens Steel, IC basis, $5.65; IX basis, $6.75 @ $6.80. Charcoals—Melyn grade, IC, $6.35; Crosses, $8; Allaway grade, IC, $5.60; Crosses, $6.75; Grange grade, IC, $5.75; Crosses, $6.85. Charcoal Ternes—Worcester, 14 x 20, scarce; do., 20 x 28, $11.35; M. F., 14 x 20, $7.35 @ $7.37½; do., 20 x 28, $14.75; Dean grade, 14 x 20, $5.35; do., 20 x 28, $10.50 @ $10.60; D. R. D. grade, 14 x 20, $5.15; do., 20 x 28, $10.10; Alyn, 14 x 20, $5.35; do., 20 x 28, $10.50; Wasters—S. T. P. grade, 14 x 20, $4.75; do., 20 x 28, $9; Abercarne grade, 14 x 20, $4.60; do., 20 x 28, $8.87½.

New York.

Office of *The Iron Age*, 96-102 Reade street,
New York, December 6, 1893.

Pig Iron.—Merchants and agents generally note a somewhat improved inquiry and a greater interest in the market, particularly as to the prices which may be fixed for next year's delivery. As yet, however, no advance is being asked by the majority of sellers, and a good deal of cheap Iron is being offered. Contracts for Cast Iron Pipe of some magnitude have been lately let at Washington and at Jersey City, and other work of a similar character involving somewhat large quantities is now or will be soon in the market. We quote: Northern brands, $14 @ $15 for No. 1; $13 @ $14.25 for No. 2; $12.25 @ 12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, $13 @ $14 for No. 1; $12 @ $13 for No. 2; $11.50 @ $12.25 for No. 3; $11.75 @ $12.25 for No. 2 Soft, and $12.25 @ $12.50 for No. 1 Soft. Gray Forge is $11.25 @ $12.

Spiegeleisen and Ferromanganese.—Importers are protesting against the change in the duty on Ferromanganese from $6.72 to 22½% ad valorem on the ground that it represents an increase. On a valuation of £9/10, English works, the proposed duty would figure out about $10.50, against the present rate of $6.72. No business has been done

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in foreign material, which we quote: Foreign Spiegeleisen. 10 % @ 12 %, $21.50 @ $22, and 20 %, $25 50 @ $26, on cars, Jersey City, and Ferromanganese, $55 @ $55.50.

Billets and Rods.—There is no business doing of any consequence. We quote nominally: Domestic Billets, $20 @ $22, and foreign Billets $28 @ $28 50, tidewater; domestic Wire Rods, $27 25 @ $28, and foreign Rods, $39 @ $39.50, tidewater.

Steel Rails.—The market for standard sections is exceedingly dull, nor is there any expectation that anything of consequence will be done in the Eastern market for some time to come. The price is $24.80 at tidewater.

Track Material.—We quote as follows for small lots: Spikes, 1.75¢ @ 1.90¢; Fish Plates, 1.30¢ @ 1.50¢; Track Bolts, Square Nuts, 2.10¢ @ 2.40¢, and Hexagon Nuts, 2.30¢ @ 2.50¢, delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—Very little new business is coming up, and interest centers chiefly in guessing at what figures Western mills captured the last contracts. Very low offerings of Plates are being made to procure immediate specifications for Western mills who had large contracts deferred. We quote nominally: Beams up to 15 inch, 1.65¢ @ 2¢, 20-inch, 2¢ @ 2.25¢, for round lots; Angles, 1.60¢ @ 1.80¢; Universal Mill Plates, 1.60¢ @ 1.75¢; Tees, 2¢ @ 2.15¢; Channels, 1.65¢ @ 2¢, on dock. Steel Plates are 1.45¢ @ 1.60¢ for Tank; 1.65¢ @ 1.90¢ for Shell; $1.90 @ 2.15¢ for Flange, and 2.30¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.45¢ @ 1.9¢, on dock, and Common 1.35¢ @ 1.50¢; Soft Steel Bars are 1.45¢ @ 1.70¢; Scrap Axles are quotable at 1.65¢ @ 2¢, delivered; Steel Axles, 1.65¢ @ 1.90¢, and Links and Pins, 1.65¢ @ 1.80¢; Steel Hoops, 1.70¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ ℔ 45 lb bundle, at mill.

F. B. Hawkins & Co. of 29 Broadway, and 70 Kilby street, Boston, announce that their F. B. Hawkins has withdrawn from the firm of Warren, Wood & Co., and that they shall conduct a business in Pig Iron, Coke, Cast Iron Water and Gas Pipe at the above address. Their leading specialty in Pig Iron will be the Alleghany, made by the Alleghany Iron Company of Iron Gate, Va., for whom they are exclusive selling agents north of Richmond, Va. The furnace, which was banked last May, is again in operation.

The Eclipse Bicycle Company of Beaver Falls, Pa., have recently increased their force of employees to some extent, and expect in the near future to give employment to about 400 men. This firm are bringing out a number of new wheels for the season of 1894 and expect their trade next year to be much larger than for this season.

Three topedo boat "catchers" have been ordered by the British Admiralty from a firm of shipbuilders at Cowes, Isle of Wight. They are each to be 210 feet long, and capable of attaining a speed of 26 knots.

Fred. A. Beelen, Consul-General of Chili, announces the receipt of a cable advising him that the Chilian Mineral Exposition has been postponed until September, 1894.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, December 6, 1893.

Pig Tin prices have averaged somewhat higher and the market has shown firm, although irregular tone. There was some depression early in the week under the influence of free selling, but later reaction took place, chiefly from livelier speculative interest and expected renewal of American demand. Between this and some improvement in consumptive demand, prices moved up about 20/ from the extreme lowest point. Better advices from the East also helped to stiffen the market. Sales were made at as high as £77. 5/ for prompts. Subsequent realizations caused a reaction and the market closed quiet at £76 10/ for prompt and £77. 10/ for three months' futures.

On prices of Merchant Bar Copper there has been an advance of about 15/, chiefly on speculative buying for American account, but helped to a certain extent by quite good purchases by home consumers. Latterly the market became irregular, being influenced by speculative realizations by speculators and freer selling by some dealers. Against this, however, was quite liberal buying of one and two months' futures, prompted by more favorable advices from New York and improved statistical position in Europe. Liberal deliveries of G. M. B. tend to check any great advance. Chili charters last half of November were about 600 tons. Sales of furnace material have been limited, and prices remain comparatively low. At the close, Merchant Bars were quoted at £43. 7/6 for prompts and £43. 17/6 for three months' futures. Best selected English quoted at £47.

In Tin Plate there has been hardly any business and the market remains flat. Prices are unchanged. Although makers appreciate the proposed reduction in the duty in the United States, they do not relish the ad valorem rate. Work has been suspended at the Waterloo works, Machen. Liverpool quotations for Plates were as follows:

IC Charcoal, Alloway grade	12/3 @ 12/9
IC Bessemer Steel, Coke finish	11/3 @ 11/6
IC Siemens " "	11/6 @ 11/9
IC Coke, B. V. grade, 14 x 20	11/3 @ 11/6
Charcoal Terne, Dean grade	10/9 @ 11/

Pig Lead has been quiet, but the market is steady at £9. 10/ for soft Spanish.

Spelter has met with moderate sale and prices are steady at £17. 2/6 for ordinary Silesian.

There is more activity in some branches of the Iron and Steel market, but prices have not changed, except for warrants. Last dealings in warrants were at 43/8 @ 43/9 for Scotch, 35/7½ @ 35/9 for Cleveland, and 45/ for Hematite.

San Francisco News.

The items as to what the character of the proposed tariff may be do not, as they come along by telegraph, seem to excite any very great interest among the trade or the manufacturers, although the interests of the latter would be affected very materially. There is a general disgust among manufacturers generally at the tariff for revenue proposition, and perhaps it is because they deem a change to be inevitable that there is so much apathy on the subject among business men. Some time ago the manufacturers in iron and steel signed a petition asking Congress to take away the duty on coal, scrap, pig iron and ingot steel, and this is the general sense of the manufacturers in these lines over the coast. There are, to be sure, a few who for consistency sake are for the McKinley tariff or something like it, but these are in the minority. The proposition to leave a small duty on pig iron and take away so much of the duty on bar iron does not find favor among the manufacturers. The one to reduce tin plate to a duty of 1 cent per pound does. Fiscal considerations doubtless counsel leaving a cent a pound on tin plate. As it is not protective, our people think that it would be better to remove the duty altogether. Putting tin again on the free list is decidedly popular here. As to the general duties proposed on hardware, &c., they do not affect us specially, as we are not manufacturers. We do not produce iron ore to any extent, although we have mountains of it, so that putting it on the free list does not trouble us. The general sentiment would, however, be in favor of having it admitted free, to see if we could not import and work up ore from Mexico.

Trade keeps very quiet in every direction, and in hardware and metals as well as all else. The country trade did not get a good start this fall, and the leading houses will have, as a rule, to wait over till next year for the realization of hopes which did not bear fruit in this. The farmers feel poor; they have neither been paying up the storekeepers well, nor have they been buying largely of new goods. Collections are and have been very slow, and this after a dull year is especially discouraging. A gentleman well known to me, not, however, in the hardware trade, took out $1300 in bills on last collection day, and as the result of his work returned with $31. This may be looked upon as an extreme case, but it is not infrequent. Eastern bills, being in the shape of notes, have to be met in some way, and as coast bills are invariably on long time our coast merchants suffer. There have been very light arrivals of late by sea or rail. There are a great many clippers out, many due with large consignments of hardware, iron and nails, &c., and as they have been ordered they must perforce be delivered, whether trade is dull or not, but shipments by the Isthmus and by rail are becoming few and far between.

John Reis is now manager at Edith Furnace, Allegheny, Pa., E. D. Reis having resigned that position in order to devote all his time to Rosena Furnace, at New Castle.

W. T. Wells, of Hackensack, N. J., president of the Wells Rustless Iron Company, has purchased Crown Island, one of the most beautiful of those located in Lake George.

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HARDWARE.

Condition of Trade.

THE volume of November business was certainly as large as could reasonably have been expected, and indicated a decided improvement in the general condition of trade. There continues to be a fair activity, though business still feels to a considerable degree the depression which has existed and is also restricted by the advance of the season, this being a time of the year when trade is usually quiet. Seasonable goods are moving freely. the demand being stimulated by the advent of cold weather, especially as many merchants deferred their purchases to a later date than usual. Holiday goods are also in request, but the demand is not as large as in more prosperous years. There is a good deal of inquiry by the large houses in regard to next season's orders and the disposition is shown to defer purchases. A good many orders are, however, being placed for shipment early in the year, and in some lines this class of business is referred to as nearly up to the normal volume. Up to the time when the Wilson tariff bill was announced there were evidences of a marked improvement in business and a much more confident tone than has characterized the market for some time, but the proposed reduction of duties has the effect of inducing an unsettled feeling, repressing trade, and leaving manufacturers and merchants in a state of not a little uncertainty. The prospect of a reduction in the tariff naturally makes the trade at large reluctant to purchase goods which they may be able to buy at lower figures in the near future, and there is a good deal of doubt as to the lines which will be thus affected and the extent to which lower prices will result. Manufacturers are also perplexed in the matter and in not a few lines are entirely at sea as to the effect which the proposed bill will have upon their interests, especially as it is not unlikely that some kinds of foreign Hardware which have not recently been sold to any extent in this country will be admitted in competition with American goods. The fact is that in not a few lines our manufacturers are not informed as to the European costs so as to figure definitely on the influence which the proposed bill would have upon their business. In many other lines, however, the manufacturers are aware of the disaster which the enactment of the proposed law would bring upon their business, and are naturally disposed to do little until they know the disposition which will be made of the bill. Opinions differ widely as to the prospect of its being enacted in the form submitted, many holding to the view that important modifications must be made in view of the injury which it would inflict on established industries. There is, however, general agreement that it will be for the good of the country to have the matter settled in one form or another at as early a date as possible, that the existing uncertainty may be removed and manufacturers and merchants be permitted to adjust themselves to the new conditions.

Chicago.

(*By Telegraph.*)

Trade shows some improvement as compared with last month, but it is still far below what it should be. It is estimated that sales are now from 30 to 40 per cent. below the customary volume of business at this season. The main demand is for seasonable and holiday goods, but general Hardware is steadily called for in small lots. The smallness of stocks in retailers' hands compels them to buy frequently, which is much to the annoyance of jobbers, who are obliged to break packages to meet the wants of such trade. Lead goods are lower, in sympathy with the decline in crude lead. Shot has been marked down to $1.40 for small sizes, and $1.65 for large sizes. Heavy Hardware jobbers have had an unusually heavy run of orders for sleigh stock, more than for several years past, caused by the abundance of snow throughout the Northwest and the prospect of a long sleigh season. In other respects Heavy Hardware has been less active.

St. Louis.

(*By Telegraph.*)

The demand continues to show a falling off in comparison with last year. In some lines an increased trade is noted. In the matter of repairs for Stoves and Stove Pipe Elbows an increased trade is noted. Shelf goo ds are moving rather slowly, while on the other hand holiday goods are having an unusually heavy run. Barb Wire is dull and Wire Nails are selling fairly well, but prices are low. Tin Plates are dull and manufacturers are not pushing their plants very strong, and stocks are therefore not very heavy. Collections are excellent.

Boston.

BIGELOW & DOWSE.—The improvement noted in our last report still continues. Salesmen are sending in well assorted orders, and with a good volume of mail orders the jobbers are quite busy. Retailers in the country are keeping up their sales better than those in the cities. Stocks are light, and need frequent replenishing.

The low price now ruling for both Cut and Wire Nails is influencing many to place orders. Evidently some of the trade believe with the manufacturer who, after quoting a price he thinks is very low, says he does it "hoping it will not take many moons to bridge over the present peculiar condition of things." Our first ice has made a lively sale for Skates, and the late fall of snow has made great inroads on the stock of Sleds and Snow Shovels.

New Orleans.

A. BALDWIN & CO.—Business is still fairly active in this section of the country, although it shows a slight falling off in the past two weeks. People are evidently awaiting developments in the new year. Staples are being sold at such low prices that merchants are taking advantage of the present situation, thinking perhaps that the extreme bottom has been reached.

The movement in Barb Wire is somewhat sluggish, and the output shows considerable falling off the last season.

Orders for Shelf Hardware are coming in freely, which indicates some activity in the building trade.

Baltimore.

CARLIN & FULTON.—Considering the season, that it is too late for fall and too early for spring, the orders keep up remarkably well, indicating that stocks in the hands of the retail trade are very light throughout the entire country. We think a comparison with last year will show generally in this market for the month just ended an equal volume of business, and collections are as good as can be expected and no doubt up to the average. There are cases where indulgence has to be granted, but such has always been the case, no matter how prosperous the times.

For a long while the retailer has been in close touch with the consumer, and his orders have been mainly for goods needed for immediate consumption. This policy will undoubtedly continue for some time to come, which will give the country an opportunity to adjust itself to the new conditions arising

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from the passage of any proposed tariff bill, without causing any great loss from depreciation of values of stocks on hand. This hand to mouth buying seems small, but as the requirements of this nation are immense, the aggregate of such business foots up by the end of a year large amounts, and the indebtedness of the buyer is kept at a minimum. From all reports we look for a fair, healthy trade during the coming year.

Portland, Ore.

CORBETT, FAILING & ROBERTSON.—We have nothing to report of an encouraging nature, either as to the present or future. In some sections of this territory it would seem that it would be better that the dealer should close his doors for the next eight months, after insuring stock, and not try to do any business. He certainly would be ahead on his expenses, and he cannot be in continuing his business. The only relief we can hope for is that the tide of immigration shall set in strong the coming spring. We have the country and climate; now we want farmers. There are enough mechanics and clerks—towns and cities are well abreast of the country. Large ranches are being thrown on the market, owing to the money stringency, and as they are subdivided there are now fine opportunities to secure homes.

The jobbing trade have large stocks of goods on their hands. Having expected a better season, they shipped freely via Cape Horn. Now, wishing to realize on same, they naturally are selling on a very close margin of profit, where the opportunity is open and the buyer good.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—We have now entered upon our winter operations in this latitude, and the season has opened with steady, severe cold and with considerable snow, and the indications are now for one of our old fashioned winters. The November business closed about as expected, both as to trade and collections. Toward the latter part of the month there probably was a larger falling off in cash receipts than anticipated, but there will still be considerable realized from collections on the proceeds of the crops. It is not expected that trade will be active for several months. Of course there will be some lines of holiday goods furnished by most jobbers that will be in demand to some extent, but the demand for them will be less than usual this year. The principal aim of jobbers just now is to get their outstanding claims into the best shape possible, and thus be able to enter on the new year's business in shape to handle it satisfactorily. The uncertain and very unsatisfactory situation of the tariff legislation at present is influencing trade unfavorably to some extent and is specially unfavorable to the wool interests, which are quite important on considerable of the territory tributary to St. Paul. There are several other causes, such as short crops in some sections and low prices generally, that contribute largely to the general feeling that trade will not be quite so active as usual during the early part of the coming year; still there will be a demand for considerable quantities of goods in all lines, and there will also be found more funds distributed throughout the country to pay for them than is generally supposed.

Omaha.

LEE-CLARKE-ANDREESEN HARDWARE COMPANY.—The past four weeks have witnessed little change affecting the distribution of Hardware in a jobbing way. It may be said, however, that such changes as have occurred have been, if anything, on the side of improvement. The reports of returning confidence in the East have had a beneficial effect on the situation here, and while any great activity in business is not expected this year, at least, still these signs of returning confidence can reasonably be interpreted to convey an assurance that busines is gradually resuming its normal condition.

It is certain that for some time to come business will be conducted on conservative lines, until all traces of the late severe experience of the summer months have been effaced and forgotten. There is no indication in the trade, either on the part of jobbers or retailers, toward anticipating wants. Orders generally are for small lots of goods, but the frequency of these orders makes up in a large degree for the loss in size. The demand seems to be based entirely on the consuming disposition of the country.

Collections in the country tributary to this market continue to drag, and there is considerable room for improvement. A free movement of the corn crops would have a tendency to make money much more plentiful in the country, which would improve both trade and collections. In explanation of the situation it is asserted that farmers will not market their corn crops, as the price is too low and unsatisfactory; while it is also claimed that the denizens of the country are too busy just now with farm work, particularly corn husking, to devote any time to marketing their products. If these are the true reasons for slow collections just now, it is gratifying to know that they are not caused by unfavorable conditions prevailing.

Louisville.

W. B. BELKNAP & CO.—It is cheerful to note a general improvement in business. The November result shows an approximation to last year in many jobbing lines, according to the most reliable testimony of those houses which have survived and are in a position to take care of business offering. This does not mean that the aggregate volume is as large as last year, because many firms have gone out of business, consequently it is concentrated in fewer hands.

Prices are firm at present figures. There are some indications of scarcity of stock, more especially in raw material, and it would not be surprising if January should mark advances in the great staples. Of course anything like a heavy advance would immediately start many now idle machines to work, and the market might be quickly overstocked again, but there is a healthy demand based on the actual needs of consumers which is not to be put aside by new tariff bills or any other devices.

The financial situation has eased materially. First-class bonds are in good demand, are bringing full prices and are hard to get. Buyers are still extremely shy of anything except gilt edged securities and even of what used to be considered desirable stocks, while new enterprises find no favor at all. There is, of course, a great deal of settling up to be done between now and January, and many concerns will take advantage of the state of affairs in the condition of the public mind to assign and settle at a reduction; but the general state of affairs is on the mend, undoubtedly. We look for a good business in the spring of 1894.

Cleveland.

THE W. BINGHAM COMPANY.—When the exceeding depression in trade for the past few months is taken into consideration, November has done remarkably well, and in comparison might be called good. Certain it is the percentage of decrease as compared with 1892 is very much less than any month since July last, and if the uncertainty of tariff legislation were removed we feel sure that trade would soon be back in its wonted channels. The cold and blizzard like weather of the past few days has brought many orders for winter goods, and Skates, Sleigh Bells, Foot Warmers, &c., have been in brisk demand, and have carried with them some orders for Shelf Hardware. The prices on general goods remain stationary, but lack of firmness in the staples of Wire and Nails has reflected somewhat upon other lines and caused some lack of confidence in the stability of prices. Orders for Wire Cloth, Poultry Netting, &c., are, however, being freely placed, the scarcity of those articles last season being an incentive to early purchase, which is, no doubt, a wise precaution, as the outlook indicates a still greater scarcity the coming year.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade during the last two weeks in November exceeded in volume the last two weeks of the preceding month. If we could rely upon a continuation of the same for each succeeding month we would naturally all be happy. We, however, think the outlook favorable for the balance of the year, as customers are now buying both seasonable and holiday goods freely. The recent cold weather has made seasonable goods temporarily active.

Skates have been in active demand, a larger number having been sold than customary for some years past. There has been a heavy demand for Sleds, especially one particular make manufactured in this locality, which has become very popular. Sleigh Bells have not been so freely called for for some years past as they have this season, and the Axe trade has been especially active.

Outside of Barb Wire and Wire Nails, prices remain without any change. The present price on the above named articles has evidently been reached by a reduction in wages, although at this price it is not likely to draw in very large orders for 1894 shipments at present, as it is a little in advance of immediate wants.

Collections remain without any material change.

Notes on Prices.

Wire Nails.—It is evident that the low prices ruling on Wire Nails have the effect of stimulating orders, and this influence, in connection with the general improvement in the tone of business, causes many merchants to purchase Wire Nails with more freedom than for some time past. Merchants are not, however, purchasing much beyond their early requirements, but the fact that stocks generally are depleted and broken increases somewhat the size of orders

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which are being given. Many buyers, however, are still holding off, as they do not care to purchase at all freely at the present dull season and with the uncertainty which attends the future course of trade. Prices remain as at our last review, at $1.15 to $1.20 for carload lots at mill, and manufacturers are refusing to make concessions from the lower of these figures except in very special cases. Buyers are watching the market closely, and are preparing to place their orders in case there should be reason to anticipate an early turn in the market toward higher prices.

Chicago, by Telegraph. — All Wire Nail manufacturers report very large shipments for November. The Salem Wire Nail Company that month shipped 92,626 kegs from their Salem and Findlay mills, which is the heaviest month's product they ever turned out. December is expected to be a month of heavy shipments also. There are plenty of contracts to be filled, but there are also some sections of the country in which stocks were never so light at the beginning of the year, and from which orders are therefore anticipated in good quantities. Quotations for factory lots are continued at $1.30, Chicago. Small lots are selling at $1.35 from stock.

Cut Nails —We are unable to report any improvement in the Cut Nail market in the matter of prices, which remain as for several weeks past, at about 95 cents for carload lots at mill; this figure, however, being shaded to close buyers on good orders. There has been a fair activity considering the season and the condition of business in general, and the aggregate of sales during the past week or two has been fair. Small lots from store in New York are quoted regularly at $1.20.

Chicago, by Telegraph.—The Cut Steel Nail trade is not so active as it has been, but manufacturers report a tolerably fair run of small orders, enabling them to keep in operation. Prices range from $1.15 to $1.20, according to the character of the order. Small lots from stock are quoted at $1.25.

Barb Wire—Low prices continue to rule in the market for Barb Wire, but there has been no further decline during the past week. Quotations are on a basis of $2.15 to $2.20 for carload lots of Four-Point Galvanized at mill. The demand is only moderate. The low prices ruling, while not inducing liberal purchases from the trade at large, enable the manufacturers, however, to dispose of a larger quantity of Wire abroad than has heretofore been the case, inasmuch as they are now enabled to enter some markets which have been supplied from German mills.

Chicago, by Telegraph.—The year has now advanced to a point where orders for spring shipment of Barb Wire are beginning to make their appearance. Manufacturers of special brands are booking more or less business, and inquiries are reported for standard qualities. Manufacturers appear to be standing firmly at $2.35 to $2.40, Chicago, for Galvanized, and offers of heavy tonnage are stated to have been refused at a shade under the minimum quoted. Jobbers name $2.55 for small lots from stock, but are receiving very little business, as most of it is being handled by manufacturers.

Plain Wire.—Plain Fence and Market Wires, which have for some time been declining in price, have now touched a point considerably below anything in the experience of the manufacturers. For example, round lots of No. 9 Black Fence Wire can be bought at $1.40, with the usual advance of $\frac{4}{10}$¢ ℔ pound for galvanizing, f.o.b. vessel, New York, which of course means a correspondingly low figure at mill. A good deal of complaint is made by the manufacturers of the unsatisfactory volume of business even at the prices which are ruling. There is, however, an increase in the amount of Wire exported, as at ruling prices they are able to compete with German manufacturers. While the aggregate of this business is not as yet large, the opportunity to dispose of goods in markets which have been out of their reach is referred to by some of the manufacturers as an encouraging sign.

Cordage —The Cordage market is in substantially the same condition as for the past week or two, and the low prices recently referred to are still ruling. Reports in regard to the reorganization of the concerns connected with the National Cordage Company are current, but are not regarded by the trade as having any important or direct bearing on market values, even though coupled, as they are in some cases, with an intimation that an understanding as to price has been or will be reached by these and other manufacturers of Cordage. The present indications are that no serious attempt will soon be made by the manufacturers to agree as to production and prices with a view to controlling the market, as in the present condition of things this is not likely to be accomplished. Ruling prices are unquestionably low and leave but a meager margin of profit, and when an active demand sets in higher prices are likely to result.

Sad Irons.—The following net prices on the Sad Irons of Colebrookdale Iron Company, Pottstown, Pa, who are represented by Duncan K. Major, 103 Reade street, New York, are announced, terms 60 days or 2 per cent. discount for cash in ten days:

Crown Sad Irons:
No. 230. Plain Polished, $8.40 per dozen sets.
No. 235. Nickel Plated, $9 per dozen sets.
Extra Handles, $1.25 per dozen.
Extra Stands, 35 cents per dozen.
Common Diamond Sad Irons, 2¾ cents per pound.
The XX Tailor Irons—wide face, 4 cents per pound.
The XX Tailor Irons—narrow face, 4 cents per pound.
The XX German Tailor Irons, 4 cents per pound.
New England Pressing Irons, 4 cents per pound.
Chinese Laundry Irons, 6 cents per pound.
Chinese Common Sad Irons, 4 cents per pound.

Shot —As a result of the decline in the prices of Lead, the following revised quotations on Shot are announced by the manufacturers under date December 4; terms, net 30 days, 2 per cent. discount for cash in 10 days:

Drop Shot up to B, 25-pound bag	$1 40
" " 5-pound "	35
Drop Shot B and larger, 25-pound bag	1.65
" " 5-pound "	40
Buck and Chilled, 25-pound bag	1.65
" " 5-pound "	40
Dust Shot, 25-pound bag	2.00
" 5-pound "	45

In lots of 2000 pounds and upward, taken at one time, a discount of 5 cents per bag (25 pounds) will be allowed. A special discount of 2½ per cent. will be given on lots of 1 ton and upward bought, invoiced and paid for at one time.

Ideal Fasteners.—The Ideal Storm Sash and Window Screen Fasteners, manufactured by C. H. Congdon, 643 St. Anthony avenue, St. Paul, Minn., and illustrated in *The Iron Age* November 23, 1893, are sold at $2 per gross subject to a discount of 60 per cent.

Columbian Sash Lock.—The Columbian Sash Lock, manufactured by the Columbian Sash and Door Lock Company, Wauseon, Ohio, is sold at a discount of from 60 and 10 and 5 per cent. to 60 and 10 and 10 per cent. from the following lists:

No.	Per doz.
500, Ornamental Malleable Iron Bronzed	$1.90
501, Ornamental Malleable Iron Copered	2.25
502, Ornamental Malleable Iron bronzed. No. 14 Finish Lever and Catch	3.00
503, Ornamental Malleable Iron Polished Electro Bronze Plated, No. 14 Finish	5.00
504, Ornamental Malleable Iron Polished Nickel Plated	6.50
600, Ornamental Real Bronze Metal, No. 1 Finish	7.50
601, Ornamental Real Bronze Metal, No. 4 Finish	7.50
602, Ornamental Real Bronze Metal, No. 3 Finish	7.50

The foregoing list relates to the style of finish shown in Fig. 2 of the illustrated description in *The Iron Age*, November 23, 1893. The following list, which is subject to same discount as above, relates to the style of finish in Fig. 1 of the same description:

No.	P
450, Plain Iron Bronzed	$1.40
451, " " Black Japan, Nickel Plated Lever and Catch	2.50
452, Plain Iron Bronzed, Nickel Plated Lever and Catch	2.75
453, Plain Iron Coppered	1.75
550, " Malleable Iron Bronzed	1.90
551, " " " Japanned, Nickel Plated Lever and Catch	3.00
552, Plain Malleable Iron Bronzed. Bronze Metal Lever and Catch	3.00
553, Plain Malleable Iron Polished Electro Bronze Plated	5.50
554, Plain Malleable Iron Polished Nickel Plated	6.50
555, Plain Malleable Iron Polished Electro Copper Plated Antique	6.00
556, Plain Malleable Iron Bower-Barffed Finish	4.00
557, Plain Malleable Iron Polished Bower-Barffed Finish	5.50
650, Plain Real Bronze Metal, Polished Nos. 1 or 2 Finish	7.50

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651, Plain Real Bronze Metal, Polished Nickel Plated..... 9.00
652, Plain Real Bronze Metal, Polished Antique Copper..... 8.00
653, Plain Real Bronze Metal, Polished Oxidized Silver..... 10.50
654, Plain Real Bronze Metal, Antique Brass..... 8.00
655, Plain Real Bronze Metal, Dead Brass..... 8 25

Curling Iron Heater.—The Ætna Curling Iron Heater, manufactured by Nicol & Co., 55 W. Washington street, Chicago, and illustrated in our issue of November 23, 1893, is sold at the following net prices:

No.	Per doz.
0. Without wire attachment.....	$1.75
5. With wire attachment.....	2.25

Door Check.—The Beardsley Door Check, manufactured by the Beardsley & Mouat Mfg. Company, 234 Lake street, Chicago, and illustrated in *The Iron Age*, November 23, 1893, is sold at a discount of 25 per cent. from the following list:

No.	Per doz.
5. 8-inch, Bronzed Iron.....	$ 8.00
16. 10-inch, Bronzed Iron.....	10.00
17. 8-inch, Bower-Barff.....	12.00
18. 10-inch, Bower-Barff.....	14.00
19. 8-inch, Old Copper, Bronze and Nickel-plated on Iron.....	18.00
20. 10 inch, Old Copper, Bronze and Nickel-plated on Iron.....	20.00
21. 8-inch, Genuine Bronze.....	24.00
22. 10-inch, Genuine Bronze.....	30.00
23. 8-inch, Old Copper, Antique Brass and Dark Bronze.....	30.00
24. 10-inch Old Copper, Antique Brass and Dark Bronze.....	36.00

Glass.—The impression prevails that whatever tariff legislation may be enacted will not go into effect before June, 1894, and if such should be the case the price of Window Glass, or the wages of workmen according to the scale signed, would not be directly effected by the tariff. It is not improbable, however, that the prospect of a reduction of tariff will somewhat depress prices on Glass. Authorities state that the reductions proposed by the Wilson tariff schedule vary from 28 to 37 per cent. on Window Glass, while others estimated it at 50 per cent. Glass factories continue starting up; at the present time there is reported the equivalent of 1044 pots in operation. Prices on American Window Glass continue low, and there seems to be a disposition to make private prices rather than open quotations. Plate Glass is quoted by local jobbers at from 60 and 10 and 5 to 70 per cent. discount, according to size of Glass. It is understood that the regular quotations on French Window Glass of 75 and 10 and 5 per cent. to 80 and 5 per cent. discount are shaded in some cases. There is a limited demand for all kinds of Glass.

The Parsee merchant, Mowranji Norasji Patuck, who is now in this country, contemplates forming an association on his return to India, with a view to establishing direct trade relations with the United States. He has found that many articles can be exported from this country to India in competition with English and German goods. Among these are Axes, Lawn Mowers, Refrigerators, small sized Ice Machines that can be operated by hand power, Iron Screens and Railings, Agricultural Implements, Shears, Typewriters, &c.

The W. Bingham Company's Catalogue.

THE W. BINGHAM COMPANY, Cleveland, Ohio, have just issued an 1894 catalogue, which is unique, especially in the matter of size, as it indicates a reaction from the extremely large proportions of representative jobbers' catalogues. It has been the aim of the company in the preparation of this volume to produce a book of moderate size which will be convenient for use and at the same time sufficiently large to illustrate their complete line of goods distinctly and comprehensively. The company are to be congratulated on the success of their effort, as the book, which is just being issued, is very convenient to handle and use, while it presents the very large variety of goods shown in it in a clear and satisfactory manner. The plan of the book was formulated by H. S. Blossom, the secretary of the company, but the compiling and the entire arranging of the work were under the supervision of Frank N. Cleland, a young man who has been in the employ of the firm for a number of years, and to whom credit is due for the successful manner in which the work has been accomplished. The catalogue is about 6½ x 9 inches in size, handsomely bound in cloth and leather, containing 1476 pages and weighing 5 pounds 10 ounces. The line of goods represented includes Hardware, Railway, Miners', Engineers', Architects', Machinists' and Tinners' Tools and Supplies, Table and Pocket Cutlery. A comprehensive and well arranged alphabetical index is given a place near the front of the book. The page preceding the index pages is devoted to facts about the city of Cleveland, touching upon its pre-eminent position, distinctive features, progress, shipping interests, its importance as a market and industrial center, &c. The quantity of matter, including cuts, descriptions and prices, condensed on each page, but admirably arranged, is noteworthy and will be appreciated by the trade. Distinctness has not been sacrificed, nor do the pages present a crowded appearance, but sufficient space has been allowed to give all cuts in suitable size, with complete list prices of the goods. Goods which can thus be shown to better advantage, such as Decorated Ware, labels of Axes, Adzes, Hatchets, &c., are printed in colors. The company are to be complimented upon the results of their enterprise and skill in producing so complete, convenient and acceptable a book. The catalogue is destined to find favor with their customers, each of whom, it is stated, is entitled to one copy free of charge. The company's two-page advertisement in this issue contains a full size illustration of the book, and some of our readers who desire a handy and comprehensive catalogue will be interested in the announcement that a few extra copies are obtainable at $10 each.

A Well Organized Business.

BY VIATOR.

ON A THANKSGIVING DAY, several years ago, E. C. Simmons entered a car on the New York, New Haven & Hartford Railroad and shared my seat with me. Our destination was New York, so I had the pleasure of his company for an hour and a half. We talked of home, Hardware and religion. The topic of home appeared to be his favorite. He talked of his children, and appeared to be specially delighted with their progress in music, &c. After the social topic he produced a statement, received that morning, prepared by one of his trusted lieutenants, showing the condition of his business on November 22, three days prior to the receipt thereof. The statement contained the following information:

Total sales on November 21.
Total sales on November 21 of preceding year.
Gain of business,
Estimated profits on sales of November 21.
Estimated stock on hand, November 21.
Estimated purchases on November 21.
Amount of insurance in force.
Total expenses for that day.
Amount of money received.
Amounts of money paid out.
Balance in banks.
Number of men on pay roll, wholesale department.
Number of men on pay roll, retail department.
Number of men on pay roll at large, hustling department.

So a sheet of paper about 6 x 8 inches gave the general in command:

1. Strength of his army in active service.
2. The value of stores.
3. The condition of the treasury.
4. The captive dollars, captured on that day.

From this concise information he could direct the policy to be pursued, in a telegram of from 10 to 20 words, from a distance however remote.

Such a statement, I was informed, is placed on his desk every day when at home, or sent to him daily when abroad.

One day I received an urgent telegram calling me home. My train was to start at 10 a.m. As I had some business to transact with the Simmons Hardware Company I proceeded to their establishment, reaching there at 8.20 a.m., and found the buyer with whom I was to transact my business at his post. While conversing with this gentleman I heard a familiar voice bidding me good morning. Upon turning about I found that the greeting emanated from a voice under a straw hat. It was in the winter, at 8.30 a.m. It was E. C. Simmons. When I ventured the remark that it was rather early for him to be about, he said something about birds and worms. After these few words the stenographer at his side was busy exercising his abbreviating methods. In the meantime the buyer had the stock taken of the goods I had offered them, my order was made out, and I left the establishment at 9 o'clock, with ample time for my train.

Mr. Pilcher, the vice-president of the company, who has been connected with the concern in the capacity ranging from an office boy to the present position, delights to speak of his chief

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as an organizer and judge of men. He said that Mr. Simmons would not hesitate to ask for his resignation should he find that his department was not conducted in accordance with the rules and policies of the establishment. In speaking of the organization of the Simmons Hardware Company in relation to their employees, Mr. Pilcher stated that every man was expected to attend strictly and exclusively to business and that there was no time for play. To illustrate this point Mr. Pilcher suggested that I accompany him to a department on the second floor, where we could observe some 30 men without being seen by them, and if I could detect a single employee not at his post and at work he would pay for a dinner. Based upon my observations in many business houses, visions of pheasants and that part of the snipe which is served on toast appeared. I was sure of that dinner, but—well, I did not get it.

On one visit I met Colonel Eshleman of Stauffer, Eshleman & Co., New Orleans, in St. Louis. The Colonel had heard of Simmons even in regions where rice grows in abundance, where black birds are the delight of the small boy, and where the cooking of okra soup is reduced to a science, so he wanted to see his concern. I introduced the Colonel to Mr. Morton, the able treasurer of the company, who gave us a very cordial reception, after which Mr. Morton summoned one of his head men and instructed him to take us from cellar to garret, and authorized him to answer any question as to the manner and system the machine was operated. The Colonel, who is the head of a colossus down in Louisiana, lubricated with considerably over $1,000,000, was very forcibly impressed and left the establishment with a series of resolutions to be offered, moved and seconded upon his return to New Orleans.

Semi-Centennial.

THE firm of W. H. & G. W. Allen, Hardware merchants, located at 113 and 115 Market street, and 104 Church street, Philadelphia, celebrated the fiftieth anniversary of the founding of their house by a dinner given to their employees at the Art Club on the 23d ult.

The occasion was one that gave great pleasure to the firm as well as to their guests, for the well deserved reputation of the cuisine of the Art Club was fully maintained by the well prepared and promptly served viands making up the eight-course dinner.

The history of the house has been rather unique in several particulars. It was founded by W. H. Allen in 1843, before he attained his majority, and during the half century they have never moved from their original location, only growing in width on their Market street front, also in depth, now reaching to Church street in the rear.

In 1849 G. W. Allen was received as a member of the firm, and in 1875 and 1877 respectively, H. F. Chorley and J. D. Barr, both having learned their trade with the house, were taken into partnership, these four constituting the present firm.

One peculiarity is that, except for a period of four months, they have never employed traveling salesmen, and yet their record is that during the year 1892 they handled more goods than in any previous year; 1891 and 1890 following next in quantity, and from the present data, 1893, in spite of the universal depression in trade, will surpass all former ones.

One other peculiarity is that during the 50 years they have never lost a partner from any cause whatever, a record rarely equaled. Passing through all the panics and financial disasters occurring, they have never defaulted in payment or needed extension.

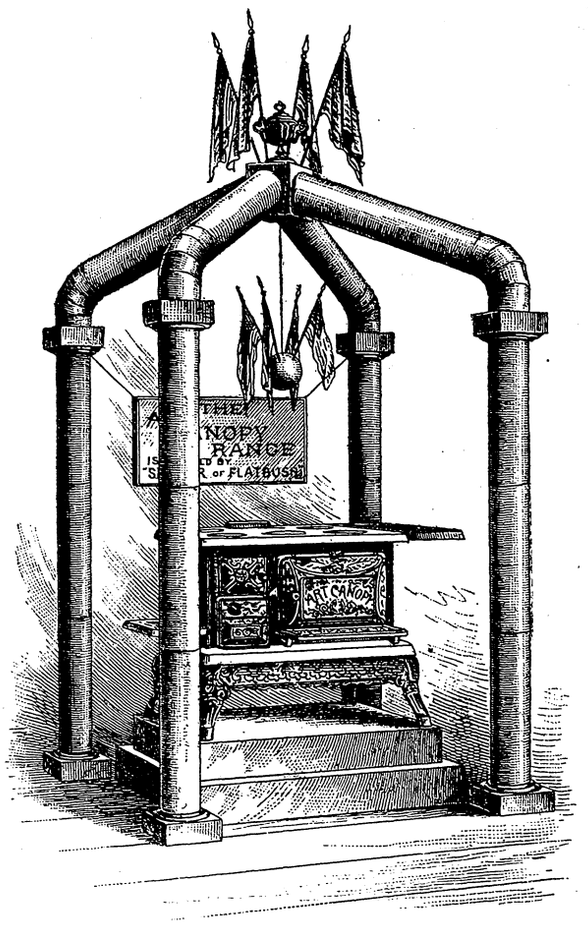
From the facts that they have remained so long in one place, and the non-use of the modern means of selling goods, many might conclude that the firm was a fossil and the members old fogies, but other houses who come in competition with them for business have a wholesale respect for their ability to secure and to hold the trade competed for.

Donations to Fairs.

OUR READERS are familiar with the annoyance to which merchants are subjected in connection with requests for donations for fairs given in aid of charitable societies. We give herewith an account of the method adopted by an enterprising house, which is referred to as rendering substantial assistance to the fair, while at the same time they derived considerable benefit from it through the advertising which was secured.

J. J. Snyder & Son of Flatbush, L. I., were recently requested to contribute toward a fair held by one of the local churches, and set to work to devise some method by which the donation could be turned to their profit. As it was the beginning of the stove season and a proper time to bring such goods to the notice of the public, they presented an Art Canopy Range, one of the best they had in stock, and secured the privilege of mounting it to the best possible advantage. This was done as shown in the accompanying illustration by placing it on a platform in a conspicuous part of the hall in which the fair was to be held, the platform being covered with bright red and canary colored cheese cloth. Above and around the Range a pavilion was constructed of Russia iron stove pipe and elbows, with bases and capitals of galvanized iron, the latter being ornamented with brass plated stove pipe collars. The four pipes were held together in the center by inserting the ends in a galvanized iron box with wooden top and bottom. This, in turn, was surmounted by a large stove ornament encircled by American flags placed in holes in the wooden top of the box. From the lower side of the box a wooden ball was suspended, in which were small American flags. The pavilion was also draped with bunting, but not so shown in the cut. Hung from and between the two rear columns was a sign, neatly framed, on which was lettering announcing that the Range in question is sold by "Snyder of Flatbush," their usual firm designation in their advertisements.

One of the conditions of the donation was that the Range should be drawn for at 10 cents a chance. The firm furnished cards as follows, with testimonials printed on the back:



An Exhibit at a Fair.

CHANCES, NOS ....
IN THE DRAWING FOR THE
"ART CANOPY" RANGE
AT THE FAIR OF THE
Holy Cross Cath. Church,
IN THE TOWN HALL,
SEPTEMBER 4th to 16th, 1893.

The trifling cost induced almost every person who visited the fair to invest at least 10 cents, and thus several hundred testimonials of the Range given by residents were carefully carried to every section of the town. Although there were many articles on exhibition of tenfold greater value, nothing attracted more attention, and from the comments which the firm afterward heard they consider it the best advertising hit they ever made.

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Bicycle Prices for 1894.

THE QUESTION as to what the list prices of the standard makes of Bicycles during the next season will be is one of much interest to the trade. The makers as a general rule are reticent on the subject, and are apparently deferring announcements until they find what policy will be pursued by their competitors. The effect of this uncertainty is being felt to a certain extent on trade in this line. We are, however, authorized by the Overman Wheel Company, Chicopee Falls, Mass., to state that the Victor Wheels, 1894 pattern, manufactured by them, will be listed at $125.

We are also advised by E. C. Stearns & Co., Syracuse, N. Y., that the price of their Stearns Wheel for 1894 will be $150. Referring to this announcement they say:

With but a few exceptions there has been a delay on the part of the manufacturers generally to formally set aside the rumors that the next month or two would see a reduction in the former prices of the standard machines. Buyers of Bicycles are left in the dark, while orders wait a hint. It seems to us that the time has now arrived for the manufacturer to take the public into his confidence and remove the feeling of uncertainty as to what next year's figures will be by coming out and definitely announcing his list prices. Not only would it restore confidence in the directions in which the maintenance of certain prices cuts a large figure, but it would give the dealers an opportunity to plan further ahead and thus be beneficial to maker and dealer alike.

In common with our competitors we are aware to the last cent the cost of building and marketing our wheels. It has never been our aim since we first embarked in the industry to see how cheaply we could build a Bicycle. On the contrary, our goal has been to produce a wheel embodying in its workmanship, its style, its capacity and its intrinsic value the full worth of the money at which it is sold. We are far from unmindful of the competition which we encounter in the open market; but we recognize that the maintenance of our reputation in the Bicycle business rests primarily on the excellence of our wheels. Therefore, we cannot with justice to ourselves, or without sacrifice to the quality which we wish to continue, offer the Stearns at a less list than $150.

The $150 list is founded on the ascertained cost, and as "self preservation is the first law of nature," it seems to us that any reduction in the list would naturally be at a sacrifice of quality that the wheelmen would not ask. The general adoption of a lower list by the manufacturers, while at first it might be considered a blessing, would in the end prove exactly the opposite. We want to feel that our price is such that we can afford to use in our wheels everything that is best, everything that will tend to increase the excellence of the Bicycle.

All things considered, therefore, there is every reason why we should announce and advocate the $150 list for high grade wheels.

THE TWO-PAGE ADVERTISEMENT of the Covert Mfg. Company, West Troy, N. Y., calls attention, it will be observed, to their Soldering Irons and their Pants Stretcher. They allude especially to their improved facilities for manufacturing their Adjustable Soldering Copper Irons, and call attention to the advantages which they possess over other goods. The particular features of their Pants Stretcher are also described.

Trade Items.

THE large establishment of the Paddock-Hawley Iron Company, 806 to 816 North Main street, St. Louis, was destroyed by fire early on the morning of the 23d ult. The fire raged for over three hours. Most of the engines in the city were called out. Smoke at first prevented the location of the fire and this gave it much headway. The origin of the fire is unknown, but it is supposed to have started in the engine room. Almost the entire structure was burned to the ground. The efforts of the firemen, however, prevented the fire from spreading to adjoining property. The damage is estimated at from $150,000 to $200,000.

BLAIR MFG. COMPANY, Springfield, Mass., have purchased of Farnsworth & Co., San Francisco, Cal., their California Lawn Sprinkler, which they will hereafter manufacture in connection with their Lawn Mowers and other lawn specialties.

J. FRANK GREENE & CO., manufacturer of Leather Specialties, 278 Water street, New York, have for years made a study of working up leather into a multitude of forms, so as to leave but a minimum of waste, at the same time using from each skin only what is best adapted for the special purpose for which it is required. This permits, they advise us, of supplying minor leather parts to manufacturers at a much reduced cost. Manufacturing as they do a very diversified line from this class of materials, they have in years accumulated much original and special machinery for the manipulation of leather, not possible with those having a limited use for it. Among other things, they make Knapsacks, Toilet Sets, Strops of many kinds, including Reaping Machine Strops, Dog Collars, Links for Belts, Washers for any purpose, &c. A feature of the Washers they make is that being cut with knives instead of dies the edges, inside and out, are parallel, instead of beveled, as when compressed by being cut under dies.

R. CHRISTENSEN, 90 Chambers street, New York, dealer in Cabinet and General Hardware, has made it a custom for years at this season to handle a moderate line of holiday goods, suitable for this class of trade. At present he has in stock an assortment of Aluminum Goods, embracing Match Safes and numberless small wares, fancy Clocks, Cigar Boxes, Cigar Holders, Mantel Ornaments, Austrian Vases, Smokers' Sets, &c,

CHARLES ASHLEY has disposed of his Hardware business at Ogdensburg, N. Y., to the Ashley Hardware & Iron Company, who have been duly organized under the laws of the State. Henry H. Bosworth is the manager of the company and Egbert N. Burt secretary and treasurer. Mr. Ashley's business career, which has been a very successful one, extends over a period of 43 years. He commenced business in 1850 in a small store in Ogdensburg. The store was 36 feet long and 20 feet wide and was about as large as the average town store at that time. In 1855 Mr. Ashley removed to new quarters, which he occupied for six years, when the requirements of his business having outgrown his facilities he removed again to a still more commodious store. Mr. Ashley occupied this store until 1870, when in consequence of changes which were necessary he purchased the site of his present business block on Ford street. It was at that time comparatively outside the business limits of the town, but it was Mr. Ashley's judgment that men and not location made business. He built his present store in 1870 and 1871. The business occupies the entire building, which is 30 x 80 feet, with four floors. There are also four warehouses and an oil storage house. Henry H. Bosworth, the manager of the new company, has been connected with Mr. Ashley for 33 years, and Mr. Burt, the secretary and treasurer, for 21 years. The officers of the company are thus qualified by long experience to conduct the business energetically and successfully. Mr. Ashley will still be identified with the house and will extend to it all the support and assistance in his power; but desiring to be released from the burden of the business, he will not be so actively connected with it as heretofore. He is to be congratulated on the success which he has achieved and the high esteem in which he is held.

THE MUSSEY STONE COMPANY, Cuyahoga Building, Cleveland, Ohio, announce that they have just completed the erection of a Scythe Stone factory, and are now prepared to furnish promptly all the well known patterns of Western Scythe Stones, in addition to their full line of Grindstones of all sizes and Grits, mounted Grindstones, &c., at the lowest market quotations.

THE TRADE will observe the advertisement of George A. Waller, Seneca Falls, N. Y., in which he illustrates the Arctic Ice Dogs, which are designed to secure safe footing in walking on ice. Illustrations are given showing the construction and use of the Ice Dogs, which are made in two sizes, for ladies and gentlemen respectively. It is stated that the method of adjustment adapts them equally well to both shoes and rubbers.

Lee Clarke-Andreesen Hardware Company's Catalogue.

LEE-CLARKE-ANDREESEN HARDWARE COMPANY, Omaha, Neb., have just issued a handsome catalogue of 1012 pages, substantially bound in cloth and leather. It is printed on paper of excellent quality, fully illustrated, with descriptions and list prices. Each page is encircled with blue lines, adding much to the appearance of the book; and such goods as Axes, Hatchets, &c., have the labels reproduced in colors. For convenience the goods are arranged in departments, as follows:

Mechanics' and Edge Tools..... 1 to 148
Builders' Hardware.....149 to 422
Farming Tools, Harness and Miscellaneous Hardware.....423 to 700
Pocket and Table Cutlery, Razors, Shears and Silver Plated Ware.701 to 804
Bicycles, Tricycles, Velocipedes, Boys' Wagons, Sleds and Childrens' Carriages.....805 to 823
Granite Iron Ware, Pearl Agate Ware, Pieced, Stamped, Galvanized and Japanned Tinware, Tinned Trimmings and Stock.823 to 888
Tinners' Tools and Machines... ..889 to 904
Arms and Ammunition, General Sporting Goods.....905 to 1012

A well arranged index is placed immediately after the list of departments at the front of the book. Addressing the trade, the company remark that the increasing magnitude of their business, the large and varied stock they carry and their facilities for rapidly handling orders enable them to give to their customers the lowest market prices and quick shipment.

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Price-Lists, Circulars, &c.

READING HARDWARE COMPANY, Reading, Pa., and 81 Reade street, New York: Supplement No. 4 to their 1891 catalogue. This is a book of 54 pages containing full size illustrations of a variety of new goods in genuine bronze and also a new line of fine Locks with flat and rabbeted fronts, for French windows, closets and doors having narrow stiles. The new patterns in solid bronze metal include complete lines of trimmings for Vassar and bit key Locks in scroll and circular fluted patterns. Eulalia designs and circular fluted door and window trimmings in wrought bronze are also shown. In addition to the supplement they publish an attractive 12-page pamphlet of iron goods in Columbian design. These goods are antique copper plated, which, the company state, is an entrely new method of finishing iron goods, requiring special patterns to obtain the desired results. This new finish is claimed to be very durable, and is referred to as presenting an appearance which closely resembles genuine bronze. The line of Columbian iron goods is limited to interior trimmings only. It comprises several Lock sets for inside doors, including sliding door Locks and Escutcheons, Door and Shutter Butts and a variety of small goods.

THE METALLIC WINDOW SCREEN MFG. COMPANY, 465 Washington street, Boston, Mass.: Fine Window Screens and Screen Doors. The Screens are made entirely of metal, the frame being of steel $\frac{3}{16}$ inch thick and $\frac{1}{2}$ to $\frac{5}{8}$ inch wide, according to size. The wires are soldered directly to the frames, so that when finished every part is soldered, brazed or welded. The Window Screen slides in guides, and for doors the Screens are set in a wood frame in suitable sized panels.

COLLINSVILLE BELL COMPANY, Collinsville, Ill.: Stock Bells and O. B. Wilson's Hill's Pattern Hog Rings and Ringers. List prices are given of O. B. Wilson's Stock Bells and Blum's Kentucky Durham Bells. Chime Bells No. 1, set of four for sheep, and No. 2, set of four for cattle, are also listed. This line of goods is thus facetiously referred to:

> It has been discovered that wild animals will not disturb stock that are provided with chime bells, and that cattle cannot be stampeded that wear them. To meet this new demand for our goods, we take Nos. 1, 3, 5 and 8 of the musical octave and put them in perfect accord so that any two, three or all four will harmonize. Travelers in Switzerland are enchanted by the beautiful effect of these bells worn by stock in the mountains there. Our own pastural districts may be made just as enchanting by the tinkling of the bells.

COLEBROOKDALE IRON COMPANY, Pottstown, Pa., with New York office 103 Reade street, in charge of Duncan K. Major: Colebrookdale Tailor and Sad Irons. An illustrated catalogue for 1894 shows Crown Sad Irons, common Sad Irons, Tailor Irons, wide and narrow faces; German Tailor Iron, New England Pressing Iron, Chinese Laundry Iron and Chinese common Sad Iron.

THE NORTHERN REFRIGERATOR COMPANY, Grand Rapids, Mich.: Hardwood Glacier Refrigerators. An illustrated catalogue and price-list shows Glacier Cold Dry Refrigerators, Grocers', Sideboard and Apartment Refrigerators, Ice Chests, &c., in different styles and sizes. Samples of wool felt and charcoal sheathing, as used in the Refrigerators, are inserted as pages in the catalogue. Attention is directed to their new metallic ice rack, air tight lock, and the new style of carvings in the Empire or Laurel Wreath design; also the addition of a line of Refrigerators with porcelain ice tanks.

PORTLAND TINWARE COMPANY, 100 Cross street, Portland, Maine: Pieced Tinware. A price-list is issued by the company of Pieced Tinware, which they state is made from bright charcoal plates of full weight. A separate sheet illustrates the Maine Creamery Can, in which a faucet is set 1 inch from the bottom, so as not to disturb the sediment when drawing off the milk and cream. In addition to manufacturing the foregoing goods, the company job Stamped and Japanned Ware, Ironware, Wire goods, Agate Ware, 5 and 10-cent goods, Wooden Ware, Trimmings, &c.

EDWARD MILLER & Co., 10–12 College place, New York; 63 Pearl street, Boston, and Meriden, Conn.: The Miller Lamp. An illustrated catalogue and price-list shows the Miller Lamp in piano, banquet and parlor styles; Rochester Study Lamp, hanging, library, hall, desk and pulpit Lamps, Chandeliers and Bracket Lamps and Miller Oil Heaters.

SIMMONS HARDWARE COMPANY, St. Louis, Mo.: Guns, Pistols, Sporting Goods, also leading foreign Guns. A catalogue of some 130 pages illustrates and describes, with prices, Guns, Rifles, Revolvers, Ammunition, Gun Implements, Calls, Hunting Clothing, Boots and Shoes, Traps and Pigeons, Boxing Gloves, Footballs, &c. Attention is called to 1894 models of Bicycles, catalogue and prices of which will be sent to dealers upon application.

THE ADAMS & WESTLAKE COMPANY, Chicago: Brass Bedsteads. The company issue a supplement to their No. 5 catalogue showing a large line of Brass Bedsteads, with prices and descriptions. A smaller pamphlet calls attention to a medal awarded by the World's Columbian Exposition for superiority of construction and excellence of finish and calls attention to some advantages and the care of Brass Beds.

SIDNEY SHEPARD & Co., Buffalo, N. Y.: The Buffalo Damper Clip. The company send a small pamphlet illustrating and describing the Clip, with prices for the Clip with wood and metal handles, from 4 to 7 inches, Two full page humorous illustrations add attractiveness to the pamphlet.

NOVELTY WOOD WORKS, F. E. Levanseler, proprietor, Sturgis, Mich.: Improved Step Ladder Chairs, and furniture specialties. An illustrated price-list shows Step Ladder Chairs in a variety of patterns and upholstery. The goods are made of elm finished in antique to closely resemble oak, also of sycamore finished to resemble cherry or mahogany. Every chair, it is remarked, has four steel wire locks to prevent the sides from pulling away from the steps. Unless otherwise ordered they are shipped tied in pairs at the consignee's risk of damage.

It Is Reported—

That Herman & Son, Hardware dealers, were burned out in a fire at Albia, Iowa, November 17.

That in a large fire at Hamilton, Ont., on the 22d ult., the Hardware stock of Peter Bertram was almost totally destroyed. Loss, about $20,000; insurance, $8000.

That W. L. Snow, plumber and dealer in Stoves, West Somerville, Mass., will add a line of Hardware to to his business.

That S. B. Spencer's Hardware store, at Maiden Rock, Wis., was entered by burglars on the 18th ult. Thirty Pocket Knives, two Revolvers and a lot of Table Cutlery were carried off.

That the Hardware store of J. E. Phillips, Porterville, N. Y., was burned out recently.

That the Hardware store of A. Scheff, 462 St. Clair street, Cleveland, Ohio, was entered by thieves on the 18th ult. The cash drawers were stripped of their contents and a large quantity of Hardware taken.

That Laughlin & Brown's Hardware store, at McComb, Ohio, was robbed on the 22d ult.

That the foundations for Charles E. Faeth's new wholesale Hardware store, at Sioux, City, Iowa, have been completed, and a large force of men have commenced work on the building proper.

That G. E. Piper has bought the Hardware stock of A. M. Smith, Silver Springs, N. Y.

That H. D. Blanchard of Boston, Mass., will on January 1 open a Hardware store at Vergennes, Vt.

That the Hardware store of W. C. Fluke, Clayton, Mich., was recently robbed. This is the second burglary within a year.

That W. R. Batley's Hardware store, at Hearne, Texas, was burned out on the 23d ult.

That the Hardware firm of Atchison & Knowlton, Newton, Kan., have been dissolved. T. B. Atchison will continue the business.

That McClure & Co., in the Hardware business at Buffalo, N. Y., have sold out.

That the Hardware and Tin firm of Schick & Bridanstein, Mansfield, Ohio, have dissolved partnership.

That O. P. Olson has opened a Hardware store at Ulen, Minn.

That P. Martinson & Son, Hardware merchants, Lake Park, Minn., have dissolved partnership.

That Heins, Rich & Co., in the Hardware business at Renville, Minn., have been succeeded by Heins & Co.

That M. I. Crosby's Hardware store, at Baldwin, Kan., was burned out on the 19th ult. Loss, $1500; insurance, $500.

That J. F. Johnston has sold out his business interests in the Hardware firm of Johnston & Farrar, London, Ohio, to his partner, Colburn W. Farrar. Mr. Johnston is the Mayor of London.

That G. A. Taylor has disposed of his Hardware business at Portland, Ore., on account of ill health.

That Wm. Haberman has bought the Hardware stock of I. M. Lyman, Concord, Neb.

That M. Quinlan and H. S. Latham have opened a Hardware and Tin store at Gray's Lake, Ill.

That the store of the Fort Collins Hardware Company, Fort Collins, Col., was entered by burglars on the 20th ult.

That the Hardware store of A. L. Mills, Hartford, Conn., was entered by burglars on the 24th ult. About $100 worth of goods were stolen.

That in a fire at Covington, Pa., the Hardware store of J. L. Kiff was destroyed.

That burglars entered L. H. Kurtz's Hardware store, Des Moines, Iowa, on the 19th ult. and blew open the safe. They secured $55 in money and some valuable papers, some of them negotiable.

That Warren M. King has sold his interest in the Hardware firm of Carruth & Co., Orange, Mass. Fred. P.

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Carruth will continue the business alone.

That the Hardware store of James Clifford, at Lenox, Mass was burglarized on the 27th ult.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

The market is in a somewhat nervous condition, and business all along the line is of extremely conservative type. In some departments affairs are considerably disturbed by the uncertainties connected with the new tariff bill, and it is next to impossible to secure orders for the lines of goods thus affected with a saving duty clause wholly in the buyers' favor. Next in significance is the erratic condition of White Lead, due partly to prospective tariff legislation and in a measure to growing aggressive attitude of producers not connected with the National Lead Company. Besides these influences is the upward turn latterly in price of Linseed Oil that has more or less effect upon goods into the composition of which the Oil enters prominently as an ingredient. The most severe contention, however, is dullness of regular trade nearly all along the line and irritating slowness of collections. Hope of better things later on is not abandoned, but all signs indicate that the conservative policy among buyers is extremely popular.

White Lead.—Officials of the National Lead Company state that no changes have been made in their list prices and assert that they are making no direct or indirect concessions in this market. It is an open secret, however, that jobbers are selling small quantities at a liberal shading from those figures. Outside corroders seem to be gradually becoming more aggressive and have made some bold moves since the publication of the proposed new tariff. They have confined their movements chiefly to Dry Lead, which is offered at 5¢ here and ¼¢ cheaper at Western points, where the contest with the combined corroders is keenest. The outcome is problematical and shrouded in so much uncertainty that buyers take only such stock as they may be in immediate need of. This leaves the market in a dull and rather debilitated condition.

Red Lead and Litharge.—There is little doing in either pigment of foreign manufacture, since near future wants of the large consumers have been well provided for, while tariff uncertainties check further forward contracts. However, hardly any concession from late lowest prices is made, and the tone of the market is about the same as it was a week ago. Domestic sorts are without change in price and meet with very slow sale at the moment.

Orange Mineral.—French has been selling to a remarkably fair extent, but the dealings were chiefly in small lots for early delivery. The movement, however, served to keep prices quite steady. Interest in future shipments is subdued by the tariff uncertainties. Domestic brands are almost neglected and prices remain quite nominal.

Zincs. — Comparatively little new business in American Oxide has been effected, and the market at present shows rather slack tone. The ordinary canvass for orders would indicate that some producers are not as well off as could be desired in the matter of contracts booked, and, while the recently revised list covers the popular quotations, concessions are not infrequent when really desirable orders come up for competition.

Colors, &c.—There is not a new feature in the market. Sales are slow, and only modest orders of the most pronounced type are being put through for future delivery. Prices are slightly uneven, as usual, on a slow market, but show no radical change. In ready mixed Paints, metallic Paints, &c., nothing new has transpired.

Oils and Turpentine.

With few exceptions the market remains in a very spiritless condition and the surroundings afford little hope for an early change for the better. In the departments in which export movement frequently cuts a prominent figure there is hardly any interest manifested by foreign buyers at the present time. In no line does there appear to be speculative tendency. As for the regular home trade movement, the best that can be said is that it is very moderate and hardly up to average value for the season. Movements in prices have been few and generally within very narrow range.

Linseed Oil.—The advance in prices of local brands made last week has been closely adhered to and the out of town crushers, as far as can be learned, make no concession from their prior advance. The market would thus appear to be quite firm at 42¢ for city and 40¢ for out of town brands of raw Oil made from American seed. Dealings have been moderate since the advance and, while looking quite firm, the market is by no means spirited. The strength of the market is due in a good measure to the late advance in cost of raw material.

Cotton Seed Oils.—Under the influence of quite heavy receipts and only moderate demand prices have ruled rather weak, and the market is at present in rather poor shape, since the lower range of values has stimulated business to a moderate extent only. Late sales were at 28¢ @ 29¢ for prime quality Crude, 35¢ for prime Summer Yellow, and corresponding prices for other varieties.

Lard Oil.—For strictly prime city-made Oil the common quotation is 75¢ and ordinary jobbing lots can doubtless be secured at that price. In any event the demand is no freer than the offering, while purchases of other than small lots have been strictly the exception during the past week or ten days. The tendency of the market for raw material is suggestive of lower prices for Oil, rather than any considerable advance in the immediate future.

Fish Oils.—Somewhat more interest has been manifested in crude Menhaden Oil, but buyers have purchased sparingly, and thus far there is no change in prices. Crude Sperm and crude Whale Oils have remained quiet and unchanged. The pressed and bleached products have met with fair sale in a jobbing way, chiefly at old prices. Cod Oil is a shade easier, with 40¢ now apparently a stiff price for wholesale quantities.

Spirits Turpentine.—The demand at this point has been moderate, and Southern advices have almost invariably reported slow trade there. Supplies have not increased greatly at first hands, but had sufficient weight to weaken prices off to 29½¢ for regular and 30¢ for machine barrels.

Miller Oil Heater.

Edward Miller & Co., 10-12 College place, New York, and Meriden, Conn., are putting on the market a series of oil heaters, one of which is shown in Fig. 1. The Miller lamp, which is used, has two flame spreaders, one particularly adapted for heating purposes and one for lighting, although either can be used for the stove. The lamp is provided with an aluminum indicator, which will not corrode, for showing when the lamp is full. The lamp has a simple wicking and adjusting device, and no chimney is used with the heater, resulting in greater radiating power. The lamp rests on a heavy nickeled cast



Fig. 1.—Miller Oil Heater.

base, and is provided with a brass nickeled top. Top or bottom wick adjuster is provided, as desired. The heater cylinder is of Russia iron, with mica at the bottom, all resting on the body of the lamp. The point is emphasized that the cylinder is supported on and locked to the main body of the lamp instead of on the chimney gallery. After the cylinder rest is in place it is



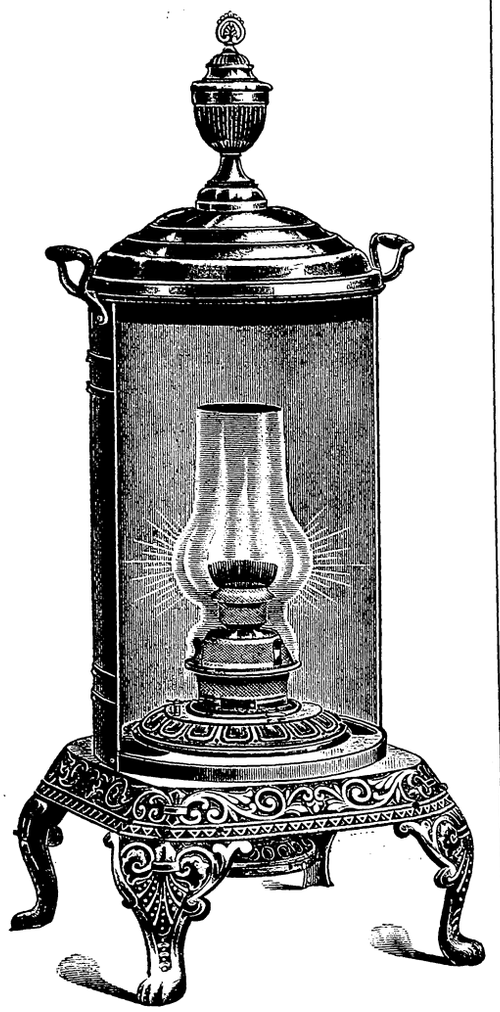
Fig. 2.—Mode of Lighting the Heater.

fastened on the lamp by an eccentric looking device. The heaters are made in five sizes and styles, designed to heat rooms from 8 to 14 feet square. By removing the cylinder and substituting a chimney, the lamp may be used for lighting purposes. Fig. 2 illustrates how the lamp is lighted with or without the chimney.

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Browne's Lamp Heating Stove.

The Breitting Metal Ware Mfg. Company, Huron and Sedgwick streets, Chicago, are manufacturing a recently patented oil lamp heater which is herewith illustrated. It is intended to be used for cooking and heating, as well as for light. The hight of this heater is 40 inches over all, while the diameter is 12 inches. The lamp is partly encircled by a highly polished tin reflector which fits into an opening in the base. Cold air is admitted from the floor, heated, and discharged at the top, causing a circulation of heated air in the room. The B. & H. lamp is used, which not

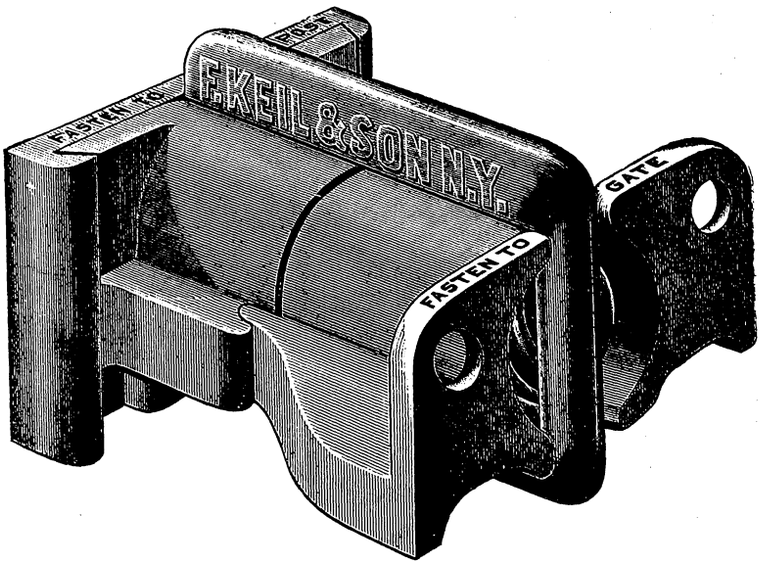


Browne's Lamp Heating Stove.

only perfectly consumes oil without odor or smoke, but also provides a very brilliant light. The urn and top are nickeled, and in every respect the heater is handsomely finished.

The Superior Hinge.

Francis Keil & Son, 163d street, west of Third avenue, New York, are introducing the Superior hinge, as shown herewith. The hinges are made of malleable iron to prevent breaking, and every hinge is warranted by the makers. The hinge is described as swinging both ways, as not raising the gate as ordinary hinges do, but as opening level. The manufacturers claim that the hinge is self shutting, always stopping at the center; that it has no parts to get loose or out of place; that it is easily applied and cannot get out of order. The point is made that any catch can be used with the hinges, but that none is necessary. The hinge is designed for use on house gates, and has, we are advised, been adopted for

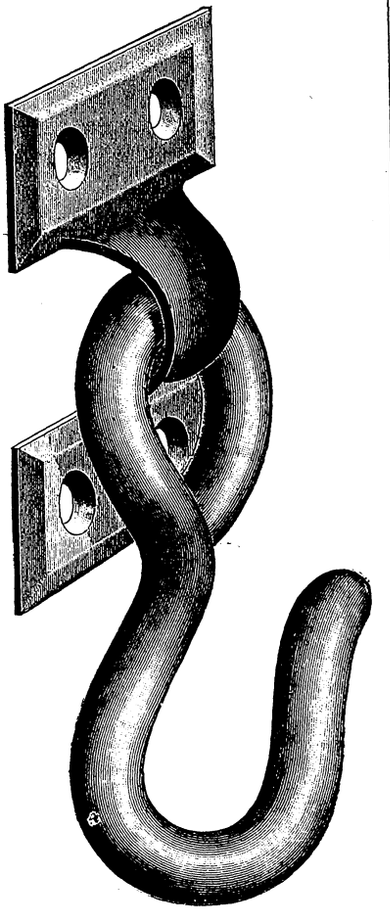


The Superior Hinge.

office gates. The goods are furnished in japan, copper plated, polished bronze metal, nickel plated.

Stearns' No. 200 Hammock Hook.

E. C. Stearns & Co , Syracuse, N. Y., are putting the hammock hook here-



Stearns' No. 200 Hammock Hook.

with illustrated, on the market. The plate is made of a special quality annealed sheet steel, and the hook is formed up from ⅛ inch wrought iron. The company state that the article is the result of a great deal of experimenting on their part to produce a hook which would be lighter than those now on the market, and at the same time possess equal strength; that although the hook is very light it is at the same time capable of sustaining great weight, and that they have no hesitation in pronouncing it as strong as any of the regular size hammock hooks on the market. The hooks are tin finish, and are packed 1 dozen in a box.

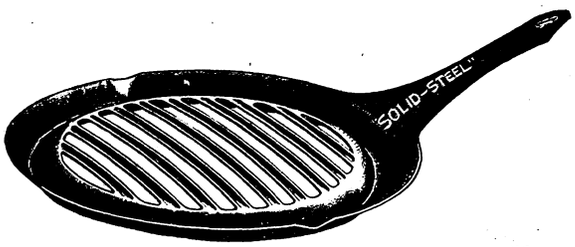
The Ideal Implements.

Ideal Mfg. Company, New Haven, Conn., have issued a circular addressed particularly to their foreign trade, which states that those who have used the Ideal implements for American arms and shells have frequently requested the company to make implements for the various other kinds of arms and shells they have in use, also to prepare a list that would inform the users as to which were alike in the English and American manufacture, and to specify the tool that is adapted to them. In compliance with this request the company have prepared a list for the convenience of the foreign trade using Ideal implements, showing which cartridges are alike of English and American manufacture and the tool that is adapted to them. In this list the name of the cartridge as given in Eley Brothers' catalogue is first presented, and on the same line, under the head of American, is given the name of the same cartridge made by the Union Metallic and Winchester Cartridge companies, U. S. A.; followed by the name of the particular Ideal tool required to load them. This list is designed to be used in connection with the Ideal catalogue, which illustrates the implements and gives list prices. The circular further states that at the request of P. Webley & Sons of Birmingham, England, the Ideal Company have recently perfected a model tool for the Webley's 0.450 and 0.455 revolvers, as supplied to the English department of war. The shells as made by Eley Brothers of London, or by the Union Metallic Cartridge Company of Bridgeport, Conn., U. S. A., we are advised, may be used. The company have also made tools for casting bullets and reloading the Lee-Metford (Eley's 0.303) and are now prepared to furnish the same on order.

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Steel Broiler.

The accompanying cut represents a steel broiler being introduced by the Cleveland Stamping & Tool Company, Cleveland, Ohio. The broiler is made of a single piece of heavy, cold rolled steel, all in one piece, which the manufacturers claim is peculiar only to this broiler. The point is made that it has no seams or rivets to catch grease, that it will not warp, that it cannot be broken and that it catches all of the juice of the meat.



Steel Broiler.

The California Extension Hack Saw Frame.

The extension hack saw frame herewith shown is put on the market by Knapp & Cowles Mfg. Company, Bridgeport, Conn. The frame is made of steel, and is so constructed that it can be easily extended from 8 to 12 inches. This is accomplished by the parts slipping past each other, and being held at the desired point by a rivet attached to a spring, dropping into a hole. The frame is as firm as a solid one when the saw is inserted in position. A thumb screw allows the saw to be tightened after it is in place, and the handle and the piece to which the thumb piece is attached are arranged so that the saw may be set at different angles to the frame as desired. The handle is of enameled wood, and the metal part of the frame is nicely furnished and polished. The frame is also made with solid back for 8-inch saws



The California Extension Hack Saw Frame.

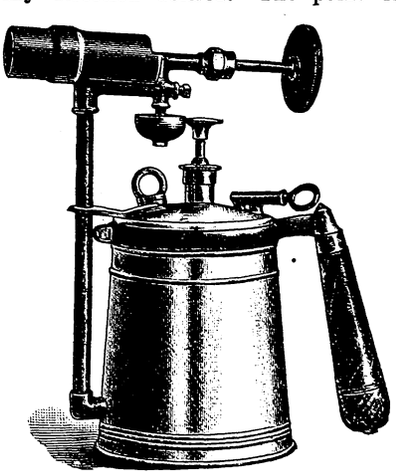
How to Buy a Bicycle.

A Scottish newspaper publishes the following unique hints on "how to buy a bicycle:"

Always see that the bicycle offered you for sale has got two wheels, and that they are attached by some solid substance. Otherwise, the one may go and leave the other behind. The next point to observe is that the cycle is supplied with a saddle, as it will be found to be very irksome to ride long distances perched on the point of a saddle pillar. It should be possessed of two pedals fixed on as many cranks. If the pedals describe a circle without fetching the cranks along with them that is a clear and sure sign of early bronchial affection of the tubes, and that the machine should be unhesitatingly discarded. Looking around for a moment to suit your taste, bear in mind that a wheel without rims is like a footless sock without the leg, and should not be had at any price. It is very desirable that the wheels should be fitted with spokes, as otherwise the rims are easily bent. With these tips in view, any one should be able to choose a mount for himself without the expense of engaging a special commissioner to do the job for him. Handle bars, mud guards and gear cases are mere details, and may be regarded as the luxurious cravings of a pampered age.

The Quick Meal Adjustable Paint Burner.

The Quick Meal Stove Company, St. Louis, Mo., are putting on the market an adjustable paint burner, as shown herewith. The handle is adjustable, turning loosely on the brass band which encircles the tank, to enable the operator to throw the flame in any direction without exertion. The tank, pump, &c., are of brass, and the flame is referred to as being blue and very powerful, from 6 to 8 inches long. It is explained that for corners or places in wood work out of ordinary reach the burner will be found serviceable, as the flame can be thrown in any direction desired. The point is made that when the burner needs repairing it is not necessary to make a brazed or soldered joint, and that it is easily taken apart for cleaning and repairing. The burner is designed for the use of plumbers, painters, wood workers, &c.



The Quick Meal Adjustable Paint Burner.

The Safety Cistern and Well Cover.

The Safety cistern and well cover shown in the accompanying cuts is offered by Menefee & De Vilbiss, Fort Wayne, Ind. The cover is made of cast iron, japanned to prevent rusting, having an outer rim (Fig. 1, Letter A), which is to be firmly cemented to the wall of the cistern or well, to obviate any possibility of bugs or worms getting into it. It is provided with an adjustable lid (Fig. 1, Letter B), to be used in connection with a pump, to fasten it in position, as in Fig. 2. For a pump placed in the house a solid lid is provided (Fig. 1, Letter C), instead of the split lid, this being fastened by a lock bolt, to obviate danger to children. The cover is provided with an air box, to allow foul air to escape, to keep the water in a pure and healthy condition. It is explained that the construction is such that no surface or waste water can possibly return into the cistern or well, and that either lid can be removed without disturbing the outer rim by the use of a common wrench. The manufacturers remark

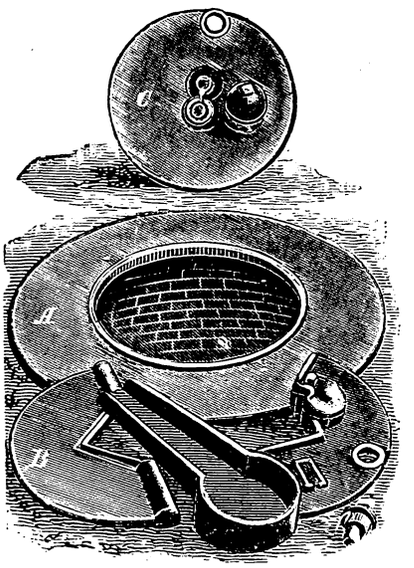


Fig. 1.—The Safety Cistern and Well Cover.

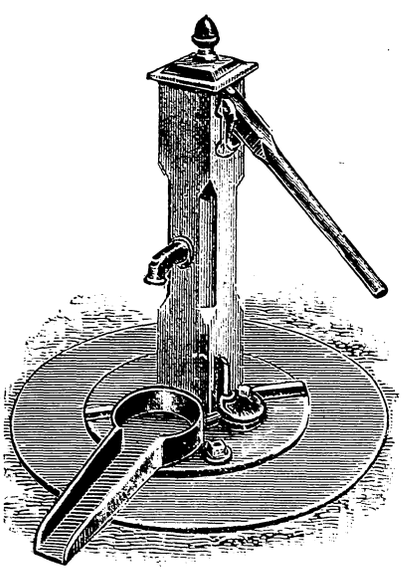


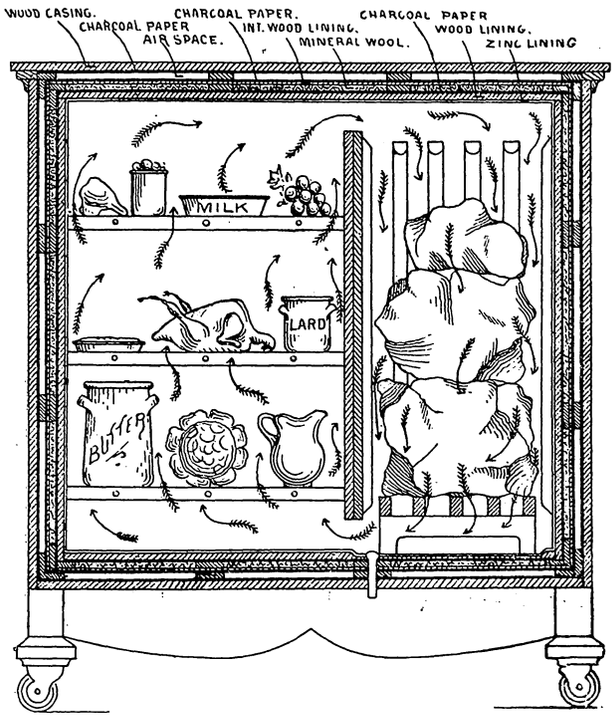
Fig. 2.—The Cover in Connection with Pump.

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that the device, besides being as cheap as others, is free from dirt and insects. and that it is not open to the objections of wood covers, the underside of which become damp, causing decay, a growth of vegetation, and become inhabited with vermin, small snakes, &c.; also that, unlike wood covers, it will not become rotten and unsafe.

The Automatic Refrigerator.

The Illinois Refrigerator Company, 909 Masonic Temple, Chicago, are manufacturing a new line of refrigerators. The illustration given herewith shows the distinctive features of the construction which has been adopted. It will be seen that the ice chamber is placed at the side of the provision chamber. The illustration also shows the manner in which the circulation of air is secured. The air in the ice chamber being colder and heavier than elsewhere, falls to the bottom and flows out under the partition into the provision chamber. The warmer air in the provision chamber flows over the partition into the ice chamber to take the place of the cold air passing out below. As it is cooled it falls. Thus a circulation is secured. The manufacturers state that as the vapors and odor from the food come in contact with the ice they are condensed and drawn off with the waste water from the ice. All the food being above the drip basin, it will be seen that no damage can result should the waste pipe become clogged.

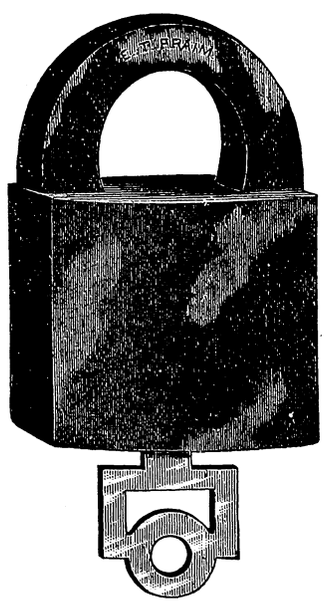


Interior of Automatic Refrigerator.

East Mfg. Company, Buffalo, N. Y., are offering two household preparations recently brought out. One is the Instant Crockery Mender, for cementing leather, wood, glassware, iron, &c. It is in liquid form, requires no heating and sets quickly. The other, Glistening Cream, is for polishing wood, furniture, pianos, &c. Both are put up in illuminated cardboard display boxes with hinged cover and contain 12 bottles each. Geo. F. Eberhard Company, 64 William street, New York, have been made agents for New England, New York, New Jersey, Pennsylvania and Pacific Coast, as well as all export trade.

A New Padlock.

The accompanying cut represents a padlock being introduced by the Keystone Lock Works, Lancaster, Pa., for whom Surpless, Dunn & Alder, 79 Chambers street, New York, are agents. The lock, which the cut shows full size, is heavy, with oval case both front and back, having all inside work of brass. It is self locking, with spring shackle, and each lock is supplied with two flat steel keys. The locks are furnished in solid steel, Bower-Barff finish on case, polished shackle; solid steel case, Bower-Barff finished, bronze metal shackle; antique copper finish, case and shackle, on steel; plain solid real bronze metal and antique copper finish on solid real bronze.



A New Padlock.

Razorine Mfg. Company, 2 West Fourteenth street, New York, are putting on the market a preparation for sharpening razors called Razorine. It is a small, hard cake 1¾ x 1 x ½ inch in size, of a reddish color. It may be rubbed on any strop, whether of leather, canvas or stone side. The finish is made by stropping on leather without the Razorine. The preparation is said not to harm the finest razor.

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Current Hardware Prices.

DECEMBER 6, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic .....₩ doz $3.00, 33⅓@33⅓&10%
Excelsior....₩ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Am. Wrought, Horse shoe brand.11@11½¢
Armitage's Mouse Hole.....10½@11¢
Eagle Anvils, ₩ ℔ 9¢.....15@15&5%
Moore & Barnes Mfg. Co.....33⅓%
S. & H., machine finished..10½¢@11½¢
Trenton .....10@10½¢
Wilkinson's.....10½@11¢
Peter Wright's.....11@11½%

Anvil Vise and Drill—

Allen Anvil and Vise $3.00.....40&10%
Cheney Anvil and Vise.....25%
Millers Falls Co., $18.00.....20%
Star .....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—

Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....50%
Common Augers and Bits.....70@70&10%
Cincinnati Bell-Hangers' Bits.....30&10
Forstner Pat. Auger Bits.....15%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
C. E. Jennings & Co., No. 10, extension lip 40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits. ₩ set 32½ quarters, No. 5, $5; No. 30, $3.50.25%
Russell Jennings' Augers and Bits.25&10%
Lewis' Patent Single twist.....45%
L'Hommedieu Car Bits.....15&10%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
Snell's Bits.....60&5%

Bit Stock Drills—

Cleveland.....50&10&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Steer's, No. 1, $26; No. 2, $18.....35@40%
Stearn's No. 2, $48.....20%
Swan's.....40%

Gimlet Bits—

Bee .....25@25&5%
Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25....40&10%
Double Cut:
Shepardson's.....45@45&10%
Ct. Valley Mfg. Co.....30&10%
Hartwell's.....₩ gro.,$10.00..40&10%
Douglass'.....40&10%
Ives.....60@60&10%

Hollow Augers—

Bonney's Adjustable, ₩ doz $48.....50%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%
Douglass'.....33⅓@33⅓&10%
French, Swift & Co. (Beecher .....33⅓@33⅓&10%
Ives' .....33⅓@33⅓&10%
Ives' Expansive, each $4.50..... 50&5%
Stearns'.....20&10%
Universal Expansive, each $4.50.....20%
Wood's. .....25@25&10%

Ship Augers and Bits—

L'Hommedieu's... .....15&10@15&10&5%
Snell's .....25@25&10%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%
Watrous'.....25@25&10%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@ 1.40
Awls, Handled Brad...₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *ets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00	$7.50
First qual., other brands	6.50 / 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1 .....3¼¢@4¢; 4½¢@5¢
Nos. 7 to 14.....70%
Nos. 15 to 28.....47½%
Nos. 19 to 22.....70%
Concord Axles, loose collar.. 4½¢@5¢
Concord Axles, solid collar.. 5¢@6¢
} 3% cash

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz.	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-in., $1.80; 12-inch, $2.00; 13½-inch, $2.50; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Dover.....₩ doz $1.00@$1.20
Dover (Standard Co.).....₩ doz $1.00
Duplex (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)..... ₩ doz. $3.50
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Improved Acme (H. & R. Mfg. Co.)..... ₩ gro. $9.00
Silver & Co.....₩ doz $5.50
Spiral.....₩ gro $4.25 @ $4.50
Triple (H. & R. Mfg. Co.).....₩ gro $16.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2 .....20%

Bells—

Cow—

Common Wrought.....60&10%
Dodge, Genuine Kentucky....70@70&10%
Kentucky Durham.....70&10%
Kentucky, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Texas Star .....60&10@50&10&5%
Western, Sargent's list.....70&10%

Door—

Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Gong, Abbe's.....33⅓&10%
Gong, Barton's .....40&10@50%
Gong, Yankee.....45&10%
Lever, R. & E. Mfg. Co.'s.. .....50&10&2%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Pull, Brook's.....50&10&2%

Electric—

Bigelow & Dowse.....20
Wollensak's.....20%

Hand—

Extra Heavy Brass.....70%
Light Brass.....70&10@70&10&5%
Silver Chime.....33⅓&10%
White.....70%
Globe Cone's Patent).....25&10@35%

Miscellaneous—

Call.....45@50%
Farm Bells.....₩ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Hand Bellows.....40&10@50%
Molders'.....40&10@50%

Belting, Rubber—

Common Standard.....75@75&10%
Extra.....60&10@60&10&10%
Standard.....70&5@70&10%
N.Y.B.&P. Co., Carbon.....60@60&5%
N.Y.B.&P.Co., Diamond..... 50@50&5%
N.Y.B.&P.Co., Para.....40@40&5%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters..15%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron.60@60&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks 25%
See also *Machines, Hoisting*

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....80&5@80&15%
Genuine Eagle, Norway, list Oct. '84.... 80&5@80&10%
Eagle, Norway, list Oct. '84 80&10@80&15
Phila. pattern, list Oct. 7, '84..... 80%
R.B.&W., old list.....70%
Bolt Ends, list Jan. 1, 1890.80&10@80&25%
Machine, list Jan. 1, 1890. .80&10@80&25%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Cast Iron Shutter Bolts.....70&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wr't B. K. Flush, Common.....55&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Shutter, all Iron, Stanley's..... 60&10@60&10&10%
Wrought Square.....70&10@75%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%

Stove and Plow—

Plow.....60&10&5@60&10&10%
Stove.....60&10@60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
American Screw Company
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16 '84.....80%
Philadel., list Oct. 16, '84 .....80%
Bay State, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Clark's.....33⅓@35%
Enterprise Mfg. Co.....20%
Ives' Tap Borers.....33⅓&5%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Boxes, Miter.

Spliker's Excelsior, 3 in. $7.50, 4 in $8 50, 5 in. $13.00, 6 in. $15.00.....20%

Braces—

American Bit Brace and Tool Co..
Nos. 10, 12, 20..... ....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber's.....50&10%
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Davis Patent.....50&10%
Fray's Genuine Spofford's...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.16

Brackets—

Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting. { Inch..... 9 10 9x11
{ Per doz...$4.50 5.50 6.50
Morgan Odorless.....₩ doz. $12, 50%
New Haven.....50%
Queen City.....33⅓%
Wire Goods Co.....65&10%

Buckets, Well—

Galvanized—

Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00
Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers.*

Butts—

Brass—

Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%
Cast Brass, Tiebout's..... 50%
Wrought Brass.....80@50&10%

Cast Iron—

Fast Joint, Broad.....50&10@60%
Fast Joint, Narrow.....50&10&5@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Loose Pin, Acorns..... 75&5@
Loose Pin, Acorns, Japanned.. 75&10
Loose Pin, Acorns, Japanned, Plated Tips.. &5
Mayer's Hinges.....
Parliament Butts.....

Wrought Steel—

Fast Joint, Broad.....
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Inside Blind, Light.....
Inside Blind, Regular.....
Loose Joint, Broad.....
Loose Pin.....
Table Butts, Back Flaps, &c....
} List Jan. 2, 1893, 40@40&10%
Bronzed Wrought Butts.....50@50&10%

Cages, Bird—

Hendryx, Brass or Enameled..... 50&10%
Hendryx, Wood..... .....40&10%

Calipers—See *Compasses.*

Calks Toe—

Burke's, One Prong, Blunt.....5½@6¢
Burke's, One Prong, Sharp..... 6½@7¢
Burke's, Two Prong, Blunt..... 7½@8¢
Gautier, One Prong, Blunt..... 5½@6¢

Can Openers—See *Openers, Can.*

Cans, Milk—

S. S. & Co.: 5-gal., $3.00; 8-gal., $4 40; 10-gal., $4.75 each ..... 40&10

Cans, Oil—

Galvanized Blue Band, 1 gal., ₩ doz. $2.25
Galvanized Blue Band, 5 gal., Tip-Top, ₩ doz, $12.00
Galvanized Blue Band, 5 gal, Faucet, ₩ doz., $8.00
Glass Oil, Friend.....₩ doz. $2.75

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co. ₩ 1000
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire $1.60
E. B. Grnd. Edge, Cent. Fire, 1-10's.... 47@50¢
E. B. Trimmed Edge, 1-10's.....47@50¢
F. L. Waterproof, 1-10's.....35@37¢
G. D.....27@30¢
Musket. Waterproof, 1-10's.... 50@53¢
S. B. Genuine Imported..... ..... 45¢

Primers—

Berdan Primers, $1.00..... 2%
B. L. Caps (Sturtevant Shells) $1 00... 2%
All other Primers, $1.20..... 2%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.. ..... 25%

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

B. B. Caps, Con. Ball, Swgd., $2.00.....2%
B. B. Caps, Round Ball, $1.75.....2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Cent. Fire, Military and Sporting 15&5&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Primed Shells and Bullets.....15&5&2%
Rim Fire Cartridges .....15&5&2%
Rim Fire Military.....15&2%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed..... { Brass.....55@55&10%
Plate..... { Others....60@60&10%
Shallow Socket...
Deep Socket.....40&10%
Giant Truck Casters..... 35%
Gwinner's Common Sense..... 45%
Gwinner's Hercules..... 45%
Martin's Patent (Phœnix).45&10@50&10%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Socket Truck Casters.....50@50&10%
Stationary Truck Casters.....50&10%
Tucker's Patent, low list..... 45%
Yale Casters, low list..... 45%
Yale, Gem..... 70%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised May, 1893.....60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.60	3.40	3.25

Less than cask lots, add ½¢@½¢ ₩ ℔
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12, 1892. 60@60&10%
Barnes' Reinforced Sash ..... 60&10¢
Barnes' Victor Sash..... 65¢
Covert Halter..... 60&2%
Covert Heel Chain..... 50&2%
Covert Traces..... 35&2%
Galvanized Pump Chain.
5 ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.75
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔.....₩ 100 ℔ $7.00
Jack Chain, Iron and Brass, list July 10, 1893.....60&10%
Oneida Halter Chain.....60@60&5%

Chalk—

See also Crayons.
Blue, case lots...₩ gr 75¢; mall ots 80¢
Red, case lots...₩ gr 67¢; small lots, 72¢
White, case lots. ₩ gr 50¢; small lots, 52¢

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Chalk Lines—See *Lines.*

Checks, Door—
Unity 50%

Chisels—
Socket Framing and Firmer
Mix, New Haven, Ohio Tool Co., P. S. & W, Witherby ..... 75&10@75&10&10%
Buck Bros. 30%
Douglass ..... 75@75&5%
Merrill ..... 60&10@60&10&5%
L. & I. J. White ..... 30@30&5%

Tanged and Miscellaneous.
Buck Bros. 30%
Butchers' ..... $4.75@$5.00 to £
Cold Chisels, fair quality, ℔ ..... 14@16¢
Spear & Jacksons' ..... $5 to £
Tanged Firmers ..... 50@50&10%

Chucks—
Beach Pat. ..... each, $8.00 ..... 20%
Danbury ..... each, $6.00, 30@30&5%
Graham Patent 33⅓%
Morse's Adjustable, each, $7.00, 20@20&5%
Syracuse, Ialz Pat 25%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Drill Chucks 15%
Independent Lathe Chucks 40%
Universal Lathe Chucks 40%
Union Mfg. Co.
Combination 40%
Independent 40%
Universal 40%
Victor $8.50, 25%

Churns—
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.

Clamps—
Adjustable, Cincinnati ..... 15&10%
Adjustable, Hammers ..... 15@15&5%
Adjustable, Stearn's ..... 30@30&10%
Barnes' Machinists' Clamps 33⅓%
Cabinet, Sargent's ..... 70&10%
Carpenter's, Cincinnati ..... 25&10%
Carriage Makers', P., S. & W Co.. 40&10%
Carriage Makers', Sargent's... 75@75&5%
Eberhard Mfg. Co. ..... 40&5@40&10%
R. I. Tool Co.'s Wrought Iron 25%
Saw Clamps, see Vises, Saw Filers'.
Stearn's Adjustable Cabinet and Corner ..... 30@30&10%
Warner's ..... 40&10@40&10&5%

Cleavers, Butchers'—
Beatty's ..... 40@40&5%
Bradley's ..... 25@30%
Foster Bros. 30%
New Haven Edge Tool Co.'s 40%
P., S. & W ..... 33⅓&5@33⅓&10%
Schulte, Lohoff & Co. ..... 40@40&5%
L. & I. J. White ..... 20&5%

Clips—
Baker Axle Clips 25%
Norway, Axle, ¼ & 5-16 ..... 55&5&5%
Norway Spring Bar Clips, 5-16...60&5&5%
2d grade Norway Axle, ¼ & 5-16... 65&5%
Steel Felloe Clips ..... ℔, 5¢
Superior Axle Clips ..... 66⅔&5@70%
Wrought Iron Felloe Clips ..... ℔, 5½¢

Cloth and Netting, Wire
—See *Wire, &c.*

Cockeyes 50%

Cocks, Brass—
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.).... 60&2@60&10

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—
Brass, Pope & Steven's list 40%
Chapman Mfg. Company, new list.... 40%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list 40%
Medford Fancy Goods Co..... 40&10@50%

Combs, Curry—
American Curry Comb Co. ..... 33⅓@40%
Fitch's ..... 50&10@50&10&10%
Kohler's Humane ..... ℔ doz., $1.75
Kohler's Magic Oscillating... ℔ doz., $2.00
Rubber, per doz., $10.00 ..... 25%

Compasses, Dividers &c.
Compasses, Calipers, Dividers. 70&10@75%
Bemis & Call Co.'s
Dividers 65%
Calipers, Call's Patent Inside 55%
Calipers, Double 65%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Compasses ..... 50&5%
Excelsior 50%
Starrett's
Combination Dividers 25%
Lock Calipers and Dividers 25%
Spring Calipers and Dividers....25&10%
Stevens & Co.'s ..... 25&10%

Coolers, Water—
S. S. & Co.: 2-gal., $2.00; 3-gal., $2.50; 4-gal., $2.75; 6-gal., $3.40 each.... 33⅓%

Coopers' Tools—
See *Tools, Coopers'.*

Cord—Sash—
Braided, Crown Drab and Fancy, ℔, 55¢ 80%
Braided, Crown White, ℔ ℔, 50¢... 50%
Cable Laid Italian Sash..... ℔ ℔, 19@20¢
Common ..... ℔ ℔, 8½@9¢
Common Russia Sash..... ℔ ℔, 12½@13¢
Egyptian, India Hemp, Braided..... 26¢
India Cable Laid Sash..... ℔ ℔, 11½@12¢
Massachusetts, White ..... 25¢
Osswaan Mills—
Braided, Giant, Drab and Fancy, ℔ ℔ 35¢ 10%
Braided, Giant, White, ℔ ℔, 30¢ 20%
Patent, good quality ..... ℔ ℔, 10@11¢
Patent Russia Sash..... ℔ ℔, 13½@14¢
Samson—
Braided, Drab Cotton ..... ℔ ℔, 42¢
Braided, Italian Hemp ..... ℔ ℔, 40¢
Braided, Linen ..... ℔ ℔, 56¢
Braided, White Cotton ..... ℔ ℔, 37¢
Semper Idem. Braided, White..... 26¢
Silver Lake—
A quality, Drab, 55¢ 25%
A quality, White, 50¢ 25%
B quality, Drab, 35¢ 10%
B quality, White, 30¢ 10%
Sylvan Spring, Extra Braided, Drab..39¢
Sylvan Spring, Extra Braided, White.34¢
Tate's Solid Braided—
Economy, Drab ..... ℔ ℔, 27¢
Economy, White ..... ℔ ℔, 22¢
Hercules, Drab ..... ℔ ℔, 30¢
Hercules, White ..... ℔ ℔, 25¢
White Cotton Braided, fair... ℔ ℔, 23@24¢

Wire Picture—
Braided or Twisted ..... 80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers, Nut—
Acme.
Japanned, ℔ gro., $30 ..... 50%
Nickel Plated, ℔ gro. $30 ..... 10%
Blake's Pattern, ℔ doz., $2.00 ..... 10%
Table (H. & B. Mfg. Co) 40%
Turner & Seymour Mfg. Co. 50%

Cradles—
Grain ..... 50&2@50&5&2%

Crayons—
White Crayons, ℔ gross ..... 7@8¢
D. M. Stewart Mfg. Co.:
Metal Workers', ℔ gross, $2.50 ..... 25%
Railroad, ℔ gross, 2.00 ..... 25%
Rolling Mill, ℔ gross, 2.50 ..... 25%
Soapstone Pencils, ℔ gross, 1.50 ..... 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—
See *Combs, Curry.*

Curtain Pins—
See *Pins, Curtain.*

Cutters—
Meat—

American 30%					
Nos.	1	2	3	4	5
Each	$5	$7	$10	$25	$50
Enterprise 25%					
Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15
Dixon's, ℔ doz. ..... 40@40&5%					
Nos.	1	2	3	4	
	$14.00	$17.00	$19.00	$30.00	

Draw Cut, each:

Nos.	5	6	8	
	$50	$75	$80	$225

Hale's, ℔ doz. ..... 20@25%

Nos.	11	12	13
	$27.00	$33.00	$45.00

Home No. 1, ℔ doz., $26.00 ..... 70%
Little Giant, ℔ doz. ..... 55&10%
Nos. 305 310 312 320 322
$35.00 $48.00 $44.00 $72.00 $68.00
Miles' Challenge, ℔ doz. ..... 40@40&10%

Nos.	1	2
	$32.00	$30.00

Triumph No. 505, ℔ doz., $21.00...25@30%
Woodruff's, ℔ doz. ..... 40@40&5%

Nos.	100
	$15.00

Beef Shavers (Enterprise) 20%
Chadborn's Smoked Beef Cutter, ℔ doz., $66.00

Slaw and Kraut—
Tucker & Dorsey Mfg. Co.:
Kraut Cutters 40%
Slaw Cutters, 1 Knife, ℔ gross... $21.00
Slaw Cutters, 2 Knife, ℔ gross... 30.00

Tobacco
Acme ..... ℔ doz., $20.00, 40%
All Iron ..... ℔ doz., $4.25
Champion ..... 20&10@30%
Nashua Lock Co.'s.. ℔ doz., $18.00, 50@55%
Sargent's ..... ℔ doz., $24.00, 55&10
Wilson's 55%

Washer—
Appleton's ..... ℔ doz., $16.00, 60&10%
Bonney's ..... 30&10%
Cincinnati ..... 25&10%
Johnson's ..... ℔ doz., $11.00, 33⅓%
Penny's.. ℔ doz., Pol. $14; Jap'd, $16, 55%
Smith's Pat.... ℔ doz., $12.00, 20&10&10%

Diggers, Post Hole, &c.—
Cronk's Post Bars, ℔ doz., $60.00, 50&5@50&10%
Eureka Diggers..... ℔ doz. $12.00@$13.00
Fletcher Post Hole Augers, ℔ doz., $36.00, 20@20&10%
Gem, Improved ℔ doz.,. $9.00@$10.00 net
Gibbs' Columbia ..... ℔ doz., $13.00
Gibbs' Imperial ..... ℔ doz., $7.50
Gibbs' National ..... ℔ doz., $12.00
Gibb's Post Hole Digger..... ℔ doz., $15.00
Kohler's Hercules ..... ℔ doz., $14.00
Kohler's Invincible ..... ℔ doz., $12.00
Kohler's Little Giant ..... ℔ doz., $18.00
Kohler's New Champion..... ℔ doz., $8.00
Samson, ℔ doz., $34.00 ..... 25@25&10%
Scheidler ..... ℔ doz., $18.00
Shimer's Hollow Handle.. ℔ doz., $24.00, 50%
Vaughan's Post Hole Auger, ℔ doz., $8.50@$9.50

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers.
Money, ℔ doz. ..... $18@$20
Waddell's Improved, ℔ doz. $15.00

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Blacksmiths' ..... each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Automatic Boring Tools..... $1.75@$1.85
Breast, Bartholomew's.... each $2.50 25&10@40%
Breast, Millers Falls..... each $3.00, 25%
Breast, P. S. & W..... 40&10%
Breast, Wilson's..... 30&5%
Chicopee Automatic Drill..... 20&10%
Goodell Automatic Drills..... 40&5%
Ratchet, Curtis & Curtis..... 30%
Ratchet, Ingersoll's..... 25%
Ratchet, Merrill's..... 20@20&5%
Ratchet, Moore's Triple Action....25@30%
Ratchet, Parker's..... 20@20&5%
Ratchet, Weston's..... 20@25%
Ratchet, Whitney's..... 20&10%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00..... 20&10%

Twist Drills—
Cleveland ..... 50&10&10%
Diamond, W. & B..... 50&10&10%
Graham's Pat. Groove Shank. 50&10&10%
Morse..... 50&10&10%
New Process..... 50&10&10%
Standard..... 50&10&10%
Syracuse (Metal list)... ..... 50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Allard's Spiral, new list..... 25%
Brace Screw Drivers..... 25&10%
Buck Bros..... 30%
Buck Bros.' Screw Driver Bits....27½&5%
Clark's Pat..... 30@33⅓%
Cincinnati..... 25&10%
Champion..... 25&10%
Disston's..... 50%
Douglass Mfg. Co..... 20@20&10%
Ellrich's Socket and Ratchet..25@25&10%
Fray's Hol. H'dle Sets...No. 3, $12.00, 45%
Gay & Parsons..... 35%
Goodell's Automatic..... 50%
Knapp & Cowles
No. 1 ..... 60&20@70%
No. 2..... 60&10&10@70&5%
No. 3..... 60&5@60&10%
Nos. 4 and 00, Acme and Ideal...50&5@50&10&5%
Kolb's Common Sense.. ℔ doz., $6.00, 25&10%
Mayhew's Black Handle..... 50%
Mayhew's Monarch..... 45&10%
P. S. & W..... 70%
Sargent & Co.'s
No. 1, Forged Blade..... 60&10&10%
Nos. 20, 40 and 60..... 66⅔&10&10%
Screw Driver Bits, Parr's.. ℔ gross, $6.25
Screw Driver Bits..... ℔ doz., 50¢75¢
Stanley R. & L. Co.'s
No. 64, Varnished Handles..... 65&10%
No. 86..... 70&10%
Stearns'..... 25&10&5%
Syracuse Screw-Driver Bits.....30&30&5%
C. T. Williamson Wire Novelty Co.....50%

Egg Beaters—See *Beaters, Egg.*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F.FF.
10-℔ cans, 10 in case	6 ¢	6½¢	5 ¢
10-℔ cans, less than 10.....	10 ¢	10 ¢	7½¢
Kegs, ℔ ℔.....	4½¢	5 ¢	2½¢
½ kegs, ℔ ℔...	4½¢	5½¢	2½¢
¼ kegs, ℔ ℔...	5 ¢	5½¢	3 ¢

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—
Brass Thread..... 60@60&10%
Door Lock....Same dis. as Door Locks.
Wood..... 25%

Expanded Metal—
List No. 5.
Door Mats, Galvanized..... 25%
Fencing, Painted Sheets..... 20%
Lathing..... 10%
Netting, Painted Sheets..... 20%
Tree Guards, Paneled..... 15%
Window Guards, Paneled..... 15%

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Austin & Eddy No. 2008..... ℔ gr., $9.00
Mackrell's, ℔ doz., $1.00..... 20@20&10%
Security Gravity..... ℔ gr., $9.00
Van Sand's Old Pat., $15 ℔ gr.... 55&10%
Van Sand's Screw Pat, $15 ℔ gr.. 60&10%
Zimmerman's..... 60&10%

Faucets—
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Burnside's Red Cedar..... 50%
Burnside's Red Cedar, bbl. lots....50&10%
Boss Metallic Key..... 50%
Cork Lined..... 70&5@70&10%
Diamond Lock..... 40%
Fenn's..... 40%
Fenn's Cork Stops..... 33⅓%
Frary's Pat. Petroleum..... 60%
IXL, 1st quality, Cork Lined..... 50%
Metallic Key, Leather Lined....60&10@60&10&10%
No Brand, Red Cedar (in bbls.)....50&10%
No Brand Metal Key..... 60%
O. K. Western Pattern Cork Lined....50%
Perfection, Fla. Red Cedar (in boxes)..40%
Reliable Cork Lined..... 60%
Self Measuring
Enterprise, ℔ doz., $36.00..... 20%
Lane's ℔ doz., $36.00..... 25&10%
John Sommers'
Peerless Best Block Tin Key..... 40%
Star..... 60%
Star, Metal Plug, new list..... 40%
Lockport, Metal Plug, reduced list.... 60%
Western Pattern Metal Key..... 40%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—
Derby and Cincinnati..... 45&5%
Brewster..... 50&5%

Files—
Domestic—
American..... 66⅔&10@66⅔&10&5%
Arcade..... 60&10&5@60&10&10%
Eagle..... 60&10&10@70%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Nicholson Files, Rasps, &c. 60&10&5@60&10&10%
Nicholson (X.F.) Files..... 25%
Nicholson's Royal Files (Seconds)... 75% (extra prices on certain sizes.)
Other makers, best brands..60&10&5@70%
Fair brands..... 70&10@70&10&10%
Second quality..... 80@80&5%
Arcade Horse Rasps.... 60&10@60&10&5%
Chelsea Horse Rasps, Hand Cut...50&10%
Heller's Horse Rasps..... 50&10@60%
McCaffrey's Horse Rasps..... 50&10%
Trojan Horse Rasps..... 60&10&5%

Imported—
Butcher..... Butcher's list, 20%
Stubs..... Stubb's' list 75@80%

Fixtures, Grindstone—
Moore's..... 55%
P., S. & W. Co..... 50&10%
Reading Hardware Co..... 30&10%
Sargent's Patent..... 70&10%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Hay, Manure, &c. Asso. List, 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—
Saw—
Red, Polished and Varnished... ℔ doz., $1.50, 25%
White Vermont..... ℔ gro.. $9.00@$10.00

Screen, Window and Door—
Bonanza Window Screens..50&5@50&10%
Cortland..... 40@40&5%
Empire Fancy Screen Doors, ℔ doz ..$12
Phillips' Window Screen Frames.... 50@50&5%
Porter's Pat. Window and Door Frame, 33⅓&10%
Stearns' Frames and Corners.25@25&10%
Warner's Screen Corner Irons..33⅓&10%

Freezers, Ice Cream—
American..... 60%
Arctic..... 70@70&5%
Blizzard..... 70%
Boss and Pet..... 60&10&10&10%
Buffalo Champion..... 65@65&5%
Confectioners' Machine..... 50%
Crown..... 60%
Double Action Crown..... 60%
Gem..... 65%
Giant..... 60%
Good Luck..... 65@65&5%
Granite State..... 65@65&5%
Keystone, P., D. & Co., each, $1.50 .... 20%
Model..... 60@60&5%
Peerless..... 60&10%
Shepard's Lightning..... 65@65&5%
Standard..... 60@60&5%
Standard Double Action..... 60@60&5%
Star..... 60%
White Mountain..... 60@60&5%
Zero..... 70%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fruit Pickers—
See *Pickers, Fruit.*

Fry Pans—See *Pans, Fry.*

Funnels—
Gersdorff's Perfection, Standard and Globe; *Tin*, ½ gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro..... 30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz..... 25%

Furnaces, Soldering—
Burgess No. 3 Gem, Copper reservoir.$8.50
Burgess No. 3 Gem tin reservoir....$7.00
Clayton & Lambert No. 1 Fire-Pot, complete..... $6.00
Fuse—Dis. 10@2½ cash. ℔ ℔, 1000 ft.
Common Cotton Fuse, for dry gr'nd..$3.00
Common Hemp Fuse, for dry ground. 2.80
Double Taped Fuse, for very wet gr.. 5.60
Single Taped Fuse, for wet ground.. 4.75
Triple Taped Fuse, for very wet gr.. 6.40
Large Gutta Percha Fuse, for water.15.00
Small Gutta Percha Fuse, for water.10 00

Gates, Molasses—
Boss, ℔ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10..... 60&10&10%
Lincoln's Pattern..... 70@70&10%
Stebbin's Genuine..... 60&10&10%
Stebbin's Pattern..... 80&10@80&10&5%
Stebbin's Tinned Ends..... 40&10%
Weed's..... 20&10%

Gauges—
Barrett's Comb. Roller Gauge..... ℔ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale..... ℔ doz.. $5.00
Without Scale..... ℔ doz.. $4.00
Marking, Mortise, &c..... 60&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge..... 20&10%
Starrett's Surface, Center and Scratch, 25&10%
Wire, Brown & Sharpe's..... 10@20%
Wire, Morse's..... 25%
Wire, P., S. & W. Co..... 10&10%
Wire, Wheeler, Madden & Co..... 10%

Gimlets—
Nail and Spike..... 50&10&5%
Diamond Gimlets..... ℔ gr $5.00
Eureka Gimlets..... 60&10%
Double Cut, Douglass'..... 40&10%
Doub e Cut, Ives'..... 60@60&5%
Double Cut, Shepardson's..... 45@45&5%

Glue—
Dodd's Liquid Glue..... 25@25&5%
Improved Process..... 25@25&5%
Le Page's Liquid..... 25@25&5%
Upton's Liquid..... 35%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Axleine, tin boxes..... ℔ gross $12.00
Dixon's Everlasting...10-℔ pails, ea. 85¢
Dixon's Everlasting, in bxs.. ℔ doz 1 ℔ $1.20; 2 ℔ $2.00
English Coach, 5-℔ tin pails. ℔ doz, $3.50
English Coach, wooden boxes..... ℔ gross $8.50
Fraser's..... Keg ℔ ℔ 4¢, Pail ℔ ℔ 5¢
Fraser's, in boxes..... ℔ gr $9.50
Lower grades, special brands. ℔ gr $5.50@$7.00
Tiger, 5-℔ tin pails..... ℔ doz $2.85
Tiger, wooden boxes..... ℔ gross $7.00

Grindstones—
Family, regular list..... 60%
Family, Cleveland Stone Co..... 20%

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
Sewing, Brass Fer. ℔ gr..... $1.75
Pat. Sewing, Long..... ℔ doz $1.20
Pat. Sewing, Short. ℔ doz..... 45@50%
Pat. Peg, Leather Top. ℔ doz 45@50%
Pat. Peg, Plain Top. ℔ doz ... ..40@45%

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Halters—
Covert's Adj. Rope Halters.....40&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ½-in., Hemp.....50&2%
Covert's Rope, Jute.....60&10&10&2%
Covert's Saddlery Works Halters...33⅓%
Covert's Saddlery Works Handy Web Halters.....33⅓%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓%

Hammers—
Handled Hammers—
Atha Tool Co, Buffalo Hammer Co, Humason & Beckley, Verree.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
C. Hammond & Son.....40&10&—%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Maydole's, list Dec. 1, '85.....25&10&35%
Peck, Stow & Wilcox.....35@40%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Horseshoe Turning Hammers.....50%
Regular Y. & P., A. E. Nail.....50%
Other Hammers.....50&10%
Nelson Tool Works.....40&10%
Sargent's.....40@40&10%
Warner & Nobles, new list.....25&10

Heavy Hammers and Sledges—
3 ℔ and under...₩ ℔ 40¢
3 to 5 ℔.....₩ ℔ 36¢ } 75&10@75&10 &5%
Over 5 ℔.....₩ ℔ 30¢
Wilkinson's Smiths.....10½¢@11¢₩ ℔

Handcuffs and Leg Irons
—See *Police Goods.*

Handles—
Cross-Cut Saw Handles—
Atkins', new list.....40%
Champion.....15%
Ely's Perfection.....₩ doz., $3.00
Sensible.....40%

Iron, Wrought or Cast—
Barn Door, ₩ doz $1.40.....10&10%
Bronze Iron Drop Latches..₩ doz 70¢ net
Chest and Lifting.....70@70&10%
Door or Thumb.

Nos	0	1	2	3	4
Per doz.	$0.90	1.00	1.08	1.35	1.50

60&10&10%
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Roggin's Latches.....₩ doz 30¢@35¢

Wood—
Auger, assorted.....₩ gr 5.00
Auger, large.....₩ gr 7.00 } 50%
File, assorted.....₩ gr 2.75
Brad Awl.....₩ gr $2.00
Apple Firmer Chisel, ass'd..₩ gr 5.00
Apple Firmer Chisel, large...₩ gr 6.00
Hickory Firmer Chisel, ass'd..₩ gr 4.50
Hickory Firmer Chisel, large..₩ gr 5.00
Socket Firmer Chisel, ass'd..₩ gr 3.00
Socket Framing Chisel, ass'd..₩ gr 5.00
Hammer, Hatchet, Axe, &c.....40@40&5%
Hoe, Rake, Shovel, &c.....60@60&5%
Pat. Auger, Douglass.....₩ set $1.25
Pat. Auger, Ives'.....30&10%
Pat. Auger, Swan's.....₩ set $1.00
Saw and Plane.....40&10@50%
J. B. Smith & Co.'s Pat. File.....50%

Hangers—
Barn Door, New England.....70@70&5%
Barn Door, old patterns.....70@70&5%
Barry.....50%
Best Anti-Friction.....60&10@60&10&5%
Boss.....60&10@60&10&5%
Carrier Steel Anti-Friction.....50&10%
Champion.....60&10%
Chicago Anti-Friction.....30&10%
Climax Anti-Friction.....55%
Cincinnati Nos. 1, $2.25; 3, $2.50; 4, $2.50.....60@60&10%
Crescent.....60@60&10%
Cronk's Patent, Steel Covered.....50&10%
Duplex (Wood Track).....60&10&5%
Economy, $6.00.....60&10%
Hamilton Wrought Steel Track.....55%
Interstate.....50&10@60%
Kidder's.....50@50&10%
Lane's New Standard.....50@50&5%
Lane's Parlor.....40%
Lane's Standard.....50&5@50&10%
Lundy, Steel Parlor.....40%
Magic.....45&10%
Matchless.....50&10%
Moody.....45%
Moore's Baggage Car Door.....33⅓%
Moore's Elevator.....33⅓%
Moore's Railroad.....55%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15. 40&10@50%
Orleans Steel.....55%
Paragon Nos. 5, 5½, 7 and 8.....20&10%
Pendulum, Payson's.....40@40&10%
Perfection.....50&10@50&10&5%
Richards'.....30@30&10%
Samson Steel Anti-Friction.....55%
Star.....40&10@40&10&5%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Sterling.....50&10@60%
Terry's Ideal.....50&10@50&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Shield.....50&10@60%
Terry's Solid.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Warner's Pat.....20&10&10%
Wild West.....45&10%
Zenith for Wood Track.....55%

Harness Snaps—See *Snaps.*

Hatchets—
American Axe and Tool Co.
Blood's, Hunt's, Hurd's, Mann's, Peck's, Underhill's } 40 & 10 @ 40 & 10 &5%
C. Hammond & Son.....
Fayette R. Plumb.....
Collins.....10%
Buffalo Hammer Co.....
Kelly's
P. S. & W. Co } 50 @ 50 &10%
Sargent's & Co
Schulte, Lohoff & Co.....
Ten Eyck Edge Tool Co.....

Hay and Straw Knives
See *Knives.*

Hinges—
Blind Hinges—
Clark's
No. 50, Buffalo Noiseless, 40, 60 and 65.....75%
Buffalo Reversible, Nos. 3, 2, 1½, 1 and 0.....70&5%
No. 1, Cottage, for wood only...80&10%
No. 1, Diamond, for wood only...80&5%
Dixie L. & P., Nos. 3, 2½, 2, 1½, 1, 0, 00, 4 and 5.....75&5%
No. 25, Empire Reversible....75&10%
Lull & Porter, Nos. 3, 2½, 2, 1½, 1, 0, 00, 4 and 5.....75&10&2½%
Mortise Gravity, Nos. 2, 4, 4½, 6, 8, 9 and 10.....50%
Nos. 1, 3, 5, 1868, Old Pattern.....75&10&5%
Nos. 1 and 3, Tip Pattern. 75&10&5%
Huffer.....50@50&10%
Parker.....75&10%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Reading's Gravity.....75&10@75&10&5%
Sargent's, Nos. 1, 3, 5, 11, 12, 13.....75&10@75&10&5%

Gate Hinges—
Automatic.....₩ doz $12.50, 50%
Clark's, Nos. 1, 2, 3.....60&10@60&10&5%
N. E.....₩ doz $7.80, 60@60&10%
N. E. Reversible..₩ doz $5.60, 60@60&10%
N. Y. State.....₩ doz $4.20, 60@60&10%
Western.....₩ doz $4.20, 60@60&10%

Spring Hinges—
Acme.....30%
American, Gem and Star.....20%
Bardsley's Patent Checking.....15%
Geer's Spring and Blank Butts....40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's Japanned.....35%
Bommer's All other Kinds.....30%
Buckman's.....15@20%
Chicago.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
Oxford.....20%
Royal.....66⅔%
Reliable.....60%
Champion.....60%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ₩ gro., $30.....50&5%
Samson.....60@60&7½%
Wiles', No. 1, ₩ gro., $16; No. 2.....$13
Devore, No. 1.....₩ gro, $13.00
Rex.....₩ gro., $13.00
Freeport.....₩ gro., $12.00
New Idea Nos. 1 and 10....₩ gross $13.00
New Idea Dbl. Acting.....45%
Ideal No. 3.....₩ gross $10 00
Stearns' Noiseless Floor Hinge, ₩ set, $5.00.....20&10@30%

Extra 5@10% often given.

Wrought Iron Hinges—
List February 14, 1891.
Corrugated Strap and T.....50&10&5%
Strap and T.....50&10@50&10&10%
Plate Hinges (3, 10 & 12 in., ₩ ℔.....5¢
"Providence") over 12 in. ₩ ℔.....4¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10¢
Screw Hook and Eye.....(½ in., ₩ ℔ 7½¢ (⅝ in., ₩ ℔ 5½¢ (¾ in., ₩ ℔ 4½¢
Screw Hook and Strap.....(6 to 12 in., ₩ ℔.. 4¢ (14 to 20 in., ₩ ℔..3½¢ (22 to 36 in., ₩ ℔.. 3¢

Hoes—
Eye—
Am. Axe and Tool Co., S. & O. Pat. } 60&5 @60&10%
Sandusky Tool Co., S. & O. Pat }
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
D. & H. Scovil.....20%
Grub.....60&10%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%

Handled—
Garden, Mortar, &c.....70@70&5&2%
Magic.....₩ doz $4.00
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%

Hog Rings and Ringers—
See *Rings and Ringers—*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow-Ware—
See *Ware, Hollow.*

Holders—
Bag—
Sprengle's Pat.....₩ doz $18....60%

Bit—
Angular.....₩ doz $24.00, 40&5%
Diagonal.....₩ doz $24.00, 40%
Extension.
Barber's, ₩ doz $15.00.....40@40&10%
Ives, ₩ doz $20.00.....60&5@60&10%

File and Tool—
Balx Pat.....₩ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—
Motley's Adj. Sash, Medium Size..... ₩ doz $1.20, 40%

Hooks—
Cast Iron—
Bird Cage, Reading } 60&10&10%
Bird Cage, Sargent's list }
Clothes Line, Sargent's List. }
Ceiling, Sargent's list.....55&10&10%
Clothes Line, Moore's.....70%
Clothes Line, Reading list 60&10@60&10&10%
Coat and Hat, Moore's.....70%
Coat and Hat, Reading. 50&10&50&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Harness, Reading list..55&10@55&10&10%

Wire—
Atlas, Coat and Hat.....65%
Belt.....80&15@80&20%
Handy Hat and Coat.....50&10@60%
Indestructible Coat and Hat...45@45&5%
Steady Ceiling Hooks.....50&10@60%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Wire Coat and Hat, Standard.60@60&10%
Bright Wire Goods—See Wire.

Wrought Iron—
Cotton.....₩ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg. Co....50%
Wrought Staples Hooks, &c. See Wrought Goods

Miscellaneous—
Bush.....55@60%
Fish Hooks, American.....50%
Grass, No. 2, $2.00; No. 3, $2.10; No. 4, $2.25
Hooks and Eyes—Brass.....60&10&10%
Hooks and Eyes—Malleable Iron. 70@70&10%
Nolin's Grass.....₩ doz $2.25
Whiffletree—Patent.....55%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—
See *Shoes, Horse.*

Hose, Rubber—
Competition, Fair quality.....75@75&10%
Competition, Low Grade.....80@80&10
Cotton Garden, ¾ in., coupled:
Fair Quality, ₩ ℔.....7¢
Good Quality, ₩ ℔.....8½¢
Extra.....60&10@60&10&10%
N. Y. B. & P. Co., Dundee.....60@60&5%
N. Y. B. & P. Co., Extra.....40&5@50%
N. Y. B. & P. Co., Para.....25&5%
Standard.....70&10@70&10&5%

Huskers—
Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper.....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber Ware—
See *Ware, Indurated Fiber.*

Irons.
Sad—
From 4 to 10, at factory....₩ 100 ℔, $2.30@$2.40
B. B. Sad Irons, ₩ ℔.....3@3½¢
Chinese Laundry (N.E.Butt Co.).8½¢, 15%
Crown Improved.....60&10%
Ideal Irons, new list...50&10@50&10&10%
Mahony's Troy Pol. Irons.....25%
Mrs. Potts' Sad Irons, per set:

No.	50	55	60	65
Small lots	.90	.85	1.05	.95

National Self-Heating.....30%
New England.....5¢. 20@20&5%
Salamander Irons.....25%
Self-Heating.....₩ doz $8.00
Self-Heating Tailors'.....₩ doz $18.00
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%

Soldering—
Soldering Coppers.....₩ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%
Tinker's Dread..₩ doz $1.75; ₩ gro. $18

Pinking—
Pinking Irons, ₩ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—
Daisy.....33⅓%
Lockport.....40%
Victor.....33⅓%

Kettles—
Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Stamped Brass Kettles.....₩ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—
Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.
Ames' Bread Knives, ₩ doz $1.50, 15@20%
Ames' Butcher Knives.....25%
Ames' Shoe Knives.....25@30%
Foster Bros.' Butcher, &c.....40%
Jordan's AA Al Butchers', list.....net
Moran's Shoe and Bread.....20@20&10%
Nichols' Butcher Knives.....40&10%
Wilson's Butcher Knives, List Dec 8, 1890.....25%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—
Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—
Mix, New Haven, P. S. & W., Witherby } ...75@75&10&5%
Adjustable Handle.....25@33⅓%
Bradley's.....35%
Douglass.....75@75&5%
Merrill.....60&10@60&10&5%
Watrous.....15&10@25%
L & I. J. White.....20&5%
Wilkinson's Folding.....25@25&5%

Hay and Straw—
Carter's Needle...₩ doz. $11.00@$11.50
Heath's.....₩ doz. $13.00@$13.50
Lightning, from jobbers....$6.50@$7.50
Nolin's Hay.....₩ doz. $7.00@$8.00
Wadsworth's.....40&7½@40&10%

Mincing—
Am. (2d quality), ₩ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Buffalo Adjustable....₩ doz. $3.00, 33⅓%
Knapp & Cowles.....50&10@60%
Lothrop's.....20&10%
Smith's, ₩ doz., Single, $2; Double $3 45@50%

Knobs—
Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nicke..l...$2.00@$2.25
Drawer, Porcelain....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885..40%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₩ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladders.
Davies Extension and Single..... 20&5%

Ladies—
Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, P., S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—
Tubular—
Regular, with Guard.....₩ doz $3.50
O. K., with Guard.....₩ doz $3.75
Side Lift, with Guard.....₩ doz $4.00
Square Lift, with Guard.....₩ doz $4.25
Anti-Friction, with Guard....₩ doz $4.50
Brass Plated, Sq. Lift, Guard.₩ doz $5.50
Cop. Plated, Sq. Lift, Guard..₩ doz $5.50

Bull's Eye Police—
2¾-inch regular.....₩ doz $3.6 0
3-inch regular.....₩ doz $3.90
2¾-inch flash light.....₩ doz $4.00
3-inch flash light.....₩ doz $4.50

Lawn Mowers—
See *Mowers, Lawn.*

Leaders, Cattle—
Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—
See *Squeezers, Lemon.*

Lifters, Transom—
Beardsley & Mouat, Sure Grip.....50%
Wollensak's.
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Class 3 and 4, Brass.....50%
Skylight Lifters.....25%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....60@60&10%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—
Cotton and Linen Fish.....50%
Chalk.....60%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....25%
Mason's Linen, No. 3½, $1.50; No 4, $2.00; No 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes..Nos. 18 19 20 100 ft..... $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..₩ doz $7.50..20%
Ossawan Mills:
Twisted Chalk.....60%
Braided Chalk.....50%
Solid Braided Ventilator and Masous' Lines.....25%
Cotton Clothes Lines.....₩ ₩ 16¢

Links, Open—
Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—
Cabinet—
Eagle, Gaylord Parker and Corbin... } List, March '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Champion Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&10%
Champion Cab. and Combin.....33⅓%
Yale.....net prices
Romer's.....25%

Door, Locks, Latches, &c
R. & E. Mfg. Co., list Mar. 30, 1889 } 60&10@70% Much lower net prices often made
Mallory, Wheeler & Co., list July, '88.....
Sargent & Co., List Aug. 1, '88.....

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Britain, Graham & Mathes, list Jan. 1890.....60&10&10%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Warner's Burglar Proof, ₱ doz. $8.00, 50%

Elevator—
Moore's.....33⅓%

Padlocks—
List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list.....50&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505.....15%
A. E. Deitz.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₱ doz $9, 50@50&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Scandinavian.....90&50%
E. T. Fraim's Keystone Scandinavian, 1010 line.....90&40%
120 line.....90&25%
109 line.....65%
510 line.....70&10%
225, 610 and 209 lines.....70%
All other numbers.....50&5%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker, Barry & Co.
No. 1010 line.....90&50%
No. 41 line.....60%
No. 61 line.....60%
No. 21 line.....80%

Sash, &c.—
Clark's No. 1, $10; No. 2, $8 ₱ gr.....33⅓%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₱ gr $4.00
Common Sense, Nickel Plated.....₱ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Ives' Patent.....60&10&5@60&10&10%
Fish (Jiesche's pat.), No. 100, ₱ gr., $8; No. 105, ₱ gr., $10.....50%
Davis Bronze, Barnes Mfg. Co.....60%
Champion Safety list January, 1893.70&5%
Security.....70%
Giant, list Jan., 1892.....70&5%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—
See *Tools, Lumber.*

Lustro—
Four-ounce bottles.....₱ doz, $1.75; ₱ gross.....$17.00

Machines.

Boring—
	Without Augers.	Upright.	Angular.
Douglas	$5.50	$6.75	50%
Snell's, Rice's Pat...	5.50	6.75	40&10&10%
Jennings'	5.50	6.75	50@50&5%
Other Machines..	2.25	2.50	
Phillip's Patent with Augur	7.00	7.50	
Millers Falls		7.50	25%

Boss, Carpenters' 3.60
Boss, Ship Bldrs'. 3.85

Fluting—
Knox, 4¼-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3½-inch Rolls, $2.15.....35%
Eagle, 5½-inch Rolls, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal, ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25.....30%
Shepard Hand Fluter, No. 85, per doz $15.50.....40%
Shepard Hand Fluter No. 110, ₱ doz $11.00.....40%
Shepard Hand Fluter No. 95, ₱ doz $3.00.....40%
Combined Fluter and Sad Iron, ₱ doz $15.00.....30%

Hoisting—
Moore's Hand Hoist, with Lock Brake.20%
Moore's Anti-Friction Differential Pulley Block.....20%
Moore's Rope Differential Pulley Block.....60%
Energy Mfg. Co.'s.....25%
See also *Blocks.*

Washing—
Anthony Wayne, ₱ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American.....₱ doz $36.00
Western Star ₱ doz, No. 2, $36; No. 3 $39
Weisell.....₱ doz $54.00
Fair and Square.....₱ doz $42.00

Mallets—
Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks—Regular list.
60&10@60&10&5%

Measures
Standard Fibreware, No. 1, peck ₱ dozen, $3.50; ½-peck, $3.00

Meat Cutters—
See *Cutters, Meat.*

Menders, Harness—
Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—
Coffee—
Box and Side, List Jan. 1, 1888..60@60&5%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%
Waddell's New Box Mills, Ideal Brand, New List.....60%

Mincing Knives—
See *Knives, Mincing.*

Molasses Gates—
See *Gates, Molasses.*

Money Drawers—
See *Drawers, Money.*

Mowers, Lawn—
Best Machines: 10-in., $4; 12-in., $4.50; 14-in., $5; 16-in., $5.50; 18-in., $6.
Low-Grade Machines: 10-in. $3; 12-in., $3.25 14-in., $3.50 each

Muzzles—
Safety.....₱ doz, $3.00, 25%

Nails.—
Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92.....85&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—
	Nos. 6	7	8	9	10	
Putnam	23¢	21¢	20¢	19¢	18¢.	.15%
American	9½	9½	9½	9½	9½	net
Ausable	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	.30&5%
Essex	28¢	2¢	25¢	24¢	23¢	40&10@50%
Lyra	9¼	9¼	9¼	9¼	9¼	net
Snowden	9½	9½	9½	9½	9½	net
Standard	23¢	21¢	20¢	19¢	18¢	.35%
Vulcan	23¢	21¢	20¢	19¢	18¢.	.25%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	40%
A. C	25¢	23¢	22¢	21¢	21¢	40&10%
Maud S.	25¢	23¢	22¢	21¢	21¢	50&10&5%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&2%
Champion	25¢	23¢	22¢	21¢	20¢	10&10&10%
Capewell.	19¢	18¢	17¢	16¢	16¢.	.10&5%
Anchor	23¢	21¢	20¢	19¢	18¢	.35%
Western	23¢	21¢	20¢	19¢	18¢.	.50%
Empire Bronzed						.13@14 ₱ ℔

Picture—
Brass Head, Sargent's list.....60@60&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list.40&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—
See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.
	Square.	Hex.
Hot Pressed	5.80¢	6.50¢ off list
Cold Punched	5.00¢	5.10¢ off list

In packages of 100 ℔, add 1-10¢ ₱ ℔, net; in packages less than 100 ℔, add ½¢ ₱ ℔, net.

Oakum—
Best or Government.....₱ ℔ 6¾@7¼¢
U. S. Navy.....₱ ℔ 5¾@6¢
Navy.....₱ ℔ 5¢@5¼¢

Oil Tanks—See *Tanks, Oil.*

Oilers—
Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Steel, Draper & Williams.....50%
Wilmot & Hobbs Mfg. Co., Steel Anti-Rust.....60%

Openers, Can—
Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $2.75@$3.00
Duplex.....₱ doz 25¢, 15@20%
Lyman's.....₱ doz $3.75, 20%
No. 4, French.....₱ doz $2.25, 55@60%
No. 5, Iron Handle.....₱ gr $6.00, 45@50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2.75@3.00
Star.....₱ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 66⅔@70%
Excelsior, No. 1 $2.50; No. 2, $1.50.....40%
World's Best ₱ gross. No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00.....55&5%
Domestic, ₱ doz $2.00.....45%
Champion, ₱ doz $2.00.....50%
Moore's.....70%

Packing, Steam—
Rubber—
Standard, fair quality.....70@70&10%
Inferior quality.....75@80%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₱ ℔ 80¢.....25@25&5%

Miscellaneous—
American Packing.....10¢@11¢ ₱ ℔
Russia Packing.....14¢ ₱ ℔
Italian Packing.....13¢@14¢ ₱ ℔
Cotton Packing.....15¢@17¢ ₱ ℔
Jute.....7¢@8¢ ₱ ℔

Palls—
Creamery—
S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 ₱ doz.....5%

Galvanized—
	Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25	
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75	
Sidney Shepard & Co.	2.50	2.75	3.00	
Central Stamping Co.	2.50	2.75	3.00	
Iron Clad	2.50	2.75	3.00	
Fire Buckets	2.75	3.25	3.50	

Buckets—See Well Buckets.

Indurated Fiber Ware
Star Pails, 12 qt.....₱ doz $4.20 } 25%
Milk, 14 qt.....₱ doz $5.40 }
Stable, 14 qu.....₱ doz $6.00 }
Fire Pails, deep.....₱ doz $4.80 }
Fire Pails, round bottom.₱ doz $5.40 }

Standard Fiber Ware—
	Plain.	Decr'd
Water Pails, 12 qt., ₱ doz.	$3.15	$3.75
Dairy Pails, 14 qt., ₱ doz.	3.75	4.25
Fire Pails, No. 1, 12 qt., ₱ doz	3.75	
Fire Pails, No. 2, 14 qt., ₱ doz	4.25	
Sugar Pails	5.00	5.50
Horse Pails	4.00	
Buggy Pails	3.00	
Slop Jars (bal. trap)	7.50	8.50
Chamber Pails, 14 qt.	6.00	7.00

Pans—
Dripping—
Small sizes.....₱ ℔ 5½¢
Large sizes.....₱ ℔ 5¢
Silver & Co. (Covered).....40%

Fry—
Standard List:
No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....66⅔%

Dust—
Steel Edge, No. 1.....₱ doz $1.75

Roasting and Baking—
Columbian, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each.....60&10%

Paper and Cloth—
Sand and Emery—
List April 19, 1886.... 50&10@50&10&10%
Sibley's Emery and Crocus Cloth.....30%

Parers—
Apple—
Advance.....₱ doz $4.75
Baldwin.....₱ doz 5.25
Bonanza.....each 5.00
Daisy.....₱ doz 4.00
Dandy.....each 7.50
Eclipse.....₱ doz 4.00
Eureka, 1888.....each 16.00
Family Bay State.....₱ doz 12.00
Favorite.....₱ doz 5.00
Gold Medal.....₱ doz 4.00
Ideal.....₱ doz 4.00
Improved Bay State....₱ doz 27.00@30.00
Little Star.....₱ doz 4.50
Monarch.....₱ doz 13.50
New Lightning.....₱ doz 5.50
Oriole.....₱ doz 4.00
Penn.....₱ doz 3.00
Perfection.....₱ doz 4.00
Pomona.....₱ doz 4.00
Rocking Table.....₱ doz 6.00
Turn Table.....₱ doz 4.50
Victor.....₱ doz 13.50
Waverly.....₱ doz 4.00
White Mountain.....₱ doz 4.00
Reading 72.....₱ doz 4.25
Reading 78.....₱ doz 7.00

Potato—
White Mountain.....₱ doz $4.50
Antrim Combination.....₱ doz $5.50
Hoosier.....₱ doz $13.50
Saratoga.....₱ doz $5.50

Pencils, Soapstone—
See *Crayons.*

Pickers, Fruit—
Prize Fruit Pickers.....50%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10&5@60&10&10&5%

Picture Nails—
See *Nails, Picture.*

Pinking Irons—
See *Irons, Pinking.*

Pins—
Bow—
Humason, Beckley & Co.'s.....60&10%
Sargent & Co.'s, $17 and $18.....60&10%
Peck, Stow & W. Co....50&10@50&10&5%

Escutcheon—
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—
List April 13, 1893.
1¼ and under, Plain.....57½&10%
1¼ and under, Galv.....50&10%
1⅜ and over, Plain.....67½&10%
1⅜ and over, Galv.....57½&10%
Boiler Tubes, list Oct. 24, 1892.....65&10%
Casing, list Nov. 16, 1892.....52½&10%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%
Cold Drawn Seamless Steel Tubing...50%

Planes and Plane Irons—
Wood Planes—
Molding.....40&10%
Bench, First quality.....45&10%
Bench, Second quality.....50&10%
Bailey's (Stanley R. & L. Co.) ..50&10%

Iron Planes
Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steers' Iron Planes.....50@50&5%
Meriden Mal. Iron Co.'s.....50@50&5%
Davis' Iron Planes.....50@50&5%
Birmingham Plane Co.....60@60&5%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....50@50&5%
Sargent's.....60@60&10%
Standard Tool Co.....50@50&5%

Plane Irons—
Butcher's.....$5.00@$5.25 to $
Buck Bros.....30%

Auburn Thistle, Ohio, Sandusky.....30&10@30&10&10%
L. & I. J. White.....25%
Stanley R. & L. Co.....50&10%

Plates—
Felloe.....₱ ℔ 6¢@6½¢

Pliers and Nippers—
Button's Patent.....60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₱ doz.....40%
Humason & Beckley Mfg. Co. 50@50&10%
Lindsay's Giant.....33⅓%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P., S. & W. Cast Steel.....50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz. $12.00.....30&5%
Cronk's 8 in., $15.00; 10 in.....$20
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels—
Regular List.....75&10@75&10&10%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Cook's.....40&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis Inclinometers.....10&10%

Poachers, Egg—
Buffalo Steam Egg Poachers, ₱ doz. No. 1, $6.00; No. 2, $9.00.....33⅓%
Silver & Co., 6-Ring, ₱ doz, $4.00; 3-Ring.....$2.00

Pokes, Animal—
Bishop's I. X. L.....₱ doz $6.00
Bishop's Monarch.....₱ doz $4.50
Bishop's Pioneer.....₱ doz $4.00
Bishop's American.....₱ doz $3.00
Eagle, Double Stale.....₱ doz $5.75
Eagle, Single Stale.....₱ doz $3.75
Buckeye, Single Stale.....₱ doz $2.75
Bolding.....₱ doz $6.00
Metallic Horse Poke.....₱ doz $6.00

Police Goods—
R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs; 2 Hands, Polished, ₱ doz, $48.00; Nickeled, $57.00: 3 hands, Polished, ₱ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish—
Metal—
Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Stove—
Joseph Dixon's.....₱ gro, $6.00, 10%
Gem.....₱ gro, $4.50, 10%
Gold Medal.....₱ gro, $6.00, 25%
Lustro.....₱ gro, $4.75
Ruby.....₱ gro, $3.75
Rising Sun, 5 gro lots.....₱ gro, $5.50
Dixon's Plumbago.....₱ ℔ 8¢
Boynton's Noon Day.....₱ gro, $13.00
Parlor Pride Stove Enamel, ₱ gro,
Yates' Liquid, 2 3 5 10 gal
₱ gal...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ₱ ℔ 12½¢
Jet Black.....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish, ₱ gro $9.00
Bonnell's Paste Stove Polish, ₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₱ gro $6.00
Crown Paste.....₱ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ₱ ℔ 12¢
Black Flag.....₱ gro $7.20
Black Flag, 5 and 10 ℔ pails..₱ ℔ 12¢
Black Flag, liquid, in bottles, ₱ gro $8.00
Diamond Rock Nickel Cleaner.....₱ gro $10 20
Raven Liquid, 6 oz. bottles.....₱ gro $8.00
Raven Liquid, 8 oz. bottles..₱ gro $9.00
Raven Water Polish, large boxes.....₱ gro $7.20
Raven Paste in 5 lb. pails (cases of 6 pails), ₱ ℔ 10¢

Poppers, Corn—
Round or Square,
1 qt.....₱ doz $1.00; ₱ gr $8.00
1½ qt.....₱ doz $1.00; ₱ gr $9 00
2 qt.....₱ doz $1.50; ₱ gr $14.00

Post Hole and Tree Augers and Diggers—
See *Diggers, Post Hole, &c.*

Potato Parers—
See *Parers, Potato.*

Pots—
Glue—
Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Powder—
In Canisters—
Fine Sporting, 1 ℔ each.....
Duck, 1 ℔ each.....
Rifle, 1 ℔ each.....
Rifle, ½ ℔ each.....

In Kegs—
Rifle, 25-℔ kegs.....
Rifle, 12½-℔ kegs.....
Rifle, 6¼-℔ kegs.....
Duck, 25-℔ kegs.....
Duck, 12½-℔ kegs.....
Duck, 6¼ ℔ kegs.....

For revised prices see Trade Report.

Presses—
Fruit and Jelly—
Enterprise Mfg. Co.....25%
Henis.....₱ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....₱ doz $2.75

Pruning Hooks and Shears—See *Shears.*

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Pullers Nail—
Scranton.....₩ doz., $18.00, 33⅓%
Giant, No. 1.....₩ doz., $18.00, 10%
Giant, No. 2.....₩ doz., $15.00, 10%
Pelican.....₩ doz, $9.00, 25%
Eclipse.....₩ doz., $24.00, 40%
Economy.....₩ doz., $6.00

Pulleys—
Hot House, Awning, &c.....66⅔@70%
Japanned Screw.....60&10&10%
Brass Screw.....70%
Japanned Side.....60&10&10%
Moore's Side, Anti Friction.....50%
Moore's Ceiling or End, Anti-Friction.40%
Moore's Dumb Waiter, Anti-Friction.50%
Moore's Electric Light.....33⅓%
Japanned Clothes Line.....60&10%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10&50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5.70.....50%
Hay Fork, "F" Common and Patent Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating....60%
Hay Fork, Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00.....40%
Shade Rack.....45%
Tackle Blocks—See Blocks.
Shepard's Niagara, No. 25..₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense.....60%
Empire.....60%
Ideal, Nos. 2, 4, 10 & 15 } 60% less 1¢ ₩
Acme } doz net.
Star.....
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. ..₩ doz. 22¢ net.

Pumps—
Cistern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddler's or Drive, good..₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Springfield Socket..65%
Spring, good quality..₩ doz., $2.50@$2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Check.....55%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44.....55%
Tinners' Hollow Punches, P., S. & W. Co.....20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches.....20&2%
Niagara Solid Punches.....55%

Rail—
Sliding Door, Wr't Brass....₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron..₩ ft., 7¢
Sliding Door, Iron, Painted..₩ ft., 4¢, 40%
Barn Door, Light..In. ½ ⅝ ¾
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet.....$3.15 2.70 3.25 Net
Terry's Steel Rail.....₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot.....50&2%
Carrier, double braced, Steel Rail, ₩ foot.....3½@4¢
Lundy Parlor Door, Planed Edge, ₩ ft.7¢
Moore's Steel Rail.....25&10%
Moody Steel Rail ₩ ft., 5¢.....45%

Rakes—
Cast Steel, Association g'ds..70@70&5&2%
Cast Steel, outside g'ds.....70@70&5&2%
Malleable.....70@70&5%
Gibbs' Lawn Rake.....₩ doz., $4.90
Gibbs' Canton Lawn Rake...₩ doz., $3.75
Gibbs' Acme Lawn Rake....₩ doz., $4.75
Gibbs' Favorite Lawn Rake.₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1.....
₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake.....₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless.....65%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—
J. R. Torrey Razor Co.....Net prices
Wostenholm and Butcher, $10 to $2....10%
Jordan's AAA1, new list.....Net prices
Jordan's Old Faithful, new list.Net prices
Galvanic.....₩ doz., $15.00
Electric Cutlery Co.....Net prices
Campbell Cutlery Co.....50%

Razor Strops—
See *Strops, Razor.*

Registers —
Moore's Japanned.....75%
Moore's Electroplated.....75%
Moore's Bronze Finishes.....70%
Moore's Solid Bronze.....65%
Moore's Stove Pipe.....33⅓

Rings and Ringers—
Bull Rings—
Union Nut Co.....55%
Sargent's.....75&10%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list.....50@50&10%
Hog—
Top of the Hill Ringers.....₩ doz $2.00
Top of the Hill Rings.....₩ doz $1.25
Hill's Improved Ringers.....₩ doz $1.25
Hill's Old Style Ringers.....₩ doz $1.12½
Hill's Tongs.....₩ doz $3.00
Hill's Rings.....₩ doz bxs $1.00
Perfect Rings.....₩ doz bxs $1.50
Perfect Ringers.....₩ doz $2.15@$2.25
Blair's Hog Ringers.....₩ doz $2.00
Blair's Hog Rings.....₩ doz 90¢@$1.00
Champion Ringers.....₩ doz $2.00
Champion Rings, Double.....₩ doz $2.25
Brown's Ringers.....₩ doz $2.00
Brown's Rings.....₩ doz $1.15@$1.25
Electric Hog Rings.....₩ doz boxes $1.50
Electric Hog Ringers.....₩ doz $2.00
Major Rings.....₩ doz $1.25
Major Ringers.....₩ doz $2.00

Rivets and Burrs—
Norway Iron, list Nov. 17, '87....60&10%
Second quality.....70%
Copper.....60@60&10%
Coppere Iron, Betina Brand.....50&5%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—
Stair, Brass.....25@30%
Stair, Black Walnut.....₩ doz 40¢

Rollers—
Barn Door, Sargent's list. ....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.....70%
Moore's Barn Door Stay.....50%
Thompson Mfg. Co.'s Lawn Rollers ..30%

Rope—
The following prices are f.o.b., New York or factory, and are shaded ½¢@½¢ on large lots; terms, 1½ % for cash.

Manila, 7-16 in. diam. and larger	₩ ℔	8 @	8½¢
Manila	⅜ in. ₩ ℔	8½@	8¾¢
Manila....¼ and 5-16 in.	₩ ℔	9 @	9¼¢
Manila, Tarred Rope	₩ ℔	7½@	7¾¢
Manila, Hay Rope, Med'm	₩ ℔	8 @	8¼¢
Sisal, 7-16 in. and larger	₩ ℔	5¾@	6 ¢
Sisal	⅜ in. ₩ ℔	7¼@	7½¢
Sisal	¼ and 5-16 in. ₩ ℔	6¾@	7 ¢
Sisal, Hay Rope	₩ ℔	5¾@	6 ¢
Sisal, Tarred Rope	₩ ℔	5¼@	5½¢
Sisal, Medium Lath Yarn	₩ ℔	5½@	5¾¢
New Zealand....7-16 in. and larger	₩ ℔	5½@	5¾¢
New Zealand	⅜ inch, ₩ ℔	5¾@	6 ¢
New Zealand, ¼ & 5-16 in.	₩ ℔	6¼@	6½¢
New Zealand, Hay Rope	₩ ℔	5½@	5¾¢
New Zealand, Tar'd Rope	₩ ℔	5 @	5¼¢
Cotton Rope	₩ ℔	13½@16¢	
Jute Rope	₩ ℔	6½@7¢	

Wire—
List February, 1892. All kinds.....45%

Rules—
Boxwood.....80&10&10@80&10&10&10%
Ivory.....50&10%
Starrett's Steel Rules and Straight Edges.....25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—
See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—*See Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—
Note.—Extra 5@10% often given.
Disston's Circular.....45@45&5%
Disston's Cross Cut, list Jan. 1, '93.40&10%
Disston's Hand.....25%
Woodrough & McParlin.
Hand, Panel and Rip.....25&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....30&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Atkins' Circular.....50&10%
Atkins' Cross Cuts, new list.....40%
Atkins' Mulay, Mill and Drag.....50&10%
Atkins' One-Man Saw.....40%
Atkins' Wood Saws.....40%
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip.....25@25&5%
Peace Cross Cuts, list Jan. 1, '93...45&10%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts, list Jan. 1, '93.45&10%
Richardson's Hand, &c.....25@25&5%
C. E. Jennings & Co.'s.....25%
Simonds' Circular Saws.....45@45&5%
Simonds' Crescent Ground Cross Cut Saws.....30%
Simonds' Gang, Mill, Mulay and Drag Saws.....45@45&5

Hack Saws—
Griffin's, complete.....40&10@50
Griffin's Hack Saw Blades.....40&10@50
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—
Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab Makers'$15,25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—
Hatch, Counter, No. 171, good quality, ₩ doz $18.00@$19.00
Hatch, Tea, No. 161....₩ doz $6.50@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales.....50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10
Riehle Bros.' Platform.....40%

Scale Beams—
See *Beams, Scale.*

Scissors, Fluting.....45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%
Box, 1 Handle.....₩ doz $2.00
Box, 2 Handle.....₩ doz $3.00@$4.00
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common.....₩ doz $3.50
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—
See *Drivers, Screw*

Screws—
Bench and Hand—
Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....35%
Coach, Lag and Hand-Rail—
Lag, Blunt Point, list Jan. 1, 1890.....80&10@80&25%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....80&10@80&20%
Hand Rail, Sargent's.....70&10%
Hand Rail, H. & B. Mfg. Co.....70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws—
Jack Screws, Millers Falls list.50@50&10%
Jack Screws, P., S. & W.....35%
Jack Screws, Sargent.....70%
Jack Screws, Stearns'.....40@40&10%
Cork—
Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Williamson's Forged Worm, Applewood Handle, ₩ doz., $5.00; Rosewood, $5.50.....40%
Detroit Cork Screw Co.....33⅓%
Machine—
Flat Head Iron.....65%
Round Head Iron.....60%
Wood—
List January 1, 1891.

Flat Head Iron	70%	Extra 10& 10% often given.
Round Head Iron	65%	
Flat Head Brass	70%	
Round Head Brass	65%	
Flat Head Bronze	70%	
Round Head, Bronze	65%	

Rogers' Drive Screws.....82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—
Grain.....40&5@40&10%
Grass.....40&10&50%

Scythe Snaths—
See *Snaths, Scythe.*

Sets—
Awl and Tool—
Aiken's Sets, Awls and Tools, No. 20, ₩ doz$10.00.....60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....45%
Millers Falls Adj. Tool Hdls., No. 1, $12; No. 4. $12; No. 5. $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50...70&10&5%
Nail—
Square.....₩ gr. $4.00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr. $12, 20%
Rivet—
Regular list.....70%
Saw—
Stillman's Genuine....₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $6.50.....55@55&10%
Common Lever.....₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00.....40&20%
No. 11, $16.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00..40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
Leach's..No. 0, $8.00; No. 1, $15...15@20%
Nash's.....20&10@40%
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat.45%
Bemis & Call Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Co.'s Cross Cut.....30&5%
Aiken's Genuine.....$13.00, 60@60&10%
Aiken's Imitation.....₩ doz $3.00@$3.25
Hart's Pat. Lever.....20%
Disston's Star.....25%
Leopold.....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10@50%
Avery's Saw Set and Punch.....50%
Kohler's Royal.....₩ doz $7.00
Kohler's Giant Royal.....₩ doz $12.00
Crescent.....₩ doz $3.00
Lloyd's Acme.....₩ doz $15, 40&10%
Taintor Positive.....₩ doz $18, 50%

Sharpeners, Knife—
Larkins'.
Applewood Handles...₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%

Shaves, Spoke—
Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's ₩ doz. $9.00.....25%

Shears—
American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers..₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality.....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Hatch Cutlery Co., Solid Steel Forged.60%
Davenport Cutlery Co.....60@60&10%
Clauss brand, Japanned.....70%
Clauss brand, Nickeled, same list.....60%
Galvanic 3½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co.....Net
Campbell Cutlery Co., Jap'd.....75%
Nickel Plated.....65%

Tinners' Snips—
Wrt. Handles, Steel Blades...20@20&10%
Niagara Snips and Shears.....20&10%
Cast Handles, Laid with Steel.....40%

Pruning Shears and Hooks—
Disston's Combined Pruning Hook and Saw.....₩ doz. $18.00. 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 20&10%
E.S.Lee & Co.'s Pruning Tools.50&10@70%
Pruning Shears, Henry's Pat. ₩ doz. $3.50@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₩ doz $12.00
Dunlap's Saw and Chisel, ₩ doz $8.50,30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co.....60%
Levin Pruner No. 1, $15.00 ₩ doz. 40&3%
Levin Pruner No. 2, $21.00 ₩ doz...40&3%

Tinners', &c.—
Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—
Sliding Door—
M. W. Co., list July, 1888....50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%
Sliding Shutter—
R. & E., list Dec. 18, 1885.....60&10&2%
Sargent's list.....70%
Reading list.....60&10&10%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list).....20&10&2%
Prize.....40&2%
Star, Club, Rival and Climax Brands.....33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge..33⅓&10&2%
Seibold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality....60&2%
Brass Shot Shells, Club, Rival, Climax 65&2%

Shells, Loaded—
Standard List, July 19, 1890..... 40&10&10@40&10&10&5%
7% cash, 10 days.

Ship Tools—
L. & I. J. White.....20&5

Shoes, Horse, Mule, &c.
Horse—
Burden's, Perkins', Phœnix, Standard, Diamond State, Bryden's Boss and Crescent, at factory.....$4.00
Bryden's Frog Pressure, at factory.$5.00
Mule—
Add $1 ₩ keg to above prices.
Ox Wrought—
Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot—
Small lots.

Drop, up to B, 25-℔ bag	$1.40
Drop, up to B, 5-℔ bag	.35
Drop, B and larger, 25-℔ bag	1.65
Drop, B and larger, 5-℔ bag	.40
Buck and Chilled, 25-℔ bag	1.65
Buck and Chilled, 5-℔ bag	.40
Dust Shot, 25-℔ bag	2.00
Dust Shot 5-℔ bag	.45

In ton lots a discount of 5¢ ₩ bag, (25 ℔) is made, and 2½% for cash.

Shovels and Spades
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&5%
Griffith's Solid C. S. R. R. Goods. ..20%
St. Loul. Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....30%
Payne Pettebone & Son.....33⅓ &5%
Remington's (Lowman's Pat.)40&10@50%
Rowland's Black Iron..50&10@50& 10&5%
Rowland's Steel.....60&5@60&10%
Terra Haute Shovel & 25%

Shovels and Tongs—
Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves and Sifters—
Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co....50&25&20%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $21 00
Electric Light..₩ doz $1.50; ₩ gro $15 00
A. & W. Sifters.....₩ gr $15.00
Hunter's Genuine. ₩ doz $1 75, ₩ gr $16.50
Hunter's Imitation..... ₩ doz $1.75; ₩ gr $15.00

Sieves, Wooden Rim—

	Iron	Plated
Mesh 18, Nested, ₩ doz	$0.80	$1.00
Mesh 20, Nested, ₩ doz	.95	1.10
Mesh 24, Nested, ₩ doz	1.15	1.25

Sinks, Wrought Steel—
Columbus, Painted or Unpainted..... 30@30&10%
Columbus, Galvanized and Enameled. 50@50&10%
New Era, Painted.....40&10@50&5%
New Era Galvanized and Enameled.. 60&10&10@70&5%

Skeins, Thimble—
Western list.....7½&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....60%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—
School, by case.....40@40&10%
Large lots.....40&10&5@50%

Slaw Cutters—See *Cutters.*

Sleds Hand—
Tubular Steel.....₩ doz. $24&50%.00, 40 (Lots of 6 doz. 50%)

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Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.) 65%
Fitch's (Bristol) ..... 50&10%
Hotchkiss 10%
Andrews 50%
Sargent's Patent Guarded ..... 70&10&10%
German, new list ..... 40&10%
Covert ..... 50&10&5&2%
Covert, New Patent ..... 50&10&5&2%
Covert, New R. E. ..... 60&10&5&2%
Covered Spring ..... 60&10&10%
Covert's Saddlery Works' Triumph ..... 33⅓&5%
John Prots Snaps ..... 75@75&5%
Kelley & Woolworth's Steel Harness ..... 50&10@60%

Snaths—

Scythe ..... 50&2@50&5&2%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₩ doz., No. 5, $8; No. 5X, $9.
Spittoons, Daisy, 8-inch, No. 1, 1; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list ..... 70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list ..... 70&10%
Buffalo, S. S. & Co. ..... 33⅓&2%

Silver Plated—

4 months or 5% cash 30 days:
Meriden Brit. Co., Rogers ..... 40&15%
Rogers & Hamilton ..... 40&15%
C. Rogers & Bros. ..... 40&15%
Rogers & Bros. ..... 40&15%
Reed & Barton ..... 40@40&5%
Wm. Rogers Mfg. Co. ..... 40, 15&5%
Simpson, Hall, Miller & Co. ..... 40, 15&5%
Holmes & Edwards Silver Co. ..... 40, 15&5%
L. Boardman & Son ..... 50&12½%

Miscellaneous—

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver ..... 50&10&5%
No. 30 Silver Metal ..... 50&10&5%
No. 24 German Silver ..... 50&10&5%
No 50 Nickel Silver ..... 50&5%
No. 49 Nickel Silver ..... 50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal ..... 50&10&6%
18% Rogers' German Silver ..... 60&6%
22% Rogers' Nickel Silver ..... 50&6%
Rogers & Hamilton:
Steel Goods ..... 40&10%
Cimetar, Flatware ..... 40&15&5%
Cimetar, Steel Goods ..... 40&10%
Crown Hamliton, Flatware and Cutlery 30%
German Silver ..... 50@50&5%
Nickel Silver ..... 50&5@50&10&5% cash
Brittannia ..... 60@60&5%
Boardman's Nickel Silver, list July 1, 1891 ..... 60&7½&5%
Boardman's Brittannia Spoons, case lots ..... 60&5% cash

Springs—

Door—

Torrey's Rod, 39 in. ..... ₩ doz $1.20@1.2
Warner's No. 1, ₩ doz $1.50; No. 2, $3.40 ..... 55@55&10%
Gem (Coil), list April 19, 1886 ..... 20%
Star (Coil), list April 19, 1886 ..... 20&10%
Victor (Coil) ..... 60&10@60&10&5%
Champion (Coil) ..... 60&10@60&10&10%
Cowell's, No. 1, ₩ doz $18.00; No. 2, $15.00 ..... 50@50&10%
Rubber, complete, ₩ doz $4.50 ..... 55&10%
Hercules ..... 50@50&10%
Phœnix ..... 33⅓&5%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll ..... 60&10@60&10&10&10 or net prices
Cliff's Bolster Springs 25%

Squares—

Steel and Iron ..... } ..80&10&10@80&25%
Nickel-Plated ..... }
Try Square and T Bevels ..... 60&10&10%
Disston's Try Square and T Bevels 50%
Winterbottom's Try and Miter ..... 30&10%
Starrett's Micrometer Caliper Squares 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

Squeezers—

Fodder—

Blair's ..... ₩ doz $2.00
Blair's "Climax" ..... ₩ doz $1.25

Lemon—

Porcelain Lined, No. 1 ..... ₩ doz $6.00 ..... 25&30%
Wood, No. 2 ..... ₩ doz $3.00, 35%
Wood, Common ..... ₩ doz $1.70@1.75
Dunlap's Improved ..... ₩ doz $3.75, 20%
Sammis ..No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz ..... 25&10%
Jennings' Star ..... ₩ doz $2.50
The Boss ..... ₩ doz $2.50
Dean's..No. 1, ₩ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant ..... 50@50&5%
King ..... 40&5%
Hotchkiss Straight Flash ..... ₩ doz $12.00
Silver & Co. Glass ..... ₩ gro. $9.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Barbed Blind, ⅛ in. and larger, ₩ ℔ 7@7½¢
Barbed Blind, ¾ in. ..... ₩ ℔ 8@8½¢
Fence Staples, Galvanized. } Same price as B'rb Wire
Fence Staples, Plain ..... } See Trd. Rep
Grand Crossing Tack Co.'s list ..... 75&10%

Steelyards ..... 40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods 35%
Butterfield's Goods 35%
Lightning Screw Plate ..... 25@30%
Reece's New Screw Plates ..... 25@30%
Reversible Ratchet 30%
Gardner 25%
Green River ..... 35@30%

Stone Bench—

Morrill's, ₩ doz, No. 1, $10.00; No. 2, $11.00 ..... 40&20%
Hotchkiss' ..... ₩ doz, $5, 10@10&10%
Weston's, No. 1, $10, No. 2, $9, 25&10&5%
McGill's, ₩ doz $8 ..... 10%
Cincinnati ..... 25&10%
Terrell's Nos. 1 and 2, ₩ doz., $3; No. 3, $3.60 ..... 30%
Millers Falls 25%
Stearns' ..... 20&10%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892 ..... 33⅓%
Cleveland Stone Co., list Nov. 1892 ..33⅓%

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₩ ℔ ....8¢
Sand Stone ..... 5¢
Turkey Oil Stone, 4 to 8 in. ..... 80¢
Turkey Slips $2.00
} 40 @ 40& 10%
Lily White Washita ..... 60¢
Rosy Red Washita ..... 60¢
Washita Stone, Extra ..... 50¢
Washita Stone, No. 1 ..... 40¢
Washita Stone, No. 2 ..... 30¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Arkansas Stone, No. 1, 3 to 5¼ in. $2.80
Arkansas Stone, No. 1 5¼ to 8 in. $3.50
} 33⅓@33⅓&10%
Lake Superior ..... ₩ ℔ 13¢
Lake Superior Slips ..... ₩ ℔ 20¢

Stove Polish—

See *Polish, Stove.*

Stretchers Carpet—

Cast Steel, Polished ..... ₩ doz $2.2
Cast Iron, Steel Points ..... ₩ doz 75@80¢
Socket ..... ₩ doz $1.75
Bullard's ..... 25@25&10%

Strops, Razor—

Genuine Emerson ..... 60@60&5%
Imitation " ..₩ doz $2.00, 20&10&5%
Torrey's ..... Net prices
Badger's Belt and Com. ..... ₩ doz $2.00
Lamont Combination ..... ₩ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89. 50%
Electric Cutlery Co ..... Net prices
Campbell Cutlery Co. ..... Net prices

Stuffer, Sausage—

Miles' Challenge, ₩ doz $20 ..... 50@50&5%
Perry ..... ₩ doz, No. 1, $15.00; No. 0, $21.00 ..... 50&5@50&10%
Draw Cut No. 4, each $30.00 ..... 20%
Enterprise Mfg. Co., list Jan 17, '93..25%
Silver's ..... 40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5 ..... ₩ doz $17.00
Bissell No. 8 ..... ₩ doz $20.00
Bissell, Grand ..... ₩ doz $36.00
Standard ..... ₩ doz $24.00
Domestic ..... ₩ doz $21.00
Domestic, No. 2 ..... ₩ doz $22.00
Grand Rapids ..... ₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic ..... ₩ doz $15.00
Improved Parlor Queen,
Nickeled ..... ₩ doz $27.00
Japanned ..... ₩ doz $24.00
Excelsior ..... ₩ doz $22.00
Garland ..... ₩ doz $18.00
Parlor Queen ..... ₩ doz $24.00
Housewife's Delight ..... ₩ doz $15.00
Ladies' Friend ..... ₩ doz $15.00
Ladies' Friend No. 2 ..... ₩ doz $16.00
Advance ..... ₩ doz $18.00
Our Leader ..... ₩ doz $19.00
Triumph ..... ₩ doz $20.00
Supreme ..... ₩ doz $22.00
Easy..Jap'd, ₩ doz $22.00; Nickel, $24.00
Gilt Edge ..... ₩ doz $24.00
Acme ..... ₩ doz $26.00
Imperial ..... ₩ doz $26.00
Grand Republic
Jap'd, ₩ doz $30.00; Nickel, $33.00
Banner
Jap'd, ₩ doz, $22.00; Nickel, $24.00
The Star ..... ₩ doz $21.00
Reliable ..... ₩ doz $22.00
Rapid Jap'd, ₩ doz, $22.00; Nickel, $24.00
Our Own ..... ₩ doz $27.00
Model ..... ₩ doz $27.00
Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months ..... ₩ doz $1.00
10 dozen in 6 months ..... ₩ doz $2.00
Except on L.F., when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co. 80%

Swings—

Davies Lawn 25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.
Carpet Tacks—
American, Blued 66⅔%
American, Tin'd and Cop'd 70%
Steel, Bright and Blued 66⅔%
Steel, Tinned and Coppered 70%
Swedes Iron, Blued 72½%
Swedes Iron, Tinned 75%
American Iron Tacks, Domestic 66⅔%
Swedes Iron Tacks—
S. S., Blued 66⅔%
S. S., Tinned 70%
Lanc., Blued 55%
Lanc., Tinned 60%
Gimp and Lace Tacks—
S. S., Blued 62½%
S. S., Tinned 66⅔%
Lanc., Blued 55%
Lanc., Tinned 60%
Basket and Trimmers' Tacks—
Lanc 52½%
S. S 55%
Hungarian Nails 60%
Common and Patent Brads 55%
Leathered Tacks 10%
Brush Tacks, S. S. 60%
Looking Glass Tacks, S. S. 35%
Picture-Frame Points, S. S. 35%
Finishing Nails 60%
Trunk and Clout Nails—
Black 65%
Tinned or Coppered 67½%
Basket Nails 60%
Chair Nails 52½%
Cigar Box Nails 45%
Tin Capped Nails 50%
Extra discount 25&2%

Miscellaneous—

Double Point ..... 90&10@90&10&10%
Wire Carpet Nails ..... 50&10%
Claw Handle Carpet ..... ₩ gross $4.00
Bonnie Blue ..... ₩ box $1.50
Bill Nye Brad Box 4 00
Parisian Gilt Nails, cartoon 50
Home Tacks, No. 50 ₩ case (12 cartons), $36.00; No. 100, ₩ case (12 cartons), $72.00.
Home Nails, No. 200, ₩ case (12 cartons), $30.00; No. 400, ₩ case (12 cartons), $60 00.
} 50&2%
Upholsterers' Nails ..... 50&10%

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list ..... 50&10%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each ..... 50&10&5%

Tapes, Measuring—

American ..... 40@40&10%
Excelsior, Special list 20%
Spring 40%
Chesterman's, Regular list ..... 25@30%

Thermometers—

Tin Case ..... 80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list ..... 50&10&5%

Tinners' Shears, &c.—

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887 ..... 70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's 20%
Barton's ..... 20@20&5%
L. & I. J. White ..... 20&5%
Albertson Mfg. Co. 25%
Beatty's 30%
Sandusky Tool Co. ..... 30@30&5%
Shaves Cincinnati Tool Co. 20%

Lumber—

Ring Peavies, "Blue Line" ..₩ doz $20.00
Ring Peavies, Common ..... ₩ doz $18.00
Steel Socket Peavies ..... ₩ doz $21.00
Mall. Iron Socket Peavies ..... ₩ doz $19.00
Cant Hooks, "blue Line" ..... ₩ doz $16.00
Cant Hooks, Common Finish..₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish $16.00
Cant Hooks, Mall. Socket Clasp, Common Finish ..... ₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish ..... ₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish ..... ₩ doz $12.00
Hand Spikes ..... ₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $16.00; 16 ft., $17.00.
Swamp Hooks ..... ₩ doz $18.00

Saw—

Atkins'. new list 40%
Simonds' 33⅓%

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse ..... 40@40&5%
Oneida Pattern ..... 75@75&10%
Game, Blake's Patent ..... 40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₩ doz holes, 9@10¢
Mouse, Round Wire ..... ₩ doz $1.50 10%
Mouse, Cage, Wire ..... ₩ doz $2.50 10%
Mouse, Catch-'em-alive ..₩ doz $2.50 15%
Mouse, Bonanza ..... ₩ doz 0.90@$1.00
Rat, Decoy ..... ₩ gr $10.00, 10%
Ideal ..... ₩ gr $10.00
Cyclone ..... ₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 75¢; in full cases, ₩ doz. 60@65¢
Hotchkiss Imp. Rat Killer ..₩ gro $18.50
Hotchkiss New Rat Killer ..₩ gro $16.50
Schuyler's Rat Killer ..... ₩ gro $15.00
Dandy ..... ₩ doz., $1.75
Waddel's Go Bang, ₩ gro. $12.50

Fly—

Harper, Champion or Paragon ..... ₩ doz. $1.75, ₩ gro. $16.50
Balloon, Globe or Acme ..... ₩ doz. $1.50, ₩ gro. $13.50

Triers—

Butter and Cheese 25%

Trimmers, Spoke—

Bonney's ..... ₩ doz $10.00, 50%
Stearns' ..... 20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. ..... 55&10%
Douglas' ..... ₩ doz $9.00, 20%
Cincinnati 25%

Trowels—

Lothrop's Brick and Plastering, ... 20&10&5@35%
Reed's Brick and Plastering 15%
Disston's Br'k and Plastering. 25@25&10%
Peace's Plastering ..... 25@25&5%
Clement & Maynard's ..... 20@20&5%
Rose's Brick ..... 15@20%
Brade's Brick 25%
Worrall's Brick and Plastering 20%
Garden 70%
Cleves' Angle Trowel, ₩ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list 40%
Thompson Mfg. Co 40%
Barnes' Barrel Trucks 40%
Daisy Stove Trucks, Improved pattern, ₩ doz. $18.00

Tubes, Boiler—

See Pipe.

Twine—

Flax Twine—

	BC.	B.
No. 9, ¼ and ¼ ℔ Balls	25¢	31¢
No. 12, ¼ and ¼ ℔ Balls	22¢	30¢
No. 18, ¼ and ¼ ℔ Balls	20¢	29¢
No. 24, ¼ and ¼ ℔ Balls	20¢	29¢
No. 36, ¼ and ¼ ℔ Balls	18¢	28¢

No. 264 Mattrass, ¼ and ¼ ℔ Balls, 52@54¢
Chalk Line, Cotton, ⅛ ℔ Balls ..... 25¢
Mason Line, Linen, ⅛ ℔ Balls ..... 55¢
2-Ply Hemp, ¼ and ⅜ ℔ Balls (Spring Twine) ..... 15½¢
3-Ply Hemp, 1 ℔ Balls ..... 16¢@16½¢
3-Ply Hemp, 1¼ ℔ Balls ..... 15¢@15½¢
Cotton Wrapping, 5 Balls to ℔ ..15¢@16¢
2, 3, 4 and 5 Ply Jute, ⅛ ℔ Balls ..... 10¢
Wool ..... 6½¢@6¾¢
Paper ..... 13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz. 18¢

Vises—

Solid Box ..... 50&10@60%

Parallel—

Fisher & Norris Double Screw ..... 15&10%
Stephens' ..... 25@30%
Parker's ..... 20@25%
Wilson's 55%
Howard's 40%
Bonney's 50%
Millers' Falls ..... 40@40&10%
Trenton ..... 40&5@40&10%
Merrill's ..... 15@20%
Hollands' ..... 35@40%
Sargent's ..... 70&10%
Backus and Union 40%
Double Screw Leg ..... 15&10%
Prentiss ..... 20@25%
Simpson's Adjustable 40%
Moore's 20%
Massey Quick Action ..... 20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00 ..... 40&10@50%
Stearn's ..... 33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises ..... 33⅓@35%
Hopkins' ..... ₩ doz $17.50, 10%
Reading ..... 40&10%
Wentworth ..... 20&10%
Economy, ₩ doz., Nos. 110, $10.00; 120, $15.00 ..... 50&10&10&5%

Miscellaneous—

Phœnix Vises 33⅓%
Phœnix Hand Vises ..... ₩ doz $3.60, 33⅓%
Cowell Hand Vises 20%
Bauer's Pipe Vises 10%
Cincinnati ..... 25&10%
Enterprise Pipe Vises ..... each $3.00, 40%
Massey Combination Pipe Vise 40%

Wads—Price Per M.

U.M.C.&W.R.A.—B. E., 11 up	68¢
U.M.C.&W.R.A.—B. E., 9&10	82¢
U.M.C.&W.R.A.—B. E., 8	96¢
U.M.C.&W.R.A.—B. E., 7	$1.10
U.M.C.&W.R.A.—P. E., 11 up	1.15
U.M.C.&W.R.A.—P. E., 9&10	1.50
U.M.C.&W.R.A.—P. E., 8	1.70
U.M.C.&W.R.A.—P. E., 7	1.80
Eley's B. E., 11 and larger	$1.70@$1.75
Eley's P. E., 12 to 20	$3.00@$3.25

Dis 20&2%

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow

Stove Hollow-Ware—
Ground ..... 60&10@60&10&10%
Unground ..... 65&10@70&5
White Enameled Ware—
Maslin Kettles ..... 70&10@75%
Boilers and Saucepans ..... 60@60&5%
Tinned Boilers and S'pans ..... 60@60&5%
Rustless Hollow Ware ..... 50@50&5%
Gray Enameled Ware—
Stove 50%
Maslin Kettles ..... 60@60&10%
Boilers and Saucepans ..... 40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889 ..... 33⅓%
Ironclad Enameled Ware ..... dis 33⅓&10%
} Extra 10% on many leading articles.

Kettles—

Galvanized Tea-Kettles—

Inch	6	7	8	9
Each	55¢	60¢	65¢	75¢

Standard Fiber

	Per Doz. Plain.	Decorated.
Wash-Basins, 10½ in.	$1.80	$2.00
Wash-Basins, 12 in.	2.00	2.50
Keelers, 11½ in.		3.00
Cuspidors		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure	3.50	
Half-peck Measure	3.00	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₩ doz $6.00
Basins, Ringed, ₩ doz., No. 2 ..... 2.80
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), ₩ nest $5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest $2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest $1.50
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), ₩ set $1.20
25%
See also Pails.

Silver Plated, Hollo

4 mo. or 5% cash in 30 days

Reed & Barton ..... }
Meriden Britannia Co. ..... }
Simpson, Hall, Miller & Co. ..... } 40&5%
Rogers & Brother ..... }
Hartford Silver Plate Co. ..... }
William Rogers Mfg. Co. ..... } 40&5&5%

Washers—

Size hole ..... 5-16 ⅜ ½ ⅝ to 1
Washers 5½ 4½ 3½ 2¾
In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Washer Cutters—

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Iron ..... ₩ ℔ 3½¢@3¼¢
Steel ..... ₩ ℔ 3¾¢

Weights, Sash—

Solid Eyes ..... ₩ ton, $18.00@19.00

Well Buckets Galvanized—See *Buckets, Well Galvanized.*

Wheels, Well—

8 in., $2.00; 10 in. $2 50; 12 in. 75 82.

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Whips

American Whip Co.: Length.	4½	5	5½	6	6½	7	7½	8 ft.
X. L. Whalebone Driving	$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone.	....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whale bone.	....	....	11.00	12.00	13.00	15.00	....	....
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors	....	....	....	6.00	....	....	....	....
Americus, 93 Pen Whip	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106	....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No. 103	....	....	3.75	4.00	....	....	....	....

Per dozen.

A large variety of cheaper grades.....50¢@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....₩ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Wire and Wire Goods—

Iron—

Market,

Br. & Ann., Nos. 0 to 18, 75&10@75&10&5%
Cop'd, Nos. 0 to 18, 75&5%
Galv., Nos. 0 to 18, 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18, ..70@70&10%

Extra 5@10% often given and low net prices often made on large lots.

Stone,
Br. and Ann'd,
Nos. 16 to 18.....80%
Nos. 19 to 26.....80&5%
Nos. 27 to 36....82½&5%
Extra 10% often given.

Tinned Broom Wire, 18 to 21, ₩ ℔....4½¢
Galvanized Fence.....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Ossawan Mills, An'ld and Tinned on Spools.....60&10%
Ossawan Mills, Brass and Copper on Spools.....50&10%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported....60@70¢ ₩ ℔
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....85&10@85&10&10%

Wire Cloth and Netting—

Painted Screen Cloth ₩ 100 ft.....$1.50
Galvanized Wire Netting.....75&10@75&10&5%

Wire Barb—

See Trade Report.

Wire Rope—

See *Rope, Wire.*

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50@50&10%
Coes' "Mechanics".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
W. & B. Diamond.....
75&10@80%

Bemis & Call's:
Pat. Combination Bright.....40&5%
Pat. Combination Black.....40&10%
Merrick's Pattern.....45%
Brigg's Pattern.....30&10%
Cylinder or Gas Pipe.....45&5%
No. 3 Pipe.....55%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz., $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....30%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Eagle.....50&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70@70&5%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

Am. Wringer Co.'s list, July 1, '93..2% cash
Colby Wringer Co., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list July 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	42
Linseed, City, boiled	..	@	45
Linseed, Western, raw	39	@	45
Lard, City, Extra Winter	76	@	..
Lard, City Prime	75	@	..
Lard, City, Extra No. 1	..	@	50
Lard, City, No. 1	..	@	45
Lard, Western, prime	74	@	75
Cotton-seed, Crude, prime	28	@	29
Cotton-seed, Crude, off grades	25	@	27
Cotton-seed, Summer Yellow, prime	35	@	..
Cotton-seed, Summer Yellow, off grades	32	@	34
Sperm, Crude	65	@	..
Sperm, Natural Spring	66	@	68
Sperm, Bleached Spring	71	@	73
Sperm, Natural Winter	71	@	73
Sperm, Bleached Winter	76	@	78
Whale, Crude	..	@	..
Whale, Natural Winter	..	@	45
Whale, Bleached Winter	..	@	48
Whale, Extra Bleached	..	@	50
Sea Elephant, Bleached Winter	..	@	..
Menhaden, Crude, Sound	35	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed	39	@	40
Menhaden, Bleached W'ter	..	@	43
Menhaden, Extra Bleached	..	@	46
Tallow, City, prime	..	@	55
Tallow, Western, prime	..	@	50
Cocoanut, Ceylon	5½	@	5¾
Cocoanut, Cochin	6½	@	6¾
Cod, Domestic	38	@	40
Cod, Foreign	42	@	45
Red Elaine	44	@	46
Red Saponified ₩ ℔	4¼	@	4¾
Bank ..... per gal	38	@	..
Straits	39	@	..
Olive, Italian, bbls	58	@	62
Neatsfoot, prime	60	@	65
Palm, prime, Lagos ₩ ℔	7¾	@	8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....per gal	7	@	7½
Black, 29 gravity, 15 cold test	7½	@	8
Black, 29 gravity, summer	6	@	6½
Cylinder light, filtered	14	@	16
Cylinder, dark, filtered	10	@	..
Paraffine, 23½ @ 24 gravity	11	@	12
Paraffine, 25 gravity	10	@	11
Paraffine, 28 gravity	7½	@	8
Paraffine, red	9½	@	10½

Paints and Colors—

Barytes, Foreign, ℔ ton	$22.00	@	24.00
Barytes, Amer. floated	29.00	@	32.00
Barytes, Amer. No. 1	16.00	@	18.00
Barytes, Amer. No. 2	13.00	@	15.00
Barytes, Amer. No. 3	11.00	@	12.00
Blue, Celestial ₩ ℔	6	@	8
Blue, Chinese	40	@	50
Blue, Prussian	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½	@	1
Brown, Vandyke, Amer	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk	2.75	@	..
Carmine, No. 40, in boxes or barrels	2.85	@	..
Carmine, No. 40, in ounce bottles	3.75	@	..
Chalk, in bulk ₩ ton	1.75	@	2.00
Chalk, in bbls. ₩ 100 ℔	33	@	40
China Clay, English ₩ ton	13.00	@	18.00
Cobalt Oxide, prep'd	9.00	@	11.00
Cobalt Oxide, black, lots 100 ℔	1.90	@	....
Cobalt Oxide, black, less 100 ℔	1.96	@	....
Green, Paris, in bulk	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs	10½	@	11
Green, Paris, small pack	12	@	17
Green, Chrome, ordinary	6	@	12
Green, Chrom'e, pure	22	@	25
Lead, Eng., B.B. white	8½	@	10
Lead, Ann. White, dry or in oil:			
Kegs, lots less than 500 ℔	7	@	7¼
Kegs, lots 500 ℔ to 5 tons	6½	@	6¾
Kegs, lots 5 tons to 12 tons	6⅝	@	6⅞
Kegs, lots 12 tons and over	6¼	@	6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price	..	@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	..	@	2½
Lead, Red, bbls. and ½ bbls	6	@	7
Lead, Red, kegs	6¼	@	7¼
Litharge, kegs	6¼	@	7¼
Litharge, bbls. and ½ bbls	6	@	7

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35	@	1½
Ocher, French Washed	1½	@	2½
Ocher, German Washed	1¼	@	3
Ocher, American	½	@	1¼
Orange Mineral, English	8½	@	9
Orange Mineral, French	10	@	10½
Orange Mineral, German	8½	@	9
Orange Mineral, American	8¼	@	8¾
Paris White, English Cliffstone	1.00	@	1.15
Paris White, American	65	@	75
Red, Indian, English	5½	@	7
Red, Indian, American	2	@	6½
Red, Turkey	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American ₩ 100 ℔	1.00	@	1.10
Red, Venetian, English	1.20	@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔	4	@	5
Sienna, Ital., Burnt Lumps	1½	@	3½
Sienna, Ital., Raw, Powd	4½	@	5½
Sienna, Ital., Raw, Lumps	1¾	@	3½
Sienna, American, Raw	1½	@	1¾
Sienna, American, Burnt and Powdered ₩ ℔	1½	@	1¾
Talc, French	..	@	1½
Talc, American	1¼	@	1⅜
Terra Alba, Fr'ch. ₩ 100 ℔	95	@	1.25
Terra Alba, English	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered ₩ ℔	3½	@	4
Umber, Turkey Bnt. Ln	2¾	@	3
Umber, Turkey, Raw and Powdered	3½	@	....
Umber, Turkey, R'w Lumps	2½	@	2¾
Umber, Turkey, Bnt. Amer	1¼	@	1½
Umber, Turkey, R'w Amer	1¼	@	1½
Yellow, Chrome	10	@	25
Vermilion, American Lead	11¼	@	12
Vermilion, Quicks'er, bulk	53	@	..
Vermilion, Quicks'er, bags	54	@	..
Vermilion, Quicksilver sm'r pkgs	62	@	..
Vermilion, English Import	85	@	90
Vermilion, Imitation, Eng	8	@	35
Vermilion, Trieste	90	@	92½
Vermilion, Chinese	92½	@	95
Whiting Common, ₩ 100 ℔	37½	@	42½
Whiting Gliders'	45	@	55
Zinc, American, dry ₩ ℔	3½	@	4¼
Zinc, French, Red Seal	7½	@	..
Zinc, Frech, Green Seal	9	@	..
Zinc, Frech, V. M. X	..	@	7
Zinc, Antwerp, Red Seal	7¼	@	..
Zinc, Antwerp, Green Seal	7¾	@	..
Zinc, German, L. Z. O	6¾	@	7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over	10¾	@	11¼
lots less than one ton	11	@	11½
Zinc, V. M. in Poppy Oil, Red Seal, lots of 1 ton and over	10	@	10½
lots of less than 1 ton	10¼	@	10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort	25	@	30
Black, Drop, English	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory	8	@	15
Blue, Chinese	35	@	40
Blue, Prussian	20	@	45
Blue, Ultramarine	12	@	18
Brown, Vandyke	7	@	12
Green, Chrome	8	@	13
Green, Paris	16	@	18½
Sienna, Raw	7	@	14
Sienna, Burnt	7	@	14
Umber, Raw	7	@	10
Umber, Burnt	7	@	10

Putty—

In barrels and ½ bbls	.01¾	@	.01¾
In tubs	.01¾	@	.01¾
In tin cans	.01½	@	.02½
In bladders	.01¾	@	.02½

Spirits Turpentine—

In regular bbls	30	@	30½
In machine bbls	30	@	30½

Glue—

Low Grade ₩ ℔	8	@	10
Cabinet	12	@	14
Medium White	13	@	15
Extra White	17	@	20
French	10	@	22
English	10	@	15
Irish	12	@	..

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

DECEMBER 6, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:	
¾ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in....	₩ lb 1.80 @ 1.90¢
Refined Iron:	
¾ to 2 in. round and square. 1 to 4 in. x ⅜ to 1½ in.... 4½ to 6 in. x ⅜ to 1 in.	₩ lb 1.90 @ 2.00¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.10 @ 2.20¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.00 @ 2.10¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price	₩ lb 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.80¢
"Ulster"	₩ lb 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store—

	Per lb
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2½¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

Black—

Best Refined Iron.

Nos. 14 to 20	@ 3⅛¢
21 to 24	@ 3¼ @ 3⅜¢
25 to 26	@ 3⅜ @ 3½¢
27	@ 3½ @ 3⅝¢
28	@ 3⅝ @ 3¾¢

Common ¼¢ less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 16	2½ @ 2⅝¢
" " " 18 to 20	2⅞ @ 3¢
" " " 21 to 24	3⅛ @ 3¼¢
" " " 25 to 26	3⅜ @ 3⅝¢
" " " 27 to 28	3⅝ @ 3⅞¢

Best Bloom Sheets, ¼¢ extra over above prices.
Best Bloom, Galvanized, jobbing dis. 70 @ 70&5%
Ordinary Bessemer, ⅛¢ @ ¼¢ lower than above prices.

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 12¢ @ 13¢
Patent Planished	₩ lb A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel	₩ lb, 8½¢

Foreign Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 90 ¢
Eicken's Special No. 8	₩ lb 30 ¢
" Extra	₩ lb 15 ¢

METALS—

Tin—

	Per lb
Banca, Pigs	22¢ @ 22½¢
Straits, Pigs	21½¢ @ 22¢
Straits in Bars	22½¢ @ 23¢

Tin Plates—

Duty: 2.2¢ ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade.	IC, 10	x14..	@ $6.50
" " "	IC, 12	x12..	@ 6.75
" " "	IC, 14	x20..	@ 6.50
" " "	IC, 20	x28..	@ 13.00
" " "	IX, 10	x14..	@ 8.50
" " "	IX, 12	x12..	@ 8.75
" " "	IX, 14	x20..	@ 8.50
" " "	IX, 20	x28..	@ 17.00
" " "	DC, 12½	x17..	@ 6.00
" " "	DX 12½	x17..	@ 8.00
Allaway Grade	IC, 10	x14..	@ 6.00
" "	IC, 12	x12..	@ 6.25
" "	IC, 14	x20..	@ 6.00
" "	IC, 20	x28..	@ 12.00
" "	IX, 10	x14..	@ 7.50
" "	IX, 12	x12..	@ 7.75
" "	IX, 14	x20..	@ 7.50
" "	IX, 20	x28..	@ 15.00
" "	DC, 12½	x17..	@ 5.50
" "	DX, 12½	x17..	@ 7.00

Coke Plates—Bright—

Steel Coke.—IC, 10 x 14, 14 x 20		$5.40	@ $5.50
	10 x 20		@ 8.50
	20 x 28	11.50	@ 12.00
	IX, 10 x 14, 14 x 20		@ 7.00
BV Grade—IC, 10 x 14, 14 x 20			@ 5.50

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC, 14 x 20	@	$5.65
20 x 28	@	11.00
IX, 14 x 20	@	6.40
20 x 28	@	12.80
Abecarne Grade.—IC, 14 x 20	@	5.55
20 x 28	@	10 75
IX 14 x 20	@	6 40
20 x 28	@	12.80

Tin Boiler Plates—

IXX, 14x 26	112 sheets	@ $13.35
IXX, 14 x 28	112 sheets	@ 14.50
IXX, 14 x 31	112 sheets	@ 16.00

American Terne Plates.—Apollo.

IC, 14 x 20	$6.25
IC, 20 x 28	12.50
IX, 14 x 20	7.25
IX 20 x 28	14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35% ad valorem.

Ingot—

Lake	@ 11 ¢
Ansonia grade Arizona	@ 10½¢
Ansonia grade Casting	@ 10 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15% @ 25%, according to size of order. Stubs' gauge standard.

Not wider than	Not longer than	And longer than	Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
			Weights per sq. foot and prices per pound.							
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	....
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅜ inch diameter and over, ₩ lb 22¢
Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per lb.
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter, 2¢ ₩ lb additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
15% @ 25% discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned	₩ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz.	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

O. G.	N. G.	⅜	¼	⅝	¾	⅞	1	1⅛
		Net.						
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional
Brazed Brass Tubing. (To No. 20 inclusive.)
Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	$1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list	30 @ ..%

Roll and Sheet Brass—
(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2	in. 10	in. 12	in. 14	in. 16	in. 18	in. 20	in. 22	in. 24
To No. 20 -inclusive	.21	.22	.23	.25	.27	.29	.31	.33	
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34	
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35	
Nos. 27 and 28	.23	.24	.2	.28	.30	.32	.34	.36	

Common High Brass: Wider than and including	in. 24	in. 26	in. 28	in. 30	in. 32	in. 34	in. 36	in. 38	in. 40
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65	
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.68	
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75	

Discount from List 15% to 25%.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15% to 25%.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0.30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.62
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1 30	1.32	1.34	2 00
No 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

—% discount.
Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

	Per lb.		Per lb.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No. 10	54¢		

60% @ 5% discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive	17¢ ₩ lb
Over 3½ to 5 inches inclusive	18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive	18¢ ₩ lb
Over 3½ to 5 inches inclusive	19¢ ₩ lb

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	4½¢@4¾¢
Bertha (pure)	8¢@8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.

600 lb casks	5½¢@5¾¢
Per lb	6½¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	4¢@4.10
Bar	4½¢
Pipe, subject to discount 20%	6¼¢
Tin-Lined Pipe, subject to discount 20%	15¢
Block Tin Pipe, subject to discount 20%	37½¢
Sheet, subject to discount 20%	7¢

Old Lead in exchange, 3¼¢ ₩ lb.

Solder—

½ @ ½	13½¢ @ 14½¢
No. 1	11¾¢ @ 12½¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson	₩ lb 11 ¢
Hallett's	10½¢

Aluminum—

Duty: 15¢ ₩ lb.

No. 2 grade metal, in to a lots	₩ lb .75
No. 1 (guaranteed to be 98% pure and over), in ton lots	₩ lb .90
Lots less than 1 ton	10¢ ₩ lb additional

Old Metals—

Prices Paid in New York.

Heavy Copper	₩ lb 7½¢
Light and Tinned Copper	₩ lb 6½¢
Heavy Brass	₩ lb 5½¢
Light Brass	₩ lb 4½¢
Lead	₩ lb 3 ¢
Tea Lead	₩ lb 2 ¢
Zinc	₩ lb 2¾¢
No. 1 Pewter	₩ lb 14 ¢
No. 2 Pewter	₩ lb 7 ¢
Wrought Scrap Iron	₩ gross ton $9.00
Heavy Cast Scrap	₩ gross ton 7.00
Stove Plate Scrap	₩ gross ton 4.50
Burnt Iron	₩ gross ton 3.00

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THE IRON AGE

THURSDAY, DECEMBER 14, 1893.

The Bliss Double Spindle Milling Machine.

The engraving on this page represents a modification of the standard double spindle milling machine built by the E. W. Bliss Company of Brooklyn, N. Y., for the J. L. Mott Iron Works of New York. The work which the machine was particularly intended to do was the facing of each surface of the several sections forming the steam heater built by the Mott Company. Their heaters consist of rectangular sections, placed one above the other and bolted together. It is of the utmost importance to have the meeting surfaces true, as the apparatus is intended to be run under pressure.

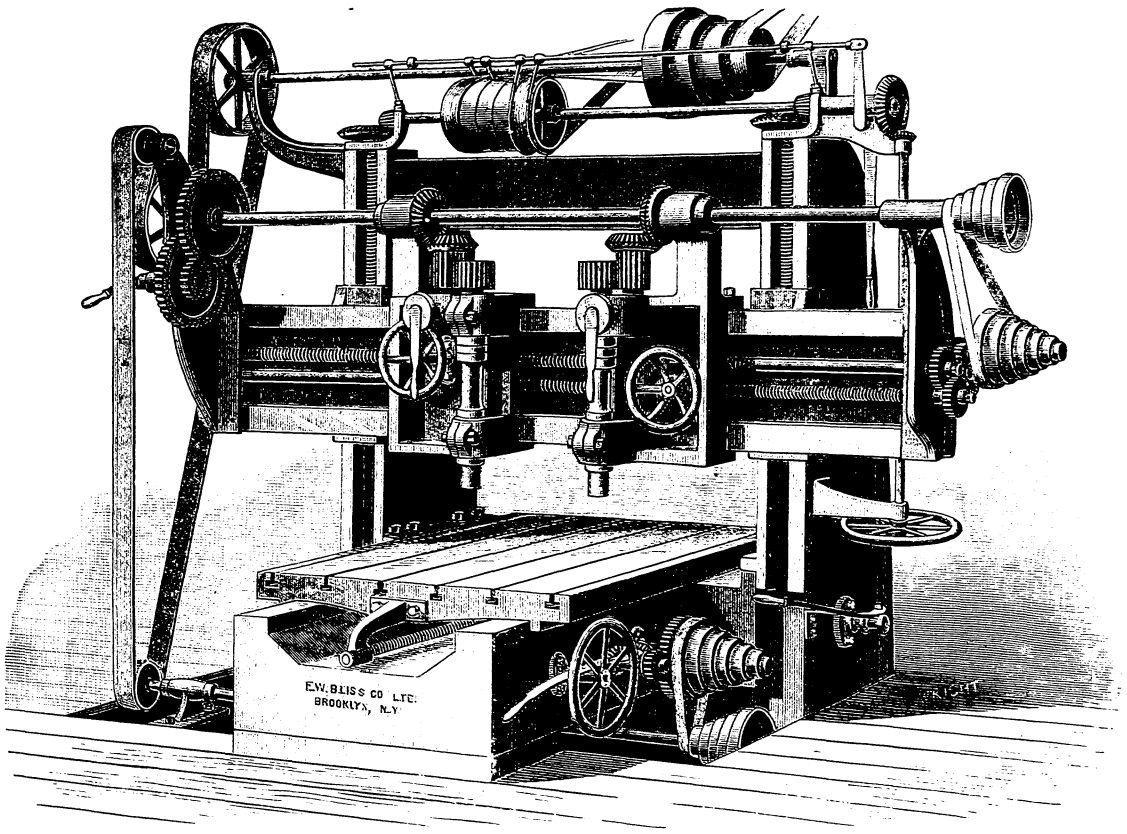
The general arrangement of the machine is like that of a planer, but in place of the ordinary planer heads it carries two vertical spindles for butt milling.

The longitudinal travel of the table is effected by means of a screw, which may be operated by hand or power in either direction. This table feed has six changes of speed (for each cutter speed), besides a power "rapid transit" motion to run the table in either direction. The quick motion is especially intended for running the table back after the cut is finished. It is entirely independent of the regular feed, and either can be operated without stopping the other.

The cross head is raised and lowered by power, in addition to which each spindle has an independent vertical adjustment of 2 inches.

Each spindle is carried in a separate saddle with independent lateral motion, actuated by either hand or power feed. The power feed has six changes of speed. The hand feed is manipulated by means of the wheels shown on the saddles. It is independent of the power feed, so that the saddles can be moved in any desirable way while the power feed is in operation. The cross head is made of sufficient length to permit of running the saddles out far enough to bring the milling cutters outside of the housings.

The milling cutters can be run at eight different speeds in the machine illustrated.



THE BLISS DOUBLE SPINDLE MILLING MACHINE.

The principal dimensions of the machine are: Length of table, 48 inches; width of table, 30 inches; width between housings, 54 inches; smallest obtainable distance between spindle centers, 8 inches; vertical adjustment of cross head, 24 inches; floor space over all, 9 x 12 feet; hight over all, 9 feet; weight, 15,000 pounds.

Novel Annealing Furnace for Tin Mills.—A radical departure from old established methods is made in the design of an annealing furnace recently invented for the purpose of annealing small sheets of steel used in making tin plates. The old practice of charging and drawing boxes through doors at the side of the furnace is abandoned, the furnace being built vertically and charged in that manner. By a simple arrangement annealing boxes, together with their bottom plates and contenst, are easily handled by two men, manual labor is largely dispensed with, and there is consequent saving in labor cost. It is claimed that the furnace is economical in construction and maintenance. The design is adaptable for using various kinds of fuel, such as coal, natural gas, crude oil or fuel gas. A. Beard, Cambridge, Ohio, is the inventor.

Two important omissions have been noticed in the estimates from the State and Agricultural Departments, as presented to Congress. These are the $30 000 usually appropriated for the Bureau of American Republics, and the sum of $720,000, which has been allotted yearly since 1888, for the maintenance of 48 agricultural experimental stations, one for each State and territory of the Union. It is inferred that these institutions are to be abolished, or at least that they are to cease being maintained by the country.

The World's Columbian Exposition has been sued for $25,000 damages in the United States Circuit Court, at Chicago, by the Yale & Towne Mfg. Company, William Sellers & Co., the Morgan Engineering Company and the Edgemoor Bridge Works. The plaintiffs together entered into a contract with the World's Fair to construct three big electric cranes which were among the sights in Machinery Hall. They allege that the World's Fair failed to furnish sufficient power for one of the cranes and that the electric machinery was damaged by rain and snow which came through the roof of the building.

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Management of Men and Workshops.

THIRD PAPER.

General and Detail Duties in Conducting Manufacture.

BY THOS. D. WEST.

In conducting manufacture with concerns requiring a general manager with superintendents or assistants under him it often becomes a question with the former where his labors will end and the latters' commence. The division of official duties in any manufacturing concern is a very important element to properly adjust. The duties of each should be so clearly defined that should anything go wrong with work as it progressed, or the finished product be found at fault the hand of the general manager could at once be laid upon the assistant responsible.

To insure perfection in any line of manufacture this point must be rigidly enforced. The line must be drawn so fine that no possible doubt as to the one responsible should exist, for if for a moment an opening is left for one head of a department to wedge in upon another and by interference and conflict of authority cause confusion, just so soon may ill results be expected.

It is the general manager's duty to plan and set off in sections or departments the manufacture of the firm's product so that as it progresses it will be under the charge of men who are fully qualified to watch and govern every detail in the process of its manufacture.

The detail work for any line of manufacture is more or less a factor that must be closely watched to accomplich success. The superintendent or assistant can in most cases be an incessant worker, and then, with all his efforts, he may often find that things go wrong and mistakes are made. It is not necessary, in order to exhibit interest and press forward work to the most successful end, that he should run around browbeating and asserting his authority at every opportunity. Some of the most successful superintendents and assistants to be found are men who, when seen at their posts of duty, are often judged of by observers as "figure heads," men having "a soft snap;" paid a big salary for doing nothing. Little conception such critics have of the hard, tedious, exacting labor such men are often performing. They seem to think their labors should be exhibited by an herculean effort of the arms and legs, interspersed with occasional opening of a volcano trap to belch forth terrifying sounds. The quiet, unostentatious superintendent, or "figure head," as some would call him, well knows that to achieve success in the performance of his duty it is brains and not bluster that must be used, and the main secret is in giving strict attention to details. He may be required to use his legs some, but at the end of the day's labors his brains will require by far the most rest. The detail work a superintendent or assistant may do is not all conceivable to any mind other than his own. It is only the workman's physical efforts that are tangible to conception by all, and each are as distinct in their function of exhibiting labor as it is possible for mental and physical efforts to be.

The daily details demanding attention may consist in deep thinking, designing, in directing, in inspecting and in educating or disciplining men. Altogether there may be hundreds of little things requiring study and concentration of the mind to insure desired results. They are a load which will not permit of rest in study or watchfulness. Its weight cannot be shaken off, sitting or standing. The mind must be impregnated with them so firmly that not a single item can escape having attention or be forgotten. The superintendent or assistant must know to the minute when his attention will be necessary to catch and correct errors in the manipulation of work which, from forethought, he conceives likely to occur. He will foresee and prevent accidents. The expected and the unexpected he will ever be on the alert for. Every person under his supervision is as easily controlled as the fingers of his hands. At any moment he knows what any individual should be doing. You cannot ask him a question that would betray ignorance of the doings of any man under his charge, or what is going on in his department. Surely such accomplishments are entitled to be credited as being no "soft snap." To be a good man for watching details is a very valuable quality to possess. It is equal to having power to design, to instruct, to dispatch work and get the best results out of men.

A man having all the above qualities combined is a very valuable superintendent or assistant. Too often are some of these qualities found very weak or entirely lacking. It greatly lessens a man's value if by keen thought and watchfulness he discovers details going wrong but lacks the force of character to properly oversee, reprimand and compel the wrongs to be righted.

The close watching of details in every manufacturing establishment by superintendent and assistants is akin in many respects to the duty of a general manager or president, the difference being that what he would lack in numbers would be more than made up by their importance and weight. Should one be neglected there is a chance of it bringing disaster or ruin to the establishment. With him lies the responsibility of the financial success of the firm. He must plan and study to obtain work, and then do the same to have it pass through the hands of his assistants in a manner to insure perfection in manufacture. He must be in touch with the outer world and know all that is going on, especially in his own line. If other competitors are able to undersell his firm, he must endeavor to make changes in his mode of manufacture that will admit of competition with a profit. All superintendents and assistants look to him for instruction and advice in all important transactions of their respective departments, and in all that is great and masterly concerning the establishment. He is the first to decree what shall be done, and is responsible for its enactment. Be he assistant, superintendent or general manager, he will find it is the little details of his duties that give him the most labor, and to insure success they must be as closely watched and attended to as the large and important ones.

The regular monthly meeting of the Western Foundrymen's Association will be held on Wednesday, December 20, at 7.30 p.m., in rooms 702 and 703 Temple Court Building, corner of Dearborn and Quincy streets, Chicago. Hon. E. A. Wheeler of Sharon, Pa., will read an interesting paper on "Furnace *vs.* Foundry Practice." An amendment to the by-laws governing propositions for membership will be acted on. Secretary B. M. Gardner, 1437 Monadnock Block, Chicago, earnestly invites all foundrymen to be present, whether members or not, and to take part in the discussion.

The Industrial Society of Copenhagen, Denmark, will hold a special exhibition in January next, of such new inventions as may be considered likely to be useful in the kingdoms of Denmark, Norway and Sweden, and espeecially such as may be of service to the handicrafts and industries of those countries. The object of the exhibition, says a European exchange, which will be held in the premises of the Industrial Society, is said to be partly to give native and foreign inventors and holders of patents an opportunity to make their inventions known in the three countries above mentioned, and partly to give mechanics, artisans, owners and managers of industrial establishments and others a convenient opportunity to convince themselves of the nature of the inventions exhibited, as well as the latest advances in their special branches. Applications for space, for which no charge will be made, may be made to the Industrial Society, Copenhagen, V., or to the Copenhagen Patent Office (Kjobenhavn's Patent Bureau), 48 Vimmelskaftet, Copenhagen.

Dr. Coleman Sellers of the Niagara, N. Y., Power Company; Secretary W. B. Rankine of the Construction Company, and William Sellers, Jr., recently witnessed cable manufacture at Philadelphia, which may result in a new industry for Niagara Falls. The cable making is known as Tatham's patent process of manufacturing electric cables and incasing them in a lead covering. It is designed for the transmission of electrical energy and for placing in conduits and subways. James Tatham, the owner of the cable making patents, is a member of the firm of Tatham & Bros. of Philadelphia, the oldest lead pipe and shot makers in the United States. Mr. Tatham has expressed his intention, in case this style of cable is adopted by the Cataract Construction Company, to erect a big plant at Niagara Falls for its manufacture, to supply that city and the Western market. P. C. De Sangue, representing them, has been in Niagara Falls looking for a suitable site. It is very probable that the plant will soon be established.

On Tuesday, the 5th inst., the semi-annual meeting of the Tinned Plate Manufacturers' Association of the United States was held in its headquarters in the *Times* Building, Pittsburgh. The proposed reduction in the tariff on tin plate from $2\frac{2}{10}$ cents per pound to 40 per cent. ad valorem was thoroughly discussed by the manufacturers present, and it was the sense of the meeting that if such reduction was put in force it would materially injure the tinned plate manufacturers all over the country. It is probable that in the near future a committee of prominent tin plate manufacturers, in conjunction with Secretary John Jarrett, will go to Washington for the purpose of endeavoring to have the present duty on tin plate retained.

An iron valve weighing 6500 pounds has been made at Troy, N. Y., for a Havana sugar mill, which is claimed to be the largest valve ever constructed.

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New Boiler Makers' Tools.

The Manistee Iron Works Company of Manistee, Mich., have placed two new tools on the market for the use of boiler makers, which are herewith illustrated. The power flanging clamps, Fig. 1, are stated to be a new departure in boiler makers' tools. The machine is a great saver of time and expense in flanging sheets. It is also useful for taking the twist out of sheets and straightening them after flanging. Both ends of the machine raise and lower alike, so that the jaws are parallel, no matter where the work is placed. The beams are 10 feet long in the clear and 30 inches deep. The upper one can be raised or lowered 18 inches at a speed of 2 feet per minute, driven by two 4-inch belts, one crossed and the other straight. These beams are so constructed that a pair of dies for flanging the inside or outside corners of fire box rings or other irregular shapes can be bolted on at right angles and projecting far enough to enable the strikers to turn the flange comfortably. The ends of the beams are recessed 4½ inches to allow for returning a flange. The weight without dies is 11,000 pounds.

The other machine shown, Fig. 2, is a beveling shears for chipping boiler plate. The upper blade is on the extreme end of the lever, so that there is nothing to obstruct a perfect view of the work, and it also enables the operator to chip as close as a 2½ inch flange on connections as small as 10 inches diameter by 24 inches circle. An extra convex lower shear blade is furnished for this purpose. The machine is powerful and very compact, occupying a space of only 4 x 6½ feet. It is 3 feet 3 inches high from floor to lower blade. Two sizes are made. No. 1, weight 4500 pounds, is suitable for ⅝ inch plate; No. 2, weight 5800 pounds, for 1-inch plate. Thanks are due the *Boiler Maker* for the use of cuts.

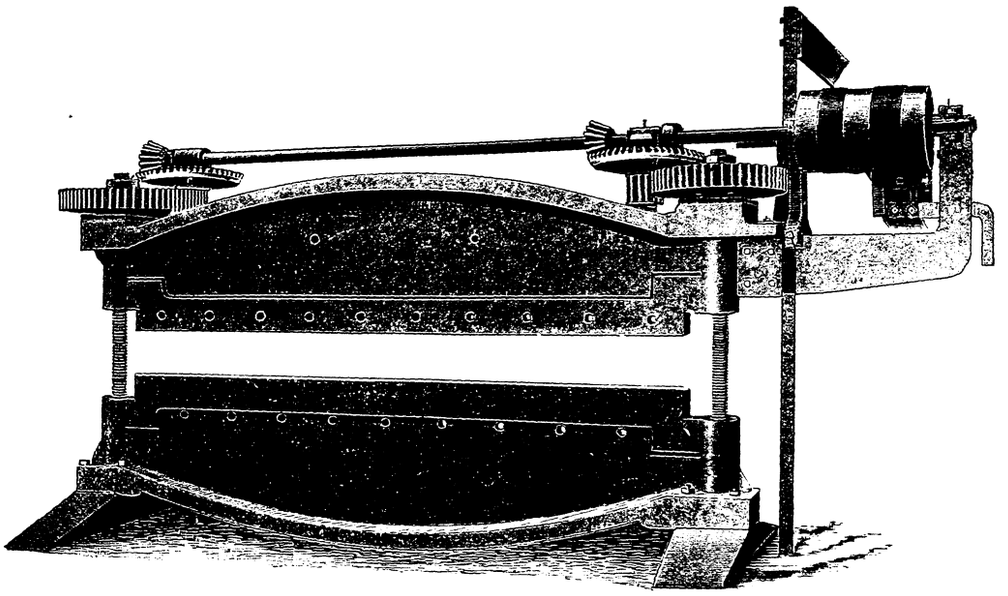


Fig. 1.—Power Flanging Clamps.

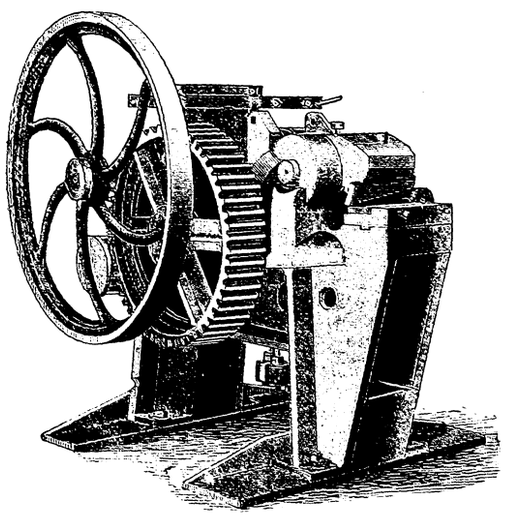


Fig. 2.—Beveling Shears.

NEW BOILER MAKERS' TOOLS.

The Westphaelische Union Company (Hamm, Germany), who employ several thousand hands, have recently made arrangements with Daniel Edwards, Swansea, Wales, through the latter's representative, E. G. Edwards, to replace all their tinning processes by that of the Edwards method. The above firm, one of the most progressive on the European Continent, arrived at this decision after careful study and protracted practical tests of different systems.

The Fair Buildings Will Stand.

The World's Fair buildings at Chicago will not be torn down and removed as summarily as has been expected. The exposition authorities have made an agreement with the Park Commissioners, controlling Jackson Park, in which the fair was located, by which the latter release the former from all obligation to restore the park to its original condition. The exposition directory will pay the Park Commissioners $200,000 for the release and relinquish possession of the park on January 1. State buildings are, of course, not included in the transfer of property to the Park Commissioners, but all the great and small structures erected by the Exposition Company are transferred, including the Administration Building, Machinery Hall, Mines and Mining Building, the Terminal Depot, the Electricity, Liberal Arts, and Agriculture buildings; the peristyle and its annexes of the Casino and Music Hall, forming the great court of honor, which in architectural effect has never been equaled; the Transportation, Horticulture, Fisheries and Anthropological buildings; the Art Gallery, the Convent of La Rabida, the Shoe and Leather Building, Stock Pavilion, barns, band stands and pagodas. If any salvage is realized from the sale of material in these buildings in the course of time it will now inure to the benefit of the Park Commissioners. They can take plenty of time for this work and can await a more propitious period in which to offer the several structures for sale. When the fair buildings were in process of erection the exposition management intimated that a good round sum would be realized from salvage, but that hope was abandoned long since, and it was deemed inevitable that heavy loss would be incurred if the buildings were torn down during the coming year and

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the park restored to its old condition. In the contract just made there is a stipulation that the city of Chicago may be permitted to remove the Manufactures and Liberal Arts Building, if arrangements are made for its re-erection elsewhere.

Recent Progress in the Manufacture of Steel Castings.*

BY H. L. GANTT, ELIZABETH, N. J.

When I spoke of the condition of the art a few years ago, probably but few realized how very few years were really meant. The first soft steel castings, such as are used for gun carriages, that were made in this country, and which were subjected to a ballistic test, were made in 1886 and 1887, by the Midvale Steel Company, who were the pioneers in this work. The ballistic test was considered severe at that time; but to-day the ordinary soft castings made by almost any one of a dozen of the best steel casting companies would pass it successfully.

Though it was about 1886 or 1887 before any large increase took place in the use of steel castings, they had been successfully made in this country at least as early as 1867.† In July of that year, the Wm. Butcher Steel Works, now the Midvale Steel Works, cast some crossing frogs for the Philadelphia & Reading Railroad, of crucible steel. The molds were made of ground fire brick, black lead crucible pots ground fine, and fire clay, and washed with a black lead wash. The surface of these castings was very smooth, and the metal, which was practically tool steel, was so well adapted for the purpose that some of the castings made in those early days are said to be still in use.

This was before the use of silicon for solidifying steel was known, and the castings were very much honeycombed in all parts except the wearing surface of the frogs, which was "cast down." The possibility of getting one face of a casting approximately solid admitted of the use of steel also for hammer dies, although their general sponginess was a great obstacle to their extensive adoption.

On April 28, 1876, two small hammer dies were made of open hearth steel at the same place, and on May 29 a hammer head weighing 2535 pounds was made. As long as castings were small, the molding mixture of ground brick, ground pots and fire clay was satisfactory, but on large castings made with that facing the surface was very imperfect, and the sand adhered to it with great tenacity. But little improvement in the method of molding was made for some time, and while the quality of the steel was gradually improved, the appearance of the castings was decidedly against them, and but little progress was made in their introduction.

The next step taken by the Midvale Steel Company was to leave the ground pots out of the molding mixture, and to wash the mold with finely ground clay fire brick. This was a great step in advance, especially in heavy castings, and a marked improvement took place in their general appearance, but the mixture still clung so strongly to the casting that only comparatively simple shapes could be made with certainty. A mold made of such a mixture became almost as hard as fire brick when dried, and offered so much resistance to the proper shrinking of castings that, when at all complicated in shape, they had so great a tendency to crack that their successful manufacture was almost impossible. The next step was to use a mixture of silica sand and flour. In small castings this gave pretty good results, as such a facing cleaned off the casting very readily, leaving a smooth surface much superior in appearance to that left by the ground brick. The great difficulty in the way of the extended use of such a facing was the tendency of the flour to burn in drying, leaving the sand without a proper bond, and often the burnt mold was so friable as to be entirely useless. In the case of large castings it was almost impossible to dry thoroughly the whole mold without burning that portion nearest the fire, and for such work flour was necessarily abandoned.

By this time the use of silicon for solidifying castings was becoming general, and the only obstacle in the way of making good steel castings was the want of a suitable molding sand. This was ultimately found in a mixture the principal constituents of which were silica sand and molasses thoroughly ground together.

The improvement in the appearance of castings caused by the use of a sand that left a clean, smooth skin was the cause of their rapid adoption; and the year 1887, when the Midvale Steel Company made the first gun carriage castings of steel, is approximately the date at which their rapid extension began.

At this time the necessity for hot metal did not seem to be understood, and castings frequently contained blow holes, when it seemed that all the conditions for making them perfect had been complied with. It was noted before a great while that small castings contained more holes than large ones, and that those poured last on a heat were worse than those poured first. The conclusions that hot metal was needed to make solid castings, and that smaller castings needed hotter metal than large ones, were soon deduced and amply verified. Apart from these considerations, the superior appearance of castings made from hot metal was sufficient to cause all steel casting makers to work in that direction. The difficulties in the way of getting uniformly hot metal are hard to overcome in an open hearth furnace. The delay caused by a slow or difficult tap of the furnace, which is always liable to occur, is fatal to the production of the best castings. Besides what has already been mentioned, cold metal in the ladle is to-day the cause of more complaints by purchasers and expense to the manufacturer than anything else in connection with the manufacture of steel castings. I will enumerate a few of the troubles that may be traced directly to this cause. What is known as a "bad shut off," or a leaky stopper, is usually caused by a small amount of metal chilling in the nozzle and preventing the stopper from going to its place. In cases where the dribble is slight the worst effect is that a small amount of metal runs into the mold while the ladle is being gotten over the runner. This metal is apt to chill, and make a bad looking spot on the casting, or, in the case of small castings, block up the runner entirely, and cause the loss of the mold. When the leak is very bad it not infrequently happens, especially when the heat is a large one, composed principally of small castings, that the flasks are covered by the molten steel and so strongly fastened together that it is almost impossible to separate them from the steel without considerable loss by breakage. Again, by a careful study of the subject, I feel that I have been able to lay to the door of cold metal one of the most fertile sources of complaint which steel founders have met with—namely, lack of homogeneity, which includes both hard spots and loose places. I use the term "loose" rather than spongy, for the reason that I do not so much mean a cluster of holes as a spot where the metal simply seems less dense. Such places, without any visible continuous hole, or even without anything that would indicate the existence of such a hole, allow leaks in hydraulic cylinders, and cause the failure of a test bar.

When we consider more in detail the process of making open hearth steel castings, we see why these defects are more apt to occur in cold than hot metal. While the metal is being tapped from the furnace, the silico-spiegel necessary to prevent blow holes is generally thrown into the ladle, usually in the solid, though heated, state. If the metal is very hot, and consequently thoroughly fluid, the silico-spiegel is dissolved at once and uniformly disseminated through the mass. If, however, the metal should not be so hot, it is easily seen that the silico-spiegel may not become at all thoroughly diffused, and the slightly viscous metal in the ladle may be the reverse of homogeneous, in which case the resulting castings may be very far from what is hoped for. It is now the practice in the best foundries to melt the silico-spiegel, and these defects in their worse form are thus practically eliminated.

Why hard spots should appear in cold metal is readily seen, for lumps of partially melted silico-spiegel would certainly form the nuclei for such spots; but why the loose places should occur is not quite so apparent. It may be noted that the loose places appear to a more marked extent in large masses than in small ones, and the most reasonable explanation seems to be that the silico-spiegel, which is but imperfectly melted when the metal is poured, finally melts thoroughly after the metal is in the mold, which can only occur in very heavy castings, forming a spot higher in carbon, manganese and silicon than the metal surrounding it. Such a spot would have a lower melting temperature than the adjacent metal and would remain partially fluid after the other metal was set. The result of such a condition would be to drain away a portion of the fluid metal to feed the shrinkage in the metal solidifying about it, leaving a more or less spongy spot.

That shrinkage holes and cracks do still occur in steel castings is well known, but the success that founders have had in casting complicated shapes within the past year or two has been surprising. The fact that a steel casting must cool at the bottom first, and then gradually upward in the mold, is being learned by designers; and shrinkage holes are becoming less frequent, for the founder at once fixes on the heaviest portion for his sink head, which is usually about 20 per cent. of the total weight of the casting, and which must remain fluid until the whole of the casting proper is solid.

By a strict observance of the rule that

*Presented at the New York meeting (December, 1893) of the American Society of Mechanical Engineers.

† This historical note was furnished some time ago to Edwin H. Cramp to go into a paper he purposed to write on the subject of steel castings, but it has seemed to me to be of sufficient interest to publish it here also. If any member has any additional information on the subject, I should be glad if he would add it in the discussion.

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a steel casting should, as far as possible, be of uniform thickness throughout, it has been posssible to make within the past few years castings 20 feet long by 10 feet wide, which would have been considered impossible a few years ago. To one unfamiliar with the details of the process of making steel castings, the statement that to-day we can get large steel castings that are perfectly satisfactory, while it is almost impossible to get good small ones, would seem very strange. It is, however, a fact, and the explanation is simple. Most steel castings are made by the open hearth process, and the furnace usually melts from 5 to 20 tons. To pour even 5 tons of steel into castings averaging 100 pounds in weight would, as a rule, take so long that those poured last would be of inferior quality on account of the cooling of the metal. As a rule, a large portion of the heat is poured into a comparatively few large castings, and the remainder put into the smaller ones. If the metal is very hot to start with this may give fair results, but in all cases the least desirable metal is put into the small castings.

This difficulty seems almost insurmountable by the open hearth process, but is readily overcome by a small Bessemer converter, from which we can get 2 or 3 tons of metal as hot as we may wish it. Add to this the fact that we can get from the converter that quantity of metal of any composition we may desire every half hour throughout the day, and we realize the advantage of the Bessemer process for making small and medium weight castings. The manufacturers of electric motors who have been buying their castings from open hearth foundries have apparently not realized what the Bessemer foundry has in store for them. It seems hard to believe that perfectly solid steel castings can be made of the following composition with regularity: Carbon, 0.12 per cent.; manganese, 0.30 per cent.; silicon, 0.30 per cent., but it is a fact. It may be noted, however, that this steel, while very well adapted to electrical purposes, is of but little value for any miscellaneous castings, except very small ones, on account of the tendency it shows to crack during the process of solidifying, when cast in shapes at all complicated.

The fact that we can make a number of different kinds of steel each day if we use a converter, and but two or three heats at the most in 24 hours if we use an open hearth furnace, gives a great advantage to the founder using the converter, especially if he is making all kinds of steel castings, enabling him, as a rule, to make far more prompt deliveries than is possible for the open hearth founder doing the same variety of work.

Among the other advances made in casting steel may be mentioned one for making a casting having one or more faces of a steel much harder than the body of the casting. The process consists in lining such faces of the mold as will be adjacent to the parts of the casting it is desired to harden with a metallic alloy in a crushed or powdered state, capable of being melted and absorbed by the molten steel in contact with it, and of such a nature as to impart to the steel a hard face, or a face of such a composition as may be readily hardened. If it is desired that the casting shall have a permanently hard face and be used for stamp shoes, crusher jaws, hammer dies, &c, ferromanganese gives the best results. If it is desired to do machine work on the face, and make it extremely hard afterward, ferro chrome is most suitable. The fact that it is possible to produce a soft steel casting having a face that can be hardened without causing the remainder of the casting to become brittle will undoubtedly make it possible to use steel castings in place of chilled iron in many places with great advantage.

Discussion.

H. A. Royce, general manager of the Thomson Electric Welding Company, described some experiments which they had made to remedy the evil effects produced by blow holes. The object aimed at was, when a blow hole was discovered, to fill it with steel in such a way as to make a perfect union between the plug filling the blow hole and the mass of steel itself. They had been able to do this successfully both from a commercial and practical point of view, and their process had proved to be not only perfectly efficient but economical as regards cost and time and resulted in the saving of many castings which would otherwise have been considered useless. He stated that this method was more or less in use in Russia and had been introduced quite extensively and on a commercial scale in England.

Their first experiments consisted in the employment of the electric arc, the mass of steel forming one pole and a carbon, held at the blow hole to be filled, forming the other pole. The formation of the arc by the current passing between these two poles furnished heat sufficient to melt small steel scrap or filings introduced into the hole. But this method was not successful, because of the chilling action of the walls of the hole on the plug of steel introduced into the hole, and the union between the two was therefore not perfect. Success of the most perfect description was obtained by heating the mass of steel in an oil or gas furnace and then utilizing the electric arc for the melting of the steel filings introduced into the hole. In this way they had succeeded in a few minutes in making so perfect a union between the plug introduced into the hole and the walls of the casting that no line of demarcation was apparent when the piece was planed down.

In answer to a question as to whether the Krupp steel locomotive frame exhibited by the Krupp concern at Chicago could be reproduced in this country in a commercial way in competition with the ordinary forged frame, Mr. Gantt answered that while the first frame produced would probably not pay, an order for a hundred would be remunerative. He saw no reason why three or four firms at least could not make a frame of this character of a quality equal to that exhibited by the Krupps.

Thomas Fitzgerald, one of the superintendents of the Baltimore & Ohio Railroad, and Eben T. White, master mechanic of the same road, are said to have recently patented a device for the construction of locomotive furnaces by means of which air may be supplied in such quantities and at such temperature as to effect thorough combustion of smoke and gases generated in the use of bituminous coal and similar fuel. If so desired, the air may be supplied in three volumes. One of these enters the fire box through the grate bars, generates the gases from the coal and partially consumes them. The other, being previously heated, enters through an air duct into the burning fuel and partially consumes the generated gases, while the remaining volume of air, having also been first heated, enters the fire box at a point remote from the boiler flues and completes combustion with intense heat.

The Brown Automatic Fire Alarm System.

While the importance of a reliable automatic fire alarm system has been recognized for years, the subject has lately received more than usual attention from all interested, from the fact that the losses from fires have greatly increased, and in many sections the insurance rates have also increased. It is conceded by many of the best authorities that a reliable system of this class gives better and cheaper protection against fire than a watchman.

The following have been laid down as axioms to be considered in an automatic fire alarm system:

1. Any system, to be entirely successful, must be of such a nature that any accident to the battery or wiring that will render the system inoperative will at once notify the attendant at the receiving station without sounding a fire alarm. In short, a system must watch itself, and notify whenever it needs attention.

2. It must be prompt and sure to act and entirely unaffected by dust, insects, moisture, foul gases or jarring of the building, &c., and require no readjustments.

In the interests of economy, such a system should require but very little current for its operation and be easily and cheaply installed. Any system which does not embody all these features cannot be entirely satisfactory in practice.

The first axiom not only makes it necessary that the system shall be closed circuit, but that the entire current required to give the alarm shall flow all the time; otherwise the extra batteries and lines intended to be brought into action by the thermostat may not be operative. All closed circuit systems which depend upon breaking the circuit to sound the alarm are subject to the fatal fault of sounding false alarms whenever the line is broken or short circuited by accident. To obviate this, it is necessary that the thermostat in acting shall make some change in the line which is never made by accident, and that the receiving instruments be so arranged as to indicate what change has taken place.

In the system in question, by very simple mechanism, the thermostat in acting reverses the current, instead of simply stopping it. Reversing the current is a change which never occurs by accident; hence the receiving instrument will never indicate fire unless a thermostat has acted. The receiving mechanism consists of a simple electro-mechanical gong, controlled by a polarized armature of the rotary type, to which is attached a pointer moving over a suitable dial arranged to show just what change has occurred in the line. This dial, Fig. 1, is marked "O. K." on its right hand end, below which are the words "Battery Run Down," in the middle "Line Broken," and on the left hand end "Fire."

The magnet and armature are of new design, giving a long movement of the latter, with a very small current. This enables the system to be maintained at a small expense, the common gravity battery being used. The polarity of the armature of this magnet can never be reversed by any of the accidents to which the system is subject, nor will it stick to the poles of the magnet or require readjusting. This armature is

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brought to center by small weights, which, in practice, are more reliable than springs. An important feature of this apparatus is the fact that the battery current can rise much above or fall much below the normal without affecting the working of the system. This system can be arranged with two bells, one of about 8 inches in the engine house to ring for fire only, the other of small size to call attention to trouble with the line. A large striker is also provided to strike a factory or other large bell one blow to indicate trouble with the line and continuous ringing to indicate fire. This is important in places where firemen are not on duty at all times.

One of the most important features of an automatic fire alarm is the thermostat, upon which to a large degree the efficiency of the system depends. The one illustrated in Fig. 2 is constructed and operates as follows:

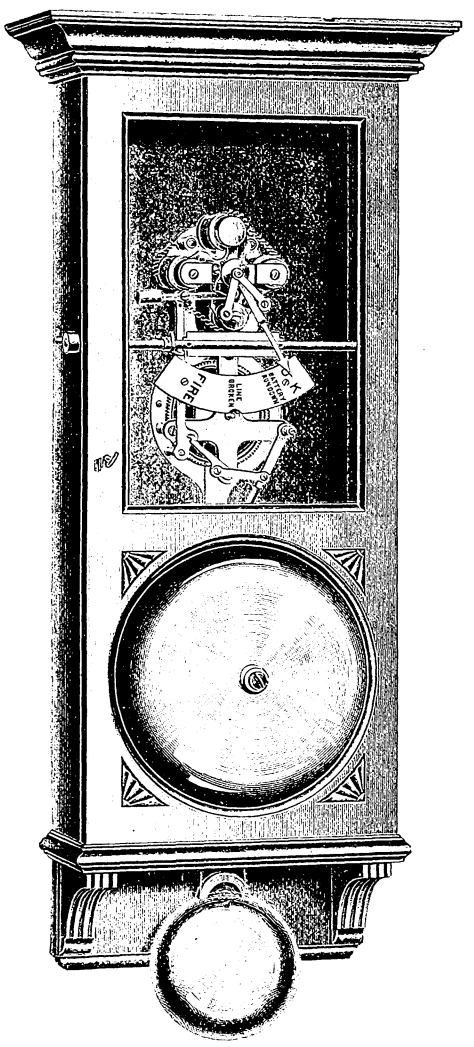


Fig. 1.—Apparatus Complete.

Upon the lower side of a porcelain base are clamped two flat bronze springs, which are held under tension by a fusible solder, the melting point of which can be changed to suit different positions. To the upper side of this base is clamped a plate of vulcanized fiber, through which screws pass into the ceiling to fasten the thermostat in position. In the center of the porcelain base and covered by the fiber plate is molded a cavity which contains electroplated contact points brought into action by releasing the springs. These contact points are punched from sheet brass and riveted to the bronze springs, extending through the porcelain into the cavity referred to, and so arranged as to press against suitable electroplated copper strips connected in such a way as to reverse the current when the springs are released by melting the solder. The working parts of this thermostat are entirely protected from dust and insects. The part sensitive to heat is entirely uncovered and in the best possible position to be affected by direct rays as well as the heated air from a fire, and being thin acts promptly and will never change its adjustment. The contacts being made on clean metal and with considerable pressure are sure to be good, and the electric contacts with the line wire are such as will not become loose or cut the wire. It is unaffected by jarring of the building or the warping of the wood to which it is fastened, nor is it affected by being wiped or brushed.

The action of the system is as follows; In case the battery should be allowed to run down the armature is drawn toward its central position by the weight until the hand points to "battery run down," when the striking mechanism is unlocked and the bell strikes. The attendant, on looking at the dial, sees that the bell is striking because the battery is run down, and to silence the bell turns over the small handle on the left-hand side of the case, which, besides stopping the striker, turns up a card over the dial marked "disconnected," which shows that the system is inoperative. Even under these conditions the system will sound an alarm in case a fire should occur, unless allowed to stand too long. In case of a broken line or short circuit (which in this case is equivalent to a broken line), the same thing takes place, excepting that the pointer indicates "line broken." In this case when the line is repaired the bell again strikes to notify the attendant that the line has been repaired, and the hand points again to "O. K.," the bell being silenced by turning the lever and card back to the original position. In case of fire the bell rings and the pointer is carried to the word "fire," and locked in that position, where it remains until released by the attendant.

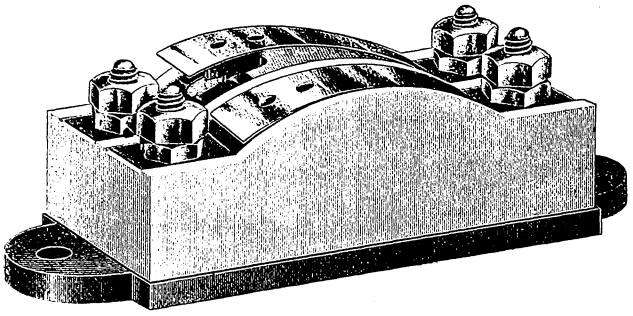


Fig. 2.—Thermostat.

It will be seen that this system is free from relays and local circuits, which in practice have been found to be unreliable. In the arrangement of the annunciator and public alarm bell, with which this system is provided, no element is introduced that can interfere with the action of the engine house gong, bearing in mind that the action of this bell is by far the most important function of the system. With this in view, care has been taken that its action should not depend upon anything delicate or uncertain or be in any way interfered with by the failure of the other instruments. This system was designed by Gilman W. Brown of West Newbury, Mass.

THE BROWN AUTOMATIC FIRE ALARM SYSTEM.

The Foundrymen's Association.

The regular monthly meeting of the Foundrymen's Association was held at the Manufacturers' Club, in Philadelphia, on Wednesday, the 6th inst., with a large attendance of members. In the absence of the president the chair was occupied by the vice-president, Thomas Devlin of Thomas Devlin & Co., Philadelphia. The minutes of the last meeting were read and approved. The Executive Committee reported that a meeting of that body had been held on the 5th inst. at which the affairs of the association, past and present, were discussed. It was their intention to pursue the same methods as hitherto used to collect information of interest, and to bring about a friendly feeling in the foundry trades. The pleasing address made by the president at the last meeting covered the ground, the committee thought, very nicely. The thoughts therein expressed for the future welfare of the association would be carried out as nearly as possible. A number of subjects had been presented to the association for discussion from time to time during the past, the one unfinished being "Chemical Analyses." The secretary was getting information from different chemists in regard to charges, in order to get the cost of determinations on a sliding scale according to the number of determinations made. The number of determinations likely to be required would then be ascertained, and in this way it was hoped an arrangement could be effected which would allow of members getting determinations at a minimum of cost.

The subject "Molding Machines, and How Far They Can Be Used Successfully," would be taken up at the December meeting of the association, and manufacturers of these machines would be invited to attend the meeting to present their respective claims and answer questions. The committee hoped that the present depression in the foundry trade had reached its limits and that the demand for castings would improve. The passage of the repeal bill by the Senate, although coming late, would help to restore confidence in the financial world, and the voice of the American people in favor of protection, as decided by the late election, was very significant. It would probably do more than any one thing to prove that protection was wanted in this country. The committee believed that when the next Congress met it would look at the large majorities in New York, Ohio, Massachusetts, Iowa, Pennsylvania and

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New Jersey as a reminder that the tariff issues as set forth in the present Mc Kinley bill were satisfactory and would come to the decision that it would be best to "let well enough alone." The report was, on motion, received and ordered to be entered upon the minutes.

Secretary Evans announced that he had secured information as to prices on a sliding scale at which analytical determinations could be obtained, and read a number of offers from chemists in New York and Philadelphia.

Mr. McKenna of the laboratory of Dr. Gideon Moore, New York, was present and in the course of a few remarks said that he would encourage the members in the idea of some day using research, and they could be assured that it would prove a benefit to them. The results of daily tests could be compared and used to the benefit of the association just as well as if the work done was research work. The results of research work were, he said, far reaching. There were technical concerns in Germany keeping a force of 20 chemists on purely research work, and in the case of competitors taking their trade away those chemists would rapidly place them in the possession of facts which would bring back the lost trade. In days to come the association would not regret the employment of chemical talent.

W. C. Henderson, chemist for Thos. Devlin & Co., in regard to an arrival at the number of determinations likely to be required by the association, said that it would be utterly impossible for any member to state exactly how many determinations he would require. The number would depend on the kind of trouble he got into. If his castings were going wrong he would probably require an analysis of them.

Mr. Whitney of A. Whitney & Sons, Philadelphia, manufacturers of car wheels, said that his firm obtained about 2000 determinations last year.

Mr. Henderson said the determinations made for his firm would amount to from 1500 to 2000 in one year, and then he considered they were not having as many as they should have. After discussion the matter was, on motion, referred to the Executive Committee.

The Condition of Trade.

The report of the Price Committee being next in order, Stanley G. Flagg, Jr., of Stanley G. Flagg & Co., Philadelphia, for the small gray and malleable iron castings section, reported that business continued in the same condition as when last reported. He had nothing of interest to present to the meeting. L. B. Whitney of A. Whitney & Sons, Philadelphia, for the car wheel section, and Geo. P. Smyser of E. G. Smyser's Sons, York, Pa., for the structural iron work section, had nothing to report.

P. D. Wanner of the Mellert Foundry & Machine Company, Reading, Pa., representing the cast iron pipe section of the committee, reported that business was getting worse. Prices on cast iron pipe were simply out of sight and were really panic prices. If anybody had told him five years ago, or even six months ago that such prices would prevail he would not have believed it. He did not think for one moment that pipe could be made at the prices it was being offered at. He said there had been a letting at Washington and another in Philadelphia. Something like 26,000 tons were given out in Philadelphia, and contracts were taken at a very low price, 1 cent per pound, delivered on the street, being the figure for some of the pipes. Since that letting contracts for 70,000 feet of pipe had been given out at Washington, 40,000 feet of 12-inch and 30,000 feet of 6-inch. Most of the pipe manufacturers from all over the country were on hand and those who bid made very low bids; one bid was $20.70 per gross ton, delivered at Washington. This price he thought was a record breaker. How could anyone suppose cast iron pipe could be made at that price unless the pig iron men furnished the iron for nothing? He presumed those that had pipe on hand were anxious to get get rid of it and were giving it away. Two thousand tons of the Philadelphia pipe, he said, was taken by the Alabama people. Facts like these, he thought, were hard to account for. A great State like Pennsylvania, with all its coal and its iron, being passed on iron pipe! There was something entirely abnormal about it. The trade will get back again one of these days; it cannot help doing so; but some will have to suffer in the meantime. Those present could figure for themselves as to what the pipe was being put in at and as to what the loss was. He noticed in the Executive Committee's report a reference to the tariff question. He did not want to branch out on that question, but thought it was a matter of greater importance to them at this time, as foundrymen and citizens, than any other question, and it occurred to him that if the members of the association wished to assert themselves as citizens and patriots during the next three months they should take up the question and discuss it. He was a protectionist, and, as such, was no politician. He was of the opinion that the tariff question should always be left out of politics. Any question that strikes at the interest and welfare of all citizens cannot well be a political question, although such it is made. He thought the association should take up the question for discussion and urge the speedy determination of the matter. The Wilson bill, or new tariff bill, now before Congress, must, he said, be passed or dealt with without delay, or be abandoned. He had stated at previous meetings of the association that manufacturers were reduced to a point at which they could stand no further reduction, and that the next cutting to be done would be on labor. The point had been reached where such a step would be forced on them. If, as manufacturers and employers, they did what they should do, they would drive the issue to a point and drive it speedily. For this reason he thought they all should come together to talk the matter over in order to arrive at a conclusion in regard to an endeavor to force the issue.

Asked by Mr. Flagg where the balance of the pipe order, part of which went South, was placed, Mr. Wanner replied, "It went to New Jersey. New Jersey has not a great deal of iron, but has a considerable amount of sand."

R. A. Register of Register & Sons, Baltimore, Md., for the cast iron soil pipe section of the committee, reported progress. He thought the reason why pipe comes through the State of Pennsylvania might be that the freight on manufactures of iron from the South was less than on pig iron. That he knew to be a fact. Pipe from Alabama could be freighted at 40 cents a ton less than pig iron.

Secretary Evans then, under the head of new business, announced that the association would take up the subject of "Molding Machines." He said he had a number of letters from people who were making molding machines, and Harris Tabor, representing the Tabor Molding Machine Company of Elizabeth, N. J., had been asked to read a paper on the subject before the meeting.

Mr. Tabor then read the following paper:

Molding Machines.

Although molding machines are not new in their application, they are comparatively little understood except in a few branches where there is great duplication of castings. It is probable that no mechanical subject of such vital importance to the metal trades has been discussed as little. This is due largely to the fact that the mechanical departments in foundries, as a rule, are more thoroughly under the dominion of one man than any other branch of the iron industry; and this man is usually one who has been trained in his method of molding and does not care to try others. There is a certain mystery about the art which he thoroughly understands, and in this knowledge lies much of his capital. His shop education has been that of apprentice and journeyman, generally varied by experience in different foundries, until he is selected as foreman. His work has always been that of judgment rather than measurement. He knows where molds should be rammed hard to prevent "strains" and where soft to avoid "blows," and his touch will indicate when these densities are right; but he has no instrument or tool which determines these conditions for him. It is a question of judgment purely, a judgment which must indicate the location and force of his rammer's blows. In a good molder this judgment is almost infallible; in a bad molder—well, we all know what it means by a reference to the scrap heap.

This peculiar judgment or skill, which all molders possess to a certain degree, and some to an extent which seems like inspiration, tends to make the average foreman skeptical, one might say superstitious, when it comes to considering other methods. His training has been away from machinery rather than with it, and when the proposed innovation takes the form of a machine his objection is intensified. In such a case if the manager takes his cue from the foundry, the chances are that machine molding will not be thoroughly discussed, and nothing short of seeing machines in operation will remove doubt.

Since metal has been wrought the foundry and machine shop have existed side by side, generally under one management. Of the two the foundry is the older; in fact, metal was cast in molds before machines were built. The foundry has always been the feeder to the machine shop, and as long as cast iron enters into construction it will continue to hold the spoon. It should come first, with the machine shop a second; but does it? In the early days of these kindred industries the molder rammed his molds much the same as he does now; he drew his pattern with the same old spike, and he used similar slicks and trowels to mend broken molds; the swab pot and brush possibly then helped to make his kit. It is true his patterns are now better fitted and in many foundries carefully matched and gated, but beyond these improvements, if we except cranes and cupolas, there has been but little change. The machine shop, in its primitive days, was equipped with hammer, chisel and file, and these tools

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are still the reliance of an occasional old time vise hand, but they are used on jobs which cannot be machined. The drill press, lathe and planer revolutionized the machine shop years ago; in more modern times the milling machine, turret lathe and jig system have made a still greater transformation, and the end is not yet. Nearly all machine shops of fair size have their tool rooms in charge of men who have a genius for reducing labor cost, whose sole duties are to design and make labor saving tools and appliances. No reduction in cost is considered too small after the fact is established that a saving may be made. If a job go into the machine shop on which a drilling jig will save three or four hours, that jig will be made. But if an order for twenty-five castings go to the average foundry and the use of a follow board would save ten hours' labor, the chances are that the follow board will not be made, and the molder may spend what might have been profit on the job in building up a difficult joint.

In each of these departments there has been a marked progress made in the production per man: greatest in the machine shop. But how has it been made? In the machine shop there has always been an eagerness to accept anything which would displace hand labor and skill and lessen cost. Special machines and tools have taken the place of old methods, thereby making the product better and cheaper, and at the same time making the lot of the workman easier. Improvements have been encouraged and nursed from the management down.

How has the increased production come to the average foundry? Not so much by the introduction of machinery or improved methods, but rather by a system of piece work which makes the individual workman a sort of proprietor and induces him to do his best. In many foundries this has been followed up by teaching a laborer to mold a single pattern, thus further reducing cost. The labor in molding has not been much reduced, but the amount of work done per man has been increased.

The proprietor of a malleable iron foundry making steam fittings in the West once said to the writer that he could not see his way clear to getting another mold per man for a day's work, nor could he reduce the cost per mold, yet his competition was so close that profits were much too low. Under such conditions the manager of a machine shop would consider any plan which promised to reduce labor cost 10 per cent., and he would even take some chance if there were any doubt in his mind.

During the present year we furnished several duplex molding machines to a foundry which is run in connection with a machine shop. The foreman of this foundry said, in a conversation on the subject of machine molding, that his superintendent had just spent about $3000 for a special machine which would save a part of the cost of tapping, and he supplemented this statement by adding that he had said to the superintendent if he could have another molding machine at a cost of about $1000 he would save more in the foundry than the entire cost of tapping, of which the special machine would save only a fraction. He finished with: "But this is the foundry and must wait."

If we go into design we find there the same discrimination against the foundry and in favor of the machine shop. I doubt if there be a founder present who does not occasionally get patterns which were made with a view to saving labor in the machine shop without a thought of the foundry. This is often carried to the extent of making patterns from which it is almost impossible to get good castings, when a little thought given to the foundry end would save much trouble and cost. While the conditions thus far considered may be said to have no direct bearing on the subject of molding machines, they have had, and do now exert, an influence which tends to create a prejudice against the adoption of such machines in some quarters.

As your association is interested in what may be termed the commercial merits of this subject, the question will be discussed from that standpoint as nearly as possible. There are certain conditions which are necessary to the production of economical work from molding machines.

1. There should be a reasonable number of castings made from one pattern, or set of patterns, and this number will depend on the class of castings and cost of molding same by hand. If the patterns to be molded are 1-inch elbows, of which a smart bench molder will put from 600 to 1000 per day, depending on the foundry he is working in, and at a cost of from $\frac{3}{10}$ to $\frac{4}{10}$ cent per elbow, this number must be much greater than if larger elbows, which cost 10 cents each for molding, are considered, and the saving over hand work will be less in the case of the smaller elbows. This duplication should be estimated from the cost of molding, not from the number of castings to be made.

2. The kind of castings to be made must be reckoned with work which requires a three-part flask, and patterns with too many drawback or pick out pieces are better left to the hand rammer. The first case is impracticable on a molding machine, and the saving in the second case might not justify the cost, unless the castings are expensive to mold. Economy in machine molding is reduced when core setting comprises a large part of the time needed to make the mold, although in such a case the core setting may be done by help independent of the machine.

3. Molding machines should not be introduced unless they can be given the same care that is given machinery elsewhere. They do not require much, but this little is indispensable if one would get good work from them; they should be oiled occasionally and never be allowed to get under the sand, as we occasionally see them. Nor should one be considered unless the management is prepared to give it a fair chance in the way of seeing that the sand is properly tempered, and the operator otherwise encouraged. To the green laborer on a machine cold sand will convey the impression of dampness to the touch, and warm sand the reverse, and until experience has taught him to discriminate between good and bad temper others should advise him.

What class of castings are adapted to machine molding? The answer to this question depends much on the ingenuity and persistence of the pattern maker and the force of the management back of him. In one foundry indifference may limit the profitable range by one-half, and in another enthusiasm may carry one too far. It is safe to assume that nearly all castings molded in a two-part flask are good work for machine molding. Irregular joints are as well made on a machine as by hand; the only question to settle is will the number of castings to be made warrant the cost of patterns? Naturally you will want to know the cost of patterns and stripping plate. It is a hard question to answer, for the reason that cost varies with patterns. When much duplication is called for it is better to have iron patterns. You know pretty well what these cost. We know that the stripping plates cost less than patterns. In considering the cost of patterns we should keep in mind the fact that one pattern or set of patterns fitted to a machine will give an amount of work equal to the product of from two to ten molders, and that these machine patterns call for little or no expense in the way of repairs. It is probable that a cost account kept from year to year would show in favor of machine patterns.

What is the profit from machine molding and how is it made? This is the vital question, in which you are all interested. An answer to the first part would show as great difference in foundries throughout the country as their respective cost accounts now indicate. A few months ago your association appointed committees to investigate competing prices for castings by obtaining bids from different parties for similar work. The resultant quotations seemed to indicate that some foundries were getting rich and others approaching bankruptcy at a rapid pace, yet there might have been enough difference in the cost of these castings to warrant a wide range in prices. The foundry which has spent years in developing a specialty is prepared to make cheap castings. Its patterns are well made, flasks designed to hold a minimum amount of sand and the workmen skilled in this branch of molding; piece work has been followed until the lowest price for molding has been reached; all energies have been devoted to reducing cost on these particular castings. Such a foundry may quote prices which carry a fair profit, but would mean ruin to a foundry less favorably equipped. These conditions have an influence on the economy of machine molding. It is evident that the saving in cost would be less in a foundry where 1000 1-inch elbows are molded per man than where 700 are a day's work. On castings of this kind where minimum cost of hand molding prevails the reduction should be one-half. As castings are larger and molding is more expensive the economy from machine molding is increased. We have cases where the cost has been reduced from 10 to 2.

The gains from machine molding are not confined to an increased product per man. Labor with less skill is used. In the sense that the machine operator need have no knowledge of molding, skill is not required, but in the broader sense the expert machine man is skilled to the extent of being apt in his movements, reasonably careful and knowing just when and how to do it. These qualities are so easily obtained that it makes the labor question comparatively easy.

Machine molding adapts the foundry to trade conditions. In busy times additional help may be given the machines to increase their product, and in dull times this may be reversed. Take, for instance, a 16-inch duplex machine, with flasks 12 x 15 inches, with six 2-inch elbows in a flask. The best product per man would probably come when the machine is operated by one or two men, but this number may be increased to four men with but very slight decrease in the number of molds per man. This particular machine is running on steam fittings. It was shipped, with

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another like it, in the early part of the year. We do not know the number of molds it is turning out now, but we do know that the owners wrote us, shortly after it was started, saying that they were then paying 1¼ cents per mold for molding, core setting, carrying off molds, closing and pouring. The machine was operated by two men. These people also wrote that these men were then putting up over 250 molds per day, and they could see no reason why they should not mold 350 when they became more used to the work. The sand was all handled with shovels by the operators. In this foundry the blast goes on at two o'clock, which reduces the molding time to six hours. If the molds made by these men were poured for them, and they were given a little help occasionally to handle the sand, they would turn out twice the number.

We have considered machine molding as it is applied to the average foundry without surrounding advantages. The best and most profitable work from this system calls for a rearrangement of foundry and greater division of labor. Continuous pouring should take the place of two-hour heats when practicable, and when not, two heats per day may be substituted. Either of these plans will reduce the number of flasks required by one-half. The machine should be run ten hours per day and the molds should be poured by other help. There should also be a force to take out castings and handle the sand. This will reduce the skill and judgment needed in each workman to a minimum and will make them proportionately more efficient. This problem calls for change in gray iron foundries, but in malleable iron and brass foundries, where frequent melts are made daily, the conditions for an ideal system are favorable.

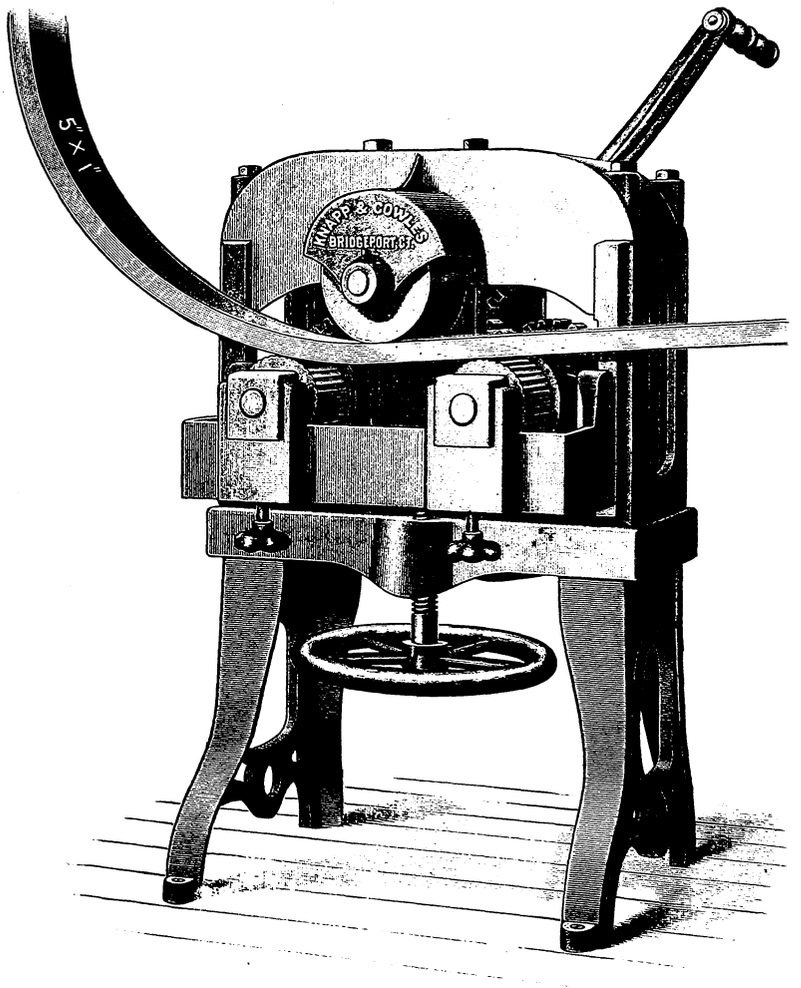
Mr. Taylor then proceeded to describe the machine shown in his drawing, both as regards construction and operation, and greatly interested all present. A discussion followed, after which the secretary introduced John Fleming, a molder in the employ of the Abram Cox Stove Company, Philadelphia, who exhibited a model of a machine for molding plumbers' soil pipe.

"This model," said Mr. Fleming, "represents a machine which has never been tried in actual use, not one having yet been built. As will be seen, it consists of a stationary follow board with a sliding jacket worked by two connecting rods operated by a lever. The machine is covered with an inclosed flask. In operation the jacket is raised above the pardon line of the follow board, is filled with sand, and the flask put on and locked. The levers are then pulled down, the flask taken off, and the process repeated for the other flask. It is intended also for use on soil pipe fittings or any work that a two-part flask will make. The sand in the machine," he said, "can be regulated to a nicety."

On motion a vote of thanks was tendered to Mr. Tabor for his interesting paper, and to Mr. Fleming for his model and description.

L. B. Whitney tendered his resignation as a member of the Executive Committee, such resignation, he said, being necessary on account of the severance of his connection with the firm of A. Whitney & Sons and his consequent retirement from the foundry business. He desired to thank the members of the association for the honor they had conferred on him by electing him as a member of the committee and regretted that his new business compelled his resignation. On motion the resignation was accepted, with regret, by the association.

Mr. Wanner then made a motion that at the next regular meeting of the association a general discussion on the Wilson tariff bill be entered into. While we may all differ, he said, on that question, the matter may be taken up with the view of educating each other, and not with the view of creating animosity. While some might favor high tariff, others low tariff, and yet others free trade, he thought that on one point all agree, and that point was the important point in connection with the whole thing, that the matter be taken up and put through Congress without delay. The motion was readily seconded and carried.



THE CALIFORNIA TIRE BENDER.

California Tire Bender.

The Knapp & Cowles Mfg. Company, Bridgeport, Conn., are introducing the tire binder herewith illustrated. The machine is described as having steel fluted rolls so set in bearings that they are easily adjusted to the top one by the hand screws in front, and by the hand wheel underneath being raised or lowered to form a radius of any size, from one foot upward. For fifth wheels and that class of work that is required to be bent edgewise, a groove is provided in the rolls. The wheel is slackened underneath to remove the work.

The gearing is so designed that when used for light work more speed is attained by operating the crank on the lower shaft, and for heavy work on the upper shaft.

The manufacturers claim that the machine is simple in construction, of the best material and workmanship, that it is effective in executing work, and is powerful for all classes of work. It is remarked that it can do double work on light tire, and, as an example of heavy work, it is stated that one man bent a 5 x 1 inch tire, as represented in the cut.

The New Phœnix Horseshoe Works.

The Phœnix Horseshoe Company of Poughkeepsie, N. Y., are the first of the large horseshoe makers to start a manufacturing branch in the West. They have just completed a fine plant at Joliet, Ill., which has the same capacity as the works at Poughkeepsie. The old works will continue to run and to supply such trade as can be handled from Poughkeepsie most conveniently, while the new plant will take care of Western trade. A most eligible site was selected at Joliet, in the northern part of the city, on the banks of the Des Plaines River. Here 20 acres were secured, and a very considerable portion of the tract is now covered with most substantial buildings, composed almost exclusively of steel. The Elgin, Joliet & Eastern Railroad has built a branch track into the company's yard, and thus provides facilities for shipping over all roads leading from Chicago, as it intersects them all. The Santa Fé Railroad, however, is expected to shortly make an independent connection.

Seven buildings have been erected for

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manufacturing purposes, together with a very handsome office building. The manufacturing buildings comprise a puddle mill, bar mill, horseshoe department, comprising three buildings, engine and boiler house and machine shop. The puddle mill is a steel fire proof building. The main structure is 156 x 76 feet, with a lean-to 76 x 40 feet. The lean-to contains the puddling furnaces and a 20 inch three-high train, suitable for rolling either iron or steel, and a squeezer. The bar mill occupies a building 144 x 121 feet, erected with a clear span and no obstructing columns, standing 22 feet to the eaves and over 50 feet to the deck lights in the center. Three trains have been installed in this building, arranged in a straight line, with room for a fourth train. Each train is run by a Porter-Allen engine, 14½ x 24 inches. The trains are so laid down that two engines stand together and can thus be attended by one engineer. Three heating furnaces stand near the trains, each having an overhead boiler. All pipes are underground in a conduit built expressly for the purpose, permitting ready access to any part of the pipe system. A separate cooling bed is arranged for each train, with shears at the foot of each bed.

Next comes the building in which the billets are heated and the shoes formed, 200 by 70 feet. It contains ten furnaces, with room for four more. A set of horseshoe machinery stands in front of each furnace. Here the straight billets of suitable length are bent and pressed into proper shape. Connected directly with this building and opening into it at one end is a stone structure, 140 by 56 feet, the roof being entirely of steel, in which the shoes are punched, finished and assorted, ready to be kegged. The floors of both these buildings are paved with vitrified brick and iron plates. Power is supplied from an engine house standing between the bar mill and the shaping room. The size of this building is 70 by 40 feet, and it contains two Porter-Allen engines, one being 14½ by 24 inches and the other 10 by 12 inches. The pumps, blowers and dynamo are located in this building. An electric light plant will shortly be installed in this house. Three Worthington pumps are in use, one for pumping from a pond to a 50,000-gallon tank built on a staging outside, and the others for boiler feeders, elevators, &c. Two Babcock & Wilcox boilers are in an adjoining room, each rated at 250 horse-power.

A stone storehouse, 200 x 80 feet, with roof entirely of steel, adjoins the finishing room. A hydraulic elevator in the latter room is used for hoisting shoes up to the level of a platform in the storehouse. The platform has various passageways running from it and passing over bins in which the different kinds of shoes are separately stored. Railroad tracks run along one side of this building, the roof of which overhangs the shipping platform. The latter is on a level with the car floors. Seven cars can be loaded at one time, the doors being an exact car length apart.

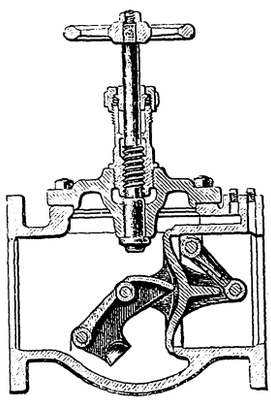
The machine shop, 70 x 33 feet, built of stone, is well equipped with planers, drills, lathes, pipe cutters, &c., enabling the company not only to handle repairs and avoid delays, but also to build new machinery.

All these buildings have been arranged according to a most carefully conceived plan. They are not only conveniently located for present conditions, but they are so placed that they can easily be extended when required, so as to increase the capacity of the plant at any time without disturbing its harmony of arrangement or interfering with its operation.

The office building is constructed of stone, with an ornamental tile roof. The inside finish is of Georgia pine. It contains a large counting room, private office, drafting room and storeroom, and is heated by steam from the mill. The same thoroughness and careful regard to appearances as well as usefulness are shown in every part of the plans, the office as well as mill buildings demonstrating the attention given to every detail. The plant will be in full operation either toward the close of this month or in the beginning of next month.

The Schutte Balanced Horizontal Check Valve.

The Schutte check valve is intended for use principally between engines, pumps and vacuum pans and a condenser, though it is as well adapted for



The Schutte Balanced Horizontal Check Valve.

use in such places where a check valve is required.

The valve, when applied in the exhaust connection from an engine to the condenser, is intended to prevent a back flow of water from the condenser to the cylinder. The desirability of a safety appliance of this kind is well understood.

The inclined suspension bar to the left in the engraving has a tendency to open the valve, while the inclined supporting bar to the right has an equal tendency to close it. The small counterweight on the supporting bar, as shown, compensates for a possible deviation from the level position of the valve, and also adds a permanent slight excess of force to close. On the right hand a boss is provided for the convenient attachment of a vacuum breaker or air admission valve. The two passages appearing in this boss correspond to passages in the vacuum breaker. When a vacuum breaker is needed it may be attached to the check valve by means of a gasket and two tap bolts, for which threaded holes are provided. The passages in the boss on the valve are also threaded and closed by screwed plugs. Where no vacuum breaker is needed, the threaded passages may, on removal of the plugs, be used for the attachment of a vacuum gauge. The valve is made in sizes ranging from 1¼ inches to 20 inches by L. Schutte & Co. of Philadelphia.

The Golding Fire Proof Floor.

A series of experiments have been made lately at the Howard Iron Foundries, South Boston, with the Golding fire proof floor. At the suggestion of Capt. John S. Damrell, inspector of buildings, a section of the flooring in question was constructed in the foundry yard. It consisted of a section of single floor arch, with a span of 16 feet, making a surface of 62 square feet, resting upon iron girders, which were supported by four heavy timber blocks imbedded in the ground and rising above the surface about 4½ feet.

In making this arch, after the forming under boards were in place, the expanded metal, which is composed of meshes of steel, was stretched across and the cement concrete poured in and leveled up to the required hight, the metal being thus thoroughly imbedded in the concrete. On this was placed a single layer of boards. This was left to set and harden for about three weeks, though it is well known that it takes at least as many months for such concrete to even approach a maximum hardness and tenacity.

Tuesday evening pig iron was piled upon this floor arch to an amount equal to 750 pounds per square foot, or 46,500 pounds. Later an additional weight of pig iron was placed upon the arch of 9300 pounds, bringing up the total weight to 900 pounds per square foot. Up to 1 o'clock, even with this great load on, no perceptible deflection was noticed. When the time set for the exhibition arrived an additional weight of about 72¼ pounds per square foot was put on, which brought the total load of the section of floor arch up to 60,310 pounds, or about 972¼ pounds per square foot of surface.

Under this great weight the arch began to give, but the movement was at first slow, and even when it went down it was a gradual and easy descent—not a sudden disruption and a crash. When its central part reached the ground it still held together, and its ends did not leave the supporting iron cross beams.

Employees of the Pennsylvania Railroad are being instructed in the use of a new Westinghouse automatic emergency air brake with which the cars of that road are to be equipped. A box freight car has been fitted up with the brake at the Altoona shops and sent over the lines of the company in charge of a corps of instructors. The car is fitted with 24 air brake cylinders, such as would be the equipment of an engine and train. These are arranged in a series within the car so that their working may be readily seen and explained. The emergency device is an attachment to the ordinary air brake, and by its use the brakes are applied quicker than the eye can follow the movements of the pistons in the series of cylinders.

Engineers who have inspected the levee now being built along the Gila River report that the Colorado River can be made navigable from its mouth to the Grand Cañon, a distance of 700 miles.

The ready sale last week of $1,225,000 of 3 per cent. stocks and bonds of New York City at 100.38 is regarded as a sign of returning confidence in commercial circles. This is the first time since the depression began that the city's securities have sold at a premium.

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American Society of Mechanical Engineers.

A valuable paper on

The Expansion Bearings for Bridge Superstructures

was read by George S. Morison of Chicago:

Among the special details of bridge construction one of the most important is the provision for changes of length due to temperature; and while this is a provision which is nearly always made, it is, unfortunately, one of the details on which least care is bestowed. For many years I have observed the defects of the expansion bearings of bridges as generally constructed, and it has seemed to me that the time has come when the attention of engineers should be called to these defects and to the arrangements which, I believe, will obviate the worst existing difficulties.

When a structure which changes its length rests on supports the distance between which is practically unchangeable, provision must be made for that change of length. When metallic structures rest on masonry piers some attempt at such provision is universally made. The refinement of modern theory would say that like provision should be made for wooden structures resting on masonry, as timber changes its length under strains more than iron does. In practice no such provistion is made in wooden bridges, and it is best that none should be made. In practice this provision, though always made in metallic bridges, seldom operates as it should.

The older devices for this purpose were of three classes—sliding plates, rockers and rollers.

The sliding plate was the simplest of all. It consists simply of a smooth planed surface of metal on the masonry, and a like surface at the bottom of the end post, one sliding on the other. So long as the plates could be kept lubricated this worked pretty well; the difficulty in lubricating, however, was often fatal, and though there are instances of important bridges, of spans of considerable length (like the deck spans of the Louisville bridge) which have done good service with sliding plate bearings, the practice has not met with favor. Sliding plates, however, are generally used under riveted structures of moderate length.

Rockers are an attractive design, and have some advantages over other plans. The rocker is, in fact, nothing but a section of a wheel, the weight being carried on the axle and the wheel rolling on its circumference. There are two objections to a rocker bearing—the great weight that must be carried on the axle and the friction on this axle. The friction causes more or less sliding motion; the result of this sliding motion is to work the bearing gradually toward one edge of the section, so that at length the rocker falls over. Rockers were used considerably 25 years ago. They are now almost entirely abandoned.

Rollers have always been the favorite device. It is the one arrangement in which friction can virtually be eliminated. There are no sliding surfaces; the top bearing rolls on the rollers, and the rollers roll on the lower bearing. If perfectly constructed the arrangement must always be perfect. Such has not proved to be the fact, and in many instances the motion on the rollers is less than on the sliding plates.

The old roller bearings differed from the old sliding plates, simply in that a nest of rollers was placed between the two plates. The lower bearing was a flat cast iron plate on masonry; the upper bearing was the planed surface of an end post, usually of cast iron; the nest of rollers was between. There was no provision except accuracy of workmanship to insure parallelism of the two plates, and even the slight deflection of the truss due to the passage of a train would disturb this parallelism; the necessary result was that some of the rollers were greatly overburdened. This practice, however, was abandoned many years ago, and all the better designed bridges now transfer their weight to the rollers through bolsters, which, supporting the trusses through the end pins, are free to rock; one of the serious defects of the older roller bearings has been thus removed.

Mr. Morison then described the bearings of several bridges of his own design, and said of the bridge across the Mississippi at Memphis:

The central span of this bridge is 621 feet long, and as a cantilever arm projects from each end of this span the weight carried at each end corresponds to nearly double the weight of the half span. Making no allowances for changes of length due to strains, the provision for temperature alone required a possible movement of about 8 inches, while the actual dead weight carried on each bearing was 2,454,000 pounds, and the total dead and live load 4,036,000 pounds. In other words, I had to prepare an expansion bearing with a possible movement of nearly 10 inches which should roll freely under a weight of 2000 tons. This is probably the largest expansion bearing ever built.

As the piers were tall and slender it seemed necessary to reduce the friction on this bearing as much as possible, and I decided to use large segmental rollers. The rollers were made of forged steel, 15 inches in diameter, and placed 6 inches between centers, the sides being planed out hollow so that the rollers would shut into each other, after the European practice. The under bearing consisted of a wall plate casting made in four sections, the whole being 10 feet square. On this wall plate are the rail plates, one on each side of the center line, each rail plate being formed of 15 rails riveted to a heavy plate below. A solid steel plate 4 inches thick is bolted between the wall plate castings and extends above the top of the rail plates, thus forming a central guide for the rollers. There are 30 rollers in all, 15 on each side of the central plate. The sides of the rollers are planed and the cylindrical rolling surfaces are polished. Each roller has two holes bored completely through it, through which pass bolts made of cold rolled shafting, these bolts uniting the rollers on the two sides so that they will roll together. The lower tier of bolts pass through side plates with square ends and the upper tier of bolts through side plates with hook ends; before the rollers can turn over the hooks of the upper plates strike the square ends of the lower plates and the motion is stopped. Graduated scales with sliding verniers were fitted on the lower plates, and brass pins were inserted in the hook plates, this being a special refinement put on for the purpose of reading the actual expansion, and from this reading some interesting results have already been obtained.

Above the rollers is the bolster, which it was originally proposed to make of two large steel castings with a guide plate between, like those between the castings of the wall plate; so much difficulty was experienced, however, in getting sound steel castings that the plan was changed and the bolster was built up of steel plates and I-beams, a central plate being so inserted as to make a guide rib between the rollers. On this was placed a large steel casting, which carries the 14-inch pin on which the entire weight of the superstructure is thrown.

As an extra precaution a steel lock plate was placed between the two sets of rollers; before any great strain can be put on the bolts which fasten the side plates to the rollers the bolster will strike one end or the other of this lock plate, and all further movement will cease; it is not likely that this will ever occur, but it was thought best to provide for it, so that in case of some special strain tending to move the pier, the pier will bend before there is any danger of the expansion bearing being thrown down.

The result of this arrangement has been satisfactory. The bearing is sensitive to all changes of length, it forms an accurate metallic thermometer 620 feet long, and the movements due to the passage of trains and the changes of chord lengths under strains are accurately measured.

Observations on these bearings showed that some further changes could be adopted to advantage. The cast iron wall plates and the rail plates were all that could be desired; the large segmental rollers with the hook side plates were good, but could be improved; the pin connection between the bolster and the truss was good as far as it went, but was defective in that it provided for rocking in one direction only, whereas irregularities of workmanship or other disturbances might destroy the parallelism between the pin and the rollers, and thus make very unequal bearings.

To remedy this last defect I decided to make the rocking of the bearing entirely independent of any of the pin connections in the truss, and to put below the chord line of the truss what I have termed a rocker plate, which is a polished steel plate with two cylindrical surfaces on top and bottom at right angles to each other. The plate bearing on the rollers is a steel casting, with a turned socket in the center, in which the rocker plate fits, and above the rocker plate is another steel casting with a turned socket below. The upper casting is, therefore, free to rock in any direction without disturbing the lower casting.

A Device for Drill Jigs

was described by B. Cruikshank of Brooklyn.

The following simple plan is submitted as leading to good results in the making of drill jigs. This is a well-known device in some shops, but not being universally used, a brief description of it would perhaps be of interest.

Where two holes are to be placed in the jig in the same flat surface, at a given distance from center to center, they can be quickly and accurately located by the use of hardened steel bushings ground to a known size on the outside, and lapped out to very accurately fit the drills and reamers which are standard for the tits of counterbores in use in the shop. By using the same tit size for several sizes of counterbore the number of bushings necessary for all round work could be considerably kept down.

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These bushings should be made with a flange or other projection, so that with clamps they may be temporarily fastened to the jig, the distance from the outside of the one to the outside of the other measured with micrometer or vernier caliper, and the holes for the counterbores drilled and reamed.

This is not new nor even my own device, but is so handy that it should be more commonly used in shops where sufficient jig making is done to warrant the expense of a few bushings with counterbores to fit.

In a paper by Fred. W. Taylor of Philadelphia on

Notes on Belting

many conclusions were drawn as to the use of belting so as to obtain the greatest economy and the most satisfactory results.

The number of square feet of double belt passing around a pulley per minute required to transmit 1 horse-power is 80 square feet of oak tanned and fulled leather belts, or the number of lineal feet of double belting 1 inch wide passing around a pulley per minute required to transmit 1 horse-power is 950 feet of the same belt. The belt speed for maximum economy should be from 4000 to 4500 feet per minute. The best distance from center to center of shafts is from 20 to 25 feet. The faces of pulleys should be about 25 per cent. wider than their belts. Belts are more durable and work more satisfactorily made narrow and thick rather than wide and thin. It is advisable to use double belts on pulleys 12 inches diameter, or larger. It is advisable to use triple belts on pulleys 20 inches diameter, or larger. It is advisable to use quadruple belts on pulleys 30 inches diameter, or larger.

When practicable, belts should be tightened by moving one pulley away from the other. Countershafts should be mounted on frames and raised in tightening vertical and diagonal belts.

Belt clamps having spring balances between the two pairs of clamps should be used for weighing the tension of the belt accurately each time it is tightened.

When it is impracticable to accurately weigh the tension of a belt in tightening it, it is safe to shorten a double belt $\frac{1}{2}$ inch for every 10 feet of length, if it requires tightening, when working, according to the ordinary rules, under a total load of 111 pounds per inch of width and giving an effective pull of 65 pounds per inch of width. If it works under a total load of 54 pounds and an effective pull of 26 pounds, it is safe to shorten the belt 1 inch for every 10 feet of length, when it requires tightening.

The most economical average total load for double belting is 65 to 73 pounds per inch of width—*i.e.*, 200 to 225 pounds per square inch section. This corresponds to an effective pulling power of 30 pounds per inch of width, and with rules No. 1, given above.

Double leather belts, when treated with great care and run night and day at moderate speed, should last for seven years, when under average total load of 111 pounds per inch width, or 358 pounds per square inch section.

They should last for 18 years when under average total load of 54 pounds per inch width, 174 pounds per square inch section.

A double belt will stretch $\frac{47}{100}$ of 1 per cent. of its length before requiring to be tightened, when subject, according to ordinary rules, to a total load of 111 pounds per inch of width, and giving an effective pull of 65 pounds per inch of width. A double belt, with total load of 54 pounds, effective pull of 26 pounds, stretches $\frac{81}{100}$ of 1 per cent. before requiring tightening. In a carefully conducted experiment between different types of leather belts, made in a machine shop, lasting nine years, between 40 and 50 belts being used, the oak tanned and fulled belts showed themselves to be superior in all respects except the coefficient of friction to either the oak tanned not fulled, the semi-rawhide, or rawhide with tanned face.

Belts of any width can be successfully shifted backward and forward on tight and loose pulleys. Belts running between 5000 and 6000 feet per minute, and driving 300 horse-power, are now being daily shifted on tight and loose pulleys, to throw lines of shafting in and out of use.

Shifting belts are much to be preferred to cut off couplings or friction clutch pulleys for throwing heavy lines of shafting in and out of use.

The best form of belt shifter for wide belts is a pair of rollers twice the width of belt, either of which can be pressed on to the flat surface of the belt on its slack side close to the driven pulley, the axis of the roller making an angle of 75° with the center line of the belt.

The writer gave his reasons for these rules (only a few of which we quote) and said they were the result of a long series of experiments and observation.

Discussion.

W. S. Rogers presented a written discussion, from which we take the following:

I have started several new shops, and I think I have had the privilege in roving over this country of seeing the inside of 10,000, and I found out more in other people's shops than I found in my own. There are lots of machines being built that are going to start right off if the man running it remembers that it is a new infant being put right into active practical work. In regard to the time lost, I admit that the object of time in all factories is an important one of all things, but the time lost in shop practice is not simply in belts, but because the superintendents, managers and other officials are devoting a little too much time to what we might expect from college graduates, instead of seeing that the work is kept up and leading men on to better victories and better results.

The author says: "I have found in my experience, taking the running conditions of the two kinds of belts in daily service, without comparisons as to length, as mentioned in article 65, that horizontal running shifting belts in machine shop work usually last about five times longer than the vertical cone belts, while in wood working plants, where the service is harder and more furious, they last nearly three times longer than the vertical belts." The chief reason why the shifting belts last so much longer than those used on cones is that cone belts have about three times more work to do and receive about ten times more abuse while doing it than their brethren who drive them. I know of nothing more destructive to belting in service than cone steps and the methods used for shifting belts on them. There is one point in regard to the life of belts that we seem never to take into consideration when discussing their extended or abbreviated lives, and that is the temperatures through which they have to pass in performing their functions. I have found that a belting running through varied changes of temperature will cause considerably more trouble and obstruction to manufacture and have a much shorter life than one running under more favorable conditions.

In speaking of the exact point of tension at which belts were just able to do their work, the author says: "This point was fixed by each belt for itself by giving indications that it was about to slip seriously." Now, I would like to ask what the sign or indication is? The only evidence I have been able to gain from a belt as to its intentions to slip was after the slip took place. In this same paragraph we read that "the shifting belts rarely if ever slip," and bearing this in mind I read on in the next paragraph in regard to the shifting belts that "they were taken up because they had stretched so much that they began to flop and jump about to

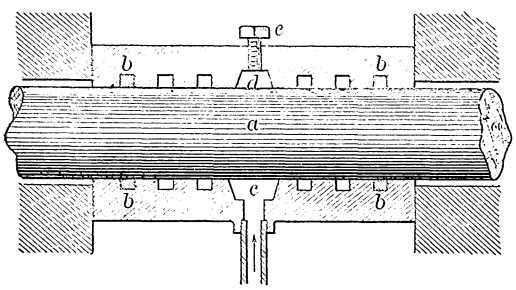


Fig. 1.

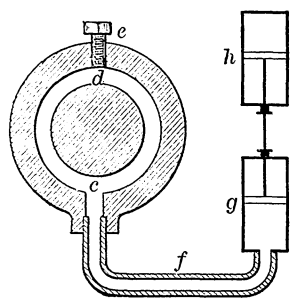


Fig. 2.

Coxe.

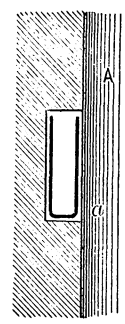


Fig. 3.



Fig. 4

Raynal.

PACKING FOR HYDRAULIC MACHINERY.

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such an extent as to be in danger of damaging themselves." Now, I have always found that a belt was slipping considerably when its actions were as here described and the tension was to zero, and not only is it damaging itself, but it is also injuring the smaller belt it is driving to a serious extent.

On page 23, the author states, in paragraphs 80, 81, 82, 83 and 84, the rules he has adopted and used for several years, and when I come to 83 I make a few figures to see how I would have come out in equipping my plant this autumn, provided I had followed these rules.

My three line shafts have a rotative speed of 200 per minute, which is a little above the average in machine shop practice. To have obtained the economical belt speed called for in paragraph 83 I would have been compelled to use pulleys 7 feet in diameter and hangers having 45-inch drop, at least. As the ceiling is 16 feet from the floor (which is a foot or two more than usual practice in the great manufacturing plants) the lower side of the belt would have been only 9 feet 9 inches from the floor. If I had belted to a heavy boring mill whose countershaft pulleys are only 28 inches diameter and are figured to run at 125 revolutions per minute by the builders, I find that I would have required tight and loose pulleys over 11 feet in diameter, and the tool builders would have had to also furnish me with hangers for the counter having 6-foot drop. This would have brought the lower side of the counter belt to within 5 feet of the floor, and should I have carried this plan out all through the plant I should have had to rent space elsewhere to work in. To have run a triple cylinder molding and flooring machine to carry a belt speed of 4000 to 4500 feet to the countershaft whose builders call for a pulley speed of 1000 revolutions per minute I would have required 16-inch pulleys on the counter instead of 10-inch ones furnished. My shafting and hangers would also have had to be much stronger to carry this excess weight, and the first cost would have given the stockholders paralysis.

Friction clutches given the same care and attention that is or rather should be expended on loose pulleys and belts will give more satisfactory results on the belting and throughout the shop generally. I would much rather have the wear and burn from slow starting come on the wooden shoes of the clutches than on the belting. The wooden shoes are cheap and easily replaced when the life is worn out of them from friction slipping, while I know of no way of putting it back into the belt. Friction clutches are superior things in case of accidents, as has been proved thousands of times for the benefit of employer and employee and machinery as well.

What is the best mode for packing the rods and plungers of hydraulic machinery, particularly under high pressure?

In the discussion of this question Mr. Coxe described very fully and illustrated by means of sketches on the blackboard, which we reproduce, the method which has been most successfully followed at his works for packing piston rods intended for pressures up to as high as 400 pounds. These worked so well that they had been placing them on all their pumping machinery as rapidly as possible. The construction here followed will be understood from Figs. 1 and 2, in which *a* is the piston rod, surrounding which is a sleeve having six small annular grooves, the end ones *b* of which contain ordinary piston rings, which are sprung in, the others being left empty, as indicated in the drawing. The groove *c d*, shown in section in Fig. 2, is formed in this sleeve, its upper portion being provided with an opening closed by the screw plug *e* and its lower portion being connected with the pipe *f*. The lower portion of this groove is wider than the upper. Connected with the pipe *f* is the cylinder *g*, the piston of which is operated by pressure admitted to the cylinder *h*. The piston *g* is removed from its cylinder and the latter filled with tallow cut into small pieces, when the piston is returned to its place and the pressure admitted on the upper side of the piston of the cylinder *h*. This forces the tallow through the pipe *f* and into the groove *c d*, surrounding the pump piston rod. During the operation of the piston rod the tallow finds its way into the empty grooves and serves not only as a perfect lubricant, but also assists and effectually packs the piston rod. The extreme simplicity of the device and its efficiency were dwelt on to some length by Mr. Coxe.

Alfred H. Raynal illustrated by means of the drawings, Figs. 3 and 4, the necessity for correctly forming the recesses to contain cupped leather packing intended for packing rods working under high pressures. When the recess is made with a right angle as shown at *a*, Fig. 3, the pressure upon the inside of the U-shaped leather will cause the latter to buckle in this corner and destroy it quickly. This joint should be made as indicated at *b*, Fig. 4, as sharp as possible and should be curved in order that there should be no tendency of the leather to buckling and that when properly constructed in this way he had found packing of this description to work well.

The high pressures produced by stopping the flow of water through a pipe, even when the velocity is small, were shown in "Some Experiments on the Effect of Water Hammer," described by Prof. R. C. Carpenter of Cornell University. A paper by the same author was presented on "Constants for Correcting Indicator Springs that Have Been Calibrated Cold."

Use of the Indicator for Continuous Records in Dynamometric Testing.

By Wm. S. Aldrich, Morgantown, W. Va. In introduing this subject, the writer said:

For variety of purposes the steam engine indicator is probably one of the most serviceable spring pressure recording instruments at the command of the engineer. It has reached a high degree of mechanical perfection for its particular use in steam engine testing. Notwithstanding its well known defects when applied to this purpose, it seems only possible to perfect further its mechanical construction, so long as its typical piston mechanism is adhered to. Still, this is not an inherent objection to the use of the indicator in some other lines of recording work, and the purpose of this paper is to show how it has been so applied in power testing with a dynamometer. It is sometimes better to make use of an instrument which has been brought to a high state of perfection in one field of work than to undertake the development of new and untried forms of apparatus for limited and usually special tests. Taking the indicator, therefore, as we find it, and not delaying work in which it may be used to advantage till it (or a similar instrument) becomes what it ought to be, the steam engine indicator will be found extremely serviceable in obtaining short continuous records in power tests.

Almost all tests of this character may be reduced to the measurement of a more or less variable pressure, depending on the amount of energy being absorbed by the dynamometer. This pressure is usually measured as a pressure on a platform scale, or by the maintenance of a weighted lever in a position of equilibrium, or by the simple pull on a spring balance. But this pressure may be transferred or transmitted to any other instrument designed for recording variable pressures, as the indicator, for instance. In some cases simple mechanical connection may be used, while in others hydraulic connection will be found desirable.

Mechanically transmitting the pressure from the arm of the dynamometer, by a linked connection, to the indicator piston, enables us to turn the indicator into a recording spring balance. In this method its piston mechanism is not in the least objectionable, serving merely as a guiding mechanism.

In the transfer of the pressure from the dynamometer arm to a diaphragm, which in turn presses upon water, oil or mercury, in a closed vessel, and thence, by pipe or tubing, to the cylinder of the indicator, we make use of it as a recording pressure gauge. Small variations in pressure, slowly increasing or decreasing, yet of comparatively short duration, are not faithfully recorded on account of the retarding effect of friction of the indicator piston; but the leakage past the piston will be the least. Rapid and extreme variations in pressure, as well as extreme pressures, maintained for any length of time, are sure to result in more extended leakage, even when mercury is used under the indicator piston, as arranged for the form of the "U" manometer. When the greatest sensitiveness of the indicator is most desired (with small pressure variations) it is least obtained. It would, therefore, be much better to use some form of diaphragm, or closed tube pressure recording gauge. It should be capable of enduring much more rapid and extreme fluctuations than any on the market at present.

The author then described the method he had followed in using the indicator in this way and gave some of the results.

A New Form of Prony Brake,

designed by Prof. R C. Carpenter of Cornell University, was then described:

The brake consists in each case of a tube of copper, with an elliptical section, which nearly encircles the brake wheel. Outside the copper tube is an adjustable band or belt of sheet steel, which prevents the copper tube from expanding. Water pressure is applied to the copper tube by means of hose connections made near the center of the wheel to water pipes, the amount of pressure being regulated by throttling the admission and discharge valves. As the external diameter of the copper tube cannot change, the internal pressure causes the inner surface to rub against the wheel, producing the friction which is used to absorb the work. To prevent the wearing of the inner surface of the copper tube a thin sheet of steel or Russia iron is inserted between the tube and the brake wheel and connected to the brake so as not to revolve.

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This brake has proved very satisfactory; the work is readily absorbed by varying the opening of the supply and discharge valves, and no trouble has been experienced on long runs from heat or irregular friction of the brake.

In the figures which follow, the principal parts and dimensions are as follows:

Fig. 5.—Elevation of wheel with attached brake. Wheel, 4 feet diameter, 12 inch face; A, supply pipe; B, discharge pipe; C, brake; D, sheet iron liner; F, external strap sheet iron; G, adjusting bolts in external strap; H, arms of brake riveted to external strap; J, support for brake arms, to be carried on platform of weighing scale.

Fig. 6.—Section of brake and rim of wheel. C, brake, elliptical section; larger diameter, 12 inches; shorter diameter, ¾ inch; F, external strap; D, sheet iron liner.

Another merit, which in some cases may be of little moment, but which was of considerable importance at the time of its erection, was the fact that the first cost was small, the brakes not costing over $50 each.

Prof. C. W. Scribner designed a self-regulating device which I consider of great merit, but which, because of pressure of other work, has not yet been applied to the brakes just described. There is, however, no doubt of the effectiveness of the design, and its description is therefore here given.

So far as the writer knows, every previous device for automatic regulation of the work absorbed by a brake requires the rotation of the wheel to be such as to tend to move the free end of the brake arm in an upward direction. This is oftentimes objectionable, and sometimes an element of danger. In this case Professor Scribner permits a downward motion of the brake arm, and yet succeeds in securing motion sufficient to adjust the tension on the brake.

The general method of securing the adjustment is shown in the diagramatic form, Fig. 7, in which A C and B C are the brake arms. These rest on the end of a horizontal lever, K C. This lever is supported at D by a knife edge on the fixed support D E. A movement weight, F, is placed on the arm of the lever at any point needed to give the required brake load. If the brake load is too great, the pressure at C is greater than at F, and the point K of the lever rises. On the other hand, if the brake load is too small, the pressure at F is greater than at C, and the end K of the brake arm falls.

The motion at this point can readily be utilized to decrease or increase the tension on the brake, as required. In this case this motion will be utilized to regulate the opening of the supply valves and to vary the pressure on the brake. The weight F can also be utilized to weigh the load. The detailed drawings for this purpose are shown in Fig. 8.

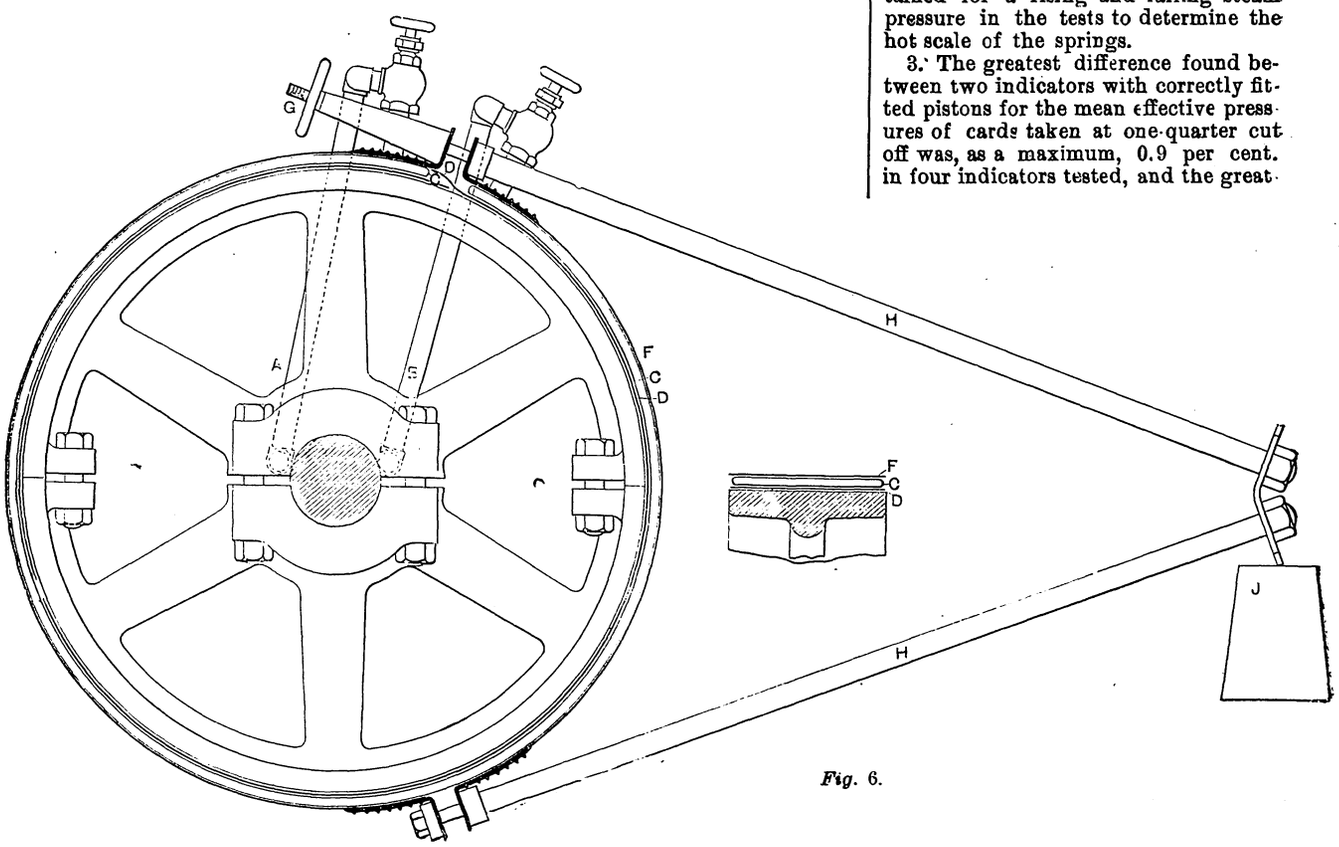


Fig. 6.

Fig. 5.

THE CARPENTER PRONY BRAKE.

The principal parts are as follows:

A, supply pipe; B, discharge pipe; C, brake; F, external sheet steel strap; G, adjusting bolts in external strap; H, arms of brake fastened to external strap; M, weighing lever; W, weight; O, knife edge between lever and stationary support; N, knife edge between brake arm and lever; P, hand wheel to adjust load on brake.

At this stage of the proceedings papers were presented by William A. Pike of Minneapolis on "Steam Piping and Efficiency of Steam Plants," and by Prof. D. S. Jacobus of Stevens Institute on

A Comparison of the Mean Effective Pressures of Simultaneous Cards Taken by Different Indicators.

From the latter paper we take the following conclusions derived from the tests made by the author:

1. With correctly fitted pistons in the indicators there need be no greater error involved in their use than that which occurs in measuring the hot scales of their springs.

2. A leaky piston is much more reliable than one that is too tight a fit. A piston that will fall through the cylinder by its own weight may be too tight and produce errors due to undue friction. The friction of an indicator piston should be so small that there will not be over the thickness of a very fine pencil line between the lines obtained for a rising and falling steam pressure in the tests to determine the hot scale of the springs.

3. The greatest difference found between two indicators with correctly fitted pistons for the mean effective pressures of cards taken at one-quarter cut off was, as a maximum, 0.9 per cent. in four indicators tested, and the greatest difference in the measurement of the mean hight of the diagrams for any two indicators was 0.005 inch. This was for comparative tests in which the average of either 12 or 24 cards was taken. The greatest difference between any single pair of indicator cards taken simultaneously was 2 5 per cent. of the mean effective pressure and the corresponding difference in reading the mean hight 0 017 inch.

4. The greatest difference found between any two indicators with correctly fitted pistons for the mean effective pressures of cards having one-fortieth cut off, so that a loop was formed below the atmosphere line, was 0.6 pound per square inch, and the greatest difference in the measurement of the mean hight was 0.010 inch; or, adding opposite signs, 0.017 inch. The presence of a loop causes the effect of friction and lost motion to be a maximum, and the above differences are therefore greater than were found in cards having no loop.

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5. The variation of the weight of the moving parts within the limits now employed by the makers of the standard instruments does not affect the accuracy of the results obtained by the indicators.

A paper by Charles H. Manning of Manchester, N. H., described the method he had followed several years ago in making a 20-inch steam pipe. It was made of mild steel, riveted, with die forged flanges of the same material, the flanges being riveted and calked.

"A Method of Calculating the Strength of Rim Joints in Fly Band Wheels" was the title of a paper by J. B. Stanwood of Cincinnati.

F. A. Scheffler of New York took for his subject the test of a boiler using grates with small percentage of openings. The openings in the grates in question should have been $\frac{3}{16}$ inch, but they were not more than $\frac{1}{8}$ inch, due to rapping the pattern in the mold and to rough edges naturally resulting from the endeavor to make such small openings. These grates had a total area for passage of air of only 15 per cent. The usual size opening for grates burning the kind of coal used is between $\frac{5}{8}$ and $\frac{1}{2}$ inch, giving an area of from 35 per cent. to 45 per cent. The draft gauge showed 0.46 inch of water, which, while being a very fair draft, was nothing to brag about, considering the grate openings. The writer felt that it would not be politic to make a test of the boiler under the circumstances, but as everything was prepared at that time to complete the test, it was finally decided to make same, if for no other reason than to demonstrate what the boiler could do with only 15 per cent. openings in the grates.

The results showed that, with only 15 per cent. grate area and with an overload of 60 per cent. above the rated capacity, when burning 24.8 pounds per square foot of grate surface per hour, the efficiency obtained was 71 per cent.

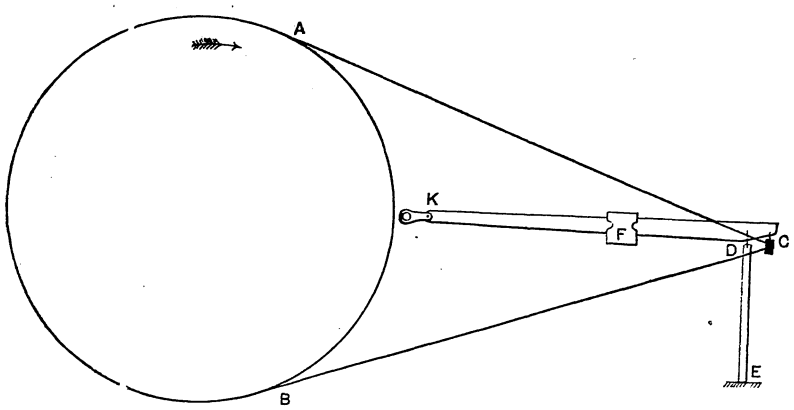
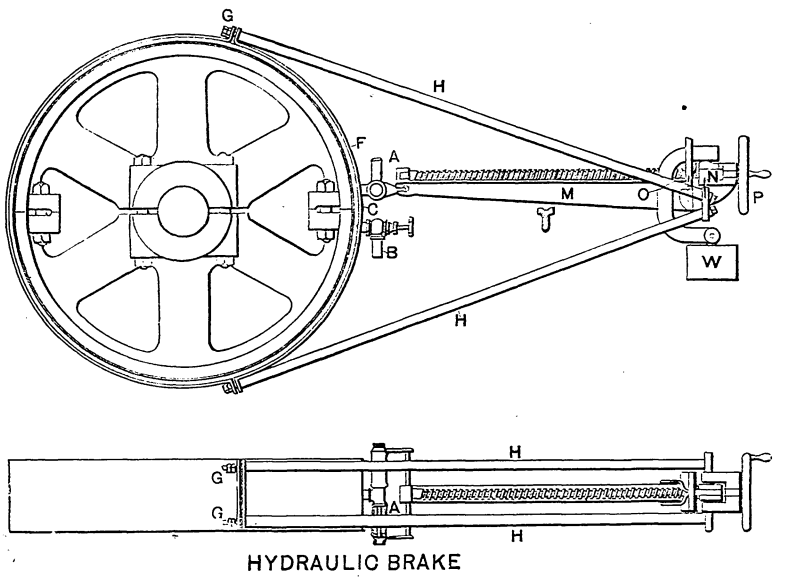


Fig. 7.



HYDRAULIC BRAKE

Fig. 8.

THE CARPENTER PRONY BRAKE.

A Crucible Furnace for Burning Petroleum

was described by W. E. Crane of Waterbury, Conn.

The furnace is built round as high as the top of the crucible, and 4 or 5 inches larger in diameter. From there up it is built square, and the corners used as described further on.

The pot stands on a support about 6 inches high. If it is a furnace running continually, it is immaterial of what substance it is made, or how solid, provided it will withstand the high temperature.

If a furnace runs 10 or 12 hours only per day it should be made with as little substance as will withstand the temperature and weight. If made solid, the first heat will take longer, as this support must be thoroughly heated through before the bottom of the pot will heat. After the first heat any support will be all right. Fig. 9 shows an elevation of the furnace, which has been rebuilt from one using grates for coal. A brick bottom is put over the grates to preserve them, but one grate should be taken out and a hole left through the bottom, so that the metal can run through if the pot breaks.

Fig. 10 shows a plan of furnace at the top of the pot. Four pieces should be provided of the shape shown in one of these corners, which will rest on top of the pot and in the corner of the furnace, shutting in the products of combustion around the pot below the top. By this means fully 15 per cent. of the fuel will be saved, a much hotter fire secured, and faster work done. A small flue should lead off from the top of this chamber, not over $2\frac{1}{2}$ inches square, either to the chimney or to heater for heating air, or to other system of economizing the heat from waste gases.

When the waste heat is utilized, this construction is essential in melting alloys, especially where spelter or zinc is used, as the fumes would coat over or fill up any economizer. By closing the space at the top of the pot the fumes from the alloys can be carried off through a separate flue. This flue should have from 30 to 40 inches area.

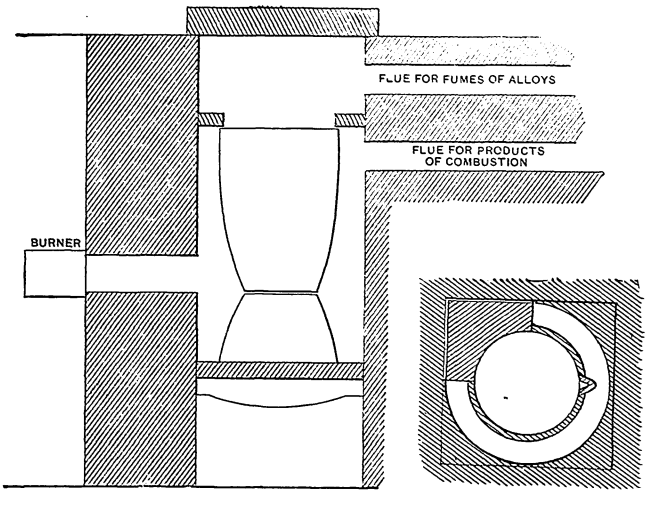


Fig. 9. *Fig. 10.*

CRUCIBLE FURNACE BURNING PETROLEUM.

The burner would preferably be an air burner, with as low a pressure as possible. Some burners work nicely

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with as low as 6 ounces pressure. All of the air for combustion should be supplied by the blower. With an air burner at high temperatures there is usually a deposit of carbon. This can be prevented by introducing a small jet of steam, preferably superheated. As a general thing this will be found to cause more annoyance than that of removing the deposited carbon. This steam will have a tendency to lengthen the flame, and as a consequence the heat will be less intense, more of the heat passing off into the flame.

There should be a good draft to take off the fumes when using alloys which smoke a good deal, but the draft for the products of combustion should be light.

For the support for the crucible in furnaces running ten hours per day I have found an old pot cut off at the right length and turned bottom up to be as good as anything tried.

The pieces to shut off at the top of the pot should be made of crucible stock and well seasoned.

During the convention other papers were read by David Guelbaum of Syracuse on "Theory of Direct Acting Steam Pumps and Its Results;" by W. H. Francis of Philadelphia on "A Modern Disinfecting Plant;" by W. A. Rogers of Waterville, Maine, on "Cumulative Errors of a Graduated Scale," and by Professor Carpenter on "Experimental Determination of the Effect of Water in Steam on the Economy of the Steam Engine."

The Worthington Condenser.

The drawing here presented represents a plant of ten blast furnace blowing engines at the Illinois Steel Company, South Chicago, provided with ten condensers built by Henry R. Worthington, New York. The valves of the steam end are each moved positively by the steam applied to the piston of the opposite cylinder and such obstructions as dirt, scale, rust or gummy oils, which sometimes prevent steam moved valves from operating, are powerless to prevent the regular and positive action of these plain slide valves. Neither is there any liability of leakage by reason of the wearing of the valve and its seat, as is often found in piston valves or steam moved valves.

It is unnecessary to say to those who are familiar with the management of blast furnaces that reliability in the blowing engine and its attachments is of the first consideration, and with a view of making them as simple as possible they are often used as non condensing engines, greatly to the loss of economy, but the invention of a separate and entirely independent apparatus for producing a vacuum by the condensation of the exhaust steam has made it possible to utilize the value of the vacuum on a blowing engine without any of the risks that pertain to attached air pumps on the main engine.

The spray pipe within the condenser cone is so arranged that it can readily be freed from any obstructions that might collect in it and interfere with the passage of the injection water, and this, too, without stopping the working of the apparatus.

The piston rods of the water end, in addition to having the usual packing, have a small pipe connecting the stuffing box with the delivery chamber of the pump, so that if at any time the packing becomes worn the water within this pipe will be drawn into the stuffing box, thus sealing the same and preventing the admission of air, which otherwise would impair the vacuum, until the pump can be repacked.

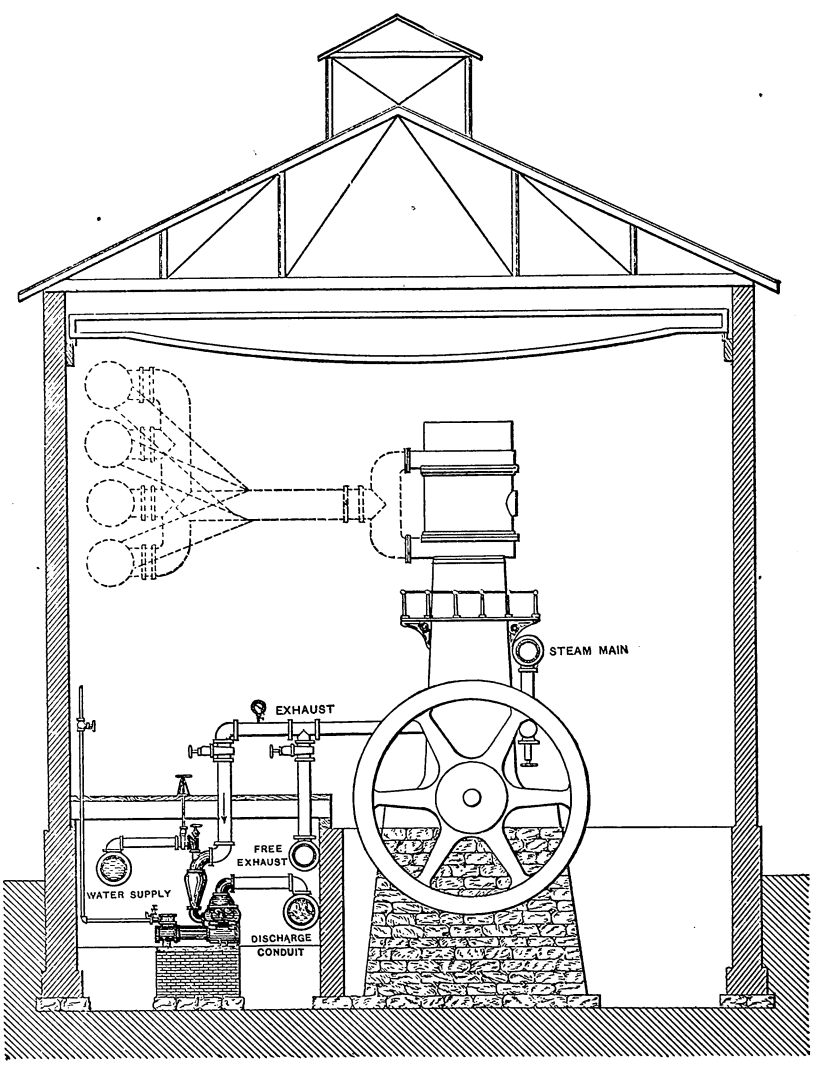
The cut is intended to show the method of piping a Worthington condenser to one or more vertical blowing engines. Each of these engines, when exhausting into its condenser, develops about 700 horse-power, making a total of 7000 horse-power in the plant.

As will be observed, the injection water is drawn to the condenser through a conduit located in the basement, and is discharged into a pipe that is in communication with the discharge pipes of each of the ten condensers. A simple arrangement of valves and piping enables the engines to be run non-condensing if desired, the exhaust being in that case through a common exhaust pipe to the atmosphere. This, however, is merely a matter of precaution, and it is quite common practice where the water supply for injection is thoroughly assured to provide an exhaust into the condenser only.

The value of a vacuum is well known to steam engineers, and especially when used in connection with blowing engines, which, as a rule, are designed and proportioned to operate with a low steam pressure, in order to be able to maintain the speed and the consequent air pressure at the time when the furnace gases are depleted and the steam pressure is low. It is at such times that the value of the vacuum is most appreciated. It is found that during this period a blowing engine supplied with a Worthington condenser will maintain its speed with 15 to 20 pounds less steam pressure than is absolutely necessary when exhausting against the atmosphere without a condenser.

It should be remembered that Worthington condensers of any size can be constructed for this work.

As an instance of the application of the Worthington condenser to steel works engines it may be mentioned that a machine using 7000 gallons of injection water per minute, or something over 10,000,000 gallons per day, is now condensing the steam and maintaining a vacuum upon a pair of double reversing rail mill engines under the most trying conditions of stopping, starting and reversing under full load, and when carrying steam very nearly full stroke. The quantity of steam condensed is about equivalent to that which would be exhaused by a 4500 horse-power engine with a water rate of 25 pounds per horse-power per hour.



THE WORTHINGTON CONDENSER.

A press dispatch from Grand Junction, Col., states that on the 8th inst. an immense volume of natural gas was struck in the experimental well of the Western Colorado Development Company at a depth of 500 feet. The force was so strong as to blow out the pipes. The pressure is estimated at 200 pounds to the square inch.

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THE WEEK.

The mule is to be superseded by electric propulsion on the Chesapeake and Ohio Canal as a consequence of the recent successful experiments with the trolley on the Erie Canal.

The Department of Immigration reports that during the last fiscal year there arrived at our ports 440,793 immigrants. Of these, 1063 were not permitted to land under the limitations of the law, and 577 were returned to countries from whence they came by reason of their having become public charges. The total arrivals were 141,034 less than the previous year.

The North German Lloyd Steamship Company have established a new line of steamers to ply between Baltimore and Bremen.

Florida's orange crop this season is estimated at 5,000,000 boxes.

November's coinage by the United States mints was the greatest executed in any one month for many years past. The number of pieces coined aggregated 7,523 602, of the value of $11 031,440.35. Of this amount the gold coined aggregated 1,265 400 pieces, of the value of $10,784,800; the silver only 976,202 pieces, of the value of $142,340 35. Of the minor coin, 4,120,000 1-cent pieces were coined, to meet the demands of the Christmas trade.

With the object of acquiring an unobstructed outlet to the lakes, the Pennsylvania Railroad Company have secured a controlling influence in the Toledo, Peoria & Western Railroad. This will largely facilitate the business of the Pennsylvania Company in Northern Indiana and Illinois.

Extensive fortifications are being constructed by the British Government as a defense for the port of Esquimalt, B. C. Some heavy guns have been received from England for the new batteries within the last week or two.

While boring a well on the property of a Cold Storage Company in the city of Montreal, a few days ago, natural gas was struck at a depth of 1020 feet. This discovery, it is believed, may lead to important results.

The British Board of Trade returns for November show a reduction in foreign trade from that of October. The imports for November amounted to $171 844,109, and the exports to $84,736,043. A considerable decrease in the receipts of American wheat was one of the unfavorable features of the month. American cotton showed, however, a slight increase over October.

Among the decisions handed down by the Missouri Court of Appeals at St. Louis recently was one declaring that a debt contracted in an option deal cannot be collected by law, as such speculation is gambling and illegal.

The town of Danbury, Conn., has appropriated $50,000 to provide employment and otherwise relieve the destitute of that community.

The Ordnance Department opened on Tuesday the bids for a preliminary supply of smokeless powder suitable for the new Krag Jorgensen magazine rifle, now being manufactured for the army at the Springfield arsenal.

Richard Raddatz of Oshkosh, Wis., is reported to have succeeded, after ten years' study and experiment, in producing a submarine boat which can operate at great depth and be run by one man. The boat has been engaged by a Detroit wrecking firm to make a survey of western Lake Huron next spring.

Philadelphia is to dispose of her garbage by cremation. A proposed ordinance provides for the construction of a number of furnaces at $40,000 each.

The coal shipments on the Reading road for the month of November exceeded those of any previous month in the history of the company by 9000 cars.

President Gompers of the American Federation of Labor places the present number of unemployed workmen in the United States at 3,000,000. Mr. Gompers, in his annual address in Chicago on Monday last, attributes the dearth of employment to the extraordinary industrial depression of the past few months, superinduced by overproduction and the general adoption of labor saving machinery. The only method, he believes, by which a practical, just and safe equilibrium can be preserved in the industrial world for the fast and ever increasing introduction of machinery is a commensurate reduction of the hours of labor. He expressed himself as very sure that if employers were to substitute a division of the work required among all their workers instead of the discharge of a number, the country would much sooner emerge from its present industrial and commercial stagnation. This is a part of the truth, doubtless, if not the whole of it.

Statistics obtained by the New York *Press* from the various labor associations give the following figures as presenting a conservative estimate of the present number of unemployed work people in the five large cities named: New York, 115,000 to 140,000; Chicago, 124 000; Philadelphia, 90,000; Boston, 39,000, and Cincinnati, 25,000. Relief associations throughout the country, whether of a permanent or temporary nature, are doing their utmost to mitigate the prevailing distress, but their resources are already overtaxed, while the number of candidates for relief is constantly on the increase owing to the continued lack of employment and the advent of winter weather.

Pittsburgh's city officials, in conference last week, decided to raise $100,000 by popular subscription, in order to aid the unemployed and deserving poor, the money to be expended in work on city improvements.

It is reported that several mills of Pittsburgh and vicinity are only paying $4 per ton for puddling. This, it is stated, is causing great dissatisfaction among the operators of mills paying the Amalgamated price, $4.75 per ton.

Trade Publications.

ONE OF THE MOST COMPLETE CATALOGUES of railway and machinists' tools and supplies ever issued is that just published by Manning, Maxwell & Moore of 111 and 113 Liberty street, New York. It contains 1103 imperial quarto pages of paper of fine quality; the 6000 engravings with which the book is embellished and the press work are of a very high grade; the binding is in keeping with a work so complete and expensive. In a notice of this description it is impossible to convey an adequate idea of the field covered, since the index, which merely names the several machines and appliances, occupies 12½ pages. The catalogue describes and illustrates stand ard types of every kind of machine tools, and many forms of special designs intended for some particular service, and also mentions the wide range of attachments and appliances necessarily belonging to such tools. No inconsiderable space is devoted to steam engines, pumps, boilers, pipe and fittings and machinery belonging with the same. In addition a wide range of small tools are mentioned. The catalogue, in short, meets the requirements of manufacturers using large or small tools or machines of every description.

Pumping Engines for New York.

Some time since the Department of Public Works of New York asked for proposals for furnishing material, building and erecting pumping engines, boilers and appurtenances for the high service works at the new aqueduct, between Tenth avenue and the Harlem River. It was thought by some of the bidders that the specifications were too rigid and that more option should be given them in the matter of certain details. When the bids were opened it was found that the difference between the highest and the lowest was so great that the Commissioners decided to reject them all and to draw up new specifications, somewhat more elastic in nature, and readvertise for new bids. The second bids have just been made public, and are as follows:

	Two 10,000,000-gallon capacity.	Two 4,000,000-gallon capacity.	Totals.
Henry R. Worthington.	$30,250	$28,225	$116,950
Snow Steam Pump Works	32,000	29,500	123,000
Groshon High Duty Pumping Engine Company	31,250	26,000	114,500
E. P. Allis Company	37,000	35,000	144,000
Geo. F. Blake Mfg. Company	27,500	27,500	110,000
Holly Mfg. Company	36,800	34,850	143,300

The contract has therefore been awarded to the Geo. F. Blake Mfg. Company of New York and East Cambridge, Mass., at their bid of $110 000.

The contract calls for two vertical triple expansion 10,000,000-gallon engines, boilers and appurtenances complete, and two vertical triple expansion 4,000,000 gallon pumping engines, boilers and appurtenances complete, making a total capacity of 28,000,000 gallons per day. The engines will have automatic cut off and will be operated with 160 pounds of steam. The makers say that they will embody the most modern ideas of engineering, and that in constructing them many of the old time customs will be abandoned, and that the plant, as a whole, will be one of the finest that has ever been built in this country.

The specifications provide that the plant when completed must be capable of obtaining a duty of 90,000,000 foot-pounds of work for each 100 pounds of first-class coal consumed by the boilers.

When completed each reservoir pumping engine will be run continuously for 24 hours to ascertain whether it does the maximum work required of raising each 24 hours 10,000,000 gallons of water into the stand pipe 100 feet above the level of delivery in supply tank, and shall be run continuously for 24 hours to ascertain whether it does the minimum work required of raising each 24 hours 5,000,000 gallons of water into the stand pipe 100 feet above the level of delivery in supply tank.

In the case of the engines of smaller capacity, they will be required to undergo a similar test, except that the amount of water raised will be 4,000,000 gallons, and the hight of the tower 230 feet. The work must be completed within 300 days.

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The Iron Age

New York, Thursday, December 14, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Plucking up Courage.

The West was hit particularly hard during the financial flurry of last summer. Bank failures were more numerous by far than in the East or South. Business was therefore depressed more than in other sections of the country. Chicago, it is true, was abundantly supplied with currency on account of the World's Fair, which drew supplies from all sections, and St. Louis was almost phenomenally free from financial disturbances, but both cities suffered greatly through the prostration of general business in contiguous territory. Recovery has been very slow from this condition, but there are indications now of growing confidence in the minor industries, which form a very important part of the business fabric. Establishments which have been closed for lack of work and others that have stood idle since the bankruptcy of their owners are now getting into operation again. Their wheels may move slowly for a time, and but few workmen may be employed instead of the usual force, but that is to be expected. A great point is gained when the way opens for an actual start. A prostrate man gets on his knees before he rises. The fact that he can get on his knees, however, shows that he is trying to get up. It is just so with the manufacturers to whom we allude. Their efforts to run on part time or with partial force show that they have not lost all their business courage, and once having made a start they will not only acquire more confidence themselves, but will instill some into their neighbors.

While great operations will be checked until the uncertainties of tariff legislation are cleared up, there is, nevertheless, continual consumption or waste, which must be renewed. The country cannot come to a complete standstill with all the consumption stopped. The heavy curtailment of productive industries during the past summer and autumn cut down the stocks of manufactured goods in many lines to a point requiring almost an uninterrupted flow of those goods from loom or workshop through the hands of distributors to the consumer. Such a movement as this cannot be stopped unless the purchasing power of the people is absolutely cut off or factories get to running more generally and accumulate stocks in excess of the wants of the people. Neither of these contingencies is imminent. On the contrary, there is a decided probability that consumption will continue to increase, keeping pace with the gradual increase in output. This statement may be criticised by those who only draw comparisons between their present volume of business and that of the corresponding time last year, but it will be approved if comparisons are made on the basis of conditions ruling last summer and during the early weeks of autumn.

There is a disposition among Western business men to take quite a hopeful view of the situation, except perhaps those who are directly interested in iron ore mining. The rapid accumulation of money at the financial centers, surpassing anything previously known in the history of the country, is looked upon as affording a strong argument in favor of an early improvement in general business. The savings banks of Chicago, by concerted action, have reduced the rate of interest on deposits from 4 to 3 per cent. per annum, with the avowed object of discouraging further deposits and to force surplus money into business channels in which it will do more good than in the savings banks. At the same time important local projects are coming forward for the investment of capital, the promoters being inspired by the belief that this is a good time to launch them when money is abundant, the rate of interest is low, materials of all kinds are cheaper than ever before known, and labor is anxious to be employed. They argue that the time to make great improvements is when business is depressed and every advantage is on the side of the capitalist, instead of waiting until times improve and labor and material are in active demand.

The impression is also gaining ground that the new Tariff bill will be passed in the form in which it has been reported, but that modifications will be made in its most radical provisions. Whether this impression is well founded or is merely born of a spirit of excessive hopefulness, it is having an effect on quite a considerable class of manufacturers and business men, who are, therefore, eliminating the tariff question from their consideration of influences governing the course of trade within a reasonable period in the future. If they have accurately diagnosed the tariff situation, and the bill is amended as it progresses so that great interests are not seriously disturbed, there is no other obstacle barring the way to a rapid recovery of the ground lost by Western business interests in 1893.

One feature of the McKinley tariff and the measures preceding it is conspicuous by its absence in the proposed measure now before the country. We refer to that clause which classifies separately bars and billets made with the aid of charcoal as a fuel and imposes upon them a duty of $22 per ton. There is a good deal of variation in the price of Swedish material of this class, but we understand that £6. 10/, at works, is the selling price now for good grades. This would make the duty $9.50 against $22, or a cut of more than one-half. While it would not influence the common grades of American soft steel and puddled iron, it would have a very great effect upon the higher qualities of American material, the market for which would be practically delivered over to the Swedish producers.

The Tin Plate Trade.

Some advantages derived from the establishment of a tin plate industry in this country have been strikingly manifested during the business depression of this year. Jobbing houses have been enabled to curtail their stocks of tin plates just as they have curtailed their stocks of other goods. Instead of purchasing large quantities, as they would have been obliged to do if importing, and thus having a considerable amount of capital steadily tied up, they have drawn on the manufacturers for just what was needed for an assortment from time to time. American manufacturers of tin plates have thus had to carry stocks for their customers in the same way that other manufacturers have been obliged to do in every time of depression or falling markets. It is an advantage so much appreciated that frequent reference is made to it by jobbers who are solicited to buy foreign tin plates. Within a few days a very large order has been secured by a Western tin plate works from a jobber, with the understanding that shipments are to be made in such quantities as are needed to supply his trade, with payments made accordingly. There is little question that the general depression in business has operated greatly to the advantage of American tin plate makers in this way, and that their trade has grown much faster among jobbers than would have been the case in the same period if money had been easy and the times prosperous. Manufacturers of tinware have pursued the same policy as the jobbers, but perhaps not to the same extent, as they could not run the risk of finding themselves suddenly out of stock.

Lest it be claimed that the figures are excessive which have been chosen by American manufacturers to illustrate the magnitude of the cuts proposed by the Wilson bill, under the guise of ad valorem rates of duty, we place before our readers some data above all caviling. Every two months the arbitrator of the North of England iron trade goes over the books of the works associated with the sliding scale and announces the average prices at which product has sold. This forms the basis of the award for wages for the succeeding period of two months. Mr. Waterhouse has just reported these figures. Thus there have been sales of 8390 tons of iron plate on which the average net price was £4. 11/5.94. This figures out 0.988

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cent, so that the duty would be 0.296 cent, as compared with the present rate of 0.65 cent per pound. In other words, the duty has been cut more than one-half. American plates have not sold as low as 1.50 cent, tidewater, even during the present panic period. Should prices rise even one-tenth, then foreign material would come in, since price plus duty figures out 1.284 cents, which would leave nearly $5 per ton to cover costs and freight. On bars the arbitrator reports sales of 11,683 tons at an average price of £5. 2/2.72, which figures 1.10 cents per pound and makes the duty 0.33 cent. We do not know whether Mr. Waterhouse arrives at his average by taking in the prices realized on extra sizes. If he does, then there is danger in this direction when our recovery comes. On angles the average selling price of 3839 tons was £4. 13/4.60, which is equivalent to 1.01 cents per pound and makes the Wilson duty 0.30 cent, as compared with 0.9 cent now, a reduction to one-third. With angles down to their lowest notch of 1.55 cents, tidewater, now, English competition under the Wilson tariff would be very uncomfortably close.

The "World" and the Iron Trade.

The New York *World* has seen fit in its issue of December 12 to question the accuracy of a series of figures presented by *The Iron Age* in a review of the Wilson bill. We care nothing for the reputation of our contemporary as an authority in the iron trade, nor have we any interest in vindicating our own before its clientele. We want the public to know the facts, and shall simply exercise the privilege of reviewing our reviewer, analyzing the *World's* statements, paragraph by paragraph. We quote:

The Iron Age deals first with the proposed cut in the duty on pig iron from $6.72 a ton to 22½ per cent. It asserts that certain brands of Cumberland Bessemer pig (foreign) have sold as low as $10.25 put on board ship. Another foreign brand, Collins Scotch foundry, has sold down to $12.50. Another very cheap foreign pig has been down to $7.07. Alabama pig has been down to $7 50 at the furnace. Adding $2 for freight to the seaboard and $2 more for water freight to New York, Alabama pig at this price would be brought to New York at $11.50 a ton. In reality the freight charge to New York is $1.50, but we will let that misrepresentation pass.

The freight on pig iron from Birmingham, Ala., to New York, is $4.01. We have stated the truth. The *World* is wrong.

Taking the Cumberland Bessemer for comparison, *The Iron Age* compares high-priced English with low-priced American pig. We find that the foreign pig would pay a duty of $2.31. The freight would be, say, 75 cents. Therefore, the Cumberland pig would be landed in New York for $13.31 On *The Iron Age's* own showing, therefore, the Alabama pig makers would have a margin for profit of $1.81 a ton, or nearly 16 per cent.

The trouble with this part of the criticism of the *World* is that there is not a pound of Bessemer pig made in Alabama nor elsewhere in the South, except by the one small furnace, the Cranberry, which makes about 100 tons per week and is not in blast now. Prices on the mill and foundry grades produced in the South have nothing to do with values on domestic or foreign Bessemer pig. If our contemporary wants to make a comparison let it turn to Pittsburgh, where Bessemer pig is selling cheapest in the country, say $11, and add $2.80 for freight, or $13.80, delivered, New York, as compared with $13.31 for Cumberland.

The cut in the rate on steel rails is the next subject of complaint. *The Iron Age* asserts that English rails may be bought at the works for $17.50. The proposed new tariff rate is 25 per cent., which would make the duty $4.37 instead of $13.44, the tax under the present law. According to *The Iron Age's* own figures the freight charge and insurance would be $2.25 a ton. Therefore a ton of English rails landed in New York would cost, duty paid at the Wilson bill rates, $24.12. As the American rail makers are willing to sell their product at $24, it follows that the Wilson bill furnishes them ample protection. Moreover, it is not true that English rails can be bought as low as $17.50. The price is about $18, which would make the rails landed in New York, paying the Wilson rate of duty, worth $24.70. The Carnegie works turn out rails at about $15.50 the ton, and the freight from Pittsburgh to New York is $2.80, so that the rail stands the manufacturer in $18.30, leaving him a profit of at least $6 a ton, or nearly 40 per cent., if he undersells the English rail by 40 cents on the ton. But if he would enjoy this profit he must then make a rail as good as the English. This might be a hardship to him, but it would be a blessing to the railroads and to shippers.

Recent sales at Montreal of English steel rails have been made at a shade over $20, delivered, which is on the basis of $17.50, English works. We assert again that steel rails can be bought in the English market at £3. 10/. We confess that Mr. Carnegie has not told us recently what his rails cost him.

The Iron Age's statement as to beams is very inaccurate. The *World* has undertaken to inquire for itself as to the facts concerning these articles. Instead of $18.75 steel beams cost on board at Antwerp about $26.25. The proposed duty and the freight, which is $2.50 instead of $1.50 as stated by *The Iron Age*, would make the German beams cost very nearly $39 a ton. As our own makers, according to *The Iron Age's* New York market quotations, are selling beams 15 feet long at from $33 to $35 a ton, it is impossible to see how the reduction can injure them.

We know that steel beams have sold at the price we named, to capture business. We stated distinctly that it was at interior German mill. This is the figure upon which the calculation must be made, because the duty is assessed on the price at mill and not on the f.o.b Antwerp price. We may add that our figuring was checked by the representative of one of the largest and oldest New York importing houses.

We leave the evidence as it stands to the judgment of the iron trade, American and foreign, and need not even point in support of our own cause to the manifest ignorance of our critic.

CORRESPONDENCE.

The New York Air Brake Company.

To the Editor: On page 1038, issue of December 7 of *The Iron Age*, under the heading of "Machinery," we notice an article referring to the recent decision in the United States Court in regard to the suit between Westinghouse and the New York Air Brake Company. The concluding paragraph of this notice is so at variance with the facts that we feel justified in asking that in your next issue the actual facts be stated. The paragraph we refer to reads:

"The officials of the New York Air Brake Company say they will take an appeal, and if they succeed in reversing the judgment their works at Watertown, N. Y., which have been closed by the injunction, may be started up again."

Such information was certainly not obtained from the officers of the New York Air Brake Company. Our works are not closed by the injunction, and will continue to run as heretofore. The decision is on two minor parts of our apparatus, one of which was discarded two years ago, not now in use, and the other is on a very small part of the triple valve. Even if the decision is sustained in the Court of Appeals there is nothing whatever to prevent the continued manufacture and sale of every portion of our present brake and signal apparatus, excepting a certain form of triple valve, and if the decision is reversed in our favor we can, of course, continue to furnish that form. In the meantime, as only a slight modification is required to make the triple valve free, we, of course, have only to make that slight alteration, and continue to furnish that also.

Trusting that these matters will have your attention, we remain,

Yours very truly,

THE NEW YORK AIR BRAKE COMPANY,
Per C. E. LEACH.

NEW YORK, December 9, 1893.

Washington News.

(*From our Special Correspondent.*)

WASHINGTON, D. C., December 12, 1893.

The full Committee on Ways and Means are having two sessions a day in hopes of completing the Tariff Revision bill for report to the House before the close of the present week. Representatives Harter of Ohio and Wheeler of Alabama have been quite industriously circulating a petition asking a caucus of the majority on the tariff bill. There is a growing feeling of opposition to the measure among the majority Representatives of industrial districts, irrespective of localities. But the indisposition to put this opposition into practical operation is shown in the inability of Messrs. Harter and Wheeler to obtain up to this time the requisite 20 names to compel the issue of such a call. It is admitted that if a caucus is held on the bill it will not be likely to get into the House for some time.

There have been some individual conferences with the chairman in hopes of securing an increase of rates for certain articles, but with the exception of certain items in the cotton, wool, silk, button, lumber and china provisions the customs part of the bill has thus far been allowed to stand.

In the metal schedule tin plate has been changed from 40 per cent. ad

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valorem to 1⅛ cents a pound, to take effect October 1. Lead and lead products, one-half the present specific rates, instead of ad valorem. Lead sheets, 1¼ cents a pound, instead of 1 cent per pound. Black plate, $\frac{9}{10}$ cent a pound, instead of 35 per cent. ad valorem. Wire, from 30 to 35 per cent. ad valorem. Ferromanganese, 10 per cent., instead of 22½ per cent. ad valorem. Pocket knives and razors are also put at a uniform rate of 45 per cent. The great industries which have been reduced to such a ruinous scale of rates are to be forced to submit, notwithstanding a number of representative men or Representatives themselves in the House have striven to secure more favorable rates. Mr. Schmidt of York, Pa., one of the largest chain manufacturers in the country, had a conference with Chairman Wilson to-day and tried to show him that the rate fixed by the committee bill would be ruinous to that industry generally, but particularly on the smaller sizes. He urged the substitution of a graduated scale as in the existing law, and pointed out the operations of the present law in order to illustrate his meaning. The chairman gave him the stereotyped answer that if they begin to make changes there will be no end.

Representative Beltzhoover, one of the majority members of the House and who represents that district, went before the chairman himself and informed him that one-half the chains manufactured in the United States were made in his district and asked reconsideration of the rates on chains, but received no satisfaction.

Mr. Beltzhoover says that he has ascertained that the committee fixed those duties at the new rate without hearing anything on the subject from any source, without desiring to hear any, or without knowledge as to where chains were made and how many.

It is now two weeks since the bill was made public and the committee are still floundering about trying to devise means of making up from internal taxes what they cut down on customs. The loss of revenue from this source is put down at from $50,000,000 to $70,000,000. There is also a deficiency of $50,000,000. The damage to the revenue is from the free list. The lower customs will flood the country with foreign manufactures and produce revenue, but it will not do much for American industries and wage workers. The postponement of the time of the bill going into effect to June 1 has greatly demoralized those of the majority, who have had considerable correspondence with their constituents on the subject and were disposed to help them, except to vote for the bill, when it comes in the House, they doing all in their power to raise the rates in the committee of the whole where there is no tell tale recorded votes. Efforts are being made to effect a combination among the Representatives of the worst injured districts to mend the bill in Committee of the Whole. They will all vote for it in whatever shape it comes up for final action.

Later.—Secretary Carlisle, getting impatient over the delay in the completion of the tariff and revenue bill, visited the Capitol late this afternoon, and was some time in conference with the Ways and Means Committee. He has been holding his annual report to Congress, which should have been submitted at the opening of the session, in order to know what the committee intend to do in reference to making up from internal taxation what they take off on articles placed upon the free list. He is unable to complete his report by making certain recommendations until he can obtain that information.

The committee clerks are working on the changes in the bill which have already been announced, for the purpose of getting out a revised print. Things are in a great muddle and growing worse.

It was also developed to-day that the opposition to the bill is gaining ground. The petition which has been in circulation asking a caucus of the majority has, General Wheeler said this afternoon, over 50 names. Under the rule 20 are enough signatures to secure the call. If the names on the petition represent the strength of the majority determined to revise and amend the committee work it begins to look as if some of the worst features of the measure may be eliminated.

The friends of the Administration and the committee who represent either the free trade or the revenue element of the majority are antagonizing the caucus and will prevent one being called if they can.

Chairman Wilson said this afternoon that he still hoped to get the bill before the House this week, but if it would have to be submitted to a caucus he could see no prospect of it getting into the House before the Christmas recess, which will begin in about ten days.

The committee are having frequent surprises from industrial sources in showing up the incongruities of the ad valorem system which they have adopted and in many cases would be glad to get out of the dilemma if they could do so without a collapse of their whole scheme.

The ad valorem system was entered into by them by a sort of sneak process, from which they are now reaping a harvest of criticism and condemnation from all parts of the country. They adopted the ad valorem system by a simple clerical process of figures without knowing the market prices of the articles.

They kept their industrial *coup* very quiet in order to avoid a storm in advance, by giving out specific rates. The process by which they made out their ad valorem rates was simply on the percentage of reduction on the specific duties in the present law, without reference to where or how the result struck. Without mincing matters, the tariff revision bill turned out thus far by the majority of the Committee on Ways and Means is one of the most disreputable measures of the kind ever proposed for legislative action. There are some Representatives who are hinting at the probability of its defeat, but this is not likely, as it would require upward of 50 votes out of the majority to accomplish that result and that seems at present out of the range of reason.

Figuring made this week by a leading importing firm on foreign ore shows that with a rate of freight of 8 shillings, which is unusually low, Bessemer ore carrying 58 per cent. would cost to lay down 7.3 cents per unit. If the duty of 75 cents were taken off this would make the cost 6 cents per unit, or $3.48 per ton.

Joseph Wharton, founder of the Wharton School of Finance and Economy in the University of Pennsylvania, has recently given $75,000 to that school, supplementing a previous sum of $125,000 with which he originally endowed it.

Pig Iron Production Increases.

There has been quite a sharp increase in the current production of pig iron, and further additions to capacity are being made during the current month, Practically the additions to active capacity are confined to those plants which are connected with the rolling mills and steel works of the Central West, the adjustment of the wages question contributing thereto quite largely. In other sections, notably in the Chicago district, the resumption of some of the steel works must be telling on the stocks of raw material, thus bringing the interests in question nearer to starting their furnaces. On foundry grades the South shows some increase in production, to which further additions have been announced. This, however, is counterbalanced partly by stoppages in the Lehigh and Schuylkill valleys.

On December 1 the active furnace plant, grouped according to fuel used, possessed the following weekly capacity:

Fuel.		
Anthracite	32	16,188
Coke	72	78,241
Charcoal	26	4,950
Total, December 1	130	99,379
Total November 1	117	80,070
Increase	+13	+19,309

The weekly product of all the furnaces on December 1 compared as follows with that of preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
December 1, 1893	130	99,379
November 1	117	80,070
October 1	114	73,895
September 1	125	83,434
August 1	169	107,042
July 1	220	153,782
June 1	244	174,029
May 1	251	181,551
April 1	255	178,858
March 1	255	176,978
February 1	251	171,201
January 1	246	173,068
December 1, 1892	240	176,271
November 1	244	171,082
October 1	226	158,027
September 1	236	151,648
August 1	238	155,136
July 1	254	169,151
June 1	269	173,674
May 1	268	177,886
April 1	280	185,462
March 1	305	193,902
February 1	308	187,383
January 1	305	188,082
December 1, 1891	298	188,135

The status of the anthracite furnaces was as follows:

Anthracite Furnaces, December 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	18	2	1,150	16	5,519
New Jersey	11	3	1,656	8	3,150
Spiegel	3	2	142	1	118
Pennsylvania:					
Lehigh Valley	44	9	2,807	35	13,592
Spiegel	1	0	0	1	61
Schuylkill Valley	27	7	4,280	20	8,935
U. Susquehanna Valley	14	2	942	12	4,275
L. Susquehanna Valley	17	4	3,275	13	4,040
Lebanon Valley	15	3	1,906	12	5,470
Totals	150	32	16,188	118	44,829

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For a number of months past our records of active anthracite furnaces show the following:

	Furnaces in blast.	Capacity per week
December 1, 1893	32	16,188
November 1	34	16,166
October 1	34	15,338
September 1	43	20,758
August 1	51	23,572
July 1	63	29,268
June 1	70	33,916
May 1	67	33,168
April 1	72	34,641
March 1	74	34,773
February 1	74	32,871
January 1	70	32,772
December 1, 1892	69	33,602
November 1	69	30,869
October 1	69	29,958
September 1	66	27,453
August 1	66	28,821
July 1	72	31,754
June 1	76	33,209
May 1	81	35,473
April 1	84	36,487
March 1	89	38,678
February 1	92	38,124
January 1	94	38,307
December 1, 1891	85	34,905

During November there were blown out Norristown and Temple in the Schuylkill Valley. One Crane and one Macungie in the Lehigh Valley were banked. The Pennsylvania Steel Company are running all four of their furnaces.

The status of the coke furnaces was as follows:

Coke Furnaces, December 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York	7	1	1347	6	3,900
Pennsylvania:					
Pittsburgh district	25	17	30,906	8	11,649
Spiegel	1	1	1,000	0	0
Shenango Val.	16	5	4,447	11	9,508
Juniata and Conemaugh Valley	16	5	4,237	11	3,870
Spiegel	1	0	0	1	575
Youghiogheny Valley	3	0	0	3	2,215
Miscellaneous	4	0	0	4	2,500
Maryland	5	2	3,059	3	3,350
West Virginia	1	0	0	1	250
Wheeling District	8	3	3,886	5	4,369
Ohio:					
Mahoning Val.	14	4	4,810	10	7,387
Central and Northern	11	3	2,620	8	6,483
Hocking Val.	14	1	762	13	3,041
Hanging Rock	14	3	850	11	2,333
Indiana	2	0	0	2	412
Illinois	19	0	0	19	26,875
Minnesota	1	0	0	1	629
Wisconsin	5	0	0	5	4,010
Missouri	6	0	0	6	3,572
Colorado	3	0	0	3	1,800
The South:					
Virginia	22	9	5,393	13	6,850
Kentucky	7	0	0	7	3,243
Alabama	38	12	10,023	26	13,690
Tennessee	14	5	3,275	9	3,500
Georgia	2	1	626	1	600
N. Carolina	1	0	0	1	97
Totals	260	72	78,241	188	126,608

As compared with previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
December 1, 1893	72	78,241
November 1	57	58,820
October 1	52	53,061
September 1	54	56,976
August 1	84	77,907
July 1	122	117,072
June 1	140	132,079
May 1	146	139,788
April 1	145	135,488
March 1	145	133,579
February 1	140	129,396
January 1	138	131,731
December 1, 1892	136	133,160
November 1	133	130,673
October 1	128	118,895
September 1	128	114,538
August 1	131	117,984
July 1	140	127,433
June 1	145	128,852
May 1	147	132,313
April 1	152	138,116
March 1	163	143,490
February 1	167	138,268
January 1	163	138,611
December 1, 1891	162	142,747

Among the large number of coke furnaces which have resumed is Niagara in New York, the second Monongahela, at Pittsburgh, Rosena and Stewart in the Sheaango Valley, two Cambria, at Johnstown, Riverside and Bellaire in the Wheeling district, Franklin and Emma in Central Ohio, and Haselton in the Mahoning Valley. Since the beginning of the month others have started and an additional number are preparing for early resumption.

In the South Allegheny has started in Virginia, and Dayton and No. 2 South Pittsburg in Tennessee are again in blast.

The status of the charcoal furnaces was as follows:

Charcoal Furnaces, December 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England	13	5	390	8	570
New York	5	1	90	4	475
Pennsylvania	13	2	156	11	761
Maryland	6	1	45	5	380
Virginia	13	0	0	13	827
Ohio	9	4	287	5	263
Kentucky	3	1	97	2	200
Tennessee	8	1	301	7	690
Georgia	3	1	285	2	230
Alabama	13	2	43	11	2,740
Michigan	20	5	1,584	15	4,875
Missouri	2	1	314	1	293
Wisconsin	4	1	700	3	1,127
Texas	4	0	0	4	603
Washington	1	0	0	1	100
Oregon	1	1	225	0	0
Totals	118	26	4,950	92	14,154

As compared with previous months, the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week.
December 1, 1893	26	4,950
November 1	26	5,084
October 1	28	5,496
September 1	28	5,700
August 1	34	5,563
July 1	35	7,224
June 1	34	8,034
May 1	38	8,595
April 1	38	8,729
March 1	36	8,623
February 1	37	8,934
January 1	38	8,865
December 1, 1892	41	9,509
November 1	42	9,540
October 1	39	9,174
September 1	42	9,657
August 1	41	8,331
July 1	42	9,964
June 1	48	11,613
May 1	40	10,100
April 1	44	10,859
March 1	50	11,734
February 1	49	10,991
January 1	48	11,164
December 1, 1891	52	11,033

Very few important changes have taken place with the charcoal furnaces.

Stocks.

The position of stocks, sold and unsold, as reported to us December 1, was as follows, the same furnaces being represented as in former months:

Stocks:	Sept. 1. Tons.	Oct. 1. Tons.	Nov 1. Tons.	Dec. 1. Tons.
Anthracite pig	115,930	121,597	134,157	134,475
Coke pig	513,260	532,157	503,806	485,292
Charcoal pig	197,881	199,008	200,450	199,220
Totals	827,071	852,762	838,413	818,987

During November the stock of coke pig iron was reduced by 18,514 tons, as compared with a decrease of 28,351 tons during October. Charcoal stocks have increased 1230 tons and anthracite stocks 318 tons, as compared with an increase of 1442 tons and 12,560 tons respectively during October.

MANUFACTURING.

Iron and Steel.

In the courts at Pittsburgh last week a bill was filed asking for the appointment of a receiver for the firm of Wm. Clark's Son & Co., proprietors of the Solar Iron & Steel Works in that city. The bill was filed by the attorneys for Elizabeth D. Clark, administratrix of the late Edward L. Clark, against Jane Clark. This litigation, in which a very large sum is involved, is based on the following statement as set forth in the application for the receivership: Edward L. Clark died April 25, 1893. In April, 1888, he and Jane Clark, the defendant, entered into partnership as the firm of William Clark's Son & Co., with a capital of $380,000, of which she possessed $224,000 and he $156,000. By an agreement she was relieved from any liability for losses of the firm, and in consideration of a guarantee of a profit of 10 per cent. per annum on her capital, or $22,400 per year, for five years, he was to operate the business, bear all the losses and receive all the profits. He conducted the business under this agreement until April 22, 1893, and paid the defendant the $22,400 per year agreed upon. At the time of his death he had accumulated net profits exceeding $268,000, of which he had on deposit in the bank $100,000 in the firm name of William Clark's Son & Co. The balance was in bills receivable, book accounts and other assets of the business. There were no debts owing. Since his death the defendant has assumed the right to manage the business as the surviving partner, and has appropriated to herself the entire assets, including the profits belonging to the deceased, and through agents is conducting the business for her own account and benefit, without the plaintiff's consent. The plaintiff asks for the dissolution of the partnership and that a receiver be appointed to take charge of the business and pay the balance due the estate of Edward L. Clark, also that the defendant be restrained from disposing of any of the effects of the partnership or interfering in any way in the business and especially with the accumulated profits belonging to Edward L. Clark. An accounting is also asked for.

The large plant of the Ætna-Standard Iron & Steel Company, at Bridgeport, Ohio, has not been in operation to full capacity at any time since last July. Last week at this plant there were ten sheet mills, two guide and one bar mill in operation, but how long these departments will continue running depends altogether on the receipt of orders For some time this firm have made it a practice to operate such parts of their works as they have orders for, and on the completion of specifications in hand close down their mills for further accumulation.

During the last three days of week before last the mills of the Brown-Bonnell Iron Company, Youngstown, Ohio, were on full time, except one puddle mill. On Monday, December 4, the entire plant was idle for inspection of boilers. On the following day eight finishing mills and three of the puddle mills were put in operation, but it is uncertain just how long these departments will continue running.

Mabel Furnace of Perkins & Co., Limited, Sharpsville, Pa., will probably go in blast about January 1 next. During the idleness of this furnace some repairs to equipment have been made which will increase the output to some extent. Spearman Furnace of the Spearman Iron Company, at Sharpsville, Pa., is again in operation, after an idleness of some months. Alice Furnace, at Sharpsville, Pa., operated by the Wheeler Iron Company of Sharon, Pa., has again resumed blast. Douglas Furnace, at Sharpsville, Pa., formerly operated by Pierce, Kelly & Co., has recently been closed down permanently. It is not probable that any additional idle stacks in the Shenango Valley, with the exception of those noted above, will be put in operation in the near future.

The steel plant of the Laughlin & Junction Steel Company, at Mingo Junction, Ohio was in full operation last week. For the past three or four months this plant has been operated to about half capacity, owing to the scarcity of orders.

Zanesville Furnace of the Ohio Iron Company, Zanesville, Ohio, was put in operation on Tuesday, the 5th inst. This furnace is 15½ x 75 feet in size and has an annual capacity of about 40,000 net tons.

The charter of the Diamond Steel Company, recently organized at Reading, Pa.,

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with a capital of $50,000, was recorded in that city last week. Walter Steel, Edwin Sassaman, F. W. Hawman, Stanley S. Davis and Evan L. Shomo are the directors, and Samuel Y. Riegner the treasurer.

The Inland Steel Company of Chicago have completed their organization. J. E. Porter of Ottawa, Ill., is president, G. H. Jones, long connected with S. D. Kimbark, is vice-president and general manager, W. M. Adams is secretary and P. D. Block is treasurer. The office for the present is in Room 559 The Rookery. The company's plant at Chicago Heights was undertaken by the Chicago Steel Company, who failed last summer, but is now being completed by the new owners. They will manufacture agricultural specialties as well as steel angles, tees, channels and bars, for which they have a capacity of about 25,000 tons per annum.

The Fowler Foundry Company, Monadnock Block, Chicago, will shortly engage in the manufacture of steel castings, using for that purpose the steel plant at Stoney Island avenue and Ninety-fifth street, Chicago, which has been idle for some two years. They will make a high grade of castings from the alloys of iron, nickel, aluminum and other metals, for special use in refineries, mills, railroad, marine and electric work, for which they have peculiar facilities. Their specialty will be heavy pieces entering into the construction of dynamos. Special facilities are enjoyed at this plant for the manufacture of large castings. The president of the company is H. W. Fowler of the Fowler Rolling Mill Company, and Joseph Grave is secretary.

In the future the main office of the American Tube & Iron Company, with mills at Middletown, Pa., and Youngstown, Ohio, will be located at the first named place, the financial department and books having been removed from New York City. The change was made for the purpose of securing greater effectiveness and economy in the management of the business.

At the West Penn Steel Works of Jennings Brothers & Co., Limited, in Allegheny, Pa., the only department in operation is the bar mill and the length of time it will continue running is very uncertain.

The Cambria Iron Company, Johnstown, Pa., have called a special meeting of the stockholders to be held on January 16, 1894, to vote for or against increasing the capital stock of the company from $5,000,000 to $10,000,000; also for or against a proposed increase of the mortgage indebtedness to the amount of $2,500,000. It is reported that the object is to place the company under the new Pennsylvania Constitution, and that, while authority will thus be obtained to get increased capital by either increasing the stock or bonds, there is no present intention of a change, the authority being sought for future needs, and the method being left to the stockholders to determine whether capital shall be obtained by issuing more shares of stock or through a mortgage loan.

The Duluth Mfg. Company, Duluth, Minn., signed the Amalgamated Association scale last week.

The Warren Boiler Works, at Warren, Ohio, are building a new stack for the Thomas Furnace Company, at Niles, Ohio, which will measure 112 feet high and 11 feet in diameter.

The plant of the J. Painter & Sons Company of Pittsburgh, manufacturers of cotton ties, has recently been remodeled and a number of additions made, which will considerably increase their output.

The plant of the Locust Point Iron & Steel Company, at Locust Point, Md., has been sold to Mrs. Anna A. Coates for $25,000. The sale was made by virtue of decree of the Circuit Court of Baltimore. The property included the rolling mill and tin plate works, as well as considerable adjoining property.

The Alabama Rolling Mill Company, Birmingham, Ala., signed the Amalgamated Association scale on November 30, and the puddling department of their plant was started up on Monday the 4th inst. It is probable that the bar and guide mills will be started in a short time, if such has not already occurred.

During this week some good sized records in production of rails have been made at the Edgar Thomson Steel Works, Bessemer, Pa. It is probable this plant will continue in operation on rails until the holidays, at which time it is customary to close down for a week or two for annual repairs.

The Diamond Steel Company, recently organized at Reading, Pa., have elected the following officers: Penrose W. Hawman, president; Samuel Y. Riegner, secretary and treasurer, and Walter Steel, general manager. It is stated that the new concern have received quite a number of orders, sufficient to keep their plant in operation for some time.

It is stated that the Haselton Rolling Mills of the Andrews Brothers Company, at Haselton, Ohio, is the only establishment in the Mahoning Valley that is being operated to full capacity.

Work is not being pushed on the new plant of the Minneapolis Rolling Mills Company, at Columbia Heights, near Minneapolis. Operations are deferred until the times are more favorable for such enterprises. J. F. Conklin is president, O. C. Merriman vice-president and F. L. Langan secretary.

Denniston & Ryder of Janesville, Wis., are rebuilding their galvanizing works on a much larger scale.

People interested in charcoal iron will find something of interest in the remarkable record of the Hinkle Furnace, Ashland, Wis., for the past three years. That furnace blew in on December 28, 1890, and up to December 5 of this year had produced 106,000 tons on one hearth. By the end of the month it will have made over 110,000 tons, an average of 37,000 tons a year, or over 100 tons per day, taking account of the few days banked each year for slight repairs, &c. The product of Hinkle goes mainly to malleable foundries throughout the United States, and negotiations are on foot for exporting it to malleable works in England. The product is handled by Rogers, Brown & Co.

Following the general strike of last week the roughers and catchers at the Newport Rolling Mill Company, Newport, Ky., have scraped up cause for a strike among themselves. The strikers claim that the rollers under whom they work have reduced their wages 25 cents per day. The rollers claim this was necessary, as they themselves had been subjected to a cut of 10 per cent., and that a cut of 25 cents on their helpers only brought the wages down to the actual scale. The catchers and roughers finally accepted the cut and returned to work.

The Spicer Mfg. Company, New Philadelphia, Ohio, have recently placed in the plant of the New Philadelphia Iron & Steel Company a mechanical drag out, consisting of a train of rolls, 9 inches diameter, each roll being driven independently by a set of bevel gears. This drag out is in connection with the muck mill, by means of which the iron after being rolled to suitable sizes, and while it is still red hot, is conveyed by means of the roll train to the shear, is sheared to length and dropped on a carrier, conveying it through a cast iron tub 16 feet long, filled with water. After passing slowly through this tub it is delivered to a truck or car, sufficiently cooled to permit of its being handled. This device does away with six laborers formerly employed to do this work. The work was done under the supervision of T. D. Morgan, superintendent of the mill.

The sheet and puddling mills of the Cleveland Rolling Mill Company, Newburg, Ohio, which have been shut down since July 1, have started up. A reduction of 12 per cent. from the old scale went into effect.

It is announced that two of Cleveland's industries, the Lake Erie Iron Company, employing 600 men and the Britton Iron & Steel Company, employing 200 men, have shut down, without prospect of starting again in the near future.

Last week it was stated that the blast furnaces, steel works and every other industry in Bellaire, Ohio, were in operation.

The sale of the steel plant at West Superior, Wis., has again been postponed for one month, and is not set for January 2. It is stated that the reason for postponement was to give the Rockefellow syndicate an opportunity to investigate the workings of the Adams process of direct steel making, which will probably be introduced into the plant.

The property of the Birmingham Mining & Mfg. Company, at Birmingham, Ala., has been sold under a decree of the court for $163,915. A. W. Smith, trustee for the Birmingham Trust & Savings Company, and others were the purchasers.

A special dispatch from Tonawanda, N. Y., gives a highly colored account of a slight accident which occurred at the blast furnace plant of the Tonawanda Iron & Steel Company. As a matter of fact, the story of a "terrific explosion" emanated from the explosion of a tuyere at the cinder notch, throwing off a few sheets of corrugated iron from the roof over it and breaking a few panes of glass nearby. Aside from this no damage was done and nobody was hurt, and the furnace was running again as usual as soon as a new tuyere could be put in place and the dirt cleaned up.

The Greenfield Iron & Nails Works, Greenfield, Ind., will, it is stated, resume work in about a week.

The sheet mills of the Joliet Sheet Steel Rolling Mill Company, Joliet, Ill., remain idle. It is understood that it is the intention of the directors to lease the mill if suitable terms can be arranged.

The Glendale Rolling Mill of Jos. L. Bailey & Son, in Berks County, Pa., have resumed operations.

The Wheeler Furnace Company have decided to continue their Alice Furnace at Sharpsville, Pa., in operation. It was the intention to blow it out at an early date.

The Wabash Iron Company, Terre Haute, Ind., have decided to run their puddling mill on single turn with the object of aiding their employees to tide over the winter. The mill started on the 11th inst.

The announcement is officially made that the works of the Pennsylvania Steel Company will be closed from December 23 until February 1.

It is announced that the Dunbar Furnace, at Dunbar, Pa., will resume operations in a few days, after an idleness of two years.

The Burden Iron Company of Troy, N. Y., have made a reduction of 10 per cent. in the wages of their 1500 employees. This is said to be the first reduction in ten years at this plant.

The Troy Iron & Steel Company of Troy, N. Y., have started two furnaces on Breaker Island and the Bessemer plant.

The Akron Iron Company of Akron, Ohio, have gone into the hands of a receiver.

Rumors have been current for some time that one of the oldest and largest blast furnace companies in the Lehigh Valley is in trouble.

The Cumberland Nail & Iron Company, Bridgeton, N. J., have started up their pipe and rolling mills.

The E. & G. Brooke Iron Company, at Birdsboro, Pa., have, according to a press dispatch, closed down their rolling mill, nail factory and wire mill for an indefinite period.

The strike at the Norton Iron Company's works, at Ashland, Ky., has been declared off, the firm having acceded to the terms proposed by the men.

It is stated that the Valley Steel Company, capitalized at $450,000, an entirely new company, will be incorporated in Missouri to purchase the plant and business of the Belleville Steel Company, who failed in May last with liabilities amounting to about $750,000.

It is stated that the second Colebrook and one or both of the two Lebanon furnaces, now idle, will blow in during the next two weeks.

Machinery.

The large upright engine recently built by Wm. Tod & Co., Youngstown, Ohio, for the Brown, Bonnell Iron Company of that place, has been tested with satisfactory results. The engine will run the 10-inch department and is calculated to make 200 revolutions per minute.

The Fulton Truck & Foundry Company of Mansfield, Ohio, have been incorporated with a capital stock of $50,000, to manufacture street railway trucks, railway frogs and switches, electric railway equipment and do a general foundry business.

The Lloyd Booth Company of Youngstown, Ohio, note quite an improvement in orders and also in inquiries for machinery. This firm have sufficient contracts on hand to warrant moderate activity in their foundry and machine shops for some time to come.

At the regular meeting of the stockholders of the J. B. Sheriff Mfg. Company of Pittsburgh, held in that city recently, N. C. Davison was elected president, W. Gunning, vice-president, and Henry Tranter, secretary and treasurer. J. B. Sheriff has sold his entire interest in the above firm.

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B. W. Payne & Sons of Elmira, N. Y., have shipped a 15 horse-power boiler to India, for a steam yacht to be used by C. A. Nichols, a missionary.

The Inman machine shops at Amsterdam, N. Y., are preparing to resume work full force and will probably start on full time January 1.

James P. Warren, 51 and 53 North Jefferson street, Chicago, has just built one of the largest exhaust steam heads thus far made in that city. It is intended for the electric plant of the Calumet Gas and Electric Light Company; will be used on a 20-inch pipe, and is 88 inches at its greatest diameter by 106 inches high.

William A. Jones, 57 and 59 South Jefferson street, Chicago, has just added to his foundry equipment the seventh machine for molding pulleys. The new machine will turn out a 60-inch pulley. Mr. Jones' enterprise presents a decided contrast to the timidity shown by numerous other manufacturers who need additional facilities, but are waiting for better times.

The destruction by fire of the Rome, N. Y., Locomotive & Machine Company's plant, on December 4, was a great loss to that city. The works were formerly the New York Locomotive Works, but when the present company bid them in for $150,000, subject to a like amount in mortgages, making the valuation of $300,000, the name was changed to the Rome Locomotive & Machine Company. Sixty-five men were employad. In the shops were two engines being repaired and almost ready for shipment. These the men succeeded in saving by getting them out. A new boiler in the blacksmith shop, almost completed, was destroyed with the building, which was two stories high and 225 x 70 feet. The boiler shop was 225 x 70, and the machine shop 270 x 80 feet, and both were burned. Aside from numerous small sheds all that is left is the building containing the main offices, the molding room and the finishing department, all being valued at about $50,000. The buildings were all of brick. The one saved contains all the private offices and patterns made since the construction of the works about 12 or 14 years ago. The company carried about $200,000 insurance, which will not cover the loss within $50,000. The principal business was to repair and rebuild locomotives and manufacture gas tanks used in railroad coaches. President Thomas H. Stryker of the company is favorable to the idea of rebuilding the works, and will lay the matter before the directors at an early date. The fire is supposed to have been incendiary.

The Vilter Mfg. Company of Milwaukee, who made an assignment in the latter part of August, have made a settlement with their creditors and will resume business as soon as the assignee is discharged by the court, which will probably be in the early part of next week. The settlement is made on the basis of 100 cents on the dollar, but the creditors have given an extension of time covering three years and the Board of Directors of the company has been strengthened by the taking in of several of the largest creditors. When the company suspended the liabilities were $205,297.06 and the assets $877,060.28.

Turner, Dickinson & Co. of Chicago have settled with their creditors and discharged their assignee. They are building a new foundry at the suburb of Cragin, on the St. Paul Railroad, to secure greater facilities, but will continue to finish the castings in their machine shop at Churchill street and Hoyne avenue.

The machine shops of the Baltimore & Ohio Railroad, at Garrett, Md., which have been almost entirely closed for about four months, have again resumed operations to nearly full capacity, giving employment to a large force of men.

The Bovaird & Seyfang Mfg. Company, extensive manufacturers of oil well supplies, with headquarters at Pittsburgh, have gone into the hands of receivers, the application being made at Bradford, Pa., last week. T. H. Kennedy and J. P. Cochran of Bradford, large stockholders, have been appointed receivers. The concern are capitalized at $500,000 and have manufactories in Bradford and Pittsburgh and warehouses at a number of places in the oil regions. It is said that the embarrassment of the firm is due to inability to make collections, and also to the fact that their manufactures have been sold at prices equal to cost, and in many cases below cost, for some time. If opportunity is given to realize on assets, it is believed by those who are familiar with the affairs of the concern that the creditors will be paid in full.

The works of Pedrick & Ayer, Philadelphia, manufacturers of machine tools, are now running ten hours a day, under the management of the assignee. It is stated that a new company is being formed for the purpose of taking over the business of the late firm, and that Mr. Pedrick will be one of the largest shareholders.

Gove & Higgins, Norwalk, Ohio, have suffered a loss of about $8000 by the burning of their foundry.

The Berlin Iron Bridge Company, East Berlin, Conn., have announced a reduction in wages.

Charles Place, machinery commission merchant, doing business under the name of the New York Machinery Depot, in Frankfort street, New York, has made an assignment. He started the business in 1886, and is said to have lost a considerable amount of money by the failure of a Jersey City iron works.

Over 70 men were laid off in one week recently at the A. A. Griffing Iron Works, Jersey City, N. J. A still further reduction in force is anticipated

Frick Company, manufacturers of machinery, steam engines, boilers and ice-making and refrigerating machines, at Waynesboro, Pa., are operating their plant a portion of the time only, with about one-seventh of their usual force, or 100 men out of 700. The manufacturers of that section have felt severely the effects of the hard times and have yet to see signs of immediate improvement.

Dupont Mfg. Company, St. Johnsbury, Vt., builders of improved power hammers, have recently shipped machines to several hardware and carriage manufacturers. One of the strong points claimed for these hammers is economy in the use of power, which has been particularly noticeable when electric motors are used, the motors showing a low consumption of power.

The boiler shop of Deppe Brothers, at St. Louis, Mo., has been completely destroyed by fire. The structure was 100 x 160 feet in size and was valued at $7000, including contents.

John Trix has broken ground at Detroit, Mich., for a new brass foundry to cost $10,000.

The Fulton Truck & Foundry Company have been incorporated, with a capital stock of $80,000, to carry on business at Mansfield, Ohio.

The Whitin Machine Company of Whitinsville, Mass., have started their works on full time, but have reduced the wages of their employees.

Morse, Williams & Co. of Philadelphia have purchased a site adjacent to their works, and are erecting a one-story brick building for the accommodation of their hydraulic department, their present quarters being inadequate. They are meeting with a good demand for their direct electric passenger elevator, and among recent installations have been the following: In Philadelphia, Lit Bros.', new dry goods store, Eighth and Market streets; Evans' drug store, Eleventh and Chestnut streets, and Ivins, Dietz & Magee's new building (freight elevator also), Twelfth and Market streets. In New York, the Frederick Ayer Building, 79 Franklin street; John F. Dillon's building, 671 Madison avenue; David Hepburn's building, 54–56 Stone street, and Chas. Lesinsky's building, 45 Vesey street; the Price Building, Scranton, Pa.; Kline & Eppihiemer's dry goods store, Reading, Pa., and the Carlman & Ribsan office building, Trenton, N. Y. Among work now under way are orders from the Babcock & Wilcox Company, and G. L. Lawrence, New York; Nashville, Tenn., for the Masonic Building there; Richmond, Va., and Portland, Ore.

The Barr Pumping Engine Company of Philadelphia are engaged in the construction of four vertical steam pumps, each having a capacity of 5,000,000 gallons, for the city of Cincinnati. Among recent orders taken by the company is one for a compound condenser pump of 2,000,000 gallons capacity for the West Chester Water Works, West Chester, Pa.

Hardware.

Buck Bros., Millbury, Mass., who have for some time been running four and one-half days a week are now running five and one-half days a week.

The employees of the Clinton Wire Cloth Company, Clinton, Mass., will soon suffer a reduction in wages of from 3 to 20 per cent.

The plant of the Marlin Arms Company, New Haven, Conn., will for the present run only eight hours per day.

H. C. & W. S. Cloe and L. E. Ford & Co., manufacturers of tacks, Kingston, Mass, are again running their factories, but only half the usual number of machines are in operation. They hope to run on full time with their full number of machines within a few weeks.

The employees at the plant of Richardson Bros., Newark, N. J., operated by the National Saw Company, have been notified of a reduction of about 10 per cent. in their wages.

The nail mill of the Laughlin Nail Company, Martin's Ferry, Ohio, which has been shut down for several weeks, on account of inability to make shipments during the low water in the river, resumed in full on the 7th inst., giving employment to 800 men.

The Dulancy Nut Lock Company have been incorporated at Rice Lake, Wis., with a capital of $100,000. The incorporators are J. G. Dulancy, W. H. Bundy and A. L. Ulrich.

Romer & Co., manufacturers of padlocks and latches, at Newark, N. J., are very busy filling orders with their full force of hands. This house, though old in years—having long since passed the half-century mark—are youthful in vigor and enterprise, and are constantly adding new and desirable features to their catalogue.

The Chicago Horseshoe Company, 908 Ashland Block, Chicago, have completed the improvements in their works at East Chicago, Ind., and are now placing their shoes on the market. The company have their own rolling mills and roll their own bars.

The Miller Bros. Cutlery Company, Meriden, Conn., have notified their employees that if the duty on pocket cutlery as embodied in the Wilson bill becomes a law it will be necessary to reduce wages from 40 to 50 per cent. No deductions in wages will be made this month, but it is announced that if the company start up after January 1 they will probably reduce wages not less than 25 per cent. If the bill finally passes in its present form still further reductions may be expected. The company state that they will use every means to have the schedule amended favorably and give their employees the benefit of it. The above statement is made thus early that any of their operatives who desire may have ample opportunity for seeking work for next year in better favored occupations.

After a long shut down the spring and axle works of Wood, Smith & Co., Fort Plain, N. Y., have resumed operations in full.

The works of the H. M. Myers Company, at Beaver Falls, Pa., which have been idle for some months, resumed operations in part last week. In accordance with notice given some time before operations were resumed, the employees who applied for work agreed to accept a slight reduction in salary. The firm were compelled to refuse positions to many, owing to the fact that there were so many applications made and on account of starting up only a portion of their plant.

Last week the report of W. C. Hine, receiver of the Youngstown Stamping Company, Youngstown, Ohio, was filed in court. The report shows that from February, 1893, to May, 1893, $12,911 was received and $12,335.28 paid out; in May $20,263.78 was received and $19,966.09 paid out; in June $11,983.65 was received and $12,377.70 paid out; in July $7402.77 was received and $7588.14 paid out; in August $7943.65 was received and $7039.34 paid out; in September $7402.88 was received and $7721.32 paid out. This leaves balance on hand, October 31, $889.11.

The Columbia Gray Iron Company, Columbia, Pa., having their New York office at 35 Warren street, in charge of O. N. Stein, report a fair business and are running on full time.

W. F. Pardee, salesman for Frazer & Jones Company, manufacturers of saddlery hardware at Syracuse, N. Y., visited our Chicago office last week on his return home from a four weeks' trip through Iowa, Nebraska, Minnesota and Wisconsin. He reported an excellent trade, considering the condition of business for the past six months.

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His largest business was secured in Iowa and Nebraska, where he found stocks completely exhausted in jobbers', dealers' and consumers' hands. It is a pleasure to note such experiences in the midst of the general complaints of extreme dullness.

New York Wire Cloth Company, New York office 280 Broadway, have about completed additions to their York, Pa., works, made necessary by the total destruction of one of their factories, at Hamilton, N. Y., June 2, last. The machinery is of the newest models and most improved kind, and in operation will double the capacity of that plant. They estimate that, based on ten hours each for 300 working days, they will be able to produce 25,000,000 square feet of wire cloth per year.

In our issue November 30 we stated that the handle finishers employed by the Goodell Company, Antrim, N. H., had refused a reduction in wages and went on strike. This statement was not, however, accurate, the facts being that when the reduction in wages was announced only eight of the 25 handle finishers remained away from work, all of them for one day, and a part of them for a few days longer, in order to inquire into the situation. One out of the eight left town, and the balance all went to work a few days later. There had been no organization and nothing that could reasonably or properly be called a strike.

Niagara Silver Company, Niagara Falls, N. Y., have for some time been engaged in manufacturing sterling silver souvenir spoons. Several months since they took possession of their large new factory erected in the early part of this year and thoroughly equipped with modern machinery and appliances for manufacturing sterling silver and various grades of plated and unplated flat ware. W. A. Jameson is the manager of the concern.

The Shelby Steel Tube Company, Shelby, Ohio, have not only thoroughly established themselves in the United States, but they are also selling their goods in Nova Scotia, New Brunswick and Canada, and receiving inquiries from England and Australia. This demand is due to their process, by which they claim they are enabled to draw lighter gauges and finer qualities than their foreign competitors have thus far been able to produce. Last year they state that they sold nearly their entire output to American manufacturers, and could have disposed of more had they been in a position to produce the same. They have, however, increased their facilities so that they are now able to supply more than is required in America. Among the company's patrons are many of the bicycle manufacturers of the United States and some in Canada. They advise us that they have, of course, to contend with the prejudice respecting this as well as other innovations by American manufacturers, but they state that this feature of the trade is disappearing rapidly.

Sargent & Co., New Haven, Conn., began on the 4th inst. to work six days a week, eight hours a day. During the past two months the company, who employ over 2000 persons, have been gradually increasing the number of hours of work, so that now the factory is running only one hour a day less than the usual winter schedule.

The Canastota Knife Company, manufacturers of fine pocket cutlery, Canastota, N. Y., are running six hours per day.

Miscellaneous.

The Shultz Belting Company, St. Louis, are having a fair trade. Among the recent export orders entered on their books they mention one of 5200 feet of different width belting to be shipped to London, England. They sent a large shipment to a point in Russia some time since, and have received a letter from the firm using the belting stating it was satisfactory.

The Northwestern Car & Machine Company of Oshkosh, Wis., passed into the hands of a receiver on the 21st inst. Serious allegations are made against the promotors of this company. Representations were made by them last spring that heavy Eastern railroad capitalists were looking for a location for the establishment of the largest car works in the country. They asked about 25 acres of land and $25,000 in cash to locate works in which several hundred thousand dollars were to be expended. The bonus was not to be called for until the works were actually turning out ten complete cars a day. Wooden buildings were put up with paper roofs, and a large lot of machinery was put in, but before the works were ready to run they called for their money, which the citizens refused to pay. Liens had been filed on about all the property and a chattel mortgage on the machinery. Several suits are already pending by the creditors. J. L. Brown of Montreal, one of the company, seems to have advanced $3600 on unsatisfied judgments. The following additional claims were also filed: Niles Tool Company, Chicago, $22,000; the Fay & Egan Company, Cincinnati, $18,000; W D. Allen, Chicago, $1200; Burtis & Howard, Minneapolis, $13,000; E. P Allis, Milwaukee, $8000, and various Oshkosh parties several thousand more. There are possibly other outside claims. It is probable that more or less litigation may grow out of the complication.

Among recently authorized corporations in Illinois are the following: National Ventilating Company, Chicago; capital stock, $100,000; incorporators, Carlos B. Sawyer, O. H. McConaughey and A. A. Barrett. Whitacre Air Brake Company, East St. Louis; to manufacture air brakes; capital stock, $500,000; incorporators, William C. Whitacre, John F. Baumgarner, Shepard Knapp. Stephenson Mattress Machine Company, Chicago; capital stock, $100,000; incorporators, Edwin Stephenson, John E. Anderson and John H. Whipple. Sterling Metal Company, Chicago; capital stock, $30,000; incorporators, Fred. W. Cook, W. W. Griggs and H. B. Moronas.

The firm of Marlin & Co., Allegheny, Pa., manufacturers of water conductors, eave troughs, metallic skylights and galvanized iron cornices, have been succeeded by the firm of Marlin & Co., Incorporated, the change going into effect on Friday, December 1.

The Baldwin Locomotive Works, Philadelphia, Pa., have received an order for 71 locomotives for the Atchison, Topeka & Santa Fé Railroad; 42 are to be constructed immediately and the remainder before the close of the year 1894.

Owing to lack of orders and general dullness in railroad business, the Wason Mfg. Company's car shops at Brightwood, Mass., have closed for an indefinite period. About 250 employees were laid off, only a few being retained to complete orders now under way.

The Lebanon Mfg. Company, Lebanon, Pa., have announced a cut in wages in all departments, varying from 6 to 10 per cent. Over 200 men are affected.

The plant, machinery and stock of the Vienna Enamel & Stamping Company, at Porter, Ind., have been sold by Receiver Eckels to Gustav Wilke of Chicago, for $38,000. It is said that the purchaser represents a new organization who will put the plant in operation at once.

A considerable reduction has been made in the working force of the Bath Iron Works, Bath, Maine.

The Erie Car Works property, at Erie, Pa., has been leased by the Lake Shore Railroad Company, and the plant started with a force of 75 men, which will shortly be increased to 200.

A number of men have been put at work in the malleable iron department of the Walter A. Wood agricultural implement plant, at Hoosick Falls, N. Y., and it is expected that the force will be gradually increased.

Witherbee, Sherman & Co. of Port Henry, N. Y., have begun the operation of two of their mines on full time, to be continued during the winter, by reducing the wages of their employees to $1 for pit hands and 91 cents for bank men.

The brick work is completed for a plow factory at Superior, Neb.

Ground has been broken for the erection of the buildings of the Litchfield Car Works, at Memphis, Tenn. The work is prosecuted under the care of Superintendent J. M. Maris. One of the leading officers of the company says they will erect a great deal of new machinery at Memphis. Besides using the material that has done service in the shops at Litchfield, the plant will be improved by the use of machinery of the latest patterns. This machinery has been purchased and is awaiting orders to ship to Memphis. He also says that within four months the company will be manufacturing cars in Memphis. The new plant will be called the Memphis Car & Foundry Works.

Henry W. Dunlop, Charles L. Dunlop and John C. Post have filed articles of incorporation of the Orvis Steel Arch Furnace Company, at Milwaukee, with a capital stock of $50,000. The purpose is to manufacture and sell the Orvis patent furnace in Wisconsin.

P. H. Halpin, receiver for the Dubuque Brass & Metal Works, at Dubuque, Iowa, has filed his report. It shows that the total liabilities of the company are $66,499.83, while all that was realized from the sale of the works, &c., was about $30,000. If a general division of the proceeds were ordered the creditors would receive considerably less than 50 cents on the dollar. The works were sold for $15,000.

The Steel Brick Siding Company, Fulton, Ill., are adding new machinery to their plant and making numerous improvements. The company will soon place on the market a line of new specialties in steel roofing, siding and ceilings.

The Standard Wheel Company are increasing the number of employees in their works at West Indianapolis, and have started up their branch plants at Terre Haute and Kalamazoo. If business continues to improve they will put in operation their branch plants at Fort Wayne and Sandusky.

The Moline Malleable Iron Works, at St. Charles, Ill., have begun operations with a force of 20 men. They were formerly located at Moline, but removed to St. Charles after the foundry was burned. The plant has but recently been completed.

Among recently authorized corporations in Illinois are the following: Anderson Coke, Gas, Power & Reduction Company, Chicago; capital stock. $10,000,000; incorporators, James C. Anderson, Frank J. Smith and James B. Gascoigne. Shailer & Shniglau Company, Chicago; general engineering and contracting business; capital stock, $125,000; incorporators, Robert A. Shailer, Charles R. Shniglau and Robert P. Lamont. George W. Pitkin Company, Chicago; to manufacture paints; capital stock, $50,000; incorporators, George W. Pitkin, Walter A. Mayo and Roger S. Pitkin. The Chapman & Davison Company, Chicago; to manufacture tools and machinery for the use of confectioners, grocers and bakers; capital stock, $25,000; incorporators, Mark J. Chapman, John C. Davison and Matthew J. Chapman. Duplex Smokeless Furnace Company of Illinois, at Chicago; capital stock, $25,000; incorporators, Edward W. Cullen, C. A. Murray and T R. Sylvanus. Griffin Wheel Company, Chicago; to manufacture car wheels; capital stock, $1,000,000; incorporators, Thomas A. Griffin, Gardner G. Willard and William W. Evans.

The Ten Mile Coal & Coke Company of Clarksburg, W. Va., have been granted a charter of incorporation, with a capital of $1,000,000. This concern purchased about a month ago 2800 acres of coal lands on Ten Mile Creek, which they propose to develop. T. Moore Jackson is prominently identified with the company.

The plant of the Niagara Machine Company, at Kensington, N. Y., which has been closed some time, has resumed operations under a new management. The company manufactured steel balls, pedals, bearing cases and other cycle fittings. Thomas H. Spaulding of Orange, N. J., is now proprietor. One hundred and fifty men are employed. Wm. H. Crosby, formerly secretary and treasurer of the old company, is manager. Associated with him are Wm. H. Hill and Theodore J. Tellefsen, the latter being superintendent. Both were connected with the old company.

The F. J. McCain Company, 439 The Rookery, Chicago, have purchased a piece of ground at West Twentieth street and the Panhandle Railroad, Chicago, on which they intend to erect a plant for fitting structural work. The company are general contractors.

The Thompson Belting Company are installing the machinery in their new plant at Harvey, Ill., and will shortly be in position to manufacture leather belts. This factory is a recent acquisition for Harvey.

The assignees of the Grant Locomotive Works, at Chicago, will receive until January 15, 1894, sealed proposals for the purchase of the entire property of the company now in their hands. The office of the assignee is at 100 Washington street, Chicago.

The Anniston Pipe Works, Anniston, Ala., have been sold to a syndicate representing the bondholders, and will be put in operation at an early date.

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TRADE REPORT

The heavy increase in the production of Pig Iron shown by our monthly statistics and the known fact that since the beginning of the month there have been further additions to capacity simply emphasize the growing supremacy of the Central West. The increase in question is due almost entirely to the resumption of plants connected with rolling mills and Steel works, who are capturing nearly every order of consequence from the Atlantic Ocean to the Mississippi. In their fierce struggle for business they are making prices that even two months since would have been thought impossible. Even with the lowest basis for raw material the figures accepted for finished material, apparently without hesitation or keen regret, by the Pittsburgh and the surrounding districts leave rival producers unable to account for them. Low as they are, our quotations in the leading markets are nominal. All important business is done at material concessions.

If there were any evidence that the low sellers are filling up there might be some hope for the near future, but thus far there is no indication that any of the hungry giants are even temporarily gorged. One by one the weaker mills are withdrawing to await better times.

In Steel Rail circles the only incident has been the announcement that the Pennsylvania Railroad has placed an order for 43,000 tons. At other times the purchasing by this road has been very significant, because many smaller roads followed its leadership. This year little is expected in this direction.

For nearly a month it has been persistently reported that Steel Billets had been sold under $17 at Pittsburgh. We know of at least one case in which it was unquestionably done. Now, however, $16.75 is an open quotation, and buyers claim that they can do even better.

There has been some recent breaking in prices lately in the Cast Iron Pipe trade, the Jersey City contract for about 2500 tons going at $19.50 ℔ ton, delivered, while the Washington business was also taken at very low prices. One of the leading authorities in the trade does not take a cheerful view of the future, fearing even greater demoralization.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, December 13, 1893.

At this time of the year not much business is expected in Iron and Steel and sellers are not being disappointed in the prevalence of the usual conditions. There is, however, a lack of the hopefulness with which better trade is ordinarily looked for after the turn of the year. The general expectation is that dullness may continue for some time, or until there is some definite action toward settling the tariff agitation.

Pig Iron.—Local Coke is moving rather steadily in small lots for quick delivery, but there is almost no inclination among buyers to place contracts for future delivery. Some figuring is being done, but it is simply owing to consumers keeping themselves posted. Stocks at local furnaces will last for a month or two more at the present rate of shipment, so that there is no immediate prospect of additional furnaces being blown in in this vicinity. Some few sales have been made of Southern Coke, but trade generally has been extremely dull, and even the carload business has dropped to very small proportions. The leading companies are maintaing prices at the rates named last week, but some of their competitors are taking business at lower figures. A sale of about 1000 tons of Lake Superior Charcoal Iron was made to a malleable concern for early delivery at a good price, but the inquiry generally for Charcoal Iron has been quite light. Quotations are now as follows for cash:

Lake Superior Charcoal	$15.50 @ $16.00
Local Coke Foundry, No. 1	13.50 @ 14.00
Local Coke Foundry, No. 2	12.75 @ 13.00
Local Coke Foundry, No. 3	12.25 @ 12.75
Local Scotch	14.00 @ 14.50
Ohio Strong Softeners No. 1	15.50 @ 16.00
Southern Silvery, No. 1	@ 13.75
Southern Silvery, No. 2	@ 13.25
Southern Coke, No. 2	12.15 @ 12.40
Southern Coke, No. 3	11.65 @ 11.90
Southern, No. 1, Soft	12.40 @ 12.65
Southern, No. 2, Soft	11.65 @ 11.90
Tennessee Charcoal, No. 1	16.00 @ 16.50
Southern Gray Forge	10.60 @ 10.85
Alabama Car Wheel	18.25 @ 18.50
Jackson County Silvery	16.00 @ 16.50
Other Ohio Silvery	15.00 @ 15.50

Bars.—The general demand for Bars has been lighter, although the car business is looking up considerably. Contracts have been placed recently for over 1000 cars by a few railroads and more orders are in sight, aggregating several thousand. The Pullman works have secured a large part of the orders thus far placed, while some have gone to Detroit. A revival of the demand for Car Iron will put the Bar mills in decidedly better shape, as business has been needed for their large trade. Manufacturers' agents note a better movement in specifications on season contracts the past week, as compared with previous weeks. Prices on new business are weak, although nominal quotations on mill shipments continue to be from 1.35¢ to 1.40¢, Chicago, half extras, on Bar Iron, and 1.40¢ to 1.45¢ on Soft Steel Bars. The tendency to use Steel steadily increases, and as more mills enter the market with Steel Bars the price is approaching more closely to that of Bar Iron. The demand for small lots from stock is less active than it has been, but nominal prices are unchanged at 1.60¢ @ 1.70¢ for Bar Iron and 1.65¢ @ 1.75¢ for Soft Steel Bars.

Structural Material.—The largest contract recently placed here for Building Shapes comprised about 200 tons for a ten-story apartment house. A brewing company will shortly make an addition to their plant which will require a considerable tonnage of Beams and other Shapes. Outside of the city prospects are somewhat better, as several large building projects have come forward at Milwaukee, St. Paul, Minneapolis, Denver and other points. The Milwaukee Viaduct hangs fire and there is a possibility that it will be readvertised. Quotations are as follows, Chicago delivery: Beams, 1.65¢ @ 1.75¢; Tees, 1.90¢ @ 2¢; Angles and Universal Plates, 1.60¢ @ 1.65¢. Small lots are sold from stock at an advance of 10¢ @ 15¢ ℔ 100 above these prices.

Merchant Steel.—Further buying is reported by implement works, but it is noticeable that these late buyers have cut their requirements considerably below the quantity they took last year. Conservatism is apparent in the agricultural implement line as well as in other branches of industry. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel, 1.90¢ @ 2¢; Ordinary Bessemer Machinery, 1 60¢ @ 1.65¢; Ordinary Bessemer Tire, 1 55¢ @ 1.60¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Billets.—No new business is reported, and quotations are continued at $19.25 @ $19 50, Joliet.

Plates.—Nothing is doing of any moment in mill business, but sales from stock are a little better than they have been, and the outlook is a trifle better from that standpoint. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.60¢ @ 1.70¢; Shell Steel, 1.80¢ @ 1.90¢; Flange Steel, 2¢ @ 2.10¢; Fire Box, 2.75¢ @ 5¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2¢ @ 2.10¢; Tank Steel, 1.90¢ @ 2¢; Shell Steel, 2 20¢ @ 2.40¢; Flange Steel, 2 50¢ @ 2.65¢; Boiler Tubes, 70 and 5 % off.

Sheets.—Black Sheets are weak under continued pressure to sell, but consumers are not inclined to take hold during this month and will wait until January or later to cover their requirements. Quotations are continued at 2.65¢ @ 2.70¢, Chicago, for mill shipments of No. 27 Common, while small lots from stock are selling at 2 90¢ @ 3¢ The demand for Galvanized Iron is by no means so good as in November and prices are drooping. The general quotation on Juniata is 70 and 10 and 10 % for mill shipments. Small lots from stock are selling at 70 and 5 % @ 70 and 10 %. Copper Sheets are fairly firm at 25 % @ 30 % off, according to quantity.

Rails and Track Supplies.—The Pennsylvania Railroad order for 7000 tons is the only business reported here in Steel Rails, except a few carload lots. The Western roads have not yet begun to place their contracts for next year. Quotations are $25 @ $27 for Steel Rails, 1.55¢ @ 1.60¢ for Splice Bars; 2.55¢ @ 2 60¢ for Track Bolts with Hexagon Nuts, and 1.90¢ @ 1.95¢ for Spikes.

Old Rails and Car Wheels.—Old Iron Rails are weaker. A considerable quantity has been sold at $12 on the railroad line, but sufficiently near to affect the Chicago market. Old Steel Rails are very quiet. The best offer for short lengths is $7.25, but sellers ask $7.75. Long lengths are neglected, while nominally quoted at $10. Only speculative interest is taken in Old Car Wheels, for which $11 is offered in quantities.

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Scrap.—Business continues in about the same condition as before with the exception of a little better inquiry for Mill Scrap and consequently an advance in the view of dealers as to the value of Wrought grades. Quotations are as follows: No. 1 Forge, $11; No. 1 Mill, $8.25 @ $8 50; Sheet Iron, $4.50; Pipes and Flues, $8; Axles, $16; Horseshoes, $11; Fish Plates, $12; Spikes and Bolts, $10; Cast Borings, $4.50; Wrought Turnings, $6.50; Axle Turnings, $8; Heavy Cast, $9 50; Stove Plate, $7.75; Malleable Cast, $8; Mixed Steel, $7, gross ton; Leaf Steel, $14 50.

Metals.—Copper is very firm, but quotations are continued at 11¢ for carload lots of Lake and 10¢ for casting Copper. Spelter is dull, with producers trying to get 3.60¢, but consumers are not even bidding 3.55¢. Pig Lead has declined to 3.10¢, but refiners are unable to secure orders at the reduction.

W. C. Hayward, who has for several years represented Matthew Addy & Co. of Cincinnati, has opened an office on his own account in Room 53 The Rookery, Chicago, as general broker in Pig Iron and Old Material. Particular attention will be paid to Southern Pig Iron, with which he is thoroughly familiar as to brands and qualities. Mr. Hayward has had much experience as a Pig Iron salesman, and is well and favorably known throughout the trade.

H. A. Keith, widely known in the foundry trade of the Northwest, has engaged as general manager of the East Chicago Foundry Company, East Chicago, Ind. The business office of the company is in Room 716 The Rookery, Chicago. Repairs and improvements are now being made and the plant will be put in operation on or about January 1. The company will make a specialty of dry sand rolls and mixtures to meet definite requirements. This is one of the largest among the local foundries and is well equipped for any class of work.

St. Louis.

(*By Telegraph.*)

Office of *The Iron Age*,
Bank of Commerce Building,
St. Louis, December 13, 1893.

Pig Iron.—The market does not show any change. The local demand runs largely to carload orders and prices are unchanged, as follows, for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	$13.25 @ $13.50
Southern Coke, No. 2 Foundry	11.50 @ 11.75
Southern Coke, No. 3 Foundry	10.75 @ 11.00
Southern Gray Forge	10.25 @ 11.50
Southern Car Wheel	17.25 @ 18.25
Lake Superior Car Wheel	16.50 @ 17.00
Ohio Softeners	16.00 @ 16.50

Bar Iron.—A fair trade is reported from mill, but jobbers are not doing much. Prices are weak; mills quote 1.40¢ @ 1.45¢ for carload quantities, half extras, f.o.b. cars St. Louis. Jobbers ask 1.70¢ @ 1.75¢.

Barb Wire.—The demand shows a falling off and prices, while unchanged, are inclined to weakness. Painted is quoted at $2 in carload lots to jobbers, but this price would doubtless be shaded somewhat. Jobbers ask $2.10 for Painted and $2.50 for Galvanized.

Wire Nails.—There is a good trade in Wire Nails, occasioned more or less by the low prices prevailing. Sales are reported at $1.35 in large lots from mill. Store price is $1.50 @ $1.55.

Rails and Track Supplies.—There is no change to note in this department, except that prices are a trifle lower. We quote as follows: Splice Bars, 1.65¢ @ 1.70¢; Spikes, 1.95¢ @ 2¢; Bolts, Square Nuts, 2.40¢; with Hexagon Nuts, 2 50¢; Links and Pins, 1.85¢ @ 1.90¢; Old Rails, $13.50; Steel Rails, $26.50. @ $27.

Pig Lead.—This metal is in an unsettled condition and price is hard to quote. Buyers bid 3¢ @ 3.05¢, but sellers ask 3.10¢ @ 3.15¢ As the result there is nothing doing except occasionally a carload or two changes hands.

Spelter.—A fair demand is reported for Spelter at 3.50¢, which price is also quoted for January delivery. Choice brands command 3.60¢.

Adolph Butze, St. Louis, Mo., has been appointed sole agent in St. Louis and the territory tributary to it for the sale of locomotive tires made by the La trobe Steel Works, Philadelphia, Pa.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,
PHILADELPHIA, Pa., December 12, 1893.

The situation in Iron and Steel is practically the same as during the past several weeks. Prices are no better, the demand is no larger, competition is no less severe, neither is the outlook any more settled than it has been since the summer months. There are some indications which might develop improvement, providing that business rested on its merits, but considering the season of the year, and the uncertainty in regard to the tariff, it is not likely that much progress will be made in the direction of greater activity. Nevertheless, there is a growing conviction that prices have reached their lowest, and that on the first signs of a volume of increasing business values will begin to harden. Six months of severe retrenchment is uncovering a great many bare spots, so that purchasing is, in many cases, not a matter of choice, but of necessity, hence it is almost as difficult to postpone business as it is to induce heavy purchases. What is wanted is wanted badly, but beyond that holders find it useless trying to force business. A position of this kind has its compensations as well as its disadvantages, inasmuch as a great many small lots must be taken, even if there is no demand for large quantities. The trade are therefore beginning to feel that there can hardly be anything less favorable in store for them, while there is plenty of room in the opposite direction, so that improvement is only a question of time.

Pig Iron.—The market is extremely dull, and while there are no evidences of large offerings, such demand as there is can be readily met at former quotations. The talk of an advance is certainly premature so far as this market is concerned, although if there was anything like an average demand it is not unlikely that an upward tendency would be developed. For the time being the supply is full and ample, and to secure better prices a larger consumption is indispensable. What there may be after the turn of the year is impossible to say, but for the present there is no likelihood of anything but a very narrow market, with sales at prices about as follows for Philadelphia and near by points:

No. 1 Foundry	$13.75 @ $14.25
No. 2 Foundry	13.00 @ 13.25
Standard Gray Forge	11.75 @ 12.25
Ordinary Gray Forge	11.25 @ 11.50

Steel Billets.—The demand is extremely light, and sales are mostly in small lots—a carload or two, up to 100 or 200 tons. In such cases $19.75 appears to be the ruling quotation, but for 1000-ton lots, of which there are occasional sales, the price ranges from $19.25 to $19.50, one transaction of that kind being reported to-day at the inside figure. It is stated that sales have been made for Harrisburg delivery at $18.75 for 2000 tons, but we have not been able to confirm it, although it is not unlikely that the report is correct.

Finished Material.—It is very unsatisfactory to report week after week nothing but a dull and declining market, and yet that is all that the facts will justify. Some of the local mills claim to be doing a trifle better on special work, but for anything over 50 or 100 ton lots Western mills scramble after the business almost without regard to price. These who are determined to maintain their reputation for quality refuse to follow the prices made by their Western competitors, on the ground that they must either lose money or sacrifice quality. Consumers, as a rule, are inclined to stand by the manufacturers in this decision, although when it comes to 100 to 300 or 400 tons it requires a good deal of squirming to satisfy both parties. It is positively asserted, however, that material is being delivered from the West at prices which must leave several dollars per ton loss, unless the quality is different to what the buyers claim they are to get. Nothing specially important has been done recently, but there are several projects under consideration which will require several hundred tons each, but they are hardly likely to go through until after the holidays, and even then the uncertainty in regard to the tariff may cause still further delay, so that manufacturers are not figuring with much confidence. Extremely low prices are authorized on them, however, so that if they do not go through it will not be because prices are not low enough, and as a matter of fact, buyers can pretty nearly name their own figures. Small lots are quoted nominally as follows:

Grooved Skelp, delivered	1.45¢	@ 1.50¢
Best Refined Bars	1.45¢	@ 1.55¢
At interior points	1.35¢	@ 1.40¢
Tank Steel	1.45¢	@ 1.55¢
Heavy Plates	1.50¢	@ 1.60¢
Shell	1.60¢	@ 1.75¢
Flange	1.90¢	@ 2.00¢
Angles	1.60¢	@ 1.70¢
Beams and Channels	1.65¢	@ 1.80¢

Old Material.—The demand is of the most unsatisfactory character, as noted for several weeks past, and large lots can only be sold by making lower figures. Nominal prices are about as follows:

No. 1 Wrought Scrap, delivered	$11.50	@ $12.50
Machinery Cast, delivered	10.00	@ 11.00
Heavy Steel Scrap, delivered	11.50	@ 12.50
Old Iron Rails, delivered	14.00	@ 14.50
Old Street Rails, delivered	15.50	@ 16.00
Wrought Turnings, delivered	10.00	@ 11.00
Cast Borings, delivered	6.50	@ 7.00
No. 2 Light Scrap	6.50	@ 7.50

C. B. Houston & Co., of 229–231 Bullitt Building, South Fourth street, Philadelphia, have been appointed selling agents for the Sykes Iron & Steel Roofing Company of Niles, Ohio, and

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Chicago, Ill., manufacturers of Roofing and Siding, Metal Clapboarding, Metal Ceilings, &c.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, December 13, 1893.

There has been a light volume of business in Pig Iron during the week, and while prices are not quotably lower, there was not enough done to really test the tone of the market, there being little more than single carloads sold to jobbing foundries in this district; while there was some demand from the East, reaching as much as 1000 tons in a single order, it was freely met at previous prices. The preliminary statement of stocks of Coke Iron on December 1 shows a reduction of about 32,000 tons in November. There is no urgency to sell, because the larger Southern Iron companies have recently sold so liberally that they are disposed to hold off for a time, but still it is apparent that it would be easier to buy for delivery three or four months into the new year than it was a week ago at the prices now current for prompt shipment. There is much melting of Iron in progress by Iron Pipe works, and there are some contracts in sight for Pipe which may keep this up. The present situation of the trade appears to be no worse. But there are apprehensions of what may occur from the operations of the new tariff. There is some inquiry for Charcoal Iron, but it is not large. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$12.25 @ $12.50
Southern Coke, No. 2	11.00 @ 11.25
Southern Coke, No. 3	10.50 @ 10.75
Ohio Soft Stone Coal, No. 1	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2	14.50 @ 14.75
Lake Superior Coke, No. 1	15.00 @ 15.25
Lake Superior Coke, No. 2	14.00 @ 14.25
Hanging Rock Charcoal, No. 1	18.50 @ 19.00
Hanging Rock Charcoal, No. 2	17.50 @ 18.00
Tennessee Charcoal, No. 1	14.00 @ 14.25
Tennessee Charcoal, No. 2	13.00 @ 13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @ 18.00
Lake Superior Car Wheel and Malleable	17.00 @ 17.25

Forge.

Gray Forge	10.00 @ 10.50
Mottled Coke	9.75 @ 10.00

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, December 12, 1893.

Reliable information received during the past week indicates that the foreign makers of Iron and Steel, especially those located in Germany and England, are already making preparations to establish trade in this country in the event of the passage of the Wilson bill. American representatives of foreign concerns have already made quotations on Finished Material for delivery during next year at prices that in some cases are $3 @ $4 ℔ ton below present ruling prices, which, as is well known, are much lower now than ever before in the history of the Iron and Steel trades. Their prices are made with cost, freight and insurance paid, and for points near seaboard lower freights could often be obtained than prevail from Pittsburgh or other places of supply. The opinion has been expressed by a competent authority that in the event of foreign makers of Iron and Steel getting a foothold in this country with their products, the next step they will take will be to add modern equipments to their plants, thus further reducing their costs and enabling them to name still lower prices in order to offset any reductions that may be made in this direction by our manufacturers, which, of course, can only be done after material reductions in wages have been made. Now that some revisions in the tariff have already been made, the hope is expressed that fair and impartial hearings will be granted to representatives of those industries that have been placed in peril by this measure and that suitable action be taken before the voting begins. The condition of trade is without material change. Demand for everything is of a hand to mouth character, and will continue so until much of the uncertainty surrounding the future has been removed. Prices are largely in buyers' favor and on some lines are perceptibly weaker.

Pig Iron.—As we approach the close of the year, the demand for Pig Iron grows smaller, and in addition consumers are requesting postponement of shipments to an alarming degree. Buyers of Pig Iron say they can see no indications of the market toning up, and until they do they will continue to buy only as necessity requires. Makers are not able to offer any arguments to offset these statements, and it is the impression that an improvement in the Pig Iron market will not come for some time. Prices of Gray Forge of standard makes are maintained on the basis of $10.50, Pittsburgh. Bessemer is very dull at $11, and this price is said to have been shaded on some recent transactions. Foundry Iron is falling off in demand, and prices are lower. Taken as a whole the market is in very unsatisfactory condition, with the outlook for improvement very discouraging. We quote as follows:

Neutral Gray Forge	$10.50 @ ...	cash
All-Ore Mill	10.50 @ $10.75	"
No. 1 Foundry	12.00 @ 12.50	"
No. 2 Foundry	11.00 @ 11.50	"
Bessemer	11.00 @ 11.25	"

We note a sale of 1000 tons of Bessemer for January and February at a price equal to $11.10, Pittsburgh.

Steel.—While there is a fair amount of Steel changing hands, the tone of the market is weak and prices are somewhat lower. Nearly all orders placed now are for delivery into next year, and while the unexpected sometimes happens, the belief is gaining ground that Steel for the first month or two of next year will rule low in price. We are advised of several contracts placed during the week aggregating some 5000 or 6000 tons, at prices ranging from $16.75 to $17, at maker's mill.

Ferromanganese.—There is little doing and we quote 80 % domestic at $52, delivered. A good order would doubtless shade this price.

Plates and Sheets.—Trade continues very quiet, buyers confining their purchases nearly altogether to small lots. There is sharp rivalry between two leading makers here to capture business, and as a result prices are somewhat demoralized. We quote as follows: Tank Steel, 1.35¢ @ 1.40¢; Shell, 1.55¢ @ 1.60¢; Flange, 1.65¢ @ 1.75¢; Marine, 1.75¢ @ 1.85¢; Ordinary Fire Box, 1.85¢ @ 1.95¢, and Railroad Fire Box 2¢ @ 2.15¢. Trade in Sheets is very quiet and will doubtless continue so for a month or more yet. We quote No. 24 Soft Steel Sheets at 2.40¢; No. 26, 2.50¢, and No. 27, 2.60¢. It is probable that for desirable business these prices would be slightly shaded.

Structural Material.—Pittsburgh is understood to be bidding on considerable bridge work, which will likely be closed between now and the first of the year. In Beams and Channels the demand is slow and altogether for small lots, with no large contracts in sight. It is reliably stated that a Pittsburgh mill has offered to sell Beams at 1.60¢, delivered, with a 20¢ freight rate. We quote as follows: Beams and Channels up to 15 inches, 1.45¢ @ 1.60¢, according to size of order; Angles and Universal Plates, 1.45¢ @ 1.50¢; Tees, 1.70¢ @ 1.75¢.

Steel Rails.—The local mill went on Billets this week, but how long this will continue is not known. Pittsburgh is said to have taken about 12,000 tons of the Pennsylvania Railroad order. It is also reported that a Western road is in the market for about 10,000 tons, which is expected to be let this month.

Muck Bars.—We continue to quote best grades at $20.50 @ $21, delivered at buyer's mill. The demand is very light, owing to low prices of Soft Steel Billets.

Wire Rods.—As noted last week, very few Rods are obtainable for delivery this month. For the first quarter of next year mills are asking $24.50, but for a good order it is probable that this price would be shaded.

Merchant Steel.—Of the five or six concerns in this city making Merchant Steel none of them have sufficient orders to operate their plant to anything like full capacity. It is stated that at one or two establishments operations are being continued in some departments with a view of giving work to employees, and also in the expectation that specifications will come in faster after the first of the year. Prices show no material change, although concessions continue to be made when a desirable order turns up. We quote Bessemer Machinery at 1.50¢ @ 1 60¢; Open Hearth Spring Steel at 1.90¢ @ 2¢; Tool Steel, 5½¢ and upward, according to quality.

Bars.—It is hardly necessary to say that trade is not satisfactory by any means. The demand continues light and prices are weak, with concessions being made right along for desirable orders. While the Valley mills continue to quote 1.30¢ at mill, it is reliably stated that this price has been shaded for favorable specifications. Soft Steel Bars are held at 1.30¢ @ 1.35¢ at mill, with Bar Iron extras. These prices are also shaded, according to desirability of order.

Skelp Iron and Steel.—The demand continues light and no material improvement is expected before spring. Prices continue very low, depending largely upon the nature of the order. We quote Grooved Steel Skelp 1.15¢ @ 1.20¢, and Sheared Steel Skelp at 1.30¢ @ 1.35¢; Grooved Iron Skelp may be quoted at 1.35¢ @ 1.40¢, and Sheared at 1.45¢ @ 1.50¢.

Barb Wire.—The demand is only moderate, although some inquiries are coming in for business for delivery next spring. Makers believe that trade next year will be fully as heavy as it was this year. The low prices ruling are expected to favor purchases to considerable extent. We quote Four Point Galvanized at 2.15¢ @ 2.20¢ in carload lots, and 2.25¢ @ 2.30 in less quantities. We quote Plain Wire at 1.40¢ @ 1.45¢ for Nos. 6 to 9 in carload lots.

Wire Nails.—There is a very satisfactory demand, although prices show

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no signs of improvement. Notwithstanding this, however, some mills are refusing to quote for delivery very far ahead at the present ruling rates. We quote Wire Nails at $1.15 @ $1.20 in carload lots, the lower price named being for large quantities. Large shipments of Cut Nails to Southern points have been made within the last two weeks by river. We quote Cut Nails at 95¢ @ $1 in carload lots, the lower price named being for large orders with desirable specifications.

Pipe and Tubes.—There is nothing new to report, the demand being very light, and no material improvement is expected before spring. Prices continue very low, depending altogether upon the nature of the order.

Coke.—Very little has been done so far this month in the direction of closing up contracts for Furnace Coke for the first half of next year. Furnace operators do not seem inclined to be in a hurry to place their contracts, and, on the other hand, Coke makers do not seem inclined to force matters. As to whether lower prices will rule for Furnace Coke is somewhat doubtful, but this will likely be determined within the next week or two. The situation just now indicates that a waiting game is being played to some extent. For the week ending December 2 there were 8181 ovens in the Connellsville region in blast and 9332 idle, with a total estimated production for the week of 71,105 tons. We continue quotations of last week, as follows: Furnace Coke, $1.10; Foundry Coke, $1.30 to dealers and $1.45 to consumers. Crushed Coke, $1.75 to consumers, all in tons of 2000 lb, on board cars in Connellsville region.

New York.

Office of *The Iron Age*, 96-102 Reade street, New York, December 13, 1893.

Pig Iron.—The market is quiet, some sellers reporting it particularly dull, while others note heavier shipments. It is probably true that more Pig Iron is being melted than for some time since. We quote: Northern brands, $14 @ $15 for No. 1; $13 @ $14.25 for No. 2; $12.25 @ $12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, $13 @ $14 for No. 1; $12 @ $13 for No. 2; $11.50 @ $12.25 for No. 3; $11.75 @ $12.25 for No. 2 Soft, and $12.25 @ $12.50 for No. 1 Soft. Gray Forge is $11.25 @ $12.

Spiegeleisen and Ferromanganese.—Advices received here indicate that the Ways and Means Committee has modified the proposed duty on Ferromanganese by reducing it to 10 %. There is no business in the foreign article at the present time. We quote: Spiegeleisen, 10 % @ 12 %, $21.50 @ $22, and 20 %, $25 50 @ $26, on cars, Jersey City. Ferromanganese remains nominally $55 @ $55 50.

Billets and Rods.—Two of the mills which are closest to this market are hunting for business, the higher grades of Soft Steel being produced by both. We quote nominally: Domestic Billets, $20 @ $22, and foreign Billets $28 @ $28 50, tidewater; domestic Wire Rods, $27 25 @ $28, and foreign Rods, $39 @ $39 50, tidewater.

Steel Rails.—The Pennsylvania Railroad has placed 43,000 tons with the three mills along its line and the Illinois Steel Company. It is understood that the Pennsylvania Steel Company reserved a certain tonnage for this order. Outside of this order no business of any consequence is reported. The price remains $24 80 at tidewater.

Track Material.—We quote as follows for small lots: Spikes, 1.70¢ @ 1.90¢; Fish Plates, 1.30¢ @ 1.50¢; Track Bolts, Square Nuts, 2.10¢ @ 2.40¢, and Hexagon Nuts, 2.30¢ @ 2.50¢, delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—The Iron work for the Kemp Building was taken by a Pittsburgh mill, again emphasing the fact that Eastern works are unable to capture business. The story is going the rounds that the management of an Eastern mill figured down to cost on a recent job and then took off $10,000, which they were satisfied to lose in order to receive employment for their workmen, the loss to be borne by the senior partner. In spite of this sacrifice the mill in question was underbid by two Pittsburgh mills. The trade is at sea so far as prices are concerned. We quote nominally: Beams up to 15 inch, 1.65¢ @ 1.90¢, 20-inch, 1.90¢ @ 2.25¢, for round lots; Angles, 1.55¢ @ 1.75¢; Universal Mill Plates, 1.50¢ @ 1.75¢; Tees, 1.80¢ @ 2¢; Channels, 1.65¢ @ 2¢, on dock. Steel Plates are 1.45¢ @ 1.60¢ for Tank; 1.60¢ @ 1.90¢ for Shell; $1.90 @ 2.15¢ for Flange, and 2.25¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.45¢ @ 1.9¢, on dock, and Common 1.35¢ @ 1.50¢; Soft Steel Bars are 1.45¢ @ 1.70¢; Scrap Axles are quotable at 1.65¢ @ 2¢, delivered; Steel Axles, 1.65¢ @ 1.90¢, and Links and Pins, 1.65¢ @ 1.80¢; Steel Hoops, 1.70¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ ℔ 45 lb bundle, at mill; Machinery Steel, 1 45¢ @ 1.50¢; Toe Calk, 1.90¢ @ 2¢ and Sleigh Shoe, 1.65¢ @ 1.75¢, delivered.

Metal Market.

Copper.—The market is quite as complicated now as it was a week ago, with the line of quotations somewhat lower. Contracts for Lake Superior Ingot have been sold on the Metal Exchange at 10 35¢ and at 10 30¢, January delivery. Some lots of actual Copper have been offered on the open market at 10⅜¢, and it would appear that purchases may yet be made at the latter price, in the face of the strong position assumed by leading producers and certain influential operators. Similar irregularity exists as to market value of other varieties, and while 9¾¢ @ 9⅞¢ is generally quoted for Electrolytic and 9⅝¢ @ 9¾¢ for ordinary casting brands, those prices could probably be shaded in some degree, more particularly on moderate quantities for near future delivery. The market is thus in somewhat uncertain form at the moment, and rather dull. The monthly report of the Bureau of Statistics affords the following comparison of exports from the United States during the ten months ending October 31:

Ore.	1893. Tons.	1892. Tons.
To United Kingdom..	37,353	39,189
Germany	1,043	1,462
Other Europe.....	....	165
Total	38,396	40,816
Ingots, Bars, &c.	Pounds.	Pounds.
To United Kingdom..	27,920,478	2,394,063
Germany.....	14,111,198	5,259,710
France	23,156,138	6,192,210
Other Europe..... ..	37,150,076	10,116,915
Other countries.....	548,708	99,006
Total.....	101,889,598	24,061,904

Pig Tin.—Prices have dropped off 15¢ @ 20¢ ℔ 100 lb. The decline is not easily explained except on the supposition that the load carried by leading holders is more than can conveniently be taken care of at the moment. In other words, the lack of any considerable "short" interest in the speculative branch of the market and very conservative buying on the part of jobbers and consumers leaves solid facts of a weighty nature to be wrestled with. Manipulation is extremely difficult in the face of the situation in London and the uncertainty connected with pending American tariff legislation. Some little business has been done on Metal Exchange contracts at 20.45¢, December delivery, and "outside" sales were said to have been made relatively as low, or say 20.50¢, cash, for 5-ton lots.

Pig Lead.—There has been hardly any business, and efforts in the direction of working up deals have been slimly rewarded. In fact, not only speculative sentiment, but good intentions of operators, seem to have been set aside by uncertainties connected with the new tariff bill. Such as it was, the business has been on a rather lower level of prices—say 3.20¢ @ 3.25¢ for ordinary Western brands for shipment during the balance of the year. Correspondingly low figures were said to have been quoted from leading Western centers. About 500 tons have been sold here.

Spelter.—The local market is almost stationary. There are hardly any orders and the offering is exceedingly tame, with some suggestion that producers are slow to accept orders at current prices. For the present 3.80¢ @ 3.85¢ may fairly be quoted on ordinary Western brands, prompt or near future shipment. Choice brands bring about the usual premium.

Antimony.—For other than jobbing quantities there is little movement. Prices are barely steady at 9½¢ for Hallett's and 10¢ for Cookson's.

Tin Plate.—Business has been extremely tame. Only small orders have come this way for spot goods and the uncertainties connected with the tariff have had a restraining influence upon ventures in futures. Upon the whole, the market shows rather weak tone. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, $5.30; J. B. grade, do., $5.35; Bessemer full weight, $5.35; light weights, $4.90 for 100 lb, $4 80 for 95 lb, $4.62½ for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60; Siemens Steel, IC basis, $5.65; IX basis, $6.75 @ $6.80. Charcoals—Melyn grade, IC, $6.35; Crosses, $8; Allaway grade, IC, $5.60; Crosses, $6.75; Grange grade, IC, $5.75; Crosses, $6.85. Charcoal Ternes—Worcester, 14 x 20, scarce; do., 20 x 28, $11.35; M. F., 14 x 20, $7.35 @ $7 37½; do., 20 x 28, $14.75; Dean grade, 14 x 20, $5.35; do., 20 x 28, $10.50 @ $10.60; D. R. D. grade, 14 x 20, $5.15; do., 20 x 28, $10.10; Alyn, 14 x 20, $5.35; do., 20 x 28, $10.50; Wasters—S. T. P. grade, 14 x 20, $4.75; do., 20 x 28, $9; Abercarne grade, 14 x 20, $4.60; do., 20 x 28, $8.87½.

A series of interesting experiments of an altogether novel character is about to be carried out at the Government torpedo station at Newport, R. I. The experiments will be under the direction of Commander Converse, and are undertaken with the object of determining the probable effect on the crew of a submerged submarine boat of the explosion of a torpedo near by.

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Financial.

Except for a partial resumption of gold exports, the week in financial circles has been almost entirely void of interesting or noteworthy features. Business on the Stock Exchange has been sluggish and shows no sign of improvement. Rather the reverse. There are no indications in the banking, commercial or the industrial worlds of any tangible revival of enterprise or speculation. The whole business of the country seems

The abnormal accumulation of money at the chief financial centers of the country continues to be a source of distress to banking institutions, which are unable to find profitable investment for their unwieldly reserves. This plethora of idle money, loaning at easy rates, is an invitation to speculative excitement, which is a distinct danger, while legitimate enterprise leaves it unutilized. There are signs this week, however, that the maximum of accumulation has been at last reached. The flow of currency from the interior to the center has evidently been checked, as demonstrated by Saturday's statement of the New York banks, which showed a much smaller rate of increase in the surplus reserve than has been the case for many weeks, the week's gain being only $468,000. The decrease is explained as due to the fact that interior points have sent in all the money they can spare, and to the further fact that Eastern banks are contemplating a reduction of the rate of interest they now allow on the balances of out of town institutions. This explanation is, moreover, verified by the fact that both at Chicago and St. Louis New York exchange is again at par. The New York banks now hold a reserve of very nearly $200,000,000, the surplus over legal requirements being $76,500,000. Compared with the surplus reserves for the corresponding week of the last five years these figures are remarkable. They were as follows:

December 10, 1892, surplus	$5,509,800
December 12, 1891, surplus	15,339,500
December 13, 1890, surplus	607,075
December 14, 1889, surplus	2,630,650
December 15, 1888, surplus	9,672,225

A favorable feature of the bank statement was a further increase in loans of nearly $3,000,000.

The announcement of export shipments of gold to the amount of $1,700,000, instead of causing apprehension, as did similar news in the summer, was received with absolute indifference in the money and stock markets. It is realized that a considerable amount of the precious metal can be sent abroad without doing any harm, and the specie can be obtained from the banks without trenching on the Treasury reserve. The curious fact is recorded that one bank alone supplied the whole of the amount shipped, which was sent to Germany. The outward movement is a perfectly natural one, in view of the low rates of interest here and the comparatively high rates ruling in Europe, where money is urgently wanted in some quarters. The banks here are, in fact, able and willing to supply a large amount of gold if Europe calls for it.

Money on call continues in abundant supply at 1 % @ 1½ %, tending, however, more to the higher figure. Time loans are easy at 2½ % @ 3½ % for 60 days up to seven months, offerings being considerably in excess of demand. Good mercantile paper is readily marketable, but the supply is not large. Rates are 3½ % @ 4 % for indorsed bills; 4½ % @ 5 % for first-class single names, and 5 % @ 5½ % for other descriptions of paper. The stock market during the week has been dull and featureless, reaching at the close a pitch of inactivity almost unexampled. Trading was of the narrowest description, and almost purely "professional." Several causes tended to depress the market, including unfavorable reports from a number of Western railroads and Eastern trunk lines, rumors of larger gold exports, and "bearish" tales from Washington, all of which were promptly utilized for "bear" purposes by that contingent. Stocks closed on Saturday dull and heavy, with lower prices almost all along the line. Some London buying on Monday served to hearten the market a trifle, but the publication of the St. Paul traffic returns for the first week in December, showing a decrease of nearly $200,000, operated unfavorably on that and other granger stocks. Apart from some active manipulation in industrials, Tuesday's market was as dull as could be, closing strong, nevertheless, with an upward tendency in several issues. The following list shows the extreme fluctuations of some of the principal stocks during the week, with closing prices on December 13:

	Highest.	Lowest.	Closing. Dec. 13.
Am. Sugar Ref.	84⅜	78⅝	79⅞
Atchison, T. & S. Fé	20⅜	18⅝	19¾
Balt. & Ohio	72½	72⅜	73¼
Chicago Gas	68	65⅜	67⅓
Chic., B. & Q.	79⅞	77¾	78⅓
Chic., Mil. & St. Paul	65⅛	62¼	63¼
Chic., Rock Isl. & Pac.	70	67¼	68¼
Del. & Hudson	134¾	132⅛	133
Del., Lack & Western	168	163	164
Gen. Electric	39	33¼	39
Lake Shore	128⅛	126	127
Louisville & Nashville	52	49⅜	50⅛
Manhattan	129	127	129
Missouri Pacific	25⅜	24¼	25
National Lead, Common.	24¼	21¼	23⅛
New Jersey Central	118	117	118
New York Central	102⅝	101⅜	102⅛
N. Y., L. E. & Western.	15¾	14⅜	15⅜
Northern Pacific, Pfd.	22½	21½	22½
Philadelphia & Reading	21⅜	20	20½
Richmond & West Pt., Terml	3	2¾	3¼
St. Paul & Omaha	39	37¾	38¼
Union Pacific	22¼	20¼	21⅛
Western Union	90	87⅜	88¾

Railway and miscellaneous bonds, although irregular, have been stronger and more active than the stocks. Surplus money appears to be finding something of an outlet in these issues, which have generally advanced in price during the past week or two. Government bonds continue firm, with a fractional advance over the rates of last week. The closing quotations were as follows:

	Bid.	Asked.
2s, 1891, registered	95¼	.....
4s, registered	113¾	114⅛
4s, coupon	114¾	115½

Foreign exchange has been strong and active for the greater part of the week, prices having on several days touched the gold exporting point. The supply of bankers' and cotton bills, although larger, has been readily absorbed by remitters. Toward the middle of this week the market for sterling was a trifle easier, owing to the demand being for the moment satisfied. It is not expected, however, that rates will decline again to any extent at present. Actual business was done at the close at $4 84½ @ $4.84¾ for 60 days; $4 86¾ @ $4 87¼ for demand; $4.87¼ for cables and $4 83½ @ $4.83⅝ or commercial. Domestic exchange on New York is quoted as follows: New Orleans, commercial 100 discount, bank par; Charleston, buying ⅛ discount, selling ⅛ premium; San Francisco, sight 5, telegraph 10 premium; Savannah, buying ⅛ discount, selling ⅛ premium; St. Louis, 85 premium bid.

Bar silver closed in London on Wednesday at 32 pence ℔ ounce, and in New York 70¢ ℔ ounce. There was exported from New York to London last week $968,957 of silver, the largest weekly shipment that has been made for a long period. The demand for the metal from Eastern countries appears to be heavy, especially from China. It is thought that this demand will continue active, and consequently that the price of silver is not likely to decline.

Railway earnings reported for the first week in this month are not of an entirely satisfactory character, those from Western roads evidencing a decline in both freight and passenger traffic. The *Financial Chronicle* computes the gross earnings of 74 railroads for the third week of November at $7,668,323, a decrease of $556,222, or 6.76 %, as compared with the corresponding week of last year; for the fourth week of November 57 roads earned $8,642,926, a decrease of $968,478, or 10.08 %; for the month of November 88 roads earned $36,472,124, a decrease of $2,691,285, or 6.87 %.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, December 13, 1893.

The line of prices for Pig Tin has averaged somewhat lower. Early in the week buying orders were fairly numerous and served to sustain the market. Some support came also from absorption of supplies received from the East and anticipation of better American support. To-day's market showed rather soft tone, with £76 quoted for prompt delivery, and £77. 17/6 for three months' futures.

Copper prices have remained almost stationary. There has been pressure to sell at intervals, chiefly to realize profits, but good buying acted as an offset later on. The buying included fair lots for home consumers apart from the purely speculative movement. Purchases for India account also helped to sustain the market, but realizations on cash lots had a counteracting influence. At the close the market was steady, with £43. 2/6 quoted for Merchant Bar prompts, £43 for three months' futures and £47 for Best Selected English.

Tin Plate has met with rather better sale. The dealings were chiefly in squares and odd sizes, fair orders for which were placed at some advance on late lowest prices. There has been some improvement also in the demand for all sizes, but lowness of prices offered restricted business. Work has been resumed at the Aberdare mills. Exports last month were 26,000 tons, against 29,000 tons in November, 1892. The quantity sent to the United States was 15,000 tons and 20,000 tons respectively. Stocks at Swansea are now about 222,000 boxes. Liverpool quotations are as follows:

IC Charcoal, Alloway grade	12/3 @ 12/9
IC Bessemer Steel, Coke finish	11/3 @ 11/6
IC Siemens " " "	11/6 @ 11/9
IC Coke, B. V. grade, 14 x 20	11/3 @ 11/6
Charcoal Terne, Dean grade	10/9 @ 11/

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Pig Lead has met with limited sale, and prices have ruled rather easy at £9. 7/6 @ £9. 10/ for soft Spanish.

Spelter remained quiet, and prices are barely steady at £17 for ordinary Silesian.

There have been no new developments in the markets for Iron and Steel. Business continues moderate throughout and has been chiefly at prices that have ruled for some little time past. Last dealings in warrants were at 43/10 @ 43/11 for Scotch, 35/10½ for Cleveland, and 45/2½ for Hematite.

Horace B. Silliman, who has been a dealer in manufacturers' supplies at Cohoes, N. Y., for many years, has sold his business to Daniel M. Sutherland, who has been Mr. Silliman's traveling salesman. Mr. Sutherland will continue the business at the old stand.

As we go to press we learn with deep sorrow that George H. Babcock, president of the Babcock & Wilcox Company of New York, is dangerously ill at his home in Plainfield, N. J.

Six hundred idle ovens were lighted in the Connellsville coke region during last week, and the outlook is said to be brighter, orders for coke having been materially augmented by the resumption of work at a number of large furnaces and foundries. The ovens now in blast number 8181 out of a total of 17,513.

English Iron Workers' Wages.

The following statement, which is an exact copy of one issued recently by an English company, will prove interesting to those who wish to make comparisons of English and American wages. It also possesses many curious features which sheet mill men will appreciate:

Edward Jones, Roller. Mill No. 5.

	T.	C.	Q.	lb.	Rate.	£.	S.	D.	£.	S.	D.
STEEL.											
Nail sheets to 15 W. G.	..	..	..	..	10/	..	..	..	..	..	..
Nail or tack, 16 to 19 W. G.	..	..	..	..	11/	..	..	..	..	..	..
Singles to 3-16	*	6	3	5	10/	..	3	5	..	..	..
Singles, 9 to 18 W. G.	*44	9	2	9	11/	24	9	3	..	..	..
Singles, 19 and 20 W. G.	*	9	3	15	13/	..	6	5	..	..	..
Doubles, 21 to 24 W. G.	..	..	..	..	15/	..	..	..	..	..	..
Lattens, 25 to 27 W. G.	..	..	..	..	19/	..	..	..	..	..	..
Ex. Lattens, 28 W. G.	..	..	..	..	21/	..	..	..	..	..	..
						24	19	1			
5 per cent. off						1	4	11			
									23	14	2
IRON.											
Nail sheets to 15 W. G.	..	..	..	..	10/	..	..	..	..	..	..
Nail or tack, 16 to 19 W. G.	*28	6	3	18	11/	14	3	5	..	..	..
Singles to 3-11	*	13	3	1	10/	..	6	11	..	..	..
Singles, 9 to 18 W. G.	*4	5	3	27	11/	2	7	3	..	..	..
Singles, 19 and 20 W. G.	*	19	2	13	13/	..	12	9	..	..	..
Doubles, 21 to 24 W. G.	..	..	..	..	15/	..	..	..	..	..	..
Lattens, 25 to 27 W. G.	..	..	..	..	19/	..	..	..	..	..	..
Ex. Lattens, 28 W. G.	..	..	..	..	21/	..	..	..	..	..	..
Scrap cutting	51	5	2	14	5d.	1	1	4	..	..	..
Splitting	..	..	..	..	10½d.	..	..	..	..	..	..
Piles, 14 to 28 W. G.	4	8	8	25	2/2	..	3	10	..	..	..
						18	15	6			
Total	79	12	2	4							
15 per cent. off						2	16	4			
									15	19	2
Turning rolls	Per fortnight.								..	10	..
Assistants, 11 turns					2/	1	2	..	..	..	..
Extra lengths	..	9	3	15	2/2	..	1	3	..	..	..
Cutting brands	..	..	..	..	..	..	6	3	1	9	6
Total earnings									41	12	10
OFFTAKES.											
Cash advanced	..	..	..	..	..	10	..	..	..	..	..
Rent	..	..	..	..	..	..	..	..	..	..	..
Coal	..	..	..	..	..	..	5	..	..	..	..
Doctor	..	..	..	..	..	..	..	..	..	..	..
Reading room	..	..	..	..	..	..	..	..	..	..	..
Society	..	..	..	..	..	..	..	..	10	5	0
Balance									£31	7	10

Roller pays furnaceman and shearer and own help.
Figures marked * represent total output of mill.

The curious features are the wide difference between the grading of gauges and prices paid compared with the American scale. The only respect in which English rolling mill hands have the advantage over Americans is in regard to the extra price paid for rolling large sheets. It will, no doubt, surprise American sheet rollers to learn that in English mills 2 shillings 6 pence per ton extra is paid for No. 15 gauge and lighter if it measures:

Wide. Long.
36 x 90 inches or over.
33 to 35 x 108 inches or over.
24 to 32 x 114 inches or over.

The many variations of his character make it difficult to compare prices by the ton, but it is easy to ascertain the amount earned per capita from the statement shown. The total earnings for two weeks amount to £41. 12/10. This is for 11 turns of 12 hours each, and is divided between eight men and one boy. The average per capita would be £4. 12/6, equivalent in American money to $22.38, or $11.19 per week. In an American sheet mill the average earnings, if divided equally between the crew, would be about $19.50 per week. This statement is made after careful examination of written accounts handed to workmen by employers. There is nothing estimated or guessed. Notwithstanding the remarkable difference in these figures it is a fact that English workmen work 12 hours per turn, while Americans only work eight hours.

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HARDWARE.

Condition of Trade.

THE middle of December usually witnesses a falling off in the demand for goods and a gradually diminishing volume of business. The present year is no exception, and some special causes are operating to make the aggregate of sales even lighter than usual. In view of the condition of trade more than the usual number of travelers have returned home and are waiting until their efforts will be rewarded by a larger measure of success. The trade, however, on the whole is still being canvassed pretty thoroughly. The conservatism which has characterized business during the past few months is still the policy of merchants, who are limiting their purchases as much as possible until they have taken stock and ascertained the results of the year's or half year's business. At the present time the uncertainty with reference to the action of Congress in the matter of tariff legislation is also having a marked effect and buyers are waiting until this matter is definitely settled. There is, however, a good deal of business doing in a small way, as stocks in the hands of both retailers and jobbers are in most cases more or less broken. There is also a fair activity in seasonable goods and some late orders for articles for the holiday trade help to swell the aggregate of business. Some large buyers have deferred much longer than usual the placing of their orders for the spring trade, and a good many of them are still holding off. The unsatisfactory condition of the market in the matter of prices, especially in staple goods, has not a little influence in deterring merchants from purchasing at this time. While the volume of business is thus only moderate, it is gratifying to note the constant improvement in the financial condition, justifying the expectation that with an early resumption of activity in mercantile circles there will be a satisfactory spring trade. It is especially a matter for congratulation that Hardware merchants throughout the country have so well stood the financial strain of the past few months, and it is hoped that with the turn of the year there will not be many failures to report.

Chicago.

(*By Telegraph.*)

The steady winter weather of the past fortnight has enlivened business somewhat in the Shelf Hardware line. It has especially improved collections. The prevalence of snow throughout the Northwest has enabled farmers to market a great deal of their produce and in this way has undoubtedly made money much easier in purely agricultural districts. The movement, however, has not extended to all classes of the Hardware jobbing trade. Manufacturers of Tinware are exceptionally dull. The inventory season is always expected to be of this character, but much less is doing this year than in previous similar periods, and a revival of demand is not expected now until considerably after the turn of the year. The heavy Hardware jobbers also report their business quiet, except in Sleigh stock, which is in particularly good demand and to some extent makes up for the dullness in other departments.

St. Louis.

(*By Telegraph.*)

Trade during the past week has improved somewhat over the preceding one, but is still considerably less than last year's. The unsettled condition brought about by the proposed Wilson tariff measure continues, and it is pretty generally agreed that any decided improvement is out of the question until this measure is disposed of. A feature of the market is the number of small orders now being received, many of them from large concerns, who were considered carload buyers, but who now buy from hand to mouth. With the exception of a few lines, such as Barb Wire, Wire and Cut Nails and Plain Wire, prices are well maintained. Jobbers do not look for much business between now and the holidays, and are making their preparations for stock taking. Collections are without change.

Notes on Prices.

Wire Nails.—With the advance of the season and the approach of the holidays there is a falling off in the volume of business, but the fact that stocks in dealers' hands are limited is evidently compelling a good many houses to purchase in larger or smaller quantities for a supply of their immediate requirements. Manufacturers also report more inquiry in regard to terms for shipment of fair assortments early in the year, but jobbers and other large purchasers are quite generally deferring placing their orders. Careful attention is, however, given to the market, and buyers are watching it closely and are preparing to place their orders at the first indication of a turn in the matter of prices. This point, however, has not as yet been reached. Notwithstanding the fact that quotations which have ruled for the past few weeks have been regarded as abnormally low the market has developed a further weakness and some sales have been made at slightly lower figures than were regarded as the extreme prices a week or ten days ago. The market is represented by the quotation of $1.15 for carload lots at mill, but attractive orders could without doubt be placed at a slight concession from this figure.

Chicago, by Telegraph.—Some manufacturers of Wire Nails are booking orders for good quantities, although the volume of business is by no means so large as that of November. The current trade is, however, not generally distributed, and some concerns complain of a dearth of orders and expect to close down their factories at an early day, not to resume operations until some time in the new year. Prices are irregular, the nominal quotation continuing at $1.30, Chicago, but it is a comparatively easy matter to secure better terms from some of the manufacturers who are eager for business. The spot cash sellers are again making their appearance to some extent. Jobbers quote small lots from stock at $1.35 to $1.40.

Cut Nails.—The Cut Nail market is sluggish and rather weak, being affected by the same influences as Wire Nails. There is some irregularity in the quotations of the different mills, but in the East the market is represented by 90 cents for carload lots at mill, a figure from which concessions are made by some of the manufacturers. There are, however, others who are endeavoring to obtain a slightly better figure. Small lots from store in New York are quoted regularly at $1.20.

Chicago, by Telegraph.—The Cut Steel Nail trade is quiet and is expected to become more so as the end of the year approaches. Prices are maintained at $1.15 to $1.20, Chicago, according to the character of the order. Small lots from stock are selling at $1.25.

Barb Wire.—The Barb Wire market continues in an unsatisfactory condition, both as regards the volume of

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business and prices. The demand is referred to as sluggish, and most of the mills report the aggregate of orders as small. Prices have receded slightly below the point at which they have been held for a few weeks, and the market is now represented by the quotation of $2.10 to $2.15 for carload lots of Four-Point Galvanized at mill.

Chicago, by Telegraph.—A great deal of business has been placed recently by manufacturers of Barb Wire with jobbers in the West and Northwest for spring delivery. Prices appear to have been well maintained, owing to the noticeable conservatism of some manufacturers who have usually competed actively for business in this territory. Prices may, therefore, be quoted at $2.35 to $2.40 for factory lots ef Galvanized, and $1.95 to $2 for Painted. Jobbers continue to quote small lots from stock at $2 55 for Galvanized, but report that manufacturers are more and more absorbing the retail trade.

Cordage. — The manufacturers of Cordage report a light demand, buyers refusing to place orders in excess of their immediate requirements. We have to record a still further decline in the price, the following prices being obtainable on large lots, f.o.b. factory or New York: Manila, 7¼ cents; Sisal, 5 cents, and New Zealand, 5 cents. The competition between the different manufacturers continues active. The matter of the reorganization of the National Cordage Company is reported to be progressing satisfactorily, and steps are being taken to consummate the purchase of the plants and property of the National Cordage Company by the Reorganization Committee as trustees.

Cistern and Well Cover.—The Safety Cistern and Well Cover, manufactured by Menefee & De Vilbiss, Fort Wayne, Ind., an illustration of which appeared in our issue December 7, 1893, is sold at a discount of 35 per cent. from the following list:

Size of cover.	Each.
36 inches	$3.85
38 "	4.15
40 "	4.65
43 "	5.50

Superior Hinges. — The Superior Hinge for gates, illustrated in our issue of December 7, 1893, and manufactured by Francis Keil & Son, 163d street, west of Third Avenue, New York, is sold at a discount of 25 and 10 per cent. from the following list:

No.	Doz. prs.
2750, Japanned	$12.00
2750 x 3/0, Copper Plated	15.00
2749, Plain Bronze Metal	22.50
2749½, Nickel Plated	22.50

Youths' Bench.—The Youths' Bench manufactured by the Grand Rapids Hand Screw Company, Grand Rapids, Mich., and illustrated in *The Iron Age* November 30, 1893, is listed at $8 each, from which a discount of 35 per cent. is allowed.

Extension Hack Saw Frame.—The California Extension Hack Saw Frame, manufactured by Knapp & Cowles Mfg. Company, Bridgeport, Conn., of which an illustrated description appeared in *The Iron Age* December 7, 1893, is sold at $12 per dozen, subject to a discount of 25 per cent.

Sash Lift.—The Willer Sash Lift, manufactured by Willer Mfg. Company, Milwaukee, Wis., and illustrated in our issue of November 30, 1893, is sold at a discount of 50 per cent. from the following list:

	Per dozen.
Berlin Bronze	$1.00
Brass	2.00
Genuine Bronze	2.00
Old Copper finish (on Bronze)	2.00
" " " (on Iron)	1.50
Nickel plated (on Iron)	1.50
" " (on Brass)	2.50

Glass.—No new or interesting features have developed in connection with the Glass trade during the past week. No improvement in demand is noticed, and such orders as are received are for limited quantities for immediate use. There is a disposition on the part of some of the manufacturers who have not as yet started up their works to postpone immediate resumption. Prices at the present time are so uncertain that it is difficult to name quotations that will stand good under all circumstances. Local prices on American Window Glass are referred to as ranging from 80 and 20 to 85 per cent. discount, according to quantity. Pittsburgh prices are reported as being from 85 and 5 to 85 and 10 per cent. discount, while it is understood that Western factories are making still lower prices. Plate and imported Glass show no change in demand or prices.

Origin of Hardware Terms.

THERE is more or less uncertainty as to the origin of many trade terms in general use, and not a few of the designations of various kinds and sizes of Hardware articles are involved in obscurity as to the reason for their adoption. As examples of this the way in which Nails are designated as 10 or 20 penny, the gauge of Shotguns, the numbers of Screws, Caps, &c., will readily occur to our readers. These and similar terms have been unquestionably in use for a long time and the origin of terms is largely tradition, as most of such markings originated with foreign makers before Hardware was manufactured in this country. When similar goods were first made here the designations familiar to the trade were naturally adhered to by the American producers so that confusion might be avoided, in very much the same way as American Tin Plate makers have adopted the foreign terms to designate the different grades of American Tin Plates. Among well informed persons explanations of most of these terms are, however, current, and in many cases there is little reason for doubt as to their correctness. In some instances, however, there are different and inconsistent explanations given and on these questions there is, of course, more or less doubt. We give below the opinions of well informed parties as to the origin of some of these designations:

The Gauge of Guns.

The usage by which the bore of Guns is designated, as, for example, 12 gauge, is supposed to have originated in this way: The gauge of Guns was determined by the number of pure lead bullets, spherical in shape, any one of which would fill the bore of a Gun. Thus a gun whose bore would be filled by one of 12 such bullets weighing together a pound was termed 12 gauge.

Numbers of Caps.

The numbers given to Caps are supposed to have been arbitrarily given by foreign makers and were continued by American manufacturers when the goods were produced here.

Bastard Files.

The origin of the term "bastard" as applied to Files is generally explained in this way: The rough File was first made, then the second cut. A demand for a File between the two was afterward developed, which being out of the regular line was termed bastard.

Penny Applied to Nails.

Two explanations are current in regard to the use of the term "penny" as a designation of the size of Nails. The one which is very generally adopted is as follows: That the word penny is a corruption of pound. Thus, a 4d Nail was one of such a size that 1000 of them weighed 4 pounds. It may be remarked that originally the term "100" when applied to Nails was six score, or 120, consequently the 1000 was 1200. Another explanation is based on the fact that Cut Nails are comparatively of recent date, having been first made in this country, and were introduced in England as late as 1846. Formerly all Nails were forged, and the price for forging 1000 1½-inch Nails was 4 pence, or as the term is now used, 4d; the price for forging 1000 2-inch or 6d Nails was 6 pence and so on. As a reason why small Nails could be forged so cheaply it is stated that children often did the work.

Numbers of Horse Nails.

The numbers given Horse Nails are supposed by some to have originated in the same way as penny with Cut Nails, according to the first explanation given above. Thus, 1000 of any size weighed the number of pounds designating the number of the Nail. No. 6 Horse Nails would then weigh 6 pounds to the 1000; No. 8, 8 pounds, &c. It is obvious, if this explanation is correct, that the present weight of any number of Nail does not correspond to the original weight of the same number.

Numbers of Screws.

The numbers by which Screws are known designate the numbers of the Screw gauge to which the sizes of the Screws correspond. It would appear that Screws were first made in the various sizes and then a Screw gauge made as a standard, and Wire used in the manufacture of Screws drawn to conform to this standard gauge. The Screw gauge bears no relation to the Wire gauge, as in the case of Screws the largest number designates the largest wire, while in the Wire gauge the largest number represents the smallest size Wire.

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Bicycles for 1894.

FIRST ARTICLE.

IN GENERAL OUTLINE the model of the 1894 Bicycle will not differ materially from the 1893 pattern, although improvements on 1893 machines will be introduced by a large number of manufactures. The diamond style of frame, with long steering head and long wheel base, has been so universally approved of that there is likely to be little, if any, change in these particulars.

Weight.—There is, apparently, a tendency toward machines weighing not much over 30 pounds for road use, which weight is made possible without sacrificing strength by the use of tubing of relatively large diameter and light gauge.

Tires. — Improvements in pneumatic tires continue to be made, especially in the ease with which they may be put on and taken off the rims, and in repairing.

Wood Rims are evidently growing in favor for wheels and will be put on machines regularly by some makers. Other manufacturers leave steel or wood rims optional with the purchaser.

Special Features.—Chainless safeties, elliptic sprockets and other features which are peculiar to various machines will find favor with many riders.

Hardware Trade.—There appears to be an increased disposition on the part of manufacturers to market their product through the retail Hardware trade rather than to sell to jobbers, as the best method of getting their wheels before the public, and to give the retailer the extra discount usually received by the jobber. Wholesale houses, will, however, continue to absorb the product of factories, and dispose of the output to retailers and agents.

Prices for 1894.—There is likely to be more of a variation in the list price of 1894 wheels than in previous years. This will allow merchants to supply machines in accordance with the wishes of their customers in quality and in price. The Eagle Bicycle Mfg. Company, Torrington, Conn., announce that their line for 1894 will consist of wheels at the following weights and list prices: 30-pound wheel, $115; 28-pound wheel, $125; 25-pound, $135, and 21-pound machines, $150. It is not improbable that others of the manufacturers will grade the list prices of their output in accordance with the weight; the lighter machines being listed the highest. The demand for lower priced wheels may result in cheaper wheels being placed on the market. There are still a large number of riders who will be satisfied with nothing but a high priced wheel of the finest finish and grade.

Makers' Announcements.—Many manufacturers have already completed arrangements as to their line of Bicycles for 1894, while others have not as yet perfected their plans for the ensuing year. We will take the opportunity of placing before our readers information regarding the output of the numerous American Bicycle manufacturers at as early a date as possible.

THE STOVER BICYCLE MFG. COMPANY, Freeport, Ill., will again offer the Phœnix wheel on the same general lines as manufactured in 1893, with many marked improvements. The frame will be manufactured with the 10-inch head placed at the proper angle to combine strength with good steering qualities. Their trade has gradually been drifting into a demand for a frame that will fit the rider so as to allow the use of a very short L rod, and for 1894 they will construct frames that will fit riders of any size. They will continue to use Credenda tubing in all parts of their Bicycle, and the bearings on the coming season's output will be dust proof, including pedals, and the important feature in this is that the caps in no wise interfere with the adjustment of the bearing. For handle bars they will manufacture dropped or raised bars with or without brake, as ordered, these bars having different angles. They will use wood rims when so ordered. Their Thoroughbred Phœnix A will be catalogued at 28 pounds, their roadster at 32 pounds; and they will build a special racer weighing 22 pounds. They contend that there is a limit to the light weight idea, and have found that machines of the above weight give the best satisfaction. The company remark that their wheels for 1893 gave universal satisfaction, and that it was upon a stock wheel of the Phœnix pattern that C. E. Henry of San Francisco made his trip across the continent to New York without a mishap.

THE FREEPORT BICYCLE MFG. COMPANY, Freeport, Ill., will make no change in their 1893 models for their 1894 product, excepting that they will add two modifications of their model D, one being with a longer saddle post to accommodate extra tall men, and another with a shorter saddle post to accommodate shorter men or boys who wish a very high grade wheel. For the coming season they will have an improved method for fastening the sprocket wheels, both driving and rear; these are positive fastenings and not liable to give the rider difficulty. The elliptical sprocket gear will remain their special feature, as heretofore. They will also offer an improved saddle which has been thoroughly tested, and for its weight shows great strength. They will make a road saddle with sufficient spring to be perfectly comfortable, at a weight not more than 2 or 3 ounces in excess of the ordinary racing saddle. This is readily adjusted to any desired position for the rider, and to any desired angle upon the wheel.

THE CENTRAL CYCLE MFG. COMPANY, Indianapolis, Ind., announce their line for the coming year to be the Central, model B, a high back double frame machine weighing 24 to 28 pounds, which will be listed at $150; the model A, a little heavier, will list at $100, and the Lady Central will list at $150. The Lady Central will weigh 30 pounds. In addition to these wheels they will have their Ben Hur as a cheap wheel. Their business will be done through dealers, instead of jobbers, as heretofore.

THE CENTURY MFG. COMPANY, Indianapolis, Ind., are successors to the Standard Mfg. Company. They are making a strictly high grade Bicycle, known as the Arrow. Their wheel was gotten out late in the past season, so there will be little or no changes for 1894. The line includes a roadster, scorcher and racer, all under the general name of Arrow. An 18-pound special racer will also be made, with a 42½-inch wheel base.

THE LEAGUE CYCLE COMPANY, Hartford, Conn., will for the coming year turn out three styles of wheels, all strictly high grade: League chainless roadster, League chainless scorcher, and League chainless ladies' safety. The roadster will weigh 30 pounds, the scorcher 27 pounds and the ladies' wheel 32 pounds. The company do not use chains on any of their wheels, bevel gearing being their special feature for propelling power. The company remark that they feel warranted in entering much more largely into the business than heretofore, as the wheel has met with public favor. They expect shortly to move into a larger building in the heart of the city of Hartford, occupying the entire building, which has a floorage of 30,700 square feet. Nicely fitted offices and salesroom will be located on the first floor, while the balance of the building will be fitted with complete equipment, including considerable new machinery for the manufacture of Bicycles.

HIBBARD, SPENCER, BARTLETT & CO., Chicago, issue a special advance catalogue of their 1894 line of Bicycles. Their line has been very much improved from the highest to the lowest grade. They control the entire product of the St. Nicholas Mfg. Company, and are therefore able, they state, to offer absolute protection and the most advantageous terms to dealers among the Hardware trade, whose business they especially solicit. The catalogue illustrates the Varsity, Courier, Gypsy, Tornado, Queen Mab, Blizzard, Fairy, Cricket, Wanderer and Little Jewel—listed from $125 to $20.

HORTON, GILMORE, MCWILLIAMS & CO., Chicago, are not making any changes for next year in regard to Bicycles, their line being as complete and exactly the same as it was last year.

WILLIAM READ & SONS, Boston, Mass., remark that the New Mail has been especially taken up by the Hardware trade the last few years. The pattern for '94 will be changed to conform to the present ideas of frame in having the top bar more horizontal, and the whole machine will be lighter. They will also have a line of medium priced wheels down to $33, which are largely handled by the Hardware trade, their 1894 models comprising several new features in patterns. This line covers both men's and youths' sizes.

THE EAGLE BICYCLE MFG. COMPANY, Torrington, Conn., will list their 1894 wheels according to weight, as follows: List $115, weight 30 pounds; list $125, weight 28 pounds; list $135, weight 25 pounds, and list $150, weight 21 pounds. All of their wheels listed at $125 and over will be fitted with aluminum rims, with which, the company state, they had success throughout the year 1893. Morgan & Wright, Akron, G. & J. and Palmer tires will be used by them, and their $150 machines will be fitted with the Palmer tire unless otherwise ordered. All their wheels will be built with special deep frames, to enable the rider to carry his saddle at the top of the frame. Wheels listing at $135 and $150 will be built under their special copyright design. One of the prominent features will be the cold swaging process to which the tube is treated, reducing large tubes to the required size and tapering the same into delicate forgings, to make the fiber of the tube firm and dense and the temper even. The tapering process begins back about 6 inches from the forging, thus forming a brace on either side, which is designed to make the taper joint much stronger than when

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the straight tubing enters into the forgings. The company claim that Eagle taper joints are much stronger than straight joints. Another special feature of their 1894 machines will be handsome decoration in gold on black enamel. This, it is stated, is something new and distinct, and will be put on wheels listing at $135 and $150.

F. C. AMES & Co., 335 Broadway, New York, are handling a line of Bicycle Supply Specialties, which they control to great extent. Among these are cork handles, chain lubricant, rubber solution, Dickens' pump and featherweight bell. The handles are of a high grade of cork, with ferrules sufficiently heavy to allow the handles to be driven on, if necessary. The chain lubricant is put up in two sizes of collapsible tubes. The base of the lubricant, we are informed, is plumbago, and is mixed with liquids other than oil, preventing the accumulation of dust and dirt on the chain. The rubber solution is also put up in tubes. The Dickens' pump is a double acting hand pump, and the bell, a single stroke one, weighs less than two ounces.

Holiday Show Windows.

ADDITIONAL ATTENTION may profitably be given to dressing show windows in anticipation of holiday trade. Activity in this direction need not be confined to merchants who make a special feature of Christmas goods, as those who carry House-furnishing, Sporting and Athletic goods have many articles in stock, which, if presented to the public in holiday attire, will solve for them the vexing question of what to buy for presents. In fact, it is more needful for those to make a display who have not the reputation of handling holiday goods than for those stores to which purchasers would naturally go to have their wants in this direction supplied. At this time of the year customers hold their purse strings less tightly and expect to be more liberal in their purchases than at other seasons. These facts should be taken advantage of, and high priced goods and those which have been hard to dispose of, which might be considered at all suitable for presents, can now be brought forward with good effect. Articles which are old to the merchant, and which he may be disgusted with, are probably new to the majority of his customers, and will repay some labor in putting them in an attractive condition. It may be surprising, after the holidays are over, to see how many of these old stand-bys have taken to themselves wings.

While every one is supposed to know the use of most articles kept in a Hardware store, nicely lettered cards attached to the article, giving its name or use, will attract attention. In addition to the name some sentence, as, "Does your wife sweep?" "How's the old Tea Pot?" "A nice Christmas present!" "Does the boy skate?" "This is no hair splitter, but cuts clean!" &c., attached to corresponding articles, will produce the desired effect in many cases.

Prices marked in plain figures and placed on articles in the window will catch many customers, especially as many buyers have decided just the amount they will spend for each gift. If the article is made to appear to them suitable and the price comes within their means, an examination of the goods, with a few judicious words from the salesman results in a sale. The purchaser would probably not have come into the store to inquire the price, especially if not in the habit of trading there. The majority of people will buy presents, even if it involves going without some of the necessaries, and such prices should be made that will appeal to buyers as bargains. In such times as these merchants may be satisfied with the exchange of goods for the cash, at a slight advance on the cost, rather than expect large profits because it is holiday time.

This principle applies to Christmas window dressing, as to any other—not to have the window crowded. An attractively arranged window, with goods shown as nearly as possible in the manner in which they are used, supplemented by a bright colored sign outside calling attention to Christmas goods, will cause people to stop in front of the store. In making signs, prices and cards for the display goods something better than wrapping paper and a marking brush is demanded. People will judge the quantity and quality of the goods before seeing them, by the quality of the signs. Let these be made by the best sign writer within reach and be done in his best style.

Something green in the window helps the display, as evergreens are so intimately associated with the popular idea of Christmas. Not too much green, but enough to give the window a decided holiday effect; not as if the evergreens got in there by mistake, but showing care and taste in arrangement and that a definite object was in view. An advertisement in the local paper can be used to advantage, in which special attention should be called to the window display. Articles in the window can be changed about each day for sake of variety, other goods substituted, and goods disposed of for future delivery can be marked "sold," showing business is being done.

All the foregoing suggestions are based upon any present stock, without special additions of holiday goods, and the work of getting things in shape for display cannot be commenced too soon.

Price-Lists, Circulars, &c.

BUHL STAMPING COMPANY, Detroit, Mich.: Buhl Lanterns. Circulars illustrate the Buhl Lanterns in colors, showing the Brilliant and Mascot assortments. The Brilliant assortment consists of one dozen square lift tubular Lanterns, assorted colors—red, blue, russet and maroon. The Lanterns are referred to as simple in construction, strong, durable and handsome, always cool to the hand, not going out, with square lift, non-detachable basket guard and safety lock burners. The Mascot assortment includes three square lift tubular Lanterns, two dash Lanterns and one tubular Headlight, finished in hard enameled colors similar to the Brilliant assortment.

MERRIAM MFG. COMPANY, Durham, Conn.: Metal Boxes. The company's line includes Tin Boxes for safe deposit vaults, Fishing Tackle Boxes, first and second quality Cash Boxes, Bond Boxes, Mail Delivery or house Letter Boxes, and hallway Mail Boxes. These goods are described and illustrated, with prices, on a circular.

ILLINOIS REFRIGERATOR COMPANY, 909 Masonic Temple, Chicago: Illustrated catalogue and price-list for the season of 1894. The factories of this company are at Morrison, Ill., and Northville, Mich. Their specialty is the Automatic Refrigerator, whose construction and principles of air circulation are thoroughly described in the introductory pages of this catalogue. The exhaustive way in which these subjects are treated is shown by the fact that 20 pages are devoted to them, all leading points being illustrated or otherwise set forth in a manner to secure the attention and interest of the reader. The Automatic Refrigerator is built with the ice chamber at the side of the box instead of the top. Air circulation is secured by suitable openings at the top and bottom of the intervening partition, so that there are no flues whatever in the entire construction. The shelves are made of woven wire, galvanized after being made. The hardware is of genuine bronze in new designs. The Refrigerators are made of solid ash and mounted on Fox patent casters. Twelve pages are devoted to various styles of Refrigerators for general domestic uses. Then follow apartment house Refrigerators, others for grocers and hotels, Ice Chests, &c., closing with several styles of Sideboard Refrigerators of pleasing designs from small to very large sizes. The territory east of Chicago is supplied with these refrigerators by the Columbia Refrigerator Company, of Northville, Mich.

INDIANA WIRE FENCE COMPANY, Crawfordsville. Ind., have a tasty and convenient calendar with a view of the ruins of White Cross Abbey. Attention is directed to their product, which includes Plain Wire, Barb Wire, Wire Nails, Fence Staples, Wire Stretchers and Post Hole Diggers.

Trade Items.

YALE & TOWNE MFG. CO., Stamford, Conn., and 84 and 86 Chambers street, New York, will issue early in January a catalogue of the products of their new Cabinet Lock department, which they refer to as including a complete line of Cabinet Locks of every kind, size and style heretofore regularly called for by the trade, as well as a number of new and special goods. Simultaneous with its distribution the company will be prepared to furnish customers with price books containing their latest quotations. In view of the early issue of the catalogue and of the completeness of the line which it embraces they suggest that their customers defer placing orders for Cabinet Locks for the coming season until they have an opportunity to examine the work.

AUGUST KREAMER, manufacturer of pieced and stamped House Furnishing Goods, South Third street and Kent avenue, Brooklyn, has bought the plant of Peter Michels of that city, for making Coffee and Tea Pots and a general assortment of Tinware. This will be incorporated with his own factory, and to provide the necessary room he recently added two new stories on the South Third street wing, giving an increased floor space of 6000 square feet. He is about to commence the manufacture of a line of heavy planished ware of four, five and six cross tin, supplementing a large assortment of

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goods already long made by him. This will include Chafing, Vegetable and Oyster Dishes, Urns, Tureens, Egg Coddlers, Rice Molds, Butter Kettles, Coffee and Tea Pots, &c. The goods made at this factory are mainly for fine trade, and, when so ordered, have the dealer's name struck in brass affixed to each piece. A full line of culinary and housekeeping ware of heavy tin, copper, sheet iron plain, galvanized, japanned and decorated is already well known to most of the largest dealers and department stores. A new catalogue, for a long time in preparation, will be issued in about two months.

CLEMENT & DUNBAR, 1129 Beach street, Philadelphia, Pa., are calling the attention of the trade to their Home and Rapid Ice Cream Freezers. The Home is a single action Freezer with an automatic adjustable scraper and white cedar tub. The Rapid is a double action Freezer with a tub large enough to allow of covering the can completely with ice without interfering with the working parts. The can, of heavy tin plate, has a solid iron cover and bottom, and is fitted with an automatic scraper which adapts itself to any difference in the surface of the can. At the bottom of the tub is a screw which raises the can, when required, sufficiently to compensate for any sag in the can, or wear in the bearings. It is claimed that the tubs are all full sized and allow of large lumps of ice being used, thus tending to hasten the process of freezing and minimize the labor incident to same. The firm are also makers of the Rapid Ice Breaker, designed for confectioners, hotel keepers, and all who use large quantites of broken ice.

A THIEF broke into the Hardware store of S. O. Burnett, 288 Fulton street, Brooklyn, on the night of the 8th inst. and stole $70,000 in bonds, mortgages, certificates, &c. In addition he took $20 in cash and a watch valued at $50. It is said that none of the securities can be realized upon by the burglar. Their loss to Mr. Burnett, however, should they be destroyed, would amount to many thousands of dollars. The securities were kept in an old-fashioned safe, which was easily broken open by the thief. Excepting the above the robber disturbed nothing else in the store, although within a few feet of the safe in a showcase were a large assortment of Pocket Knives, Tools, &c. The miscreant has not yet been apprehended by the police.

ANNOUNCEMENT is made that Manley W. McClure has retired from the firm of Brown, McClure & Wales, Boston, Mass. The business of importing and dealing in Iron, Steel, Heavy Hardware and metals heretofore conducted under the above firm name will hereafter be continued by John G. Brown and William Q. Wales under the style of Brown & Wales.

UNDER THE HEADING of "It Is Reported" in our last isssue appeared a paragraph in which it was stated that the Hardware store of A. L. Mills, Hartford, Conn., had been recently entered by thieves. Mr. Mills is, however, located in New Britain, and his initials are H. L. and not A. L. The value of the stolen booty was less than $100.

AN ENTERPRISING Brooklyn merchant recently hit on a novel mode of advertising. He purchased several thousands of high grade flat steel keys of a well known lock company, to each of which a tag with blank spaces for name and address was attached. These, with a four-page circular directing attention to many articles for sale, with prices, were inclosed in envelopes, and extensively distributed in territory adjacent to his premises. In the circular reference was made to the key, saying that 10 per cent. of the keys would fit a lock hanging just inside their door. Every one who succeeded in opening the lock would secure a neat sewing chair. In addition, all the keys entitled the holder to a chance at a handsome parlor suit then on exhibition in their window. After trying the lock the key was dropped in a box for a future drawing for the suit, the tag containing the person's name and address.

Ingenious Device for Catching Thieves.

THE Hardware firm of Foster, Stevens & Co., Grand Rapids, Mich., recently employed electricity and photography to detect a burglar. It being found that their money drawer was systematically robbed at night, W. D. Stevens of the above firm applied to the Grand Rapids Electric Company to devise some scheme by means of which the thief might be detected, and suggested what may be termed the Electro-Photographic method.

The Electric Company's efforts resulted in the detection of the thief, the method adopted being shown in the accompanying illustrations. The device as first arranged is shown in Fig. 1, the camera being so placed as to get a front view exposure of a person standing before the money drawer. Electric connection was made with the Electric Company's plant to operate the device. A burglar alarm device was fitted on the money drawer, so that when the drawer was opened the shutter of the camera operated, exposing the lens, at the same instant setting off a flash light. The night after the apparatus was first put in place the thief opened the till and the apparatus worked just as had been designed, but the thief, in order not to be seen from the street, had placed himself under the desk and drew the drawer out over his head. Upon developing the plate the following day it was found that a good photograph had been taken, though the thief was not in it. The night man was, however, arrested the following day upon suspicion, and quickly confessed all when asked if he knew that his photograph was taken when the light flashed in his face. The flash light flared up the moment the drawer was pulled out, but the thief continued his work and rifled the till. He came to the conclusion that he had been discovered, and was easily brought to confession.

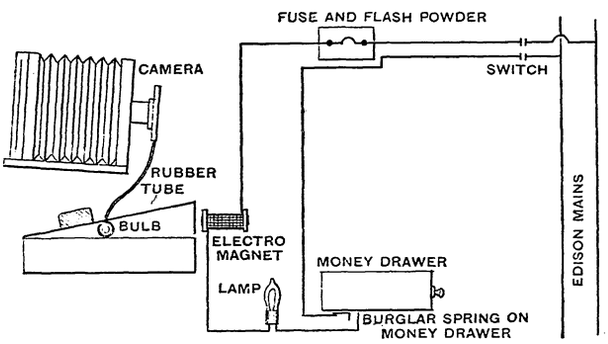


Fig. 1.—Photographic Detection of Burglars.

The second apparatus designed, as shown in Fig. 2, is referred to as working well, but no thief has yet appeared to be operated upon. The plan, no doubt, is capable of wide application, All parts of the apparatus can be so arranged as to be thoroughly concealed from the eye of the thief. An indisputable and convincing proof of guilt is a photograph of the offender, taken in the act; and the foregoing plan suggests a safe and efficient method of detecting burglars, which is capable of a wide adaption.

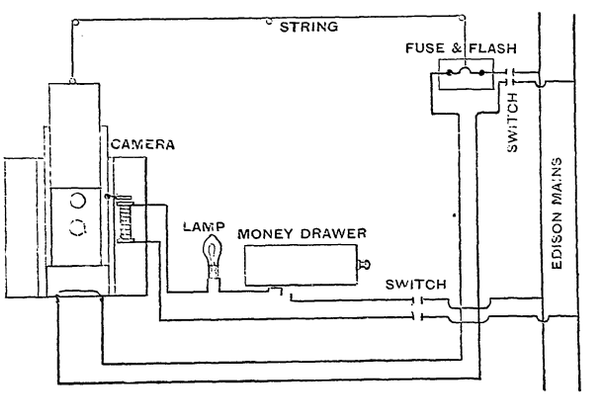


Fig. 2.—Another Arrangement of Apparatus.

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Hardware in South Africa.

LETTER FROM

POLHEMUS LYON,

Our Special Foreign Representative.

PORT ELIZABETH, November 6, 1893.

To the Editor: South Africa, with its even million of white people, is growing more and more in touch with the rest of the civilized world.

Our World's Fair is certainly helping to this end. Quite a number of people have lately returned from Chicago, bringing with them not only interesting stories of the fair, but also quite an assortment of new lines of merchandise picked up in the States from exhibits made at the fair.

This is materially helped by the direct line of steamers which leave New York every three or four weeks, and make the 7200 miles direct passage to Cape Town in 30 days. These steamers do not ask any more freight charges than those from London to the Cape, and virtually take no longer in transit, so that many lines which did not interest the colonial buyer when he had to wait for a three months' sailing ship now obtain a demand, and we are put on a more even footing with the European factories. The writer has found it possible to sell several lines because of this, which two years ago would not excite interest. It is to be hoped that the steamers have come to stay, though many of the colonial merchants prefer the sailing vessels, since the more obstacles there are put in the way of importing the less crowded do they find competition. It is a fact that these steamers each bring out a number of first-class passengers, and there are at the great mining centers down here several Americans in charge of large interests, for, of course, the mining machinery in vogue is chiefly from our country.

Cape Town, with its 85,000 people, is taking a step up in the world—that is to say, two or three years ago there were but two or three buildings over two stories high, now there are half a dozen running up to five stories and several to three.

I would take much more interest in the building interests here if they would only use decent Hardware, but the Builders' Hardware in use would shame a third class tenement. They use almost entirely cheap, heavy English Rim Locks, which turn only one way and have an inch and a half brass knob. There are very few Mortise Locks in use and no Night Latches, although in this city the trade have done very well with American Rim Locks, introduced two years ago. In Cape Town they could not be tempted to handle the goods because of the light cast case, and in neither city do they take kindly to our nicely finished Wrought Steel Butts, but prefer, at a higher price, the English Cast Butt.

The building trades have done very well during the year, which helps the Tool lines, where we come in for a large share. Some day we will be able to meet the mother country on common iron goods, even as we now do on malleables, where we almost invariably score an advantage, but on brass Hardware we are out of it again.

Every day I am told of the increased effort the Germans are putting forth for colonial business. Both in Australia and throughout South Africa they have numbers of sample rooms and travelers seeking importation orders for new lines for that market. Even lately have they come into this field with Plows, which is a very large line at this port. One number of an American Plow coming here to the tune of 30,000 per annum is in popular demand from Kaffirs as well as from the Dutch and English.

But there is one great advantage all over the world in competing with goods of German manufacture—viz., that the buyer takes it for granted that they must be of very inferior quality.

Solid Nickel Utensils.

HERMANN AICH, 43 Murray street, New York, is sole agent in this country of Arthur Krupp, Berndorf, Austria. At this place are extensive works, employing, it is stated, 3500 persons, manufacturing a large line of pure nickel Cooking Utensils. While well introduced abroad, they are said to be virtually new in this market. The utensils are all seamless and guaranteed absolutely pure nickel, also acid proof. Unlike copper goods of this character, they are always ready for use, while the former must at times be retinned. With ordinary care they are said to be practically indestructible. Probably they will first be used in hotels, restaurants, clubs, institutions, &c., as upon the recommendation of chemists, metallurgists and physicians they have been largely introduced abroad in such places. They are especially recommended for hospitals or wherever food is prepared for invalids. The ware is perfectly smooth inside and has a mirror polish outside, resembling in this respect silver ware. The variety of utensils include hotel deep, medium and shallow Sauce Pots, Stew, Frying and Dripping Pans, Egg Cookers, Fish Boilers, Trays, Cups, Tureens, Gravy Boats, &c., many of the leading articles being made in from 20 to 60 sizes each. A line of the principal goods and sizes will be carried here in stock, while importation orders can be taken for anything on the list. The manufacturer is the brother of the famous gun maker of Essen, Germany.

Outfits for Venetian Iron Work.

A. J. WEED & CO., 106 and 108 Liberty street, New York, are placing on the market, in a popular form, materials for the construction of Venetian iron work. Suitable materials and the few necessary tools constitute the outfits obtainable from the company, by means of which, with designs and instructions, useful and artistic home decorations may be made. The construction of Venetian work is designed by the company for home work, as macramé lace making and scroll sawing have been, it being represented as an easy art to master, gratifying artistic taste, and one which may be made remunerative. It is also suggested that the construction of articles in the store or shop during dull seasons, designed for sale over the counter, may be found profitable. For the construction of such Venetian iron work by amateurs the company furnishes materials, tools and working designs. The bracket and candlestick, as shown in Figs. 1 and 2, will convey an idea of what may be accomplished by workers in this line.



Fig. 1.—Bracket Frame.

The bracket frame or outline is furnished by the company, or may be made by a blacksmith. The company furnish iron strips of a suitable width, and these are bent and attached to the frame in any design which fancy may dictate.

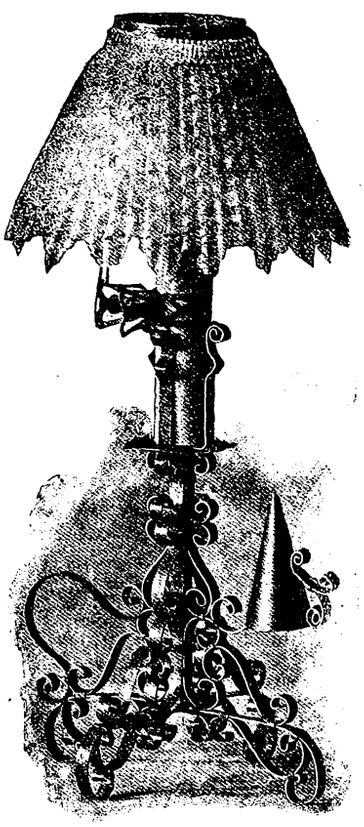


Fig. 2.—Candlestick.

For candlesticks square pieces of iron are furnished for the center or

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backbone of the structure, and the strips are fastened to this in curves, angles or any other shapes desired. There is thus opportunity for much taste and skill. The cost of the materials for the candlestick shown, with the shade, shade holder and extinguisher—these three articles being furnished ready made—is 87 cents. It is estimated that about two hours' labor would be required for the construction of the article. These particular designs are only referred to by way of illustration and it is obvious that a large variety of articles can be made according to the taste, ingenuity and skill of each individual.

The materials necessary for this work, as furnished by the company, include strips of Russia iron, copper, brass and aluminum of different widths. These can be obtained in packages or made up into primary designs, as shown in Fig. 3, at a cost of from 10 to 15 cents per dozen.

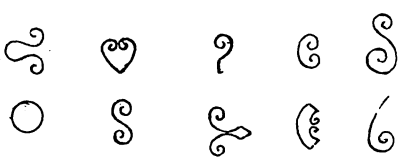


Fig. 3.—Machine Made Primary Designs.

The copper, brass and aluminum strips may be combined in designs to advantage by advanced workers either from working patterns or from original designs. Strips of the various metals are also furnished twisted, fluted, in Grecian borders and in other designs.

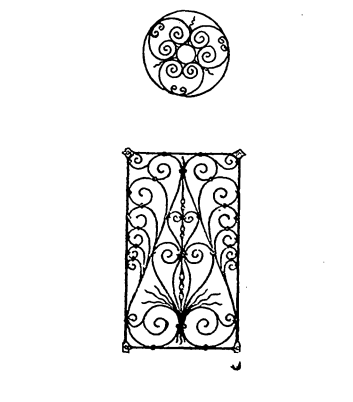


Fig. 4.—Wrought Iron Frames.

Those desiring wrought iron frames similar to those shown in Fig. 4 for windows, doorways, &c., for filling in with designs, or frames for brackets, fire screens, lanterns, &c., can obtain them in regular sizes, or frames will be forged to order from designs submitted. Working designs from which articles can be made are furnished separately, or at an annual subscription of $1 two full sized working drawings will be furnished each month. The tools required for this work are few and simple and will be furnished by the company if desired. In the construction of the different articles the strips of metal or machine made designs are fastened together with binders furnished by the company at from 5 to 15 cents per 100, according to the metal of which they are made. These are fastened by means of the binder tool shown in Fig. 5.

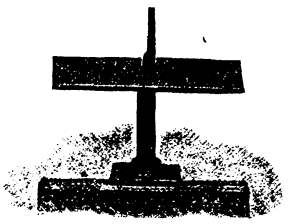


Fig. 5.—The Weed Binding Tool.

The standard of the binder tool is of machinery steel, case hardened, and the working parts are of tool steel. The binders, properly put in place with the tool, impart firmness to the article constructed. Black antique paint, furnished by the company, is used to paint the iron work after the article is completed, to give it a finished appearance.

For the convenience of customers the company put up the necessary tools and materials for making Venetian iron work in sets, varying in completeness according to the needs of the purchaser. There are three sets or outfits thus put up, known as A, B and C. Set A is the beginners' outfit and sells for $3.50, and contains all that is really necessary. In set B the tools are of a better grade, costing $6, and in addition there are several other appliances which will be found convenient, besides a greater amount of materials to work with. In set C the tools are of the best quality and everything as complete as the company's experience has made possible. This set costs $10. The following is the list, with prices. of tools and materials in set B, which is sold for $6, this being a representative outfit:

The Weed Binding Tool, for vise, with separate base	$1.25
The Weed Forming Tool	.25
Vise	.50
Iron Shears	.50
Cutting Plier	.60
Square Nose Plier	.30
Round " "	.40
Tape Measure	.10
Antique Paint	.50
Paint Brushes, per set, 3	.20
2 Hooks	.30
2 Backbones for Candlesticks	.30
Bracket Frame	.35
Package of Iron Strips, ¼ inch	.20
" " " " ⅛ inch	.05
" " Brass Strips, ¼ inch	.10
" " Iron Binders for ¼ inch.	.05
" " " " ⅛ inch.	.05
Sample of Brass Binders for ¼ inch.	.05
Wire, per spool, Iron	.05
" " " Brass	.15
6 Spring Clasp Pins	.30
2 Candlestick Bobechés	.10
2 Extinguishers	.25
2 Candle Shades	.50
2 Extension Shade Holders	.35

The point is made that there is almost no limit to the kinds of articles and designs which may be constructed with the tools and materials obtainable; and that these outfits would form an attractive addition to the line of holiday goods for sale in Hardware stores. Samples of ready made articles may be obtained from the company for display.

It Is Reported—

That G. W. Strong, Sherman, N. Y., has sold his stock of Hardware to W. H. Homewood and Henry W. Sperry. Mr. Strong will retain his interest in the sale of carriages and Agricultural Implements.

That J. C. Carter of Minneapolis, Minn., has bought the interest of his uncle, R. D. Boice, in the firm of Boice & Weidlein, Geneseo, Ill. The firm are the oldest Hardware concern in the county.

That Col. B. F. Sheets and Benjamin Knodle have purchased a Hardware store at Rochelle, Ill., of which Mr. Knodle will take charge.

That J. W. McDonald has recently opened a Hardware store at Norfolk, Neb.

That Charles Ellis, Brandon, Wis., has sold out his stock of Hardware.

That J. T. Shannon has sold his stock of Hardware at Madisonville, Texas, to Dr. W. C. Craw.

That a few Revolvers were stolen from the store of Evans Brothers, Roanoke. Va., on the night of the 20th ult.

That Fimrite & Hauge, Elmore, Minn., have purchased a stock of Hardware at Buffalo Center and are in charge.

That James M. New, Hardware merchant, Martinsburg, Iowa, has traded His Hardware store for a farm.

That the Hardware store of T. L. Burnett, Fort Worth, Texas, was entered by burglars on the 23d ult., and a large amount of Cutlery stolen, including Knives and Razors—in all about 20 dozen.

That A. Bahlke has disposed of his Hardware stock at North Star, Mich.

That a Hardware store is being erected at Wayne, Ill., for Ray Boynton.

That Mr. Bingham of Bay City has entered into the Hardware business with J. T. Harvie at Farwell, Mich.

That Burke Bros. of Ellsworth, Minn., have purchased the Hardware stock of M. E. Templer & Co., Trosky, Minn., and have removed it to Ellsworth. An opening is thus left for a Hardware store at Trosky.

That burglars entered the Hardware store of J. A. Boggs, Davenport, Neb., on the 29th ult., and stole about $30 worth of Razors, Pocket Knives, Revolvers, &c.

That Geo. H. Cutter of the Hardware firm of Cutter Bros., Meadville, Pa., shot and killed a burglar while in the act of ransacking the store on the night of the 21st ult.

That E. R. Morrill, senior manager of the Hardware firm of Morrill & Lackey, Woonsocket, S. D., has sold his interest to Fred. Dring.

That Ott & Boden's Hardware store, at West Bend, Wis., was burglarized on the 24th ult. and $150 worth of Knives and Revolvers was taken.

That in a fire at Fort Worth, Texas, on the 23d ult., the Hardware and Stove stock of Lathrop & Co. was damaged by water to the extent of $200.

That the Tompkins-Cary Hardware Company have filed articles of incorporation at Denvor, Col. The capital stock is $100,000. The directors are John Harvey, T. J. Cary, D. La Salle, H. H. Tompkins and S. H. Tompkins.

That S. H. Gay and Henry Gebhardt will soon open up a new Hardware store and Tin shop at Carbon, Wy.

That Foster & Burke, Hardware merchants, Petoskey, Mich., have bought out Williams & Carpenter, and now control most of the Farm Machinery business in that place.

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That Christoper Wiemer has bought out his brother's share in the Hardware firm of Wm. Wiemer & Co., Radcliffe, Iowa.

That the new establishment of the Stratman Hardware & Builders' Supply Company, Huntingburg, Ind., is nearly completed.

That the Star & Bullock Hardware Company, Deadwood, S. D., have purchased the plumbing business formerly conducted by the Deadwood Plumbing Company.

That in a large fire at Milan, Mich., on the 4th ult., the Hardware stock and building of O. A. Kelley were destroyed. Loss, $10,000; insurance. $4000.

That Max Ludwig's Hardware store, at Pittston. Pa., was robbed on the 1st inst. Sixty dollars' worth of goods were carried off by the miscreants.

That Charles Bowen contemplates entering the Hardware business at Crooked Creek, Iowa.

That Eastwood & Chase are a new Hardware firm at Monticello, Iowa.

That William Walker, senior member of the Hardware firm of William Walker & Son, Peoria, Ill., has retired, his place being taken by William T. Wookey.

That Lindley & Morrissey have sold out their Hardware business at Edgerton, Wis.

That robbers blew open the safe in Oliphant & Newby's Hardware store, at Kennard, Ind., on the 5th inst., but secured no money.

That E. A. Jackson, who for 27 years has carried on the Hardware business at Chatsworth, Ill., has sold out to Sneyd & Burns.

That the Hardware store of D. L. Shultz, at McFall, Iowa, was recently burned out.

That L. Romans has purchased the interest of George Knight in the Hardware business at Charter Oak, Iowa.

That the Hardware firm of J. A. Marshall & Co., Manito, Ill., are putting in a plate glass front and have torn out their old office in the front of the store and built a large new one in the rear.

That the new block built for the Stambaugh-Thompson Hardware Company, Youngstown, Ohio, is now ready for occupation. It is an especially fine one and admirably adapted to the requirements of the business.

That Geo. Bowen has sold his interest in the Hardware firm of Kelly & Bowen, Lawrence, Mich., to Elvin Rowland, and the firm style is now Kelly & Rowland.

That the Hardware firm of Koch Bros., Hope, Kan., has been dissolved, Philip Koch retiring. William Koch will continue the business alone. Philip Koch has gone to Oklahoma with a view to locating and re-entering the Hardware business.

That the C. Krueger stock of Hardware and Implements at Lincoln, Ill., was sold on the 2d inst. to Frank and O. Kiest, who expect to continue the business. The stock invoiced at over $5000 and sold for a little over $3500.

That the Hardware firm of Sutton & Sharpe, Austin, Texas, have been changed into a stock company, with a capital of $20,000. Application for a charter has been filed. The following are the directors of the firm: S. K. Brown, G. C. Atkinson, F. W. Carothers, A. L. Sharpe and J. A. Sutton. Officers have not yet been elected.

That A. G. Rummel's Hardware store, on St. Clair street, Toledo, Ohio, was entered by burglars on the morning of the 5th inst. and goods taken amounting to nearly $300.

That John A. Carman has sold his Hardware store at Pecatonica, Ill., to the E. W. Lowell Hardware Company of Janesville, Wis., who have already taken possession and will conduct it hereafter as one of their branch establishments.

That J. D. Sayers has bought out the interest of his partner, J. A. Jackson, in the Hardware business at Unionville, Mo., and will for the present continue it alone.

That Mr. Adams, who for the past 12 years has been connected with R. M. Bingham & Co., Rome, N. Y., has bought the Stove and Hardware store at 174 West Dominick street, formerly owned by F. W. Clark, who will soon leave for La Porte, Texas, where he has extensive business interests.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

There have been no important developments during the past week. Spot business has been slow, yet probably up to the average for this season of the year, while values do not appear to have undergone anything more than very ordinary fluctuation. Contracts for supplies for future delivery have been fair in some lines, but hardly all that could be wished in point of volume.

White Lead.—The irregularity in price that has existed for some time past continues, but no radical change has taken place. Competition is momentarily rather tame in this quarter, but advices from various other points indicate sharp rivalry and a quite general adjustment of prices to circumstances. This is particularly the case in the instance of Quick Process and various Mixed Lead.

Red Lead and Litharge.—Large consumers are manifesting little interest at the moment, presumably because of the fact that near future wants have been quite well provided for. The demand has been slow as well. Prices show no radical change, but seem to lean more or less in buyers' favor.

Orange Mineral.—Except of moderate quantities hardly any sales are making at present, since there is nothing in the general situation that would prompt liberality in the matter of buying for future wants. Sellers make no unusual effort to expedite business, however, and generally adhere to former prices.

Zincs.—Some manufacturers report a rather better run of orders latterly, but, as a whole, the market for American brands remains quiet and is bare of really new feature, prices being the same all along the line as quoted for several weeks past. On foreign brands no change in list prices has been made, but there is more or less irregularity and business continues to be on a very moderate scale.

Colors.—Individual orders have been almost invariably of rather small size and it is the general report that they are hardly up to the average numerically. Competition in most lines is rather keen, and, while no radical changes are quoted, prices show weakish tendency.

Oils and Turpentine.

Generally steady markets, with rather better volume of business in some lines of goods is to be reported. Along with this is a hardening tendency to values in some instances, making, upon the whole, a condition of affairs quite as encouraging as could be expected at this season of the year. Linseed Oil stands out prominently in point of firmness in value and Cotton Seed Oils figure as the weak spot. However, the movement in values has generally been within narrow range.

Linseed Oil.—Crushers have advanced their prices to 47¢ for Raw and 50¢ for Boiled Oil, owing to higher cost of raw material. Only ordinary jobbing sales have been made at the advance, but competition is remarkably tame, indicating that crushers are working together with less friction than usual.

Cotton Seed Oils.—Under the influence of continued heavy receipts, and consequent accumulation of supply here, prices have remained unsettled and weak. There has been quite a good business, but not enough to exert much force against the weight of excessive supplies here and rather unfavorable reports from foreign markets. Sales have been made at 27¢ @ 28¢ for prime Crude, 33¢ @ 34¢ for prime Summer Yellow, and corresponding prices for other varieties.

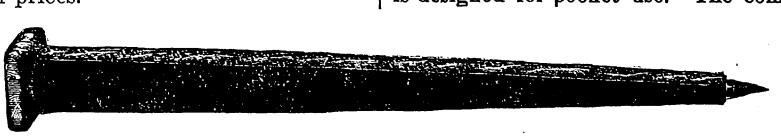
Lard Oil.—Pressers are turning out little stock beyond what may be needed to fill orders. The latter are of good volume for the season, and prices are well maintained on both city and out of town brands.

Fish Oils.—Crude product generally has been quiet, home consumers seeming to need little, while exporters are without orders of any volume. Prices, however, are held quite firmly. Pressed and bleached stock has met with about the usual jobbing sale, chiefly at old prices.

Spirits Turpentine.—Prices have fluctuated within very narrow range, and business has been on a rather small scale. The demand has shown no radical change as compared with that of the preceding two or three weeks. Last sales were at 29¢ for regular and 29½¢ for machine barrels.

A Cut Nail Pencil.

Cross Pen Company, 168 Devonshire street, Boston, have just brought out a regular propelling lead pencil, as shown in the accompanying cut. This is made in exact imitation of a 10d cut nail, and is designed for pocket use. The company are known to the trade as manufacturers of nickel pencils made in imitation of wire nails, stove and carriage bolts, screws, &c. The point is made that the cut nail pencil is especially adapted for advertising purposes, as the sides, being flat, admit of stamping in good sized plain letters any name, business or address. The manufacturers are prepared to make quotations on this novelty for advertising purposes for the new year.



A Cut Nail Pencil.

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The Delmonico Meat Tenderer.

Pullman Sash Balance Company, Rochester, N. Y., are putting the meat tenderer shown herewith upon the market. The knives are described as made from tool steel, ground to a chisel point. The plunger, as shown in Fig. 2, is taken out by removing the pin

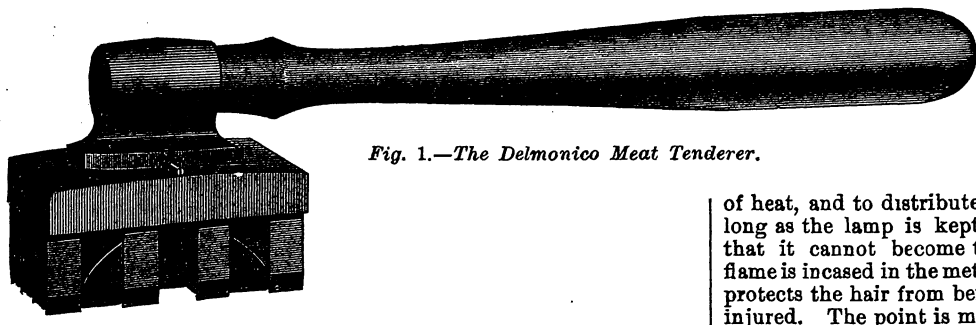


Fig. 1.—The Delmonico Meat Tenderer.

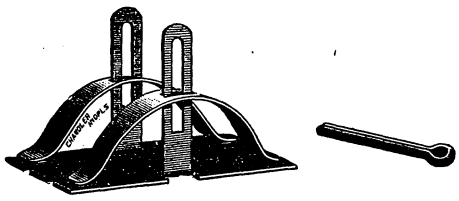


Fig. 2.—Plunger and Key.

when cleaning and washing the tenderer. The parts, it is stated, are all interchangeable and are easily kept clean. The tenderer is furnished both in tinned and japanned.

Wrought Steel Neck Yoke Center.

S. C. Johnson, Racine, Wis., is introducing a neck yoke center, as shown in Fig. 1. The center is made entirely of wrought sheet steel, with the exception of the rivets, which are Norway iron, and one malleable iron washer. The ring is lined with leather riveted in with three split rivets. The ring is riveted to the plate with a $\frac{1}{2}$-inch Norway rivet and the center to the yoke with two $\frac{5}{16}$-inch rivets. The center, it is stated, is strong, neat and durable. The centers are furnished separate from yokes, or yokes can be ordered complete, as in Fig. 2, in any style desired.

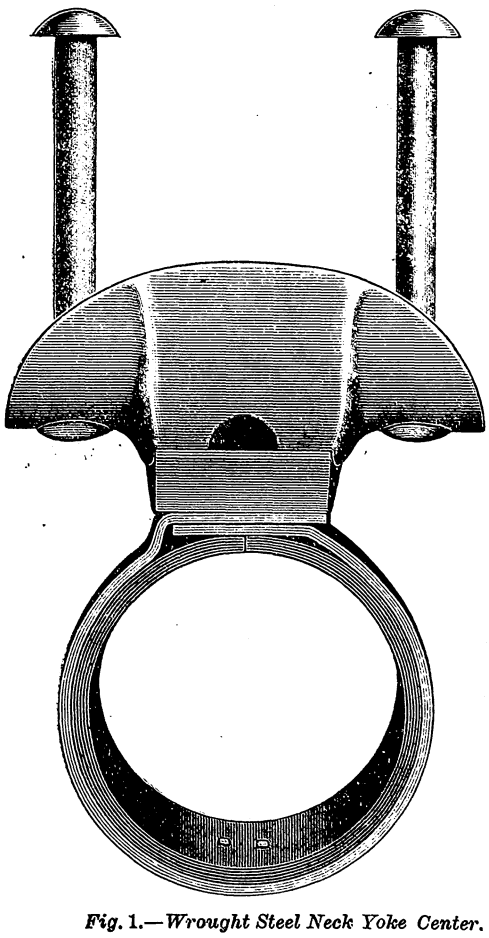


Fig. 1.—Wrought Steel Neck Yoke Center.



Fig. 2.—Yoke and Center Complete.

Unique Self Heating Hair Curler.

The hair curler shown in the cuts herewith given is being introduced by the Unique Novelty Company, 99-103 Abbott street, Detroit, Mich. The handle is of hard rubber, inside of which is a metal tube. The tube is filled with cotton, which a thumb screw at lower end of the tube permits being saturated with alcohol. As shown in Fig. 2, the curler opens by means of a hinge at the metal bulb, at which end of the handle is a wick connected with the cotton. The wick burns all the time the curler is in use, thus saving time and annoyance of reheating. It is stated that the wick is so arranged as to produce and hold the proper amount of heat, and to distribute it equally so long as the lamp is kept burning, and that it cannot become too hot, as the flame is incased in the metal bulb, which protects the hair from being burned or injured. The point is made that lamp, stand and curler being all in one piece, require no more room than an ordinary curling iron, and that by lighting the wick the curler is ready for use. The manufacturers remark that the curler is a time and labor saver at home, a great convenience at evening parties, and an addition to the traveling toilet; also that, owing to an almost universal use of the electric light in hotels, boats, on cars, &c., it has become nearly impossible to properly curl the hair while traveling. The curler is furnished nickel, silver or gold plated.

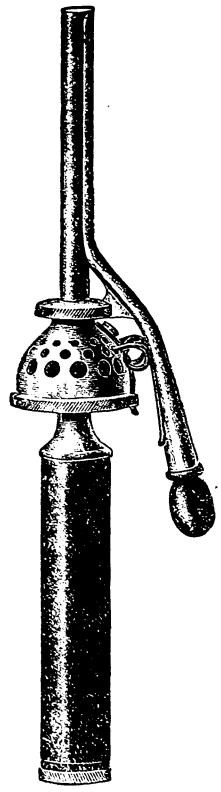


Fig. 1.—Unique Self Heating Hair Curler.

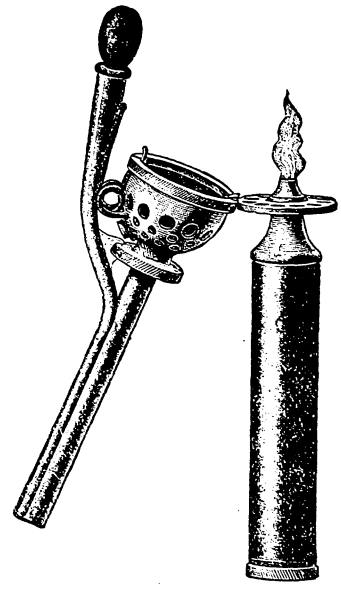


Fig. 2.—Curler Open, Showing Flame.

The handsome gift to Cornell University at Ithaca, N. Y., by Hiram W. Sibley of Rochester, N. Y., is rapidly nearing completion. It is of gray sandstone and four stories high, and is expected to be ready for the use of the students by spring. The school of marine engineering will occupy the whole second floor, with the necessary drawing apartments. The top floor will be given up to the use of second and third year students for study in machine drafting, each man being supplied with separate tools and table. The building is a model of its kind.

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A New Cutlery Box.

The American Cutlery Company of Chicago have just brought out a new and attractive box, intended to hold a half dozen each of silver plated knives and forks. The new box is made of a material over which they have control, and is called marbleoid. It is of such a character that the cover is molded in one piece, with no joints, and the body of the box in another piece. The illustrations show how well the material lends itself to an attractive shape. On the inside of the cover is the company's guarantee in raised letters, while upon the outside the world occupies the center, surrounded by the company's name, &c.

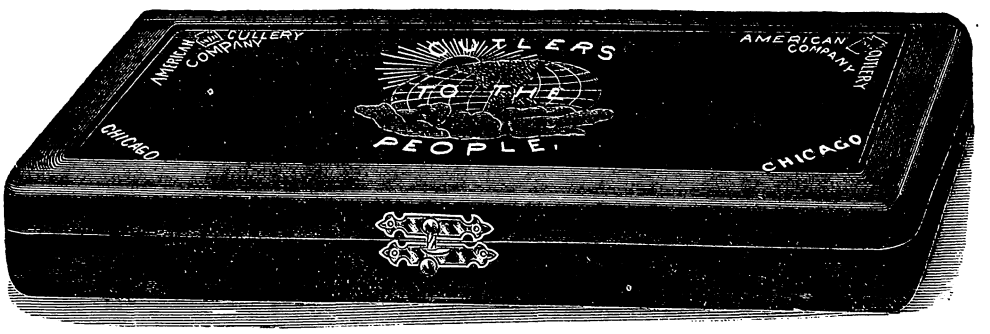


Fig. 1.—Cutlery Box.

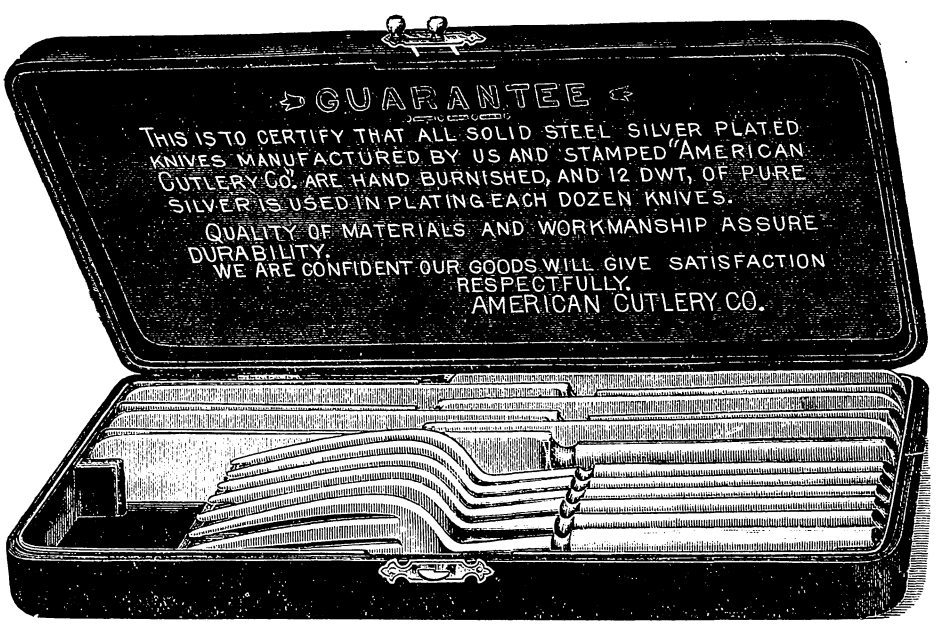
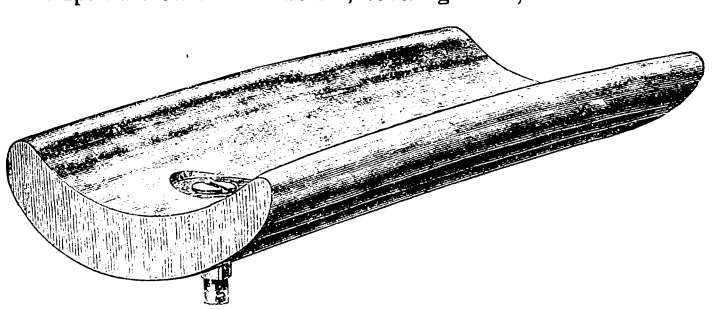


Fig. 2.—Arrangement of Cutlery in Box.

A committee has been formed for the promotion of an international exhibition on the largest scale to be held in London in 1896 or 1897.

Kingsland Wood Rim.

The accompanying illustration shows a section of a wood rim for bicycles, being offered by the Bicycle Wood Rim Company, Kingsland, N. J. The rim is described as being made of a single piece of white ash, bent and joined by a lap joint covering 4 to 5 inches; the joint is then wound with heavy linen. So confident are the makers of the strength of the joint, that the hole for the valve stem is put right through the joint, as the strongest part of the rim. The rims, it is stated, are bent naked, without protecting steel covering bands, so that defective stock is broken when it is in process of bending. A sample rim at hand weighs scant 16 ounces. The company will replace with a new rim any that prove defective in stock or workmanship, or that shall fail at the joint, within one year. The rims are made any diameter or width, and will be bored with holes for spokes, and furnished with metal washers to protect nipples, if the number of holes are specified on order. The manufacturers emphasize the fact that the wood rim is not a racing fad, but that it is the result of three years' experience on the road; that it will stand up under all conditions where a steel rim will go, and will ride faster and with more ease to the rider. An illustrated catalogue illustrates wood rims, describes the process of manufacture and explains the advantages of wood rims over steel rims. The rims are made of a single piece of white ash, and the statement is made that white ash has 12½ times the resiliency of steel.



Kingsland Wood Rim.

THE NUBIAN IRON ENAMEL COMPANY of Cragin, Ill., report their sales of Nubian in small packages almost up to former years, notwithstanding the dullness in general trade. As an evidence of the manner in which tariff agitation disturbs trade in almost unexpected quarters, the company state that they have many customers among manufacturers whose products are affected by the provisions of the Wilson bill, and who will not buy until some definite decision is made by Congress. One customer, for example, is a manufacturer of cotton ties, who uses from eight to ten carloads of Nubian Enamel annually. As cotton ties are scheduled to go on the free list, it is not remarkable that this customer is not buying materials. Others are not hit quite so hard, but prefer to wait to see exactly where they will stand, and meantime the sales of Nubian as well as other materials must suffer.

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The Gardner Observation Door Fast.

An illustration is given in Fig. 1 of the new Gardner observation door fast, which is designed to take the place of the time honored chain. It is composed of two parts—the door fast, which is attached to the jamb, and the thumb bolt, which is inserted in the door. The door fast is shown on a larger scale in Fig. 2. It consists of a plate, to which a slotted piece of metal is strongly riveted at the top. The plate is set into the door jamb, so that it is not in the way. In Fig. 3 is shown the thumb bolt also, on a large scale. It has a round body, so that a $\frac{5}{16}$-inch bit makes a perfect socket for it. The end of the bolt is finished with a knob. The action of the door fast, as will be seen, is very simple. When the door is

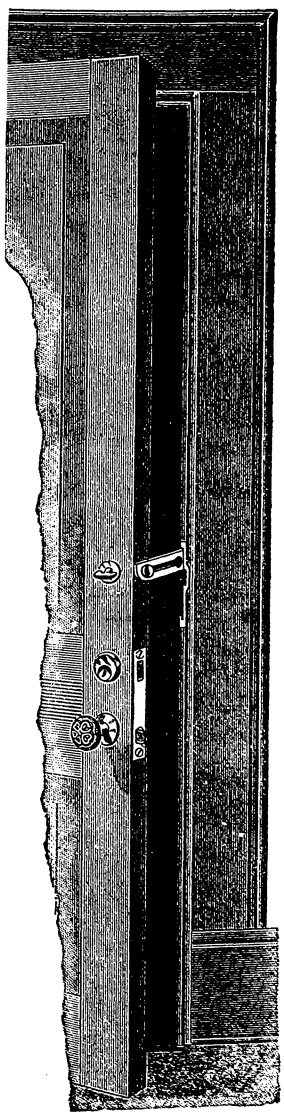


Fig. 1.—The Gardner Observation Door Fast.

closed a turn of the thumb bolt places the knobbed end into the top of the slot on the fast. On opening the door the end of the bolt pulls the arm of the fast up to a horizontal position, but the door can only be opened to the length of the slotted piece. An intruder cannot loosen it even if he is able to put his hand in and turn the thumb bolt, because the knob on the end will not slip out of the slot except at its widest part, which is only in position when the door is shut. The cut of the door fast is not perfectly accurate. The slotted piece is hung so that it will swing to either side of the plate, so that it can be used on either a right or left hand door. Its weight will always make it hang straight. The point is made that, the chain being avoided, there is nothing to mar the door wood work; also that the device is always in place, ready for instant use, and that it can be applied to any door.

The fast is made of cast bronze or brass in all finishes, and is also stamped from steel or brass and plated in all finishes. It is manufactured by G. C. Gardner, Gardner Sash Balance Company, First National Bank Building, Chicago.

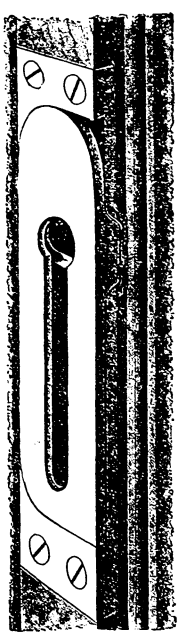


Fig. 2.—The Door Fast.

Moore's Storm Window Fastener.

The accompanying cut represents a storm window fastener put on the market by True & Blanchard, Newport, Vt. It consists of a malleable iron casting with screw slots above and below the offset. The fastener is attached from the inside to the storm window sash by means of two screws through the slots, so that the casting may be slid up and down. The fastener is pushed up as far as it will go and a screw put in the casing at the lower end of the off set, after which the fastener is driven down on to the casing screw, thus holding the sash tightly in place. The manufacturers state that the window is held in this way tighter than with screws driven through it from the outside; that the window can be put on and taken off in an instant without the use of ladders and from the inside; that the castings being malleable will stand all the driving necessary to draw as tightly as desired; that the fastener is as desirable for windows that set in flush as for those that set on the outside, and that after the fasteners have been attached to the storm window no screw driver is required to fasten the window in place in subsequent years. The New England trade will be supplied through Bigelow & Dowse of Boston.

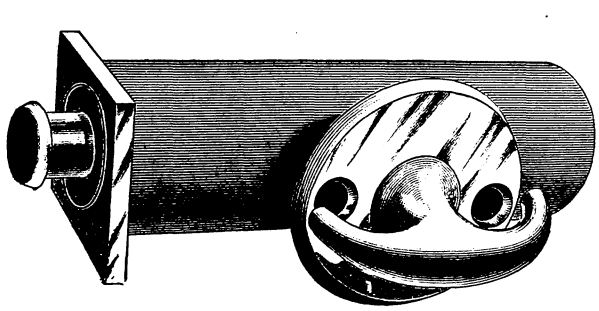
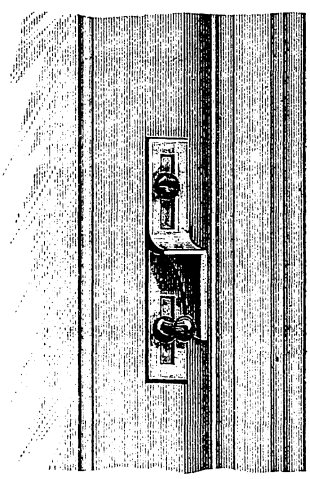


Fig. 3.—Thumb Bolt.



Moore's Storm Window Fastener.

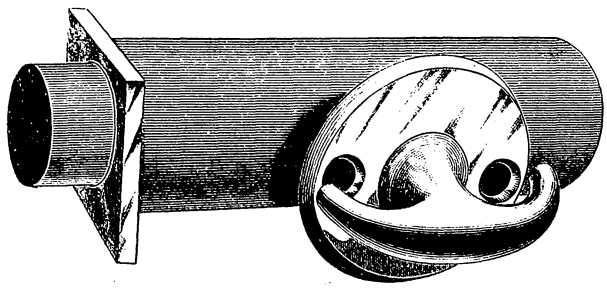
The Ideal Mfg. Company, New Haven, Conn., have added to their line adjustable molds .32-40, .38-55M and .40S. Molds for .32-40 rifles make bullets in eight different weights, ranging from 105 to 210 grains. These bullets have the standard form forward of the grooves, so that reloading tools for 32-40 Winchester, Marlin or Stevens may seat the bullets properly. The .38-55M molds (.375 diameter) make nine bullets, from 158 to 332 grains, in form the same as the standard .38-55, so as to be seated in shells with any regular tool for standard cartridge, as .38-55 Marlin, Winchester or Stevens; also .38 56 and .38-90 Winchester. The .40S Sharps or Remington mold (.403 diameter) makes eight bullets, from 188 to 383 grains. These bullets are especially designed for single shot rifles, as Sharps, Remington, Ballard, Winchester, Stevens and Maynard, using .40-50, .40-70, .40-90 bottle neck, and .40-50, .40-70, .40 90 Sharps straight and Ballard shells.

The New York Board of Underwriters at a recent meeting adopted a resolution that hereafter they will decline to issue approval for electrical equipments for advertising purposes in show windows and mercantile establishments where motors are used or where electric currents are shunted or broken on different currents for display purposes.

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The Gardner Door Bolt.

An illustration is given herewith of the new Gardner door bolt. This bolt is of the type requiring merely a hole bored in the door by a bit, the shell being round. The face, however, is square, so that the bolt will be fitted in place in proper position to receive the shank of the knob. The case is made of cast iron, and the bolt of brass. Its interior construction is very simple. The square shank fits in the corner of a V-shaped cam, held in position by a flat spring, so that the bolt can easily be thrown forward or backward, and is then held in position as thrown. This bolt is made in one size only, $\frac{15}{16}$ inch diameter of shell, but in all styles of hardware finish. It is manufactured by G. C. Gardner, Gardner Sash Balance Company, First National Bank Building, Chicago.



The Gardner Door Bolt.

Pullman Wrought Steel Spring Hinges.

The accompanying cuts represent spring hinges being introduced by the Pullman Sash Balance Company, Rochester, N. Y., for whom Jas. H. Robley, 142 Chambers street, New York, is agent. The Lion, or No. 1 hinge, Fig. 1, is made, it is stated, of the finest grade of wrought steel, and that the placing of two screw holes at the nearest point to the hinge part insures strength where it is most needed and prevents the hinge working loose. To obviate the binding or sticking of the joints a loose pin lug is used for holding the joints together, which is referred to as overcoming an objection sometimes found with spring hinges. It is remarked that the spring has 21 volutes, and that the coil spring is made of the best grade of steel spring wire. The hinge is made in one size only, 3 x $2\frac{1}{2}$, japanned, for either right or left hand doors. Fig. 2 represents the Conqueror, or No. 2 hinge, which is made of the same grade of material, and the joints are held together with a loose pin lug, the same as the No. 1 hinge. The manufacturers state that the strain on the coil of this hinge decreases in opening and increases in closing the door, and that the tension working automatically prevents any wear on the coil spring. This hinge is made in one size, 3 x $2\frac{3}{4}$, finished in japan.

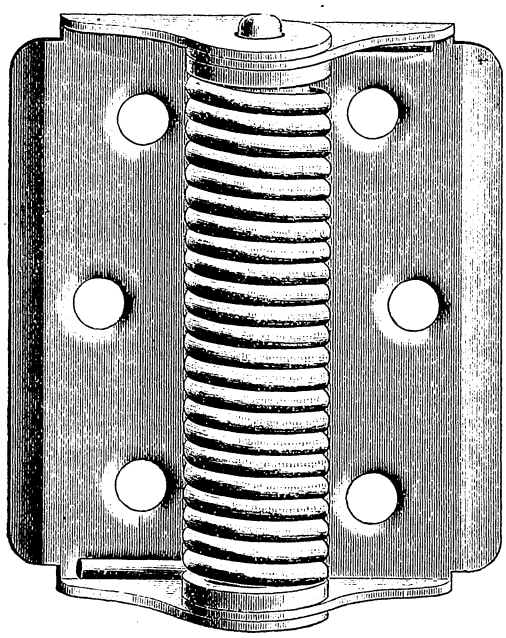


Fig. 1.—Lion Steel Spring Hinge No. 1.

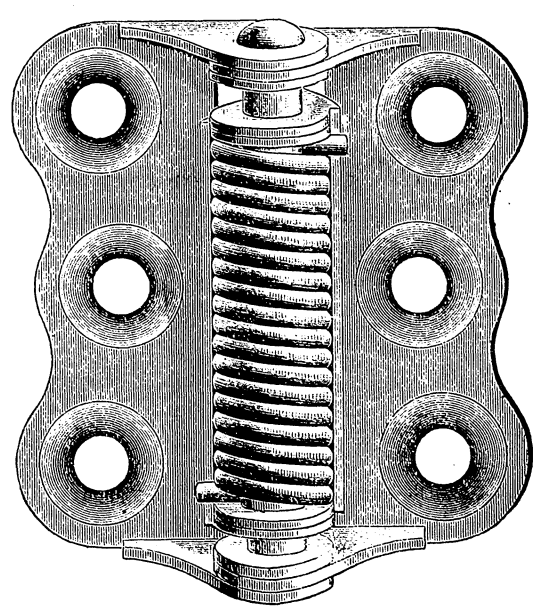
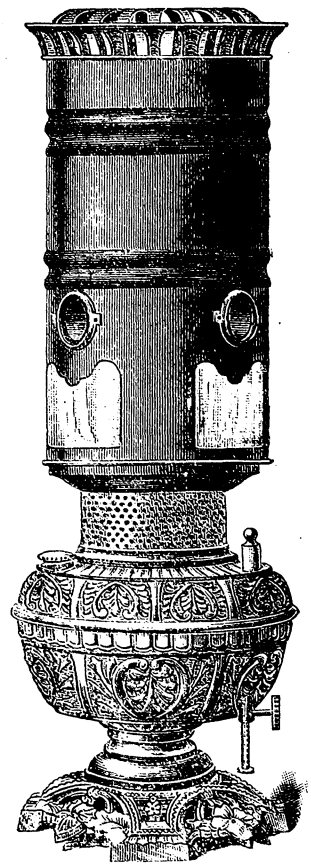


Fig. 2.—Conqueror Steel Spring Hinge No. 2.

Banner Oil Lamp Stove.

The Plume & Atwood Mfg. Company, 18 Murray street, New York, are introducing the oil lamp stove herewith illustrated. The fount and base of the lamp are nickel plated. The body of the drum is made of Russia iron, with round openings arranged to allow a continuous flow of cold air to be drawn into the flame, there to be heated and to be thrown off, largely increasing the heating capacity of the stove. The entire top lifts off from the fount for lighting, cleaning or trimming. The draft is regulated by an inside drum and side air chamber, so that no chimney is required. The flame is regulated by their Banner screw wick movement, which allows of nicety of adjustment. The manufacturers state that the fount has a capacity of about 1 gallon of oil, that it burns from 10 to 12 hours, without odor, heating comfortably at a nominal cost a room 15 feet square. The stove is referred to as especially valuable where only temporary heat is required, as in bedrooms, bathrooms, &c.



Banner Oil Lamp Stove.

It is probable that a special session of the Michigan Legislature will be called to consider measures of relief for the unemployed and destitute miners of the State. It is estimated that over $150,000 will be needed to tide them over the winter.

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Current Hardware Prices.

DECEMBER 13, 1893.

Note.—The quotations given below represent, the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range 'of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓&10%
Excelsior....₩ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Am. Wrought, Horse shoe brand.11@11½¢
Armitage's Mouse Hole.....10½@11¢
Eagle Anvils, ₩ ℔ 9¢.....16@16&5%
Moore & Barnes Mfg. Co.....33⅓%
S. & H., machine finished..10½¢@11½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Peter Wright's.....11@11½%

Anvil Vise and Drill—

Allen Anvil and Vise $3.00.....40&10%
Cheney Anvil and Vise.....25%
Millers Falls Co., $18.00.....20%
Star.....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—

Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....50%
Common Augers and Bits.....70@70&10%
Cincinnati Bell-Hangers' Bits.....30&10
Forstner Pat. Auger Bits.....15%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
C. E. Jennings & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set 32½ quarters, No. 5, $5; No. 30, $3.50.25%
Russell Jennings' Augers and Bits.25&10%
Lewis' Patent Single twist.....45%
L'Hommedieu Car Bits.....15&10%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
Snell's Bits.....60&5%

Bit Stock Drills—

Cleveland.....50&10&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Steer's, No. 1, $26; No. 2, $18.....35@40%
Stearn's No. 2, $48.....20%
Swan's.....40%

Gimlet Bits—

Bee.....25@25&5%
Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25.....40&10%
Double Cut:
Shepardson's.....45@45&10%
Ct. Valley Mfg. Co.....30&10%
Hartwell's.....₩ gro., $10.00..40&10%
Douglass'.....40&10%
Ives.....60@60&10%

Hollow Augers—

Bonney's Adjustable, ₩ doz $48.....50%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%
Douglass'.....33⅓@33⅓&10%
French, Swift & Co. (Beecher).....33⅓@33⅓&10%
Ives'.....33⅓@33⅓&10%
Ives' Expansive, each $4.50.....50&5%
Stearns'.....20&10%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Snell's.....25@25&10%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%
Watrous'.....25@25&10%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@ 1.40
Awls, Handled Brad....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *ets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands.	$7.00	$7.50
First qual., other brands	6.50 / 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1.....3¼¢@4¢; 4½¢@5¢
Nos. 7 to 14.....70%
Nos. 15 to 28.....47½%
Nos. 19 to 22.....70%
Concord Axles, loose collar..4½¢@5¢ } 8% cash
Concord Axles, solid collar..5¢@6¢

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz.	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10¼-in., $1.80; 12-inch, $2.00; 13¼-inch, $2.50; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Dover.....₩ doz $1.00@$1.20
Dover (Standard Co.).....₩ doz $1.00
Duplex (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)....₩ doz. $3.50
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Improved Acme (H. & R. Mfg. Co.)....₩ gro. $9.00
Silver & Co.....₩ doz $5.50
Spiral.....₩ gro $4.25 @ $4.50
Triple (H. & R. Mfg. Co.).....₩ gro $16.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Dodge, Genuine Kentucky....70@70&10%
Kentucky Durham.....70&10%
Kentucky, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Texas Star.....50&10@50&10&5%
Western, Sargent's list.....70&10%

Door—

Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Gong, Abbe's.....33⅓&10%
Gong, Barton's.....40&10@50%
Gong, Yankee.....45&10%
Lever, R. & E. Mfg. Co.'s.....50&10&2%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Pull, Brook's.....50&10&2%

Electric—

Bigelow & Dowse.....20
Wollensak's.....20%

Hand—

Extra Heavy Brass.....70%
Light Brass.....70&10@70&10&5%
Silver Chime.....33⅓&10%
White.....70%
Globe Cone's Patent).....25&10@35%

Miscellaneous -

Call.....45@50%
Farm Bells.....₩ ℔ 3¢&3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Hand Bellows.....40&10@50%
Molders'.....40&10@50%

Belting, Rubber—

Common Standard.....75@75&10%
Extra.....60&10@60&10&10%
Standard.....70&5@70&10%
N.Y.B.&P. Co., Carbon.....60@60&5%
N.Y.B.&P.Co., Diamond.....50@50&5%
N.Y.B.&P.Co., Para.....40@40&5%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters..15%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron.60@60&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%
See also *Machines, Hoisting.*

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....80&5@80&10%
Genuine Eagle, Norway, list Oct. '84.....80&5@80&10%
Eagle, Norway, list Oct. '84.....80&10@80&15
Phila. pattern, list Oct. 7, '84.....80%
R.B.&W., old list.....70%
Bolt Ends, list Jan. 1, 1890.80&10@80&25%
Machine, list Jan. 1, 1890..80&10@80&25%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Chain (Sargent's list).....65&10%
Cast Iron Shutter Bolts.....70&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wr't B. K. Flush, Common.....55&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Shutter, all Iron, Stanley's.....60&10@60&10&10%
Wrought Square.....70&10@75%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%

Stove and Plow—

Plow.....60&10&5@60&10&10%
Stove.....60&10@60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
American Screw Company:
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16 '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel, list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Clark's.....33⅓@35%
Enterprise Mfg. Co.....20%
Ives' Tap Borers.....33⅓&5%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Boxes, Miter.

Spliker's Excelsior, 3 in. $7.50, 4 in $8 50, 5 in. $13.00, 6 in. $15.00.....20%

Braces—

American Bit Brace and Tool Co..
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barbers.....50&10%
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Davis Patent.....50&10%
Fray's Genuine Spofford's...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15

Brackets—

Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting. { Inch..... 9 10 9x11
Per doz...$4.50 5.50 6.50
Morgan Odorless.....₩ doz. $12, 50%
New Haven.....50%
Queen City.....33⅓%
Wire Goods Co.....65&10%

Buckets, Well—

Galvanized—

Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00
Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers.*

Butts—

Brass—

Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%
Cast Brass, Tiebout's.....50%
Wrought Brass.....80@50&10%

Cast Iron—

Fast Joint, Broad.....50&10@60%
Fast Joint, Narrow.....50&10&5@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned..
Loose Pin, Acorns, Japanned, Plated Tips.....
Mayer's Hinges.....
Parliament Butts.....
} 75&5@75&10&5

Wrought Steel—

Fast Joint, Broad.....
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Inside Blind, Light.....
Inside Blind, Regular.....
Loose Joint, Broad.....
Loose Pin.....
Table Butts, Back Flaps, &c...
Bronzed Wrought Butts.....50@50&10%
} List Jan. 2, 1893, 40@40&10%

Cages, Bird—

Hendryx, Brass or Enameled.....50&10%
Hendryx, Wood.....40&10%

Calipers—See *Compasses*

Calks Toe—

Burke's, One Prong, Blunt.....5½@6¢
Burke's, One Prong, Sharp.....6½@7¢
Burke's, Two Prong, Blunt.....7½@8¢
Gautier, One Prong, Blunt.....5½@6¢

Can Openers—See *Openers, Can.*

Cans, Milk—

S. S. & Co.: 5-gal., $3.00; 8-gal., $4 40; 10-gal., $4.75 each.....40&10

Cans, Oil—

Galvanized Blue Band, 1 gal., ₩ doz. $2.25
Galvanized Blue Band, 5 gal., Tip-Top, ₩ doz, $12.00
Galvanized Blue Band, 5 gal, Faucet, ₩ doz., $8.00
Glass Oil, Friend.....₩ doz. $2.75

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co.....₩ 1000
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire $1.60
E. B. Grnd. Edge, Cent. Fire, 1-10's....47@50¢
E. B. Trimmed Edge, 1-10's.....47@50¢
F. L. Waterproof, 1-10's.....35@37¢
G. D.....27@30¢
Musket. Waterproof, 1-10's.....50@53¢
S. B. Genuine Imported.....45¢

Primers—

Berdan Primers, $1.00.....2%
B. L. Caps (Sturtevant Shells) $1 00....2%
All other Primers, $1.20.....2%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....25%

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges -

B. B. Caps, Con. Ball, Swgd., $2.00.....2%
B. B. Caps, Round Ball, $1.75.....2%
Blank Cartridges, except 22 and 32 cal., additional 10% above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Cent. Fire, Military and Sporting 15&5&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Primed Shells and Bullets.....15&5&2%
Rim Fire Cartridges.....15&5&2%
Rim Fire Military.....15&2%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed, Plate, Shallow Socket... { Brass.....55@55&10%; Others....60@60&10%
Deep Socket.....40&10%
Giant Truck Casters.....35%
Gwinner's Common Sense.....45%
Gwinner's Hercules.....45%
Martin's Patent (Phœnix).45&10@50&10%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Socket Truck Casters.....50@50&10%
Stationary Truck Casters.....50&10%
Tucker's Patent, low list.....45%
Yale Casters, low list.....45%
Yale, Gem.....70%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised May, 1893.....60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.50	3.40	3.25

Less than cask lots, add ½¢@½¢ ₩ ℔
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12, 1892. 60@60&10%
Barnes' Reinforced Sash.....60&10¢
Barnes' Victor Sash.....65¢
Covert Halter.....60&2%
Covert Heel Chain.....50&2%
Covert Traces.....35&2%
Galvanized Pump Chain.
5 ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.75
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔.....₩ 100 ℔ $7.00
Jack Chain, Iron and Brass, list July 10, 1893.....60&10%
Oneida Halter Chain.....60@60&5%

Chalk—

₩ See also Crayons.
Blue, case lots...₩ gr 75¢; mall lots 80¢
Red, case lots...₩ gr 67¢; small lots, 72¢
White, case lots.₩ gr 50¢; small lots, 52¢

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Chalk Lines—See *Lines.*

Checks, Door—
Unity 50%

Chisels—
Socket Framing and Firmer
Mix
New Haven
Ohio Tool Co. } 75&10@75&10&10%
P. S. & W
Witherby
Buck Bros.....30%
Douglass .....75@75&5%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%

Tanged and Miscellaneous.
Buck Bros.....30%
Butchers'.....$4.75@$5.00 to £
Cold Chisels, fair quality, ℔ ℔ ...14@16¢
Spear & Jacksons'.....$5 to £
Tanged Firmers.....50@50&10%

Chucks—
Beach Pat.....each, $8.00.....20%
Danbury.....each, $6.00,30@30&5%
Graham Patent.....33⅓%
Morse's Adjustable, each, $7.00,20@20&5%
Syracuse, Balz Pat 25%
Skinner's Patent Chucks.
Combination Lathe Chucks.....33⅓%
Drill Chucks 15%
Independent Lathe Chucks.....40%
Universal Lathe Chucks.....40%
Union Mfg. Co.
Combination.....40%
Independent.....40%
Universal 40%
Victor.....$8.50, 25%

Churns—
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.

Clamps—
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15@15&5%
Adjustable, Stearn's.....30@30&10%
Barnes' Machinists' Clamps. 33⅓%
Cabinet, Sargent's.....70&10%
Carpenter's, Cincinnati.....25&10%
Carriage Makers', P., S. & W Co...40&10%
Carriage Makers', Sargent's... 75@75&5%
Eberhard Mfg. Co.....40&5@40&10%
R. I. Tool Co.'s Wrought Iron.....25%
Saw Clamps, see Vises, Saw Filers'.
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Warner's.....40&10@40&10&5%

Cleavers, Butchers'—
Beatty's.....40@40&5%
Bradley's.....25@30%
Foster Bros.....30%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Schulte, Lohoff & Co.....40@40&5%
L. & I. J. White.....20&5%

Clips—
Baker Axle Clips.....25%
Norway, Axle, ¼ & 5-16.....55&5&5%
Norway Spring Bar Clips, 5-16...60&5&5%
2d grade Norway Axle, ¼ & 5-16....65&5%
Steel Felloe Clips.....℔ ℔, 5¢
Superior Axle Clips.....66⅔&5@70%
Wrought Iron Felloe Clips.....℔ ℔, 5½¢

Cloth and Netting, Wire
—See *Wire, &c.*

Cockeyes.....50%

Cocks Brass—
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.).....60&2@60&10

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company, new list....40%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list.....40%
Medford Fancy Goods Co.....40&10@50%

Combs Curry—
American Curry Comb Co. .....33⅓@40%
Fitch's .....50&10@50&10&10%
Kohler's Humane.....℔ doz., $1.75
Kohler's Magic Oscillating...℔ doz., $2.00
Rubber, per doz., $10.00.....25%

Compasses, Dividers &c.
Compasses, Calipers, Dividers.70&10@75%
Bemis & Call Co.'s
Dividers.....65%
Calipers, Call's Patent Inside.....55%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50&5%
Excelsior.....50%
Starrett's
Combination Dividers.....25%
Lock Calipers and Dividers.....25%
Spring Calipers and Dividers....25&10%
Stevens & Co.'s .....25&10%

Coolers, Water—
S. S. & Co.: 2-gal., $2.00; 3-gal., $2.50; 4-gal., $2.75; 6-gal., $3.40 each....33⅓%

Coopers' Tools—
See *Tools, Coopers'.*

Cord— Sash—
Braided, Crown Drab and Fancy, ℔ ℔, 55¢.....30%
Braided, Crown White, ℔ ℔, 50¢...50%
Cable Laid Italian Sash.....℔ ℔, 19@20¢
Common.....℔ ℔, 8½@9¢
Common Russia Sash.....℔ ℔, 12½@13¢
Egyptian, India Hemp, Braided. .....26¢
India Cable Laid Sash.....℔ ℔, 11½@12¢
Massachusetts, White.....25¢
Ossawan Mills—
Braided, Giant, Drab and Fancy, ℔ ℔ 35¢.....10%
Braided, Giant, White, ℔ ℔ 30¢.....20%
Patent, good quality.....℔ ℔, 10@11¢
Patent Russia Sash.....℔ ℔, 13½@ 14¢
Samson—
Braided, Drab Cotton.....℔ ℔, 42¢
Braided, Italian Hemp.....℔ ℔, 40¢
Braided, Linen.....℔ ℔, 56¢
Braided, White Cotton.....℔ ℔, 37¢
Semper Idem. Braided, White.....26¢
Silver Lake—
A quality, Drab, 55¢.....25%
A quality, White, 50¢.....25%
B quality, Drab, 35¢.....10%
B quality, White, 30¢.....10%
Sylvan Spring. Extra Braided, Drab..39¢
Sylvan Spring, Extra Braided, White.34¢
Tate's Solid Braided—
Economy, Drab.....℔ ℔, 27¢
Economy, White.....℔ ℔ 22¢
Hercules, Drab.....℔ ℔, 30¢
Hercules, White.....℔ ℔, 25¢
White Cotton Braided, fair...℔ ℔, 23@24¢

Wire Picture—
Braided or Twisted .....80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers, Nut—
Acme.
Japanned, ℔ gro., $30 .....50%
Nickel Plated, ℔ gro. $30.....10%
Blake's Pattern, ℔ doz., $2.00.....10%
Table (H. & B. Mfg. Co).....40%
Turner & Seymour Mfg. Co.....50%

Cradles—
Grain.....50&2@50&5&2%

Crayons—
White Crayons, ℔ gross.....7@8¢
D. M. Steward Mfg. Co.:
Metal Workers', ℔ gross, $2.50.....25%
Railroad, ℔ gross, 2.00 .....25%
Rolling Mill, ℔ gross, 2.50.....25%
Soapstone Pencils, ℔ gross,1.50.....25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—
See *Combs, Curry.*

Curtain Pins—
See *Pins, Curtain.*

Cutters—
Meat—
American.....30%
Nos..... 1 2 3 4 B 5
Each.....$5 $7 $10 $25 $50 $60
Enterprise.....25%
Nos.....10 12 22 32 42
Each.....$3 $2.50 $4 $6 $15
Dixon's, ℔ doz. .....40@40&5%
Nos..... 1 2 3 4
$14.00 $17.00 $19.00 $30.00
Draw Cut, each:
Nos. 5 2 6 8
$50 $75 $80 $225.....20@25%
Hale's, ℔ doz.....70%
Nos.....11 12 13
$27.00 $33.00 $45.00
Home No. 1, ℔ doz., $26.00.....55&10%
Little Giant, ℔ doz..... ....40&10@50%
Nos. 305 310 312 320 322
$35.00 $48.00 $44.00 $72.00 $68.00
Miles' Challenge, ℔ doz.....45@45&10%
Nos.....1 2 3
$22.00 $30.00 $40.00
Triumph No. 505, ℔ doz., $21.00..25@30%
Woodruff's, ℔ doz..... .40@40&5%
Nos.....100 150
$15.00 $18.00
Beef Shavers (Enterprise).....20%
Chadborn's Smoked Beef Cutter, ℔ doz., $66.00

Slaw and Kraut—
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife, ℔ gross...$21.00
Slaw Cutters, 2 Knife, ℔ gross... 30.00

Tobacco
Acme.....℔ doz., $20.00, 40%
All Iron.....℔ doz., $4.25
Champion.....20&10@30%
Nashua Lock Co.'s..℔ doz., $18.00, 50@55%
Sargent's.....℔ doz., $24.00, 55&10
Wilson's.....55%

Washer—
Appleton's.....℔ doz., $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%
Johnson's.....℔ doz., $11.00, 33⅓%
Penny's..℔ doz.,, Pol. $14 ; Jap'd, $16, 55%
Smith's Pat....℔ doz., $12.00, 20&10&10%

Diggers, Post Hole, &c.—
Cronk's Post Bars, ℔ doz., $60.00, 50&5@50&10%
Eureka Diggers.....℔ doz. $12.00@$13.00
Fletcher Post Hole Augers, ℔ doz., $36.00, 20@20&10%
Gem, Improved ℔ doz.,.$9.00@$10.00 net
Gibbs' Columbia.....℔ doz., $13.00
Gibbs' Imperial.....℔ doz., $7.50
Gibbs' National .....℔ doz., $12.00
Gibb's Post Hole Digger.....℔ doz.,$15.00
Kohler's Hercules.....℔ doz., $14.00
Kohler's Invincible.....℔ doz., $12.00
Konler's Little Giant.....℔ doz., $18.00
Kohler's New Champion....℔ doz., $8.00
Samson. ℔ doz., $34.00.....25@25&10%
Scheidler.....℔ doz., $18.00
Shimer's Hollow Handle.. ℔ doz., $24.00, 50%
Vaughan's Post Hole Auger, ℔ doz., $8.50@$9.50

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers.
Money, ℔ doz.....$18@$20
Waddel's Improved, ℔ doz.....$15.00

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Automatic Boring Tools.....$1.75@$1.85
Breast, Bartholomew's.....each $2.50 25&10@40%
Breast, Millers Falls.....each $3.00, 25%
Breast, P. S. & W..... .....40&10%
Breast, Wilson's..... .....30&5%
Chicopee Automatic Drill.....20&10%
Goodell Automatic Drills.....40&5%
Ratchet, Curtis & Curtis.....30%
Ratchet, Ingersoll's 25%
Ratchet, Merrill's..... .....20@20&5%
Ratchet, Moore's Triple Action....25@30%
Ratchet, Parker's.....20@20&5%
Ratchet, Weston's.....20@25%
Ratchet, Whitney's.....20&10%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%

Twist Drills—
Cleveland.....50&10&10%
Diamond, W. & B.....50&10&10%
Graham's Pat. Groove Shank.50&10&10%
Morse.....50&10&10%
New Process.....50&10&10%
Standard .....50&10&10%
Syracuse (Metal list)... .....50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Allard's Spiral, new list.....25%
Brace Screw Drivers.....25&10%
Buck Bros.....30%
Buck Bros.' Screw Driver Bits....27½&5%
Clark's Pat.....30@33⅓%
Cincinnati.....25&10%
Champion.....25&10%
Disston's.....50%
Douglass Mfg. Co.....20@20&10%
Ellrich's Socket and Ratchet..25@25&10%
Fray's Hol. H'dle Sets...No. 3, $12.00, 45%
Gay & Parsons.....35%
Goodell's Automatic.....50%
Knapp & Cowles
No. 1 .....60&20@70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos. 4 and 00, Acme and Ideal...50&5@ 50&10&5%
Kolb's Common Sense..℔ doz., $6.00. 25&10%
Mayhew's Black Handle.....50%
Mayhew's Monarch.....45&10%
P. S. & W.....70%
Sargent & Co.'s
No. 1, Forged Blade.....60&10&10%
Nos. 20, 40 and 60.....66⅔&10&10%
Screw Driver Bits, Parr's.. ℔ gross, $6.25
Screw Driver Bits.....℔ doz., 50@75¢
Stanley R. & L. Co.'s
No. 64, Varnished Handles.....65&10%
No. 86..... .....70&10%
Stearns'.....25&10&5%
Syracuse Screw-Driver Bits.....30&30&5%
C. T. Williamson Wire Novelty Co.....50%

Egg Beaters—See *Beaters, Egg.*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F.FF.
10-℔ cans, 10 in case.....	6 ¢	6½¢	5 ¢
10-℔ cans, less than 10.....	10 ¢	10 ¢	7½¢
Kegs, ℔ ℔.....	4½¢	5 ¢	2½¢
½ kegs, ℔ ℔...	4½¢	5½¢	2¾¢
¼ kegs, ℔ ℔...	5 ¢	5½¢	3 ¢

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—
Brass Thread.....60@60&10%
Door Lock....Same dis. as Door Locks.
Wood.....25%

Expanded Metal—
List No. 5.
Door Mats, Galvanized.....25%
Fencing, Painted Sheets.....20%
Lathing.....10%
Netting, Painted Sheets.....20%
Tree Guards, Paneled.....15%
Window Guards, Paneled.....15%

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Austin & Eddy No. 2008.....℔ gr., $9.00
Mackrell's, ℔ doz., $1.00.....20@20&10%
Security Gravity..... ....℔ gr., $9.00
Van Sand's Old Pat., $15 ℔ gr.....55&10%
Van Sand's Screw Pat, $15 ℔ gr.. 60&10%
Zimmerman's.....50&10%

Faucets—
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl. lots....50&10%
Boss Metallic Key.....50%
Cork Lined.....70&5@70&10%
Diamond Lock..... .....40%
Fenn's.....40%
Fenn's Cork Stops.....33⅓%
Frary's Pat. Petroleum.....60%
IXL, 1st quality, Cork Lined..... 50%
Metallic Key, Leather Lined....60&10@ 60&10&10%
No Brand, Red Cedar (in bbls.)....50&10%
No Brand Metal Key..... .....60%
O. K. Western Pattern Cork Lined....50%
Perfection, Fla. Red Cedar(in boxes)..40%
Reliable Cork Lined.....60%
Self Measuring
Enterprise, ℔ doz., $36.00.....20%
Lane's ℔ doz., $36.00..... ...25&10%
John Sommers'.....
Peerless Best Block Tin Key 40%
Star.....60%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list....60%
Western Pattern Metal Key.....40%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—
Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—
Domestic—
American.....66⅔&10@66⅔&10&5%
Arcade.....60&10&5@60&10&10%
Eagle.....60&10&10@70%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Nicholson Files, Rasps, &c.60&10&5@ 60&10&10%
Nicholson (X.F.) Files.....25%
Nicholson's Royal Files (Seconds)...75% (extra prices on certain sizes.)
Other makers, best brands..60&10&5@70%
Fair brands.....70&10@70&10&10%
Second quality..... .....80@80&5%
Arcade Horse Rasps.....60&10@60&10&5%
Chelsea Horse Rasps, Hand Cut...50&10%
Heller's Horse Rasps.....50&10@60%
McCaffrey's Horse Rasps.....50&10%
Trojan Horse Rasps.....60&10&5%
Imported—
Butcher.....Butcher's list, 20%
Stubs..... .....Stubb's' list 75@80%

Fixtures Grindstone—
Moore's.....55%
P., S. & W. Co.....50&10%
Reading Hardware Co.....30&10%
Sargent's Patent.....70&10%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Hay, Manure, &c. Asso. List, 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—
Saw—
Red, Polished and Varnished...℔ doz., $1.50, 25%
White Vermont.....℔ gro., $9.00@$10.00

Screen, Window and Door—
Bonanza Window Screens..50&5@50&10%
Cortland.....40@40&5%
Empire Fancy Screen Doors, ℔ doz ..$12
Phillips' Window Screen Frames..... 50@50&5%
Porter's Pat. Window and Door Frame, 33⅓&10%
Stearns' Frames and Corners.25@25&10%
Warner's Screen Corner Irons..33⅓&10%

Freezers, Ice Cream—
American..... 60%
Arctic.....70@70&5%
Blizzard..... 70%
Boss and Pet.....60&10&10&10%
Buffalo Champion.....65@65&5%
Confectioners' Machine.....50%
Crown..... 60%
Double Action Crown..... 60%
Gem..... 65%
Giant..... 60%
Good Luck .....65@65&5%
Granite State.....65@65&5%
Keystone, P., D. & Co., each, $1.50....20%
Model.....60@60&5%
Peerless..... 60&10%
Shepard's Lightning.....65@65&5%
Standard.....60@60&5%
Standard Double Action.....60@60&5%
Star..... 60%
White Mountain.....60@60&5%
Zero.....70%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fruit Pickers—
See *Pickers, Fruit.*

Fry Pans—See *Pans, Fry.*

Funnels—
Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10¢; 2 to 5 gro., 20¢; 5 to 10 gro..... 30%
Copper, 1 to 6 doz., 15¢; 6 to 12 doz., 20¢; over 12 doz..... 25%

Furnaces, Soldering—
Burgess No. 3 Gem, Copper reservoir.$8.50
Burgess No. 3 Gem tin reservoir....$7.00
Clayton & Lambert No. 1 Fire-Pot, complete..... $6.00

Fuse—Dis. 10@2½ cash. ℔ M1000 ft.
Common Cotton Fuse, for dry ground..$3.00
Common Hemp Fuse, for dry ground. 2.80
Double Taped Fuse, for very wet gr.. 5.60
Single Taped Fuse, for wet ground.. 4.75
Triple Taped Fuse, for very wet gr.. 6.40
Large Gutta Percha Fuse, for water.15.00
Small Gutta Percha Fuse, for water.10 00

Gates Molasses—
Boss, ℔ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10..... 60&10&10%
Lincoln's Pattern.....70@70&10%
Stebbin's Genuine.....60&10&10%
Stebbin's Pattern.....80&10@80&10&5%
Stebbin's Tinned Ends.....40&10%
Weed's..... 20&10%

Gauges—
Barrett's Comb. Roller Gauge..... ℔ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale.....℔ doz.. $5.00
Without Scale.....℔ doz.. $4.00
Marking, Mortise, &c..... 60&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge..... 20&10%
Starrett's Surface, Center and Scratch, 25&10%
Wire, Brown & Sharpe's.....10@20%
Wire, Morse's..... 25%
Wire, P., S. & W. Co..... .....10&10%
Wire, Wheeler, Madden & Co.....10%

Gimlets—
Nail and Spike.....50&10&5%
Diamond Gimlets.....℔ gr $5.00
Eureka Gimlets..... 60&10%
Double Cut, Douglass'..... 40&10%
Doub e Cut, Ives'.....60@60&5%
Double Cut, Shepardson's.....45@45&5%

Glue—
Dodd's Liquid Glue.....25@25&5%
Improved Process.....25@25&5%
Le Page's Liquid.....25@25&5%
Upton's Liquid..... 35%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Axleine, tin boxes..... .℔ gross $12.00
Dixon's Everlasting...10-℔ pails, ea. 85¢
Dixon's Everlasting, in bxs..℔ doz 1 ℔ $1.20; 2 ℔ $2.00
English Coach, 5-℔ tin pails.℔ doz, $3.50
English Coach, wooden boxes..... ℔ gross $8.50
Fraser's.....Keg ℔ ℔ 4¢, Pail ℔ ℔ 5¢
Fraser's, in boxes.....℔ gr $9.50
Lower grades, special brands. ℔ gr $5.50@$7.00
Tiger, 5-℔ tin pails..... ℔ doz $2.85
Tiger, wooden boxes..... ℔ gross $7.00

Grindstones—
Family, regular list..... 60%
Family, Cleveland Stone Co..... 20%

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
Sewing, Brass Fer. ℔ gr..... .....$1.75
Pat. Sewing, Long..... ℔ doz $1.20
Pat. Sewing, Short. ℔ doz.....45@50%
Pat. Peg Leather Top. ℔ doz 45@60%
Pat. Peg, Plain Top.℔ doz ... ...40@45%

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Halters—
Covert's Adj. Rope Halters.....40&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ⅜-in., Hemp.....50&2%
Covert's Rope, Jute.....60&10&10&2%
Covert's Saddlery Works Halters..33⅓%
Covert's Saddlery Works Handy Web Halters.....33⅓%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓%

Hammers—
Handled Hammers—
Atha Tool Co., Buffalo Hammer Co., Humason & Beckley, Verree.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
C. Hammond & Son.....40&10&—%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Maydole's, list Dec. 1, '85.....25&10&35%
Peck, Stow & Wilcox.....35@40%
Fayette R. Plumb, Artisans' Choice, A. E. Nail.....40&10%
Horseshoe Turning Hammers.....50%
Regular Y. & P., A. E. Nail.....50%
Other Hammers.....50&10%
Nelson Tool Works.....40&10%
Sargent's.....40@40&10%
Warner & Nobles, new list.....25&10

Heavy Hammers and Sledges—
3 ℔ and under...℔ ℔40¢, 3 to 5 ℔.....℔ ℔36¢, Over 5 ℔.....℔ ℔30¢ } 75&10@75&10 &5%
Wilkinson's Smiths.....10½¢@11¢℔ ℔

Handcuffs and Leg Irons
—See *Police Goods.*

Handles—
Cross-Cut Saw Handles—
Atkins', new list.....40%
Champion.....15%
Ely's Perfection.....℔ doz., $3.00
Sensible.....40%

Iron, Wrought or Cast—
Barn Door, ℔ doz $1.40.....10&10%
Bronze Iron Drop Latches..℔ doz 70¢ net
Chest and Lifting.....70@70&10%
Door or Thumb.

Nos.....	0	1	2	3	4
Per doz....	$0.90	1.00	1.08	1.35	1.50

60&10&10%
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Roggin's Latches.....℔ doz 30¢@35¢

Wood—
Auger, assorted.....℔ gr 5.00, Auger, large.....℔ gr 7.00 } 50%
File, assorted.....℔ gr 2.75
Brad Awl.....℔ gr $2.00
Apple Firmer Chisel, ass'd...℔ gr 5.00
Apple Firmer Chisel, large...℔ gr 6.00
Hickory Firmer Chisel, ass'd. ℔ gr 4.50
Hickory Firmer Chisel, large. ℔ gr 5.00
Socket Firmer Chisel, ass'd..℔ gr 3.00
Socket Framing Chisel, ass'd. ℔ gr 5.00 } 10&10&10%
Hammer, Hatchet, Axe, &c.....40@40&5%
Hoe, Rake, Shovel, &c.....60@60&5%
Pat. Auger, Douglass.....℔ set $1.25
Pat. Auger, Ives'.....30&10%
Pat. Auger, Swan's.....℔ set $1.00
Saw and Plane.....40&10&50%
J. B. Smith & Co.'s Pat. File.....50%

Hangers—
Barn Door, New England.....70@70&5%
Barn Door, old patterns.....70@70&5%
Barry.....50%
Best Anti-Friction.....60&10@60&10&5%
Boss.....60&10@60&10&5%
Carrier Steel Anti-Friction.....50&10%
Champion.....60&10%
Chicago Anti-Friction.....30&10%
Climax Anti-Friction.....55%
Cincinnati Nos. 1, $2.25; 3, $2.50; 4, $2.50.
Crescent.....60@60&10%
Cronk's Patent, Steel Covered.....50&10%
Duplex (Wood Track).....60&10&5%
Economy, $6.00.....50&10%
Hamilton Wrought Steel Track.....55%
Interstate.....50&10@60%
Kidder's.....50@50&10%
Lane's New Standard.....50@50&5%
Lane's Parlor.....40%
Lane's Standard.....50&5@50&10%
Lundy, Steel Parlor.....40%
Magic.....45&10%
Matchless.....50&10%
Moody.....45%
Moore's Baggage Car Door.....33⅓%
Moore's Elevator.....33⅓%
Moore's Railroad.....55%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15. 40&10@50%
Orleans Steel.....55%
Paragon Nos. 5, 5½, 7 and 8.....20&10%
Pendulum, Payson's.....40@40&10%
Perfection.....50&10@50&10&5%
Richards'.....30@30&10%
Samson Steel Anti-Friction.....55%
Star.....40&10@40&10&5%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Sterling.....50&10@60%
Terry's Ideal.....50&10@50&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Shield.....50&10@60%
Terry's Solid.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Warner's Pat.....20&10&10%
Wild West.....45&10%
Zenith for Wood Track.....55%

Harness Snaps—See *Snaps.*

Hatchets—
American Axe and Tool Co., Blood's, Hunt's, Hurd's, Mann's, Peck's, Underhill's, C. Hammond & Son, Fayette R. Plumb..... 40 & 10 @ 40 & 10 &5%
Collins.....10%
Buffalo Hammer Co., Kelly's, P. S. & W. Co., Sargent's & Co., Schulte, Lohoff & Co., Ten Eyck Edge Tool Co..... 50 @ 50 &10%

Hay and Straw Knives
See *Knives.*

Hinges—
Blind Hinges—
Clark's
No. 50, Buffalo Noiseless, 40, 60 and 65.....75%
Buffalo Reversible, Nos. 3, 2, 1½, 1 and 0.....70&5%
No. 1, Cottage, for wood only...80&10%
No. 1, Diamond, for wood only...80&5%
Dixie L. & P., Nos. 3, 2½, 2, 1½, 1, 0, 00, 4 and 5.....75&5%
No. 25, Empire Reversible.....75&10%
Lull & Porter, Nos. 3, 2½, 2, 1½, 1, 0, 00, 4 and 5.....75&10&2½%
Mortise Gravity, Nos. 2, 4, 4½, 6, 8, 9 and 10.....60%
Nos. 1, 3, 5, 1868, Old Pattern.....75&10&5%
Nos. 1 and 3, Tip Pattern. 75&10&5%
Huffer.....50@50&10%
Parker.....75&10%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Reading's Gravity.....75&10@75&10&5%
Sargent's Nos. 1, 3, 5, 11, 12, 13.....75&10@75&10&5%

Gate Hinges—
Automatic.....℔ doz $12.50, 50%
Clark's, Nos. 1 2, 3.....60&10@60&10&5%
N. E.....℔ doz $7.80, 60@60&10%
N. E. Reversible..℔ doz $5.60, 60@60&10%
N. Y. State.....℔ doz $4.90,60@60&10%
Western.....℔ doz $4.20, 60@60&10%

Spring Hinges—
Acme.....30%
American, Gem and Star.....20%
Bardsley's Patent Checking.....15%
Geer's Spring and Blank Butts....40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's Japanned.....35%
Bommer's All other Kinds.....30%
Buckman's.....15@20%
Chicago.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
Oxford.....20%
Royal.....66⅔%
Reliable.....60%
Champion.....60%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ℔ gro., $30.....50&5%
Samson.....60@60&7½%
Wiles', No. 1, ℔ gro., $16; No. 2.....$13
Devore, No. 1.....℔ gro , $13.00
Rex.....℔ gro., $13.00
Freeport.....℔ gro., $12.00
New Idea Nos. 1 and 10..℔ gross $13.00
New Idea Dbl. Acting.....45%
Ideal No. 3.....℔ gross $10 00
Stearns' Noiseless Floor Hinge, ℔ set, $5.00.....20&10@30%
Extra 5@10% often given.

Wrought Iron Hinges—
List February 14, 1891.
Corrugated Strap and T.....50&10&5%
Strap and T.....50&10@50&10&10%
Plate Hinges { 8, 10 & 12 in., ℔ ℔.....5¢ "Providence" } over 12 in. ℔ ℔.....4¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10¢
Screw Hook and Eye.... { ⅝ in., ℔ ℔ 7½¢ ½ in., ℔ ℔ 5½¢ ⅜ in., ℔ ℔ 4½¢
Screw Hook and Strap..... { 6 to 12 in., ℔ ℔.. 4¢ 14 to 20 in., ℔ ℔..3½¢ 22 to 36 in., ℔ ℔.. 3¢

Hoes—
Eye—
Am. Axe and Tool Co., S. & O. Pat. } 60&5
Sandusky Tool Co., S. & O. Pat } @60&10%
Chattanooga Tool Co., S. & O. Pat. .60& 5@60&10%
D. & H. Scovil.....20%
Grub.....60&10%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%

Handled—
Garden, Mortar, &c.....70@70&5&2%
Magic.....℔ doz $4.00
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%

Hog Rings and Ringers—
See *Rings and Ringers—*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow-Ware—
See *Ware, Hollow.*

Holders—
Bag—
Sprengle's Pat.....℔ doz $18....60%

Bit—
Angular.....℔ doz $24.00, 40&5%
Diagonal.....℔ doz $24.00, 40%
Extension.
Barber's, ℔ doz $15.00.....40@40&10%
Ives, ℔ doz $20.00.....60&5@60&10%

File and Tool—
Bals Pat.....℔ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—
Motley's Adj. Sash, Medium Size..... ℔ doz $1.20, 40%

Hooks—
Cast Iron—
Bird Cage, Reading, Bird Cage, Sargent's List, Clothes Line, Sargent's List, Folding, Sargent's list..... 60&10&10%
Clothes Line, Moore's.....55&10&10%
Clothes Line, Reading list.....70%
Coat and Hat, Moore's.....60&10@60&10&10%
Coat and Hat, Reading.....70%
Coat and Hat, Sargent's list. 50&10@50&10&10%
Harness, Reading list..55&10@55&10&10%

Wire—
Atlas, Coat and Hat.....65%
Belt.....80&15@80&20%
Handy Hat and Coat.....50&10@60%
Indestructible Coat and Hat...45@45&5%
Steady Ceiling Hooks.....50&10@60%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Wire Coat and Hat, Standard.60@60&10%
Bright Wire Goods—See Wire.

Wrought Iron—
Cotton.....℔ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg. Co....50%
Wrought Staples Hooks, &c. See Wrought Goods

Miscellaneous—
Bush.....55@60%
Fish Hooks, American.....50%
Grass, No. 2, $2.00; No. 3, $2.10; No. 4, $2.25
Hooks and Eyes—Brass.....60&10&10%
Hooks and Eyes—Malleable Iron. 70@70&10%
Nolin's Grass.....℔ doz $2.25
Whiffletree—Patent.....55%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—
See *Shoes, Horse.*

Hose, Rubber—
Competition. Fair quality.....75@75&10%
Competition, Low Grade.....80@80&10
Cotton Garden, ¾ in., coupled: Fair Quality, ℔ ℔.....7¢ Good Quality, ℔ ℔.....8½¢
Extra.....60&10@60&10&10%
N. Y. B. & P. Co., Dundee.....60@60&5%
N. Y. B. & P. Co., Extra.....40&5@50%
N. Y. B. & P. Co., Para.....25&5%
Standard.....70&10@70&10&5%

Huskers—
Blair's Adjustable.....℔ gr $8.00
Blair's Adjustable Clipper.....℔ gr 7.00
Hubbard's Solid Steel.....℔ gr 4.50

Indurated Fiber Ware—
See *Ware, Indurated Fiber.*

Irons.
Sad—
From 4 to 10, at factory....℔ 100 ℔, $2.30@$2.40
B. B. Sad Irons, ℔ ℔.....3@3½¢
Chinese Laundry (N.E.Butt Co.).8½¢, 15%
Crown Improved.....60&10%
Ideal Irons, new list...50&10@50&10&10%
Mahony's Troy Pol. Irons.....25%
Mrs. Potts' Sad Irons, per set:

No.	50	55	60	65
Small lots.....	.90	.85	1.05	.95

National Self-Heating.....30%
New England.....5¢. 20@20&5%
Salamander Irons.....25%
Self-Heating.....℔ doz $8.00
Self-Heating Tailors'.....℔ doz $18.00
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%

Soldering—
Soldering Coppers.....℔ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886. 35&2%
Tinker's Dread..℔ doz $1.75; ℔ gro. $18

Pinking—
Pinking Irons, ℔ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—
Daisy.....33⅓%
Lockport.....40%
Victor.....33⅓%

Kettles—
Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Stamped Brass Kettles.....℔ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—
Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.
Ames' Bread Knives, ℔ doz $1.50, 15@20%
Ames' Butcher Knives.....25%
Ames' Shoe Knives.....25@30%
Foster Bros.' Butcher, &c.....40%
Jordan's AA A1 Butchers', list.....net
Moran's Shoe and Bread.....20@20&10%
Nichols' Butcher Knives.....40&10%
Wilson's Butcher Knives, List Dec 8, 1890.....25%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—
Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—
Mix., New Haven, P., S. & W., Witherby.....75@75&10&5%
Adjustable Handle.....25@33⅓%
Bradley's.....35%
Douglass.....75@75&5%
Merrill.....60&10@60&10&5%
Watrous.....15&10&25%
L. & I. J. White.....20&5%
Wilkinson's Folding.....25@25&5%

Hay and Straw—
Carter's Needle...℔ doz. $11.00@$11.50
Heath's.....℔ doz. $13.00@$13.50
Lightning, from jobbers....$6.50@$7.50
Nolin's Hay.....℔ doz. $7.00@$8.00
Wadsworth's.....40&7½@40&10%

Mincing—
Am. (2d quality), ℔ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Buffalo Adjustable....℔ doz. $3.00, 33⅓%
Knapp & Cowles.....50&10@60%
Lothrop's.....20&10%
Smith's, ℔ doz., Single, $2; Double $3 45@50%

Knobs—
Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nicke..l.....$2.00@$2.25
Drawer, Porcelain...60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885..40%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....℔ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladders.
Davies Extension and Single.....20&5%

Ladies—
Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, P., S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—
Tubular—
Regular, with Guard.....℔ doz $3.50
O. K., with Guard.....℔ doz $3.75
Side Lift, with Guard.....℔ doz $4.00
Square Lift, with Guard.....℔ doz $4.25
Anti-Friction, with Guard....℔ doz $4.50
Brass Plated, Sq. Lift, Guard.℔ doz $5.50
Cop. Plated, Sq. Lift, Guard..℔ doz $5.50

Bull's Eye Police—
2¾-inch regular.....℔ doz $3.60
3-inch regular.....℔ doz $3.90
2¾-inch flash light.....℔ doz $4.00
3-inch flash light.....℔ doz $4.50

Lawn Mowers—
See *Mowers, Lawn.*

Leaders, Cattle—
Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—
See *Squeezers, Lemon.*

Lifters, Transom—
Beardsley & Mouat, Sure Grip.....50%
Wollensak's:
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Class 3 and 4, Brass.....50%
Skylight Lifters.....25%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....60@60&10%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—
Cotton and Linen Fish.....50%
Chalk.....60%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ℔ gro.....25%
Mason's Linen, No. 3½, $1.50; No 4, $2.00; No 4½, $2.50.
Mason's Colored Cotton.....45%
Wire Clothes..Nos. 18 19 20
100 ft..... $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..℔ doz $7.50..20%
Ossawan Mills:
Twisted Chalk.....60%
Braided Chalk.....50%
Solid Braided Ventilator and Masons' Lines.....25%
Cotton Clothes Lines.....℔ ℔ 16¢

Links, Open—
Terry's—per gro.:

Nos.....	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—
Cabinet—
Eagle, Gaylord Parker and Corbin... } List, March '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Champion Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&10%
Champion Cab. and Combin.....33⅓%
Yale.....net prices
Romer's.....25%

Door, Locks, Latches, &c
R. & E. Mfg. Co., list Mar. 20, 1889..... } 60&10@70% Much lower net prices often made
Mallory, Wheeler & Co. list July, '88..... } Sargent & Co., List Aug. 1, '88

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Britain, Graham & Mathes, list Jan. 1890.....60&10&10%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Warner's Burglar Proof, ₩ doz. $8.00, 50%

Elevator—

Moore's.....33⅓%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list.....50&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505.....15%
A. E. Deitz.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₩ doz $9, 50@50&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Scandinavian.....90&50%
E. T. Fraim's Keystone Scandinavian,
1010 line.....90&40%
120 line.....90&25%
109 line.....65%
510 line.....70&10%
225, 610 and 209 lines.....70%
All other numbers.....50&5%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker, Barry & Co.
No. 1010 line.....90&50%
No. 41 line.....60%
No. 61 line.....60%
No. 21 line.....80%

Sash, &c.—

Clark's No. 1, $10; No. 2, $8 ₩ gr.....33⅓%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₩ gr $4.00
Common Sense, Nickel Plated, ₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Ives' Patent.....60&10&5@60&10&10%
Fish (Lesche's pat.), No. 100, ₩ gr., $8; No. 105, ₩ gr., $10.....50%
Davis Bronze. Barnes Mfg. Co.....60%
Champion Safety list January, 1893.70&5%
Security.....70%
Giant, list Jan., 1892.....70&5%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—

See *Tools, Lumber.*

Lustro—

Four-ounce bottles.....₩ doz, $1.75; ₩ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas		$5.50	$6.75	50%
Snell's, Rice's Pat...	5.50	6.75	4.00	&10%
Jennings'	5.50	6.75..	50@50	&5%
Other Machines..	2.25	2.50		

Phillip's Patent with Augur..... 7.00 7.50.....
Millers Falls..... 7.50.....25%
Boss, Carpenters' 3.60
Boss, Ship Bldrs'. 3.85

Fluting—

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3½-inch Rolls, $2.15.....35%
Eagle, 5½-inch Rolls, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal, ₩ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25.....30%
Shepard Hand Fluter, No. 85, per doz $15.50.....40%
Shepard Hand Fluter, No. 110, ₩ doz $11.00.....40%
Shepard Hand Fluter No. 95, ₩ doz $3.00.....40%
Combined Fluter and Sad Iron, ₩ doz $15.00.....30%

Hoisting—

Moore's Hand Hoist, with Lock Brake.20%
Moore's Anti-Friction Differential Pulley Block.....20%
Moore's Rope Differential Pulley Block.....60%
Energy Mfg. Co.'s.....25%
See also *Blocks.*

Washing—

Anthony Wayne, ₩ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American.....₩ doz $36.00
Western Star ₩ doz, No. 2, $36; No. 3 $39
Weisell.....₩ doz $54.00
Fair and Square.....₩ doz $42.00

Mallets—

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V., 30@30&10%

Mattocks—Regular list, 60&10@60&10&5%

Measures

Standard Fibreware, No. 1, peck ₩ dozen, $3.50; ½-peck, $3.00

Meat Cutters—

See *Cutters, Meat.*

Menders, Harness—

Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—

Box and Side, List Jan. 1, 1888..60@60&5%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%
Waddell's New Box Mills, Ideal Brand, New List.....60%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Out of Season.

Muzzles—

Safety.....₩ doz, $3.00, 25%

Nails.—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92.....85&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

	Nos. 6	7	8	9	10	
Putnam	23¢	21¢	20¢	19¢	18¢.	.15%
American	9½	9½	9½	9½	9½	....net
Ausable	28¢	26¢	25¢	24¢	23¢	40&5&2%

Clinton, Fin..19¢ 17¢ 16¢ 15¢ 14¢ .30&5%
Essex.....28¢ 2¢ ,25¢ 24¢ 23¢ 40&10@50%

Lyra	9½	9½	9½	9½	9½	....net
Snowden	9½	9½	9½	9½	9½	....net
Standard	23¢	21¢	20¢	19¢	18¢	....35%
Vulcan	23¢	21¢	20¢	19¢	18¢	....25%

Northwest'n.26¢ 23¢ 22¢ 21¢ 20¢ 25@25&5%
C. B. K.....25¢ 23¢ 22¢ 21¢ 21¢ 40%
A. C.....25¢ 23¢ 22¢ 21¢ 21¢ 40&10%
Maud S.....25¢ 23¢ 22¢ 21¢ 21¢ 50&10&5%
Champlain .28¢ 26¢ 25¢ 24¢ 23¢ 40&5&2%
Champion...25¢ 23¢ 22¢ 21¢ 20¢ 10&10&10%
Capewell. ..19¢ 18¢ 17¢ 16¢ 16¢...10&5%
Anchor.....23¢ 21¢ 20¢ 19¢ 18¢.....35%
Western.....23¢ 21¢ 20¢ 19¢ 18¢.....50%
Empire Bronzed.....13@14 ₩ ℔

Picture—

Brass Head, Sargent's list.....60@60&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list.40&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.80¢	6.50¢ off list
Cold Punched	5.00¢	5.10¢ off list

In packages of 100 ℔, add 1-10¢ ₩ ℔, net; in packages less than 100 ℔, add ½¢ ₩ ℔, net.

Oakum—

Best or Government.....₩ ℔ 6¾@7¼¢
U. S. Navy.....₩ ℔ 5¾@6¢
Navy.....₩ ℔ 5¢@5¼¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Steel, Draper & Williams.....50%
Wilmot & Hobbs Mfg. Co., Steel Anti-Rust.....60%

Openers, Can—

Messenger's Comet.....₩ doz $3.00, 25%
American.....₩ gross $2.75@$3.00
Duplex.....₩ doz 25¢, 15@20%
Lyman's.....₩ doz $3.75, 20%
No. 4, French.....₩ doz $2.25, 55@60%
No. 5, Iron Handle.....₩ gr $6.00, 45@50%
Eureka.....₩ doz $2.50, 10%
Sardine Scissors.....₩ doz $2.75@3.00
Star.....₩ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 60&10@70%
Excelsior, No. 1 $2.50; No. 2, $1.50.....40%
World's Best ₩ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₩ doz $3.00.....55&5%
Domestic, ₩ doz $2.00.....45%
Champion, ₩ doz $2.00.....50%
Moore's.....70%

Packing, Steam—

Rubber—

Standard, fair quality.....70@70&10%
Inferior quality.....75@80%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₩ ℔ 80¢....25@25&5%

Miscellaneous—

American Packing.....10¢ 11¢ ₩ ℔
Russia Packing.....14¢ ₩ ℔
Italian Packing.....13@14¢ ₩ ℔
Cotton Packing.....15¢@17¢ ₩ ℔
Juvo.....7¢@8¢ ₩ ℔

Palls—

Creamery—

S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 ₩ doz.....5 %

Galvanized—

	Quarts	10	12	14
Hill's Light Weight, ₩ doz.	$2.75	3.00	3.25	
Hill's Heavy Weight, ₩ dz.	3.00	3.25	3.75	
Sidney Shepard & Co.	2.50	2.75	3.00	
Central Stamping Co.	2.50	2.75	3.00	
Iron Clad	2.50	2.75	3.00	
Fire Buckets	2.75	3.25	3.50	

Buckets—See Well Buckets.

Indurated Fiber Ware

Star Pails, 12 qt.....₩ doz $4.20
Milk, 14 qt.....₩ doz $5.40
Stable, 14 qt.....₩ doz $6.00
Fire Pails, deep.....₩ doz $4.80
Fire Pails, round bottom, ₩ doz $5.40
} 25%

Standard Fiber Ware—

	Plain.	Deor'd
Water Pails, 12 qt., ₩ doz.	$3.15	$3.75
Dairy Pails, 14 qt., ₩ doz.	3.75	4.25
Fire Pails, No. 1, 12 qt., ₩ doz	3.75	
Fire Pails, No. 2, 14 qt., ₩ doz	4.25	
Sugar Pails	5.00	5.50
Horse Pails	4.00	
Buggy Pails	3.00	
Slop Jars (bal. trap)	7.50	8.50
Chamber Pails, 14 qt.	6.00	7.00

Pans—

Dripping—

Small sizes.....₩ ℔ 5½¢
Large sizes.....₩ ℔ 5¢
Silver & Co. (Covered).....40%

Fry—

Standard List:

No.	0	1	2	3	4
₩ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
₩ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....66⅔%

Dust—

Steel Edge, No. 1.....₩ doz $1.75

Roasting and Baking—

Columbian, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each.....60&10%

Paper and Cloth—

Sand and Emery—

List April 19, 1886.... 50&10@50&10&10%
Sibley's Emery and Crocus Cloth.....30%

Parers—

Apple—

Advance.....₩ doz $4.75
Baldwin.....₩ doz 5.25
Bonanza.....each 5.00
Daisy.....₩ doz 4.00
Dandy.....each 7.50
Eclipse.....₩ doz 4.00
Eureka, 1888.....each 16.00
Family Bay State.....₩ doz 12.00
Favorite.....₩ doz 5.00
Gold Medal.....₩ doz 4.00
Ideal.....₩ doz 4.00
Improved Bay State....₩ doz 27.00@30.00
Little Star.....₩ doz 4.50
Monarch.....₩ doz 13.50
New Lightning.....₩ doz 5.50
Oriole.....₩ doz 4.00
Penn.....₩ doz 3.00
Perfection.....₩ doz 4.00
Pomona.....₩ doz 4.00
Rocking Table.....₩ doz 6.00
Turn Table.....₩ doz 4.50
Victor.....₩ doz 13.50
Waverly.....₩ doz 4.00
White Mountain.....₩ doz 4.00
Reading 72.....₩ doz 4.25
Reading 78.....₩ doz 7.00

Potato—

White Mountain.....₩ doz $4.50
Antrim Combination.....₩ doz $5.50
Hoosier.....₩ doz $13.50
Saratoga.....₩ doz $5.50

Pencils, Soapstone—

See *Crayons.*

Pickers, Fruit—

Prize Fruit Pickers.....50%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10&5@60&10&10&5%

Picture Nails—

See *Nails, Picture.*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co.'s, $17 and $18.....60&10%
Peck, Stow & W. Co....50&10@50&10&5%

Escutcheon—

Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List April 13, 1893.

1¼ and under, Plain.....57½&10%
1¼ and under, Galv.....50&10%
1¼ and over, Plain.....67½&10%
1¼ and over, Galv.....57½&10%
Boiler Tubes, list Oct. 24, 1892.....65&10%
Casing, list Nov. 16, 1892.....52½&10%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%
Cold Drawn Seamless Steel Tubing...50%

Planes and Plane Irons—

Wood Planes—

Molding.....40&10%
Bench, First quality.....45&10%
Bench, Second quality.....50&10%
Bailey's (Stanley R. & L. Co.) ..50&10%

Iron Planes

Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steers' Iron Planes.....50@50&5%
Meriden Mal. Iron Co.'s.....50@50&5%
Davis' Iron Planes.....56@50&5%
Birmingham Plane Co.....60@60&5%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....50@50&5%
Sargent's.....60@60&10%
Standard Tool Co.....50@50&5%

Plane Irons—

Butcher's.....$5.00@$5.25 to $
Buck Bros.....80%
Auburn Thistle..... } .30&10@30&10&10%
Ohio..... }
Sandusky..... }
L. & I. J. White.....25%
Stanley R. & L. Co.....50&10%

Plates—

Felloe.....₩ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent.....60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₩ doz.....40%
Humason & Beckley Mfg. Co. 50@50&10%
Lindsay's Giant.....33⅓%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P. S. & W. Cast Steel.....50@50&5%
P. S. & W. Tinners' Cutting Nippers, add 6%.....10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₩ doz, $12.00....30&5%
Cronk's 3 in., $15.00; 10 in.....$20
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels—

Regular List.....75&10@75&10&10%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Cook's.....40&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis Inclinometers.....10&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₩ doz. No. 1, $6.00; No. 2, $9.00.....33⅓%
Silver & Co., 6-Ring, ₩ doz, $4.00; 3-Ring.....$2.00

Pokes, Animal—

Bishop s I. X. L.....₩ doz $6.00
Bishop's Monarch.....₩ doz $4.50
Bishop's Pioneer.....₩ doz $4.00
Bishop's American.....₩ doz $3.00
Eagle, Double Stale.....₩ doz $5.75
Eagle, Single Stale.....₩ doz $3.75
Buckeye, Single Stale.....₩ doz $2.75
Bolding.....₩ doz $6.00
Metallic Horse Poke.....₩ doz $6.00

Police Goods—

R. I. Tool Co., Handcuffs, $15.00 ₩ doz 10%.
R. I. Tool Co., Leg Irons, $25.00 ₩ doz 10%
Tower's.....25%
Daley's Improved Handcuffs; 2 Hands, Polished, ₩ doz, $48.00; Nickeled, $57.00: 3 hands, Polished, ₩ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish—

Metal—

Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Stove—

Joseph Dixon's.....₩ gro, $6.00, 10%
Gem.....₩ gro, $4.50, 10%
Gold Medal.....₩ gro, $6.00, 25%
Lustro.....₩ gro, $4.75
Ruby.....₩ gro, $3.75
Rising Sun, 6 gro lots.....₩ gro, $5.50
Dixon's Plumbago.....₩ ℔ 8¢
Boynton's Noon Day.....₩ gro, $13.00
Parlor Pride Stove Enamel, ₩ gro,
Yates' Liquid, 2 3 5 10 gal
₩ gal...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ₩ ℔ 12½¢
Jet Black.....₩ gro $3.50
Japanese.....₩ gro $3.50
Fireside.....₩ gro $2.50
Diamond O. K. Enamel.....₩ gro $19.00
Bonnell's Liquid Stove Polish, ₩ gro $9.00
Bonnell's Paste Stove Polish, ₩ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₩ gro $6.00
Crown Paste.....₩ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ₩ ℔ 12¢
Black Flag.....₩ gro $7.20
Black Flag, 5 and 10 ℔ pails..₩ ℔ 12¢
Black Flag, liquid, in bottles, ₩ gro $8.00
Diamond Rock Nickel Cleaner ₩ gro $10 20
Raven Liquid, 6 oz. bottles..... ₩ gro $8.00
Raven Liquid, 8 oz. bottles..... ₩ gro $9.00
Raven Water Polish, large boxes..... ₩ gro $7.20
Raven Paste in 5 lb. pails (cases of 6 pails), ₩ ℔ 10¢

Poppers, Corn—

Round or Square,
1 qt.....₩ doz $1.00; ₩ gr $8.00
1½ qt.....₩ doz $1.00; ₩ gr $9 00
2 qt.....₩ doz $1.50; ₩ gr $14.00

Post Hole and Tree Augers and Diggers—

See *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Powder—

In Canisters—

Fine Sporting, 1 ℔ each.....
Duck, 1 ℔ each.....
Rifle, 1 ℔ each.....
Rifle, ½ ℔ each.....

In Kegs—

Rifle, 25-℔ kegs.....
Rifle, 12½-℔ kegs.....
Rifle, 6¼-℔ kegs.....
Duck, 25-℔ kegs.....
Duck, 12½-℔ kegs.....
Duck, 6¼ ℔ kegs.....

For revised prices see Trade Report.

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....25%
Genis.....₩ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....₩ doz $2.75

Pruning Hooks and Shears—See *Shears.*

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Pullers Nail—
Scranton.....₩ doz., $18.00, 33⅓%
Giant, No. 1.....₩ doz., $18.00, 10%
Giant, No. 2.....₩ doz., $15.00, 10%
Pelican.....₩ doz., $9.00, 25%
Eclipse.....₩ doz., $24.00, 40%
Economy.....₩ doz., $6.00

Pulleys—
Hot House, Awning, &c.....66⅔@70%
Japanned Screw.....60&10&10%
Brass Screw.....70%
Japanned Side.....60&10&10%
Moore's Side, Anti Friction.....50%
Moore's Ceiling or End, Anti-Friction.40%
Moore's Dumb Waiter, Anti-Friction.50%
Moore's Electric Light.....33⅓%
Japanned Clothes Line.....60&10%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5.70.....50%
Hay Fork, "F" Common and Patent Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating....60%
Hay Fork, Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00.....40%
Shade Rack.....45%
Tackle Blocks—See Blocks.
Shepard's Niagara, No. 25..₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense.....60%
Empire.....60%
Ideal, Nos. 2, 4, 10 & 15 / Acme / Star } 60% less 1¢ ₩ doz net.
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. ..₩ doz. 22¢ net.

Pumps—
Cistern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddler's or Drive, good..₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Springfield Socket..65%
Spring, good quality..₩ doz., $2.50@2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Check.....55%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44.....55%
Tinners' Hollow Punches, P., S. & W. Co.....20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches.....20&2%
Niagara Solid Punches.....55%

Rail -
Sliding Door, Wr't Brass....₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron..₩ ft., 7¢
Sliding Door, Iron, Painted..₩ ft., 4¢, 40%
Barn Door, Light..In. ½ ⅝ ¾
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet.....$3.15 2.70 3.25 Net
Terry's Steel Rail.....₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot.....50&2%
Carrier, double braced, Steel Rail, ₩ foot.....3½@4¢
Lundy Parlor Door, Planed Edge, ₩ ft.7¢
Moore's Steel Rail.....25&10%
Moody Steel Rail ₩ ft., 5¢.....45%

Rakes—
Cast Steel, Association g'ds..70@70&5&2%
Cast Steel, outside g'ds.....70@70&5&2%
Malleable.....70@70&5%
Gibbs' Lawn Rake.....₩ doz., $4.90
Gibbs' Canton Lawn Rake...₩ doz., $3.75
Gibbs' Acme Lawn Rake....₩ doz., $4.75
Gibbs' Favorite Lawn Rake. ₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1.....₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake.....₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless.....65%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—
J. R. Torrey Razor Co.....Net prices
Wostenholm and Butcher, $10 to $....10%
Jordan's AAA1, new list.....Net prices
Jordan's Old Faithful, new list.Net prices
Galvanic.....₩ doz., $15.00
Electric Cutlery Co.....Net prices
Campbell Cutlery Co.....50%

Razor Strops—
See *Strops, Razor.*

Registers —
Moore's Japanned.....75%
Moore's Electroplated.....75%
Moore's Bronze Finishes.....70%
Moore's Solid Bronze.....65%
Moore's Stove Pipe.....33⅓

Rings and Ringers—
Bull Rings—
Union Nut Co.....55%
Sargent's.....75&10%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers.....₩ doz $2.00
Top of the Hill Rings.....₩ doz $1.25
Hill's Improved Ringers.....₩ doz $1.25
Hill's Old Style Ringers.....₩ doz $1.12½
Hill's Rings.....₩ doz $3.00
Hill's Rings.....₩ doz bxs $1.00
Perfect Rings.....₩ doz bxs $1.50
Perfect Ringers.....₩ doz $2.15@$2.25
Blair's Hog Ringers.....₩ doz $2.00
Blair's Hog Rings.....₩ doz 90¢@$1.00
Champion Ringers.....₩ doz $2.00
Champion Rings, Double.....₩ doz $2.25
Brown's Ringers.....₩ doz $2.00
Brown's Rings.....₩ doz $1.15@$1.25
Electric Hog Rings.....₩ doz boxes $1.50
Electric Hog Ringers.....₩ doz $2.00
Major Rings.....₩ doz $1.25
Major Ringers.....₩ doz $2.00

Rivets and Burrs—
Norway Iron, list Nov. 17, '87....60&10%
Second quality.....70%
Copper.....60@60&10%
Coppere Iron, Betina Brand.... 50&5%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—
Stair, Brass.....25@30%
Stair, Black Walnut.....₩ doz 40¢

Rollers—
Barn Door, Sargent's list. ....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.....70%
Moore's Barn Door Stay.....50%
Thompson Mfg. Co.'s Lawn Rollers ..30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ¼¢@½¢ on large lots; terms, 1½% for cash.
Manila, 7-16 in. diam. and larger.....₩ ℔ 8 @ 8¼¢
Manila.....⅜ in. ₩ ℔ 8½@ 8¾¢
Manila....¼ and 5-16 in. ₩ ℔ 9 @ 9½¢
Manila, Tarred Rope.....₩ ℔ 7½@ 7¾¢
Manila, Hay Rope, Med'm ₩ ℔ 8 @ 8¼¢
Sisal, 7-16 in. and larger. ₩ ℔ 5¾@ 6 ¢
Sisal.....⅜ in. ₩ ℔ 7¼@ 7½¢
Sisal.....¼ and 5-16 in. ₩ ℔ 6¾@ 7 ¢
Sisal, Hay Rope.....₩ ℔ 5¾@ 6 ¢
Sisal, Tarred Rope.....₩ ℔ 5½@ 5½¢
Sisal, Medium Lath Yarn. ₩ ℔ 5½@ 5¾¢
New Zealand.....7-16 in. and larger.....₩ ℔ 5½@ 5¾¢
New Zealand.....⅜ inch, ₩ ℔ 5¾@ 6 ¢
New Zealand, ¼ & 5-16 in. ₩ ℔ 6¼@ 6½¢
New Zealand, Hay Rope. ₩ ℔ 5½@ 5¾¢
New Zealand, Tar'd Rope ₩ ℔ 5 @ 5¼¢
Cotton Rope.....₩ ℔ 13½@16¢
Jute Rope.....₩ ℔ 6¾@7¢

Wire—
List February, 1892. All kinds.....45%

Rules—
Boxwood.....80&10&10@80&10&10&10%
Ivory.....50&10%
Starrett's Steel Rules and Straight Edges.....25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—
See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—*See Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—
Note.—Extra 5@10% often given.
Disston's Circular.....45@45&5%
Disston's Cross Cut, list Jan. 1,'93.40&10%
Disston's Hand.....25%
Woodrough & McParlin. Hand, Panel and Rip.....25&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Wheeler, Madden & Clemson Mfg. Co. Hand, Panel and Rip.....30&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Atkins' Circular.....50&10%
Atkins' Cross Cuts, new list.....40%
Atkins' Mulay, Mill and Drag.....50&10%
Atkins' One-Man Saw.....40%
Atkins' Wood Saws.....40%
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip.....25@25&5%
Peace Cross Cuts, list Jan. 1,'93...45&10%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts, list Jan. 1,'93.45&10%
Richardson's Hand, &c.....25@25&5%
C. E. Jennings & Co.'s.....25%
Simonds' Circular Saws.....45@45&5%
Simonds' Crescent Ground Cross Cut Saws.....30%
Simonds' Gang, Mill, Mulay and Drag Saws.....45@45&5

Hack Saws—
Griffin's, complete.....40&10@50
Griffin's Hack Saw Blades.....40&10@50
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—
Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab Makers'$15,25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—
Hatch, Counter, No. 171, good quality, ₩ doz $18.00@$19.00
Hatch, Tea, No. 161...₩ doz $6.50@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales.....50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10
Riehle Bros.' Platform.....40%

Scale Beams—
See *Beams, Scale.*

Scissors, Fluting.....45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%
Box, 1 Handle.....₩ doz $2.00
Box, 2 Handle.....₩ doz $3.00@$4.00
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common.....₩ doz $3.50
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—
See *Drivers, Screws*

Screws—
Bench and Hand—
Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....35%

Coach, Lag and Hand-Rail—
Lag, Blunt Point, list Jan. 1, 1890.....80&10@80&25%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....80&10@80&20%
Hand Rail, Sargent's.....70&10%
Hand Rail, H. & B. Mfg. Co.....70&10@75%
Hand Rail, Am. Screw Co.....75%

Jack Screws—
Jack Screws, Millers Falls list.50@50&10%
Jack Screws, P., S. & W.....35%
Jack Screws, Sargent.....70%
Jack Screws, Stearns'.....40@40&10%

Cork—
Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Williamson's Forged Worm, Applewood Handle, ₩ doz., $5.00; Rosewood, $5.50.....40%
Detroit Cork Screw Co.....33⅓%

Machine—
Flat Head Iron.....65%
Round Head Iron.....60%

Wood—
List January 1, 1891.
Flat Head Iron.....70%
Round Head Iron.....65%
Flat Head Brass.....70%
Round Head Brass.....65%
Flat Head Bronze.....70%
Round Head, Bronze: ...65%
Extra 10& 10% often given.
Rogers' Drive Screws.....82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—
Grain.....40&5@40&10%
Grass.....40&10&50%

Scythe Snaths—
See *Snaths, Scythe.*

Sets—
Awl and Tool—
Aiken's Sets, Awls and Tools, No. 20, ₩ doz$10.00.....60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....45%
Millers Falls Adj. Tool Hdls., No. 1, $12; No. 4. $12; No. 5. $18.....25%
Henry's Combination Haft...₩ doz $5.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50..70&10&5%

Nail—
Square.....₩ gr. $4.00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr. $12, 20%

Rivet—
Regular list.....70%

Saw—
Stillman's Genuine....₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $6.50.....55@55&10%
Common Lever.....₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00.....40&20%
No. 11, $16.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00..40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
Leach's..No. 0, $8.00; No. 1, $15...15@20%
Nash's.....20&10@40%
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat.45%
Bemis & Call Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Co.'s Cross Cut.....30&5%
Aiken's Genuine.....$13.00, 60@60&10%
Aiken's Imitation.....₩ doz $3.00@$3.25
Hart's Pat. Lever.....20%
Disston's Star.....25%
Leopold.....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10@50%
Avery's Saw Set and Punch.....50%
Kohler's Royal.....₩ doz $7.00
Kohler's Giant Royal.....₩ doz $12.00
Crescent.....₩ doz $3.00
Lloyd's Acme.....₩ doz $15, 40&10%
Taintor Positive.....₩ doz $18, 50%

Sharpeners, Knife—
Larkins'.
Applewood Handles...₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%

Shaves, Spoke—
Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's ₩ doz. $9.00.....25%

Shears—
American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers..₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers: First quality.....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Hatch Cutlery Co., Solid Steel Forged.60%
Davenport Cutlery Co.....60@60&10%
Clauss brand, Japanned.....70%
Clauss brand, Nickeled, same list.....60%
Galvanic 3½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co.....Net
Campbell Cutlery Co., Jap'd.....75%
Nickel Plated.....65%

Tinners' Snips—
Wrt. Handles, Steel Blades. ..20@20&10%
Niagara Snips and Shears.....20&10%
Cast Handles, Laid with Steel 40%

Pruning Shears and Hooks
Disston's Combined Pruning Hook and Saw.....₩ doz. $18.00, 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 20&10%
E. S. Lee & Co.'s Pruning Tools.50&10@70%
Pruning Shears, Henry's Pat. ₩ doz. $3.50@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₩ doz $12.00
Dunlap's Saw and Chisel, ₩ doz $8.50,30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co.....60%
Levin Pruner No. 1, $15.00 ₩ doz 40&3%
Levin Pruner No. 2, $21.00 ₩ doz.. 40&3%

Tinners', &c.—
Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—
Sliding Door—
M. W. Co., list July, 1888....50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec 18, 1885.....60&2%
Moore's Anti-Friction.....50%

Sliding Shutter—
R. & E., list Dec. 18, 1885.....60&10&2%
Sargent's list.....70%
Reading list.....60&10&10%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list).....20&10&2%
Prize.....40&2%
Star, Club, Rival and Climax Brands... 33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge..33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality....60&2%
Brass Shot Shells, Club, Rival, Climax 65&2%

Shells, Loaded—
Standard List, July 19, 1890.....40&10&10@40&10&10&5% 7% cash, 10 days.

Ship Tools—
L. & I. J. White.....20&5

Shoes, Horse, Mule, &c.
Horse—
Burden's, Perkins', Phœnix, Standard, Diamond State, Bryden's Boss and Crescent, at factory.....$4.00
Bryden's Frog Pressure, at factory..$5.00

Mule—
Add $1 ₩ keg to above prices.

Ox Wrought—
Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot—
	Small lots.	In ton lots a discount of 5¢ ₩ bag (25 ℔.) is made, and 2½% for cash.
Drop, up to B, 25-℔ bag	$1.40	
Drop, up to B, 5-℔ bag	.35	
Drop, B and larger, 25-℔ bag	1.65	
Drop, B and Chilled, 5-℔ bag	.40	
Buck and Chilled, 5-℔ bag	.45	
Buck and Chilled, 25-℔ bag	1.65	
Dust Shot, 25-℔ bag	2.00	
Dust Shot 5-℔ bag	.45	

Shovels and Spades
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&5%
Griffith's Solid C. S. R. R. Goods.....20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....30%
Payne Pettebone & Son.....33⅓ &5%
Remington's (Lowman's Pat.)40&10@50%
Rowland's Black Iron..60&10@60&10&5%
Rowland's Steel.....60&5@60&10%
Terra Haute Shovel & 25%

Shovels and Tongs—
Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves and Sifters—
Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co.....50&25&20%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $21 00
Electric Light..₩ doz $1.50; ₩ gro $15 00
A. & W. Sifters.....₩ gr $15 00
Hunter's Genuine..₩ doz $1 75, ₩ gr $16 50
Hunter's Imitation.....₩ doz $1.75; ₩ gr $15 00

Sieves, Wooden Rim
	Iron	Plated
Mesh 18, Nested, ₩ doz.	$0.80	$1.00
Mesh 20, Nested, ₩ doz.	.95	1.10
Mesh 24, Nested, ₩ doz.	1.15	1.25

Sinks, Wrought Steel—
Columbus, Painted or Unpainted.... 30@30&10%
Columbus, Galvanized and Enameled. 50@50 &10%
New Era, Painted.....40&10@50&5%
New Era Galvanized and Enameled.. 60&10&10@70&5%

Skeins, Thimble—
Western list.....75&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....75%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—
School, by case.....40@40&10%
Large lots.....40&10&5@50%

Slaw Cutters—See *Cutters.*

Sleds Hand—
Tubular Steel ..₩ doz. $24&50%.00, 40 (Lots of 6 doz. 50%)

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Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.)....65%
Fitch's (Bristol)....50&10%
Hotchkiss....10%
Andrews....50%
Sargent's Patent Guarded....70&10&10%
German, new list....40&10%
Covert....50&10&5&2%
Covert, New Patent....50&10&5&2%
Covert, New R. E....60&10&5&2%
Covered Spring....60&10&10%
Covert's Saddlery Works' Triumph 33⅓&
John Frotz Snaps....75&70&5&5%
Kelley & Woolworth's Steel Harness....50&10@60%

Snaths—

Scythe....50&2@50&5&2%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8½-inch, ₱ doz., No. 5, $8; No. 5X, $9.
Spittoons, Daisy, 8-inch, No. 1, 1; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list....70&10%
Buffalo, S. S. & Co....33⅓&2%

Silver Plated—

4 months or 5% cash 30 days:
Meriden Brit. Co., Rogers....40&15%
Rogers & Hamilton....40&15%
C. Rogers & Bros....40&15%
Rogers & Bros....40&15%
Reed & Barton....40@40&5%
Wm. Rogers Mfg. Co....40, 15&5%
Simpson, Hall, Miller & Co....40, 15&5%
Holmes & Edwards Silver Co....40, 15&5%
L. Boardman & Son....50&12½&%

Miscellaneous—

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver....50&10&5%
No. 30 Silver Metal....50&10&5%
No 24 German Silver....50&10&5%
No 50 Nickel Silver....50&5%
No. 49 Nickel Silver....50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal....50&10&6%
18% Rogers' German Silver....60&6%
22% Rogers' Nickel Silver....50&6%
Rogers & Hamilton:
Steel Goods....40&10%
Cimetar, Flatware....40&15&5%
Cimetar, Steel Goods....40&10%
Crown Hamliton, Flatware and Cutlery....30%
German Silver....50@50&5%
Nickel Silver....50&5@50&10&5% cash
Brittannia....60@60&5%
Boardman's Nickel Silver, list July 1, 1891....60&7½&5%
Boardman's Brittannia Spoons, case lots....60&5% cash

Springs—

Door—

Torrey's Rod, 39 in....₱ doz $1.20@1.2
Warner's No. 1, ₱ doz $1.50; No. 2, $3.40....55@55&10%
Gem (Coil), list April 19, 1886....20%
Star (Coil), list April 19, 1886....20&10%
Victor (Coil)....60&10@60&10&5%
Champion (Coil)....60&10@60&10&10%
Cowell's, No. 1, ₱ doz $18.00; No. 2, $15.00....50@50&10%
Rubber, complete, ₱ doz $4.50....55&10%
Hercules....50@50&10%
Phœnix....33⅓&%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll....60&10@60&10&10&10 or net prices
Cliff's Bolster Springs....25%

Squares—

Steel and Iron....
Nickel-Plated....} .80&10&10@80&25%
Try Square and T Bevels....60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares....25%
Avery's Flush Bevel Squares....40%
Avery's Bevel Protractor....50%

Squeezers—

Fodder—

Blair's....₱ doz $2.00
Blair's "Climax"....₱ doz $1.25

Lemon—

Porcelain Lined, No. 1....₱ doz $6.00....25&30%
Wood, No. 2....₱ doz $3.00, 35%
Wood, Common....₱ doz $1.70@1.75
Dunlap's Improved....₱ doz $3.75, 20%
Sammis ..No. 1, $5,00; No. 2, $9; 12, $18 ₱ doz....25&10%
Jennings' Star....₱ doz $2.50
The Boss....₱ doz $2.50
Dean's..No. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant....50@50&5%
King....40&5%
Hotchkiss Straight Flash....₱ doz $12.00
Silver & Co.,Glass....₱ gro. $9.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Barbed Blind, ½ in. and larger. ₱ ℔ 7@7½¢
Barbed Blind, ¾ in....₱ ℔ 8@8½¢
Fence Staples, Galvanized. } Same price as B'rb Wire
Fence Staples, Plain.... } See Trd. Rep
Grand Crossing Tack Co.'s list....75&10%

Steelyards....40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods....35%
Butterfield's Goods....35%
Lightning Screw Plate....25@30%
Reece's New Screw Plates....25@30%
Reversible Ratchet....30%
Gardner....25%
Green River....25@30%

Stops Bench—

Morrill's, ₱ doz, No. 1, $10.00; No. 2, $11.00....40&20%
Hotchkiss'....₱ doz, $5, 10@10&10%
Weston's. No. 1, $10, No. 2, $9. 25&10&5%
McGill's, ₱ doz $3....10%
Cincinnati....25&10%
Terrell's Nos. 1 and 2, ₱ doz., $3; No. 3, $3.60....30%
Millers Falls....25%
Stearns'....20&10%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892....33⅓&
Cleveland Stone Co., list Nov. 1892..33⅓&

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₱ ℔....8¢
Sand Stone....5¢ } 40 @ 40&
Turkey Oil Stone, 4 to 8 in....80¢ } 10%
Turkey Slips....$2.00
Lily White Washita....60¢
Rosy Red Washita....60¢
Washita Stone, Extra....50¢
Washita Stone, No. 1....40¢
Washita Stone, No. 2....30¢
Lily White Slips....90¢
Rosy Red Slips....90¢
Washita Slips, Extra....80¢
Washita Slips, No. 1....70¢
Arkansas Stone, No. 1, 3 to 5½ in., $2.80
Arkansas Stone, No. 1 5½ to 8 in., $3.50
33⅓@33⅓&10%
Lake Superior....₱ ℔ 13¢
Lake Superior Slips....₱ ℔ 20¢

Stove Polish—

See *Polish, Stove.*

Stretchers Carpet—

Cast Steel, Polished....₱ doz $2.2
Cast Iron, Steel Points....₱ doz 75@80¢
Socket....₱ doz $1.75
Bullard's....25@25&10%

Strops, Razor—

Genuine Emerson....60@60&5%
Imitation " ..₱ doz $2.00. 20&10&5%
Torrey's....Net prices
Badger's Belt and Com....₱ doz $2.00
Lamont Combination....₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1 '89. 50%
Electric Cutlery Co....Net prices
Campbell Cutlery Co....Net prices

Stuffer, Sausage—

Miles' Challenge, ₱ doz $20....50@50&5%
Perry....₱ doz, No. 1, $15.00; No. 0, $21.00....50&5@50&10%
Draw Cut No. 4, each $30.00....20%
Enterprise Mfg. Co., list Jan 17, '93..25%
Silver's....40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5....₱ doz $17.00
Bissell No. 8....₱ doz $20.00
Bissell, Grand....₱ doz $36.00
Standard....₱ doz $24.00
Domestic....₱ doz $21.00
Domestic, No. 2....₱ doz $22.00
Grand Rapids....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic....₱ doz $15.00
Improved Parlor Queen,
Nickeled....₱ doz $27.00
Japanned....₱ doz $24.00
Excelsior....₱ doz $22.00
Garland....₱ doz $18.00
Parlor Queen....₱ doz $24.00
Housewife's Delight....₱ doz $15.00
Ladies' Friend....₱ doz $15.00
Ladies' Friend No. 2....₱ doz $16.00
Advance....₱ doz $18.00
Our Leader....₱ doz $19.00
Triumph....₱ doz $20.00
Supreme....₱ doz $22.00
Easy..Jap'd, ₱ doz $22.00; Nickel, $24.00
Gilt Edge....₱ doz $24.00
Acme....₱ doz $26.00
Imperial....₱ doz $26.00
Grand Republic....
Jap'd, ₱ doz $30.00; Nickel, $33.00
Banner....
Jap'd, ₱ doz, $22.00; Nickel, $24.00
The Star....₱ doz $21.00
Reliable....₱ doz $22.00
Rapid..Jap'd, ₱ doz, $22.00; Nickel, $24.00
Our Own....₱ doz $27.00
Model....₱ doz $27.00
Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months....₱ doz $1.00
10 dozen in 6 months....₱ doz $2.00
Except on L.F.,when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co....80%

Swings—

Davies Lawn....25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.
Carpet Tacks—
American, Blued....66⅔&
American, Tin'd and Cop'd....70%
Steel, Bright and Blued....66⅔&
Steel, Tinned and Coppered....70%
Swedes Iron, Blued....72½&
Swedes Iron, Tinned....75%
American Iron Tacks, Domestic.66⅔&
Swedes Iron Tacks—
S. S., Blued....66⅔&
S. S., Tinned....70%
Lanc., Blued....55%
Lanc., Tinned....60%
Gimp and Lace Tacks—
S. S., Blued....62½&
S. S., Tinned....66⅔&
Lanc., Blued....55%
Lanc., Tinned....60%
Basket and Trimmers' Tacks—
Lanc....52½&
S. S....55%
Hungarian Nails....60%
Common and Patent Brads....55%
Leathered Tacks....10%
Brush Tacks, S. S....60%
Looking Glass Tacks, S. S....35%
Picture-Frame Points, S. S....35%
Finishing Nails....60%
Trunk and Clout Nails—
Black....65%
Tinned or Coppered....67½&
Basket Nails....60%
Chair Nails....52½&
Cigar Box Nails....45%
Tin Capped Nails....50%
Extra discount 25&2½%

Miscellaneous—

Double Point....90&10@90&10&10%
Wire Carpet Nails....50&10%
Claw Handle Carpet....₱ gross $4.00
Bonnie Blue....₱ box $1.50
Bill Nye Brad Box....4 00
Parisian Gilt Nails, cartoon....50
Home Tacks, No. 50 ₱ case (12 cartons), $36.00; No. 100, ₱ case (12 cartons), $72.00.
Home Nails, No. 200, ₱ case (12 cartons), $30.00; No. 400, ₱ case (12 cartons), $60 00.
50&2½%
Upholsterers' Nails....50&10%

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list 50&10%
See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal.$8.75; 60-gal., $11 each....50&10&5%

Tapes, Measuring—

American....40@40&10%
Excelsior, Special list....20%
Spring....40%
Chesterman's, Regular list....25@30%

Thermometers—

Tin Case....80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list....50&10&5%

Tinners' Shears, &c.—

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's....20%
Barton's....20@20&5%
L. & I. J. White....20&5%
Albertson Mfg. Co....25%
Beatty's....30%
Sandusky Tool Co....30@30&5%
Shaves Cincinnati Tool Co....20%

Lumber—

Ring Peavies, "Blue Line"..₱ doz $20.00
Ring Peavies, Common....₱ doz $18.00
Steel Socket Peavies....₱ doz $21.00
Mall. Iron Socket Peavies...₱ doz $19.00
Cant Hooks, "blue Line"....₱ doz $16.00
Cant Hooks, Common Finish..₱ doz$14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft., $6.00; 14 ft. $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks....₱ doz $18.00

Saw—

Atkins'. new list....40¢
Simonds'....33⅓&

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse....40@40&5%
Oneida Pattern....75@75&10%
Game, Blake's Patent....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₱ doz holes, 9@10¢
Mouse, Round Wire....₱ doz $1.50 10%
Mouse, Cage, Wire....₱ doz $2.50 10%
Mouse, Catch-'em-alive..₱ doz $2.50 15%
Mouse, Bonanza....₱ doz 0.90@$1.00
Rat, Decoy....₱ gr $10.00, 10%
Ideal....₱ gr $10.00
Cyclone....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 75¢; in full cases, ₱ doz.60@65¢
Hotchkiss Imp. Rat Killer...₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer....₱ gro $15.00
Dandy....₱ doz., $1.75
Waddel's Go Bang, ₱ gro....$12.50

Fly—

Harper, Champion or Paragon....₱ doz. $1.75, ₱ gro. $16.50
Balloon, Globe or Acme....₱ doz. $1.50, ₱ gro. $13.50

Triers—

Butter and Cheese....25%

Trimmers, Spoke—

Bonney's....₱ doz $10.00, 50%
Stearns'....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'....₱ doz $9.00, 20%
Cincinnati....25%

Trowels—

Lothrop's Brick and Plastering....20&10&5@35%
Reed's Brick and Plastering....15%
Disston's Br'k and Plastering..25@25&10%
Peace's Plastering....25@25&5%
Clement & Maynard's....20@20&5%
Rose's Brick....15@20%
Brade's Brick....25%
Worrall's Brick and Plastering....20%
Garden....70%
Cleves' Angle Trowel, ₱ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list....40%
Thompson Mfg. Co....40%
Barnes' Barrel Trucks....40%
Daisy Stove Trucks, Improved pattern, ₱ doz. $18.00

Tubes. Boiler—

See Pipe.

Twine—

Flax Twine—

	BC.	B.
No. 9, ¼ and ½ ℔ Balls....	25¢	31¢
No. 12, ¼ and ½ ℔ Balls....	22¢	30¢
No. 18, ¼ and ½ ℔ Balls....	20¢	29¢
No. 24, ¼ and ½ ℔ Balls....	20¢	29¢
No. 36, ¼ and ½ ℔ Balls....	18¢	28¢

No. 264 Mattrass, ¼ and ½ ℔ Balls,52@54¢
Chalk Line, Cotton, ½ ℔ Balls....25¢
Mason Line, Linen, ½ ℔ Balls....55¢
2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine)....15½¢
3-Ply Hemp, 1 ℔ Balls....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔..15¢@16¢
2, 3, 4 and 5 Ply Jute, ½ ℔ Balls 10¢
Wool....6½¢@6¾¢
Paper....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz.18¢

Vises—

Solid Box....50&10@60%

Parallel—

Fisher & Norris Double Screw....15&10%
Stephens'....25@30%
Parker's....20@25%
Wilson's....55%
Howard's....40%
Bonney's....50%
Millers' Falls....40@40&10%
Trenton....40&5@40&10%
Merrill's....15@20%
Hollands'....35@40%
Sargent's....70&10%
Backus and Union....40%
Double Screw Leg....15&10%
Prentiss....20@25%
Simpson's Adjustable....40%
Moore's....20%
Massey Quick Action....20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00....40&10@50%
Stearn's....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises....33⅓@35%
Hopkins'....₱ doz $17.50, 10%
Reading....40&10%
Wentworth....20&10%
Economy, ₱ dos., Nos. 110, $10.00; 120, $15.00....50&10&10&5%

Miscellaneous—

Phœnix Vises....33⅓&%
Phœnix Hand Vises....₱ doz $3.60, 33⅓&%
Cowell Hand Vises....20%
Bauer's Pipe Vises....10%
Cincinnati....25&10%
Enterprise Pipe Vises....each $3.00, 40%
Massey Combination Pipe Vise....40%

Wads—Price Per M.

U.M.C.&W.R.A.—B. E., 11 up..	68¢
U.M.C.&W.R.A.—B. E., 9&10..	82¢
U.M.C.&W.R.A.—B. E., 8.....	96¢
U.M.C.&W.R.A.—B. E., 7.....	$1.10
U.M.C.&W.R.A.—P. E., 11 up.	1.15
U.M.C.&W.R.A.—P. E., 9&10..	1.50
U.M.C.&W.R.A.—P. E., 8.....	1.70
U.M.C.&W.R.A—P. E., 7.....	1.80
Eley's B. E., 11 and larger...	$1.70@$1.75
Eley's P. E., 12 to 20.....	$3.00@$3.25

Dis 20&2%

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow

Stove Hollow-Ware—
Ground....60&10@60&10&10%
Unground....65&10@70&5
White Enameled Ware—
Maslin Kettles....70&10@75%
Boilers and Saucepans....60@60&5%
Tinned Boilers and S'pans....60@60&5%
Rustless Hollow Ware....50@50&5%
Gray Enameled Ware—
Stove....50%
Maslin Kettles....60@60&10%
Boilers and Saucepans....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889....33⅓&% } Extra 10% on many leading articles.
Ironclad Enameled Ware....dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch.....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber

	Per Doz. Plain.	Decorated.
Wash-Basins, 10½ in....	$1.80	$2.00
Wash-Basins, 12 in....	2.00	2.50
Keelers, 11½ in....		3.00
Cuspidors....		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure....	3.50	
Half-peck Measure....	3.00	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₱ doz.... $6.00
Basins, Ringed, ₱ doz., No. 2 ...2.80
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), ₱ nest.... $5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest.... $2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest.... $1.50
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), ₱ set.... $1.20
25%
See also Pails.

Silver Plated, Hollow

4 mo. or 5% cash in 30 days

Reed & Barton....
Meriden Britannia Co....
Simpson, Hall, Miller & Co.... } 40&5%
Rogers & Brother....
Hartford Silver Plate Co.... } 40&5&5%
William Rogers Mfg. Co....

Washers—

Size hole.... 5-16 ⅜ ½ ⅝ to 1⅛
Washers.... 5½ 4½ 3½ 2¾
In lots less than 200 ℔, ₱ ℔, add ½¢, 5-lb boxes 1¢ to list.

Washer Cutters—

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Iron....₱ ℔ 3½¢@3½¢
Steel....₱ ℔ 3½¢

Weights, Sash—

Solid Eyes....₱ ton, $18.00@19.00

Well Buckets Galvanized—See *Buckets, Well Galvanized.*

Wheels, Well—

8 in., $2.00; 10 in., $2 50; 12 in. 75 82

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Whips

American Whip Co.: Length.	4½	5	5½	6	6½	7	7½	8 ft.
X. L. Whalebone Driving	$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone	....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whale bone	....	....	11.00	12.00	13.00	15.00	....	....
American Standard	6.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors	....	....	....	6.00	....	....	....	....
Americus, 93 Pen Whip	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106	....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No. 103	....	....	3.75	4.00	....	....	....	....

Per dozen.

A large variety of cheaper grades.....50@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....₩ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Wire and Wire Goods—

Iron—

Market,

Br. & Ann., Nos. 0 to 18. 75&10@75&10&5%
Cop'd, Nos. 0 to 18. 75&5@70&10%
Galv., Nos. 0 to 18. 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18 ....70@70&10%

Extra 5@10% often given and low net prices often made on large lots.

Stone,
Br. and Ann'd,
Nos. 16 to 18.....80%
Nos. 19 to 26.....80&5%
Nos. 27 to 36....82½&5%
Extra 10% often given.

Tinned Broom Wire, 18 to 21, ₩ ℔....4½¢
Galvanized Fence.....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40&5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Ossawan Mills, An'ld and Tinned on Spools.....60&10%
Ossawan Mills, Brass and Copper on Spools.....50&10%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 80%
Steel Music Wire, 12 to 30, imported.....60@70¢ ₩ ℔
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....85&10@85&10&10%

Wire Cloth and Netting—

Painted Screen Cloth ₩ 100 ft.....$1.50
Galvanized Wire Netting.....75&10@75&10&5%

Wire Barb—

See Trade Report.

Wire Rope—

See *Rope, Wire.*

Wrenches—

American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50@50&10%
Coes' "Mechanics'".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
W. & B. Diamond.....
75&10@80%

Bemis & Call's:
Pat. Combination Bright.....40&5%
Pat. Combination Black.....40&10%
Merrick's Pattern.....45%
Brigg's Pattern.....30&10%
Cylinder or Gas Pipe.....45&5%
No. 3 Pipe.....55%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz., $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....30%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Eagle.....50&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70@70&5%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

Am. Wringer Co.'s list, July 1, '93..2% cash
Colby WringerCo., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list July 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	47
Linseed, City, boiled	..	@	50
Linseed, Western, raw	..	@	47
Lard, City, Extra Winter	73	@	75
Lard, City Prime	72	@	73
Lard, City, Extra No. 1	..	@	50
Lard, City, No. 1	..	@	45
Lard, Western, prime	72	@	73
Cotton-seed, Crude, prime	27	@	28
Cotton-seed, Crude, off grades	25	@	..
Cotton-seed, Summer Yellow, prime	33	@	34
Cotton-seed, Summer Yellow, off grades	30	@	32
Sperm, Crude	65	@	..
Sperm, Natural Spring	66	@	68
Sperm, Bleached Spring	71	@	73
Sperm, Natural Winter	71	@	73
Sperm, Bleached Winter	76	@	78
Whale, Crude	..	@	..
Whale, Natural Winter	..	@	45
Whale, Bleached Winter	..	@	48
Whale, Extra Bleached	..	@	50
Sea Elephant, Bleached Winter	..	@	..
Menhaden, Crude, Sound	35	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed	39	@	40
Menhaden, Bleached W'ter	..	@	43
Menhaden, Extra Bleached	..	@	46
Tallow, City, prime	..	@	55
Tallow, Western, prime	..	@	50
Cocoanut, Ceylon	5¼	@	5¾
Cocoanut, Cochin	6½	@	6¾
Cod, Domestic	38	@	40
Cod, Foreign	42	@	45
Red Elaine	44	@	46
Red Saponified ₩ ℔	4¼	@	4¾
Bank per gal	38	@	..
Straits	39	@	..
Olive, Italian, bbls	58	@	62
Neatsfoot, prime	50	@	65
Palm, prime, Lagos ₩ ℔	7¾	@	8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test per gal	7	@	7½
Black, 29 gravity, 15 cold test	7½	@	8
Black, 29 gravity, summer	6	@	6½
Cylinder light, filtered	14	@	16
Cylinder, dark, filtered	10	@	13
Paraffine, 23½@24 gravity	11	@	12
Paraffine, 25 gravity	10	@	11
Paraffine, 28 gravity	7½	@	8
Paraffine, red	9¼	@	10½

Paints and Colors—

Barytes, Foreign, ℔ ton	$22.00	@	24.00
Barytes, Amer. floated	29.00	@	32.00
Barytes, Amer. No. 1	16.00	@	18.00
Barytes, Amer. No. 2	13.00	@	15.00
Barytes, Amer. No. 3	11.00	@	12.00
Blue, Celestial ₩ ℔	6	@	8
Blue, Chinese	40	@	50
Blue, Prussian	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½	@	1
Brown, Vandyke, Amer	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk	2.75	@	..
Carmine, No. 40, in boxes or barrels	2.85	@	..
Carmine, No. 40, in ounce bottles	3.75	@	..
Chalk, in bulk ₩ ton	1.75	@	2.00
Chalk, in bbls. ₩ 100 ℔	33	@	40
China Clay, English ₩ ton	13.00	@	18.00
Cobalt Oxide, prep'd	9.00	@	11.00
Cobalt Oxide, black lots 100 ℔	1.90	@	....
Cobalt Oxide, black less 100 ℔	1.96	@	....
Green, Paris, in bulk	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs	10½	@	11
Green, Paris, small pack	12	@	17
Green, Chrome, ordinary	6	@	12
Green, Chrome, pure	22	@	25
Lead, Eng., B.B. white	8½	@	10
Lead, Amn. White, dry or in oil:			
Kegs, lots less than 500 ℔	7	@	7¼
Kegs, lots 500 ℔ to 5 tons	6½	@	6¾
Kegs, lots 5 tons to 12 tons	6⅝	@	6⅞
Kegs, lots 12 tons and over	6¼	@	6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price	..	@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	..	@	2½
Lead, Red, bbls. and ½ bbls	6	@	7
Lead, Red, kegs	6¼	@	7¼
Litharge, kegs	6¼	@	7¼
Litharge, bbls. and ½ bbls	6	@	7

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35	@	1½
Ocher, French Washed	1½	@	2½
Ocher, German Washed	1¼	@	3
Ocher, American	½	@	1½
Orange Mineral, English	8½	@	9
Orange Mineral, French	10	@	10½
Orange Mineral, German	8½	@	9
Orange Mineral, American	8¼	@	8¾
Paris White, English Cliff-stone	1.00	@	1.15
Paris White, American	65	@	75
Red, Indian, English	5½	@	7
Red, Indian, American	2	@	6½
Red, Turkey	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American ₩ 100 ℔	1.00	@	1.10
Red, Venetian, English	1.20	@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔	4	@	5
Sienna, Ital., Burnt Lumps	1½	@	3½
Sienna, Ital., Raw, Powd	4½	@	5½
Sienna, Ital., Raw, Lumps	1¾	@	3½
Sienna, American, Raw	1½	@	1¾
Sienna, American, Burnt and Powdered ₩ ℔	1½	@	1¾
Talc, French	..	@	1¼
Talc, American	1¼	@	1⅜
Terra Alba, Fr'ch. ₩ 100 ℔	95	@	1.25
Terra Alba, English	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered ₩ ℔	3½	@	4
Umber, Turkey Bnt. Ln	2¾	@	3
Umber, Turkey, Raw and Powdered	3¼	@	..
Umber, Turkey, R'w Lumps	2¼	@	2¾
Umber, Turkey, Bnt. Amer	1¼	@	1½
Umber, Turkey, R'w Amer	1¼	@	1⅜
Yellow, Chrome	10	@	25
Vermilion, American Lead	11¼	@	12
Vermilion, Quicks'er, bulk	53	@	..
Vermilion, Quicks'er, bags	54	@	..
Vermilion, Quicksliver sm'r pkgs	62	@	..
Vermilion, English Import	85	@	90
Vermilion, Imitation, Eng	8	@	35
Vermilion, Trieste	90	@	92½
Vermilion, Chinese	92½	@	95
Whiting Common, ₩ 100 ℔	37½	@	42½
Whiting Gilders'	45	@	55

Zinc, American, dry ₩ ℔	3½	@	4¼
Zinc, French, Red Seal	7⅞	@	..
Zinc, Frech, Green Seal	9	@	..
Zinc, Frech, V. M. X	..	@	7
Zinc, Antwerp, Red Seal	7⅛	@	..
Zinc, Antwerp, Green Seal	7¾	@	..
Zinc, German, L. Z. O	6¾	@	7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over	10¾	@	11½
lots less than one ton	11	@	11⅝
Zinc, V. M. in Poppy Oil, Red Seal	..	@	..
lots of 1 ton and over	10	@	10½
lots of less than 1 ton	10¼	@	10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort	25	@	30
Black, Drop, English	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory	8	@	15
Blue, Chinese	35	@	40
Blue, Prussian	20	@	45
Blue, Ultramarine	12	@	18
Brown, Vandyke	7	@	12
Green, Chrome	8	@	13
Green, Paris	16	@	18½
Sienna, Raw	7	@	14
Sienna, Burnt	7	@	14
Umber, Raw	7	@	10
Umber, Burnt	7	@	10

Putty—

In barrels and ½ bbls	.013¾	@	.01¾
In tubs	.015	@	.01¾
In tin cans	.011½	@	.02½
In bladders	.011½	@	.02½

Spirits Turpentine—

In regular bbls	29	@	29¼
In machine bbls	29½	@	29¾

Glue—

Low Grade ₩ ℔	8	@	10
Cabinet	12	@	14
Medium White	13	@	15
Extra White	17	@	20
French	10	@	22
English	10	@	15
Irish	12	@	..

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

DECEMBER 13, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:	
¾ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in.	₩ lb 1.80 @ 1.90¢
Refined Iron:	
¾ to 2 in. round and square. 1 to 4 in. x ⅜ to 1½ in.	₩ lb 1.90 @ 2.00¢
4½ to 6 in. x ⅜ to 1 in.	
1 to 6 in. x ¼ and 5-16	₩ lb 2.10 @ 2.20¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.00 @ 2.10¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price.	₩ lb 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.80¢
"Ulster"	₩ lb 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store—

	Per lb
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2½¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

Black—

Best Refined Iron.

Nos. 14 to 20	@ 3⅛¢
21 to 24	@ 3⅜¢
25 to 26	@ 3⅝¢
27	@ 3⅞¢
28	@ 3¾¢

Common ¼¢ less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 16	@ 2⅝¢
" " " 18 to 20	@ 3¢
" " " 21 to 24	@ 3¼¢
" " " 25 to 26	@ 3⅜¢
" " " 27 to 28	@ 3½¢

Best Bloom Sheets, ¼¢ extra over above prices.
Best Bloom, Galvanized, jobbing dis. 70 @ 70&5%
Ordinary Bessemer, ⅛¢ @ ¼¢ lower than above prices.

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 12¢ @ 13¢
Patent Planished	₩ lb A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel	₩ lb, 8½¢

Foreign Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 20 ¢
Eicken's Special No. 8	₩ lb 30 ¢
" Extra	₩ lb 15 ¢

METALS—

Tin—

	Per lb
Banca, Pigs	22¢ @ 22½¢
Straits, Pigs	21½¢ @ 22¢
Straits in Bars	22½¢ @ 23¢

Tin Plates—

Duty: 2.2¢ ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade.	IC, 10 x14..	@	$6.50
" " "	IC, 12 x12..	@	6.75
" " "	IC, 14 x20..	@	6.50
" " "	IC, 20 x28..	@	13.00
" " "	IX, 10 x14..	@	8.50
" " "	IX, 12 x12..	@	8.75
" " "	IX, 14 x20..	@	8.50
" " "	IX, 20 x28..	@	17.00
" " "	DC, 12½x17..	@	6.00
" " "	DX 12½x17..	@	8.00
Allaway Grade	IC, 10 x14..	@	6.00
" "	IC, 12 x12..	@	6.25
" "	IC, 14 x20..	@	6.00
" "	IC, 20 x28..	@	12.00
" "	IX, 10 x14..	@	7.50
" "	IX, 12 x12..	@	7.75
" "	IX, 14 x20..	@	7.50
" "	IX, 20 x28..	@	15.00
" "	DC, 12½x17..	@	5.50
" "	DX, 12½x17..	@	7.00

Coke Plates—Bright—

Steel Coke.—IC, 10 x 14, 14 x 20..	$5.40	@	$5.50
10 x 20..		@	8.50
20 x 28..	11.50	@	12.00
IX, 10 x 14, 14 x 20..		@	7.00
BV Grade—IC, 10 x 14, 14 x 20..		@	5.50

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC, 14 x 20		@	$5.65
20 x 28		@	11.00
IX, 14 x 20		@	6.40
20 x 28		@	12.80
Abecarne Grade.—IC, 14 x 20		@	5.55
20 x 28		@	10 75
IX 14 x 20		@	6 40
20 x 28		@	12.80

Tin Boiler Plates—

IXX, 14x 26	112 sheets	@	$13.35
IXX, 14 x 28	112 sheets	@	14.50
IXX, 14 x 31	112 sheets	@	16.00

American Terne Plates.—Apollo.

IC, 14 x 20	$6.25
IC, 20 x 28	12.50
IX, 14 x 20	7.25
IX 20 x 28	14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot—

Lake	@ 11 ¢
Ansonia grade Arizona	@ 10½¢
Ansonia grade Casting	@ 10 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 25 %, according to size of order. Stubs' gauge standard.

Not wider than	Not longer than	And longer than	Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
			Weights per sq. foot and prices per pound.							
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	....
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅝ inch diameter and over, ₩ lb 22¢
Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per lb.
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter, 2¢ ₩ lb additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned	₩ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz.	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

July 6, 1892. Net.

O. G.	N. G.	⅜	⅓	⅝	¾	⅞	1	1⅛
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional
Brazed Brass Tubing. (To No. 20 inclusive.)
Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	$1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list	30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 / 10	in. 10 / 12	in. 12 / 14	in. 14 / 16	in. 16 / 18	in. 18 / 20	in. 20 / 22	in. 22 / 24
To No. 20 -inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.2	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 / 26	in. 26 / 28	in. 28 / 30	in. 30 / 32	in. 32 / 34	in. 34 / 36	in 36 / 38	in. 38 / 0
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.68
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0.30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.62
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2 00
No 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

—% discount.
Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

	Per lb.		Per lb.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No. 10	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive	17¢ ₩ lb
Over 3½ to 5 inches inclusive	18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive	18¢ ₩ lb
Over 3½ to 5 inches inclusive	19¢ ₩ lb

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	4½¢@4¾¢
Bertha (pure)	8¢@8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.

600 lb casks	5½¢@5¾¢
Per lb	6½¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.

American Pig	4¢@4.10
Bar	4½¢
Pipe, subject to discount 20%	6½¢
Tin-Lined Pipe, subject to discount 20%	15¢
Block Tin Pipe, subject to discount 20%	37½¢
Sheet, subject to discount 20%	7¢

Old Lead in exchange, 3¼¢ ₩ lb.

Solder—

½ @ ½	13½¢ @ 14½¢
No. 1	11¾¢ @ 12½¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson	₩ lb 11 ¢
Hallett's	10½¢

Aluminum—

Duty: 15¢ ₩ lb.

No. 2 grade metal, in ton lots	₩ lb .75
No. 1 (guaranteed to be 98 % pure and over), in ton lots	₩ lb .90
Lots less than 1 ton	10¢ ₩ lb additional

Old Metals—

Prices Paid in New York.

Heavy Copper	₩ lb	7½¢
Light and Tinned Copper	₩ lb	6½¢
Heavy Brass	₩ lb	5½¢
Light Brass	₩ lb	4½¢
Lead	₩ lb	3 ¢
Tea Lead	₩ lb	2 ¢
Zinc	₩ lb	2¾¢
No. 1 Pewter	₩ lb	14 ¢
No. 2 Pewter	₩ lb	7 ¢
Wrought Scrap Iron	₩ gross ton	$9.00
Heavy Cast Scrap	₩ gross ton	7.00
Stove Plate Scrap	₩ gross ton	4.50
Burnt Iron	₩ gross ton	3.00

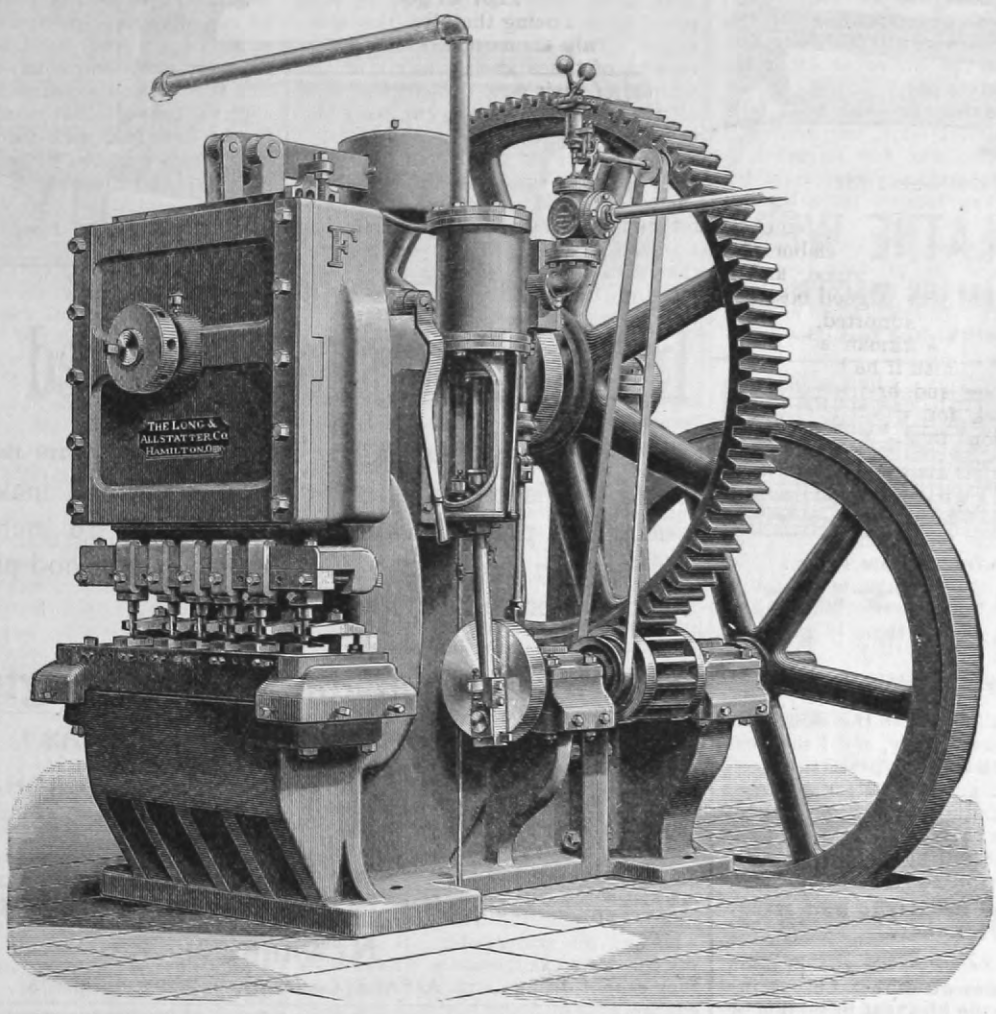
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THE IRON AGE

THURSDAY, DECEMBER 21, 1893.

Steam Driven Splice Bar Punch.

The Long & Allstatter Company of Hamilton, Ohio, are building a machine for punching at one stroke all the holes in splice bars or fish plates, or any similar work in multiple punching. The tools shown attached are for punching six elliptic holes in splice bars 1 inch thick and can be adjusted for different distances between centers of holes. The machine is under perfect control by hand lever, and the tools are easily and quickly attached and adjusted. An automatic stop brings the slide or ram to rest at any point of the stroke desired. The machine is driven by heavy steel cam shafts, provided with a hand wheel in front for setting the tools by hand. The slide is counterbalanced. The attached steam engine with governor makes the machine self contained and independent of belting and shafting. It is also provided with tight and loose pulleys for driving by belt when desired.



STEAM DRIVEN SPLICE BAR PUNCH.

The loss of life and property on the great lakes this year has been almost unprecedented. During the first ten months 53 boats, aggregating 24,258 tons, and 123 lives were lost. The value of the property wiped out during that period was $1,040,400, a larger showing than ever before recorded.

Defect in Boiler Construction.

The *Locomotive* describes a defect in boiler construction which is indirectly the cause of much trouble. In rolling plates into cylindrical form, preparatory to riveting them up into shells, it is customary to bend one end of the plate to what is judged to be the proper radius by the use of the sledge-hammer. The plate is then run through the rolls and rolled into shape, the end that was previously bent being introduced first. When the plate has been rolled all but the last 5 or 6 inches, the last end slips off of the first roll, and the rolls can no longer "grip" the sheet. The result is that the last end of the sheet is not bent to the proper radius, but remains straight or nearly so. The shell (if rolled from one sheet) has one end of it "standing off" from the rest of the shell. In order to bring the outer lap to the proper curvature, it is customary for one man to hold a sledge against the projecting edge of the lap, while another workman strikes the shell on the inside. In this way the lap is bent down into place, and after the shell has been brought to conform with the "sweep," or templet, in every part, it is ready for riveting.

Now, it will be seen that the treatment required for bringing the laps together in this manner is rather violent; and it follows that nothing but the best of materials will stand it without being greatly distressed and permanently weakened. Under the sledging operation the material is likely to be strained beyond its elastic limit, unless it possesses great ductility. The greatest strain on it comes on the outer lap, at or near the line where it touches the inner one.

If the sledging were done while the sheet is hot, it would not be so objectionable; but the great majority of boiler makers will not attempt to heat the plate before sledging the lap down, because when the sheets are hot they are apt to buckle out of shape and give great trouble. We understand that in England it is compulsory to cut off the flattened ends of the plate in order to avoid this difficulty.

It is estimated that there are 25,000 men in Detroit without employment, and their present chances of obtaining any are thought to be very slim.

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Management of Men and Manufacturing Industries.

FOURTH PAPER.

A Good Boss.

BY THOMAS D. WEST.

He is "a good boss" is a term often heard expressed by employees and employers, and any one unacquainted with industrial parlance and significance often attached to expressions would be at a total loss to understand why a man called a good boss by the former should not always be considered the same by the latter.

It must be admitted there is a cause not obvious to many for the varying conception of such qualifications.

"A good boss," to be such in the strictest literal understanding of the term, is a man who will faithfully and justly perform the duties or labor for which he receives pay.

I am aware that the good book tells us "a man cannot serve two masters," but that version was not intended to refer to employers and employees, for they are not two masters for a boss to serve.

There is only one, and he is the man who purchases the product that the combined duties and labor of the boss and workmen produce, and in this light only can "a good boss" be justly considered or admitted.

Will one workman admit another to be a good man if he has not the physical power and brains to ably perform the work for which he receives compensation from his employer? Certainly not. Then why should a boss be called good who does not ably perform the work for which he receives compensation from his employer?

It takes but little thought upon this point to see there is something higher in "a good boss" than is generally conceived of.

I well know the term as applied by some means a boss that is easy, careless and indifferent to the duties for which he receives pay, and I shall endeavor to show in this paper that such men are not good bosses for workmen to even encourage, and if they are not good men for their employers as well, then they should not be permitted to occupy offices of trust and confidence.

Necessity for Proficient and Minor Labor.

In seriously considering the question of manufacture, we cannot but be impressed with the idea that in producing the product of a firm every person from the most minor to the most proficient in their employ has some influence in perfecting the quantity and perfection of the output.

This admitted, we can but in a sense consider the efforts of all essential to effecting the ends sought for, and that the services of the minor, as well as the proficient, must be employed.

Acknowledging we must have the minor and that his labors are necessary to the completion of the product, where can we justly draw the line for the master to commence and the man to leave off?

Man and Master.

Surely not at the boss, for he can only be justly numbered with the proficients and may often be placed as the first of them. His duties may be in having control and directing, but could the effort or labor of those under him be dispensed with any more than his own in producing the firm's finished product? Of course not. Rightly considered, the boss is but the proficient whose duty it is to advise, instruct and push forward the work to the end that the product can be made profitable and sufficiently perfect to be acceptable to the buyer, and who is, when we look squarely at the problem, the true master, for it is the customer that all efforts of any manufacturing enterprise must labor to please.

Blunders and Poor Workmanship.

If work is condemned or found fault with by the purchaser, every one engaged in its manufacture can generally expect to get a dressing or reprimand, the lash being first applied to the highest proficient (the manager), who in turn gives it to the superintendent, he then to the foreman, the latter to the next most responsible. They in turn send it down the line to the most minor. They all get it, the only difference being that the first lashes of the whip are most severe and cutting, and ofttimes go so deep as to cut many out of their positions.

We must now admit, and I think truly so, that employer and employee are not man and master and the efforts of the first two are so in common that no such line should be drawn, and that each is only laboring to the interest of the other in trying to please the buyer.

Mutual Interest and Responsibility.

The main difference, if any, between employer and employee is that the former is now held financially responsible for damages in every form and if the master says he will not accept work, the latter is fairly sure he will at least get his pay, though the lack of same coming to the former may result in ruining him.

The interests of the employer and employee are mutual. They should not be separated, and to clearly illustrate the justice of such an alliance we will suppose all the industries of this country to be under one management and the product only salable to one foreign nation, and not until it would accept the goods would money be forthcoming to pay the employer and expense of manufacture. Such a condition would surely cause employees to think there was something more than figuring "to get in time" necessary to insure them their wages, and seriously impress all with the true conception of who was the real master. Some may say this is an exaggeration. Even so—they cannot dispute but that the present methods of doing business embrace the same principle, the only difference being there are now thousands of managers to oversee production and thousands of masters to purchase the product, and this large division of control and territory gives more of a leeway to dispose of unprofitable and imperfect manufactured products and the employee an opportunity of being disregardful of just duties to his employer who hires him to aid in producing profitable goods that will please the buyer.

If the employee found that by careless and poor management on the part of a boss he were to suffer in not receiving his pay his conception and desire for qualification would be very rigid and much changed from that now generally found.

"A Snap."

A good boss in looking out for the interest of his employer is also looking out for that of the employee, and his goodness cannot be defined by permitting those under him to have "a snap."

He is paid for fulfilling a trust placed in him, and there are many ways in which he can exhibit goodness that will be a hundred times more beneficial to those under his charge than by permitting "snaps" or favors to a few, for as a general thing where such are found existing some are made to suffer for it.

A True Boss.

"A good boss" will not show partiality, but ever stands independent and in a position to say no or yes, or discharge any person upon the "spur of the moment" for a just reason.

He will have higher principles than tolerating clannishness, "snaps" or favors, but will endeavor to do justice to all. There are many ways in which he can dispense goodness and command respect and confidence, though apparently "ruling with an iron hand," and the writer's experience as a journeyman proved that men who were rigid, exacting, and distant with all their men were men of principle, kind to a fault and reasonable in their dealings.

Kindness to Employees.

There are always opportunities arising to give a boss chances to exhibit kindness and consideration for the welfare of those under his charge other than by permitting "snaps" and being indifferent to his duty. If a man gets injured let him see you have feeling and desire to do all in your power to relieve his sufferings. Have his home visited, and if his family require necessaries of life use all your influence to see they are provided for. If slackness compels you to lay him off with no immediate prospects for resuming work, advise and do all you can to get work elsewhere for him. In short, if you learn of his being in any trouble do what you can to help him out. Make friends of your men and get them so attached to your works that they would not wish to leave them.

These are the characteristic points, combined with using effort to seeing that work is turned out profitably and perfect, that go to making a man a "good boss" and for one I would much prefer working for a man of principle, though he might be most exacting in obtaining a big day's work than some, of the insipid, let things take care of themselves bosses that are to be found.

I well know there are bosses who are drivers and have no principle, but the march of progress is making them less every day and time will take care of them.

What is more required is to understand one another and conceive who are the real "men and masters" and what should to both sides justly constitute "a good boss," and when such elements come to be rightly recognized, then, and not till then, will we be on the right road to solve the problem of capital and labor.

Two representatives of the Chinese Government are now in the United States studying the naval and military methods of this country.

The Standard Oil Company are about to begin a vast oil and gas operation in Northern Pennsylvania, where they have leased all the territory where surface indications of oil or gas exist.

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The Lake Carrying Trade.

The following very interesting review of the results of the past season in the carrying trade on the great lakes is taken from the Chicago *Times*:

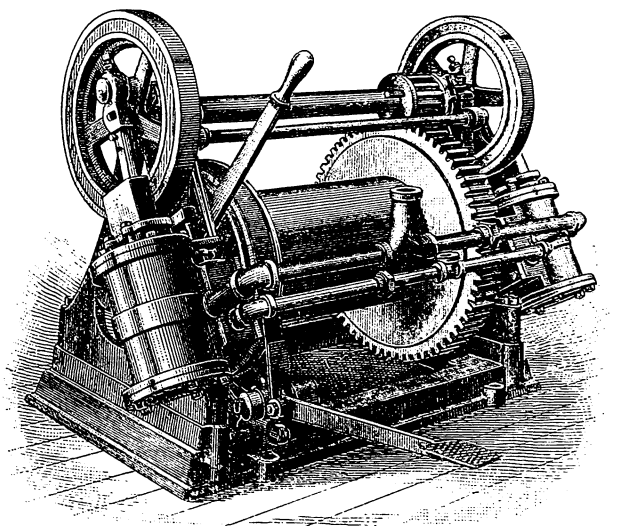
The crops of the West, the iron ore from Lake Superior region, the coal from Pennsylvania and Ohio, and the lumber from the mills were all carried by lake during the season of navigation just closed at rates which, for cheapness, have no precedent for any extended period in the history of navigation. The averages for the season are the cost prices of transportation on the lakes, and that they should be so low shows the wonderful advancement made in recent years in carrying freight by water. It is said that nowhere else have the many difficult problems of handling freight cheaply and expeditiously been met and solved with greater success than on the lakes. The season's figures go far to prove that claim.

If the balance sheets of all the boats engaged in general commerce on the great lakes could be merged into one whole it is likely that the difference between the profit and loss accounts would be infinitesimal. The larger boats of modern equipment have made from 3 to 5 per cent. on the investment where they have been lucky in catching up turns in freights and have escaped loss from disaster. The smaller boats in the general trade have had hard work to come out even, while the sail vessels in the lumber trade are worse off in every way than they were when navigation opened last spring.

The outlook when navigation opened was considered bright. There were great stocks of grain at up-lake ports, the World's Fair passenger business would monopolize the capacity of the railroads to such an extent that they could not handle coal, and the iron business was in fairly good condition.

The Straits of Mackinac had scarcely opened before the outlook for a prosperous season began to vanish. Long before the July panic came lake business was in a bad way. While the financial stringency in greatly restricting the shipments of iron ore was responsible for the disastrous period during July, August and early September, still it is likely that the excess of carrying capacity on the lakes had more to do with it. There were too many boats. For five years the shipyards had been working to their full capacity producing large and swift carriers. Steamers were built last winter of such size that four of them had the carrying capacity of an ordinary railroad between Duluth or Chicago and Lake Erie. Many conservative vessel owners have stood aghast at the tremendous increase in the capacity of the lake marine, knowing full well that as soon as the iron industry ceased booming a period of disaster would come. It did come. While winter has put an end to the wild scramble for cargoes there is no likelihood that spring will bring better conditions. There will still be more boats than cargoes, and this means cost prices of transportation, regardless of agreements, combinations or trusts which may be attempted during the winter.

Even vesselmen who have passed through the disastrous season will be surprised at the averages of freight rates paid on the principal commodities of lake traffic for the 196 business days of the season. They are as follows: Corn, Chicago to Buffalo, per bushel, 1.432 cents; wheat, Duluth to Buffalo, per bushel, 2.339 cents; iron ore, Duluth to Lake Erie, per ton, 77.297 cents; iron ore, Escanaba to Lake Erie, per ton, 56.164; coal, Buffalo to Chicago, per ton, 45.944; coal, Buffalo to Duluth, per ton, 29 163.



THE BACON SPECIAL HOISTING ENGINE.

An Opportunity for Inventors

The Metropolitan Traction Company of New York have, it is announced, decided to appropriate a sum of $50,000 as a prize to any person who shall, before March, 1894, submit an actual working system of motive power for street railway cars which shall be as efficient in speed and economy as the cable or trolley, but without the use of poles and overhead wires. The Railroad Commissioners have promised co-operation in the matter, and it is expected that the company's liberal offer will stimulate some inventive genius to devise a method of street transportation more suitable to a crowded metropolis than those now in use. The experience of the new cable cars on Broadway since their inauguration a short time ago, where traffic has increased 25 per cent., while operating expenses have decreased 20 per cent., has convinced the Traction Company that some more speedy and reliable motive power than horses is demanded by the public. As the desired system is intended for use over the entire city the cable would be inapplicable, while the overhead features of the trolley system would be so objectionable in the crowded streets of New York as to make that method undesirable. The company declare that they will exact no rights in the invention in return for the $50,000, although they do not promise to defray the expenses of experiments. This encouraging opportunity for the exercise of the large stores of inventive genius existing in this country will assuredly not be lost.

The Bacon Special Hoisting Engine.

At the Huanchaca mine in South America are 36 of the hoisting engines here illustrated, which were designed by Copeland & Bacon of New York, especially for light hoisting, in mines for underground use, as in winze sinking, &c. The engines are made in two different sizes, with double 5 inch cylinders and friction drum 12 x 21 inches, and brake, the space occupied being 3½ x 2 feet, and with double 6 inch cylinders and friction drum 14 x 24 inches, and brake, the space occupied being 3 x 4½ feet. They can be run by steam or compressed air (generally the latter is used) and when lowering the drum runs loose on the shaft independent of gearing and is controlled by a wood lined brake. Each engine is provided with a quick acting throttle valve and lubricator and is thoroughly tested before leaving the works. The flanges are deep, permitting the drum to be lagged with wood if thought desirable to increase its diameter.

Water Tube Boilers.

The following remarks, which were taken from the London *Engineer*, will be read with interest in connection with the paper by Engineer-in Chief Geo. W. Melville, read at the recent meeting of the Society of Naval Architects and Marine Engineers and published in part in *The Iron Age* of December 7, 1893:

The notable success which has been attained with their respective water tube boilers by Yarrow & Co. and Thornycroft & Co. cannot fail to stimulate the use of water tube boilers in the navy and the mercantile marine. It is stated that the two new British battleships "Magnificent" and "Majestic" are to be fitted with French boilers. Steam generators of that type have been used, it is stated, with satisfactory results, for some time in the French Navy. But we cannot think that the Belleville system is superior to that of the English firms we have just named. The French boiler is composed of comparatively large tubes, while those of Messrs. Thornycroft and Messrs. Yarrow have small tubes. The latter weigh less, power for power, and appear to be able to stand forcing better. It is worth notice that marine boilers of the water tube type have been repeatedly tried in this country with unsatisfactory results. In all cases these generators had large tubes. A few with small tubes were, however, tried, and broke down utterly. We may ask why success should now be attained. To supply the answer we must

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look to the whole course and policy of marine engineering during the last 10 or 15 years. In the first place, there has been a great augmentation of pressure. Now, the greater the pressure the better chance has the small tube boiler, because the volume of the steam is reduced. Thus, roughly speaking, a bubble representing a given weight of steam will, if of 200 pounds pressure, occupy about one-fourth of the space it would fill if its pressure were 50 pounds. Again, feed water is purified now in a way undreamt of a few years ago. Grease in a water tube boiler means destruction, and it causes disastrous priming. But until comparatively the other day the feed water filter was unknown. Again, the Thornycroft boiler would be impossible unless mild steel tubes were available. Copper might perhaps be used; but we doubt that they would on the whole be so satisfactory as the very perfect soft steel tubes that can now be had. Furthermore, it is impossible to make a very light and powerful boiler unless the fires can be forced. But the whole art and mystery of forcing fires has only been understood within a comparatively recent period. Indeed, it is doubtful if it is quite understood yet.

Great as are the results which have already been attained, it remains to be seen whether they cannot be beaten. We believe that they can, and that it is possible to make even lighter and smaller boilers for the power than anything yet produced. The limit of rate of combustion has not yet been reached. Under existing circumstances it is said that about 80 pounds of coal is the maximum quantity that can be burned in an hour per square foot of grate. It is true that as much as 120 pounds have been charged; but then a very large proportion of this is simply blown up the chimney in the shape of big cinders. But it is clear that this could not occur unless the airways through which the products of combustion escape were wide enough to permit the cinders to pass. Let us suppose that instead of tubes 1½ inches in diameter, the tubes were but ½ inch in diameter, and it is evident that the passage of comparatively large pieces of unburned fuel would be stopped. It is true that ½ inch tubes cannot be employed, for one reason because flame is extinguished in them, although it is worth while to state that very surprising results may be obtained by their use with gas and with anthracite. But the Serve tube tends to answer the same end, and it is not at all impossible that much of the great saving effected by the use of these tubes when the fires are forced is due to the arrest of unburned fuel, which, with the clear tube of the same diameter, would be ejected up the chimney. It is evident, however, that when small water tubes are adopted, as in the Thornycroft and Yarrow boilers, the tubes may be set so close that nothing but very small cinders can pass between them. Unless, however, the tubes are prepared to take up the heat, they will be quickly destroyed by the tremendous temperature that must exist in a furnace driven with, say, 6 inches or so of air pressure, and this leads to the consideration of another branch of the subject.

In the water tubes of a hard driven boiler there is, perforce, not solid water, but a mixture of steam and water. The most erroneous views are unfortunately entertained about the cause of circulation; and more nonsense has, perhaps, been written about the matter than about any other technical subject that we could name. It would serve no good purpose, however, to deal with this branch of the subject now. It is enough for our purpose to say that in order that heating surface may be as efficient as possible, it is essential that it should be continually traversed by solid water in motion, not a mixture of steam and water. To secure this end is a comparatively simple thing. Let us, to avoid complication of ideas, suppose that all the heating surface is disposed in the shape of a long coil of tubing. Let the upper end of the coil open into a vertical cylinder of moderate diameter, not exposed to the heat of the fire. The working pressure will be 50 pounds less than that maintained in the coil. The upper end of the coil will be fitted with a loaded valve inside the vertical chamber or steam separator. Between the bottom end of this chamber and that of the coil is a force pump, which will continuously draw water from the separator and force it into the tube. Then its temperature will be raised, but it will practically be prevented from boiling until it has passed the reducing valve, when that proportion of it due to the temperature will, under the reduced pressure, flash into steam, the remainder falling as water, to be pumped again through the coil. There is nothing far-fetched in this idea. It has, up to a certain point, been carried out with great success by Herreshoff in America, and some years ago in this country by Mr. Yarrow. But neither attempted to keep solid water in the coil, because it is evident that the circulating pump drawing from a separator with 50 pounds less pressure per inch in it than that in the boiler would require a good deal of power to work it. But it is easy to exaggerate the loss to be incurred in this way, while the gain is certain. We do not suggest this arrangement, unless it is combined with an enormously high rate of combustion; then we have no doubt a steam generator of greater power for the weight than anything yet turned out could be produced; and it is not improbable, we think, that it is in this direction we shall have to look for the next advance. Admirable as are the results which have been attained, we do not suppose that any one, least of all Messrs. Thornycroft or Yarrow, regards them as representing finality.

Manufacturing Machine Tools.

Last summer one of our principal machine tool makers indulged in a protest against special machines that disturbed his manufacture, and this brings to mind the fact that such business has become, in this country more than anywhere else, a manufacture, also raises the question if this is not a misfortune. The result is cheapness, and no more. It dispenses with skill, and whenever some special kind of machinery is wanted, as in the case of the water wheels at Niagara, we go abroad for it. There is continual importation of special machine tools going on.

We have a good many such here in San Francisco, and when special machines are wanted, the prices quoted in these manufactories are so high as to send the order abroad. We have seen quotations of prices as two to one for certain machine tools, and even a greater difference.

There are factories of machine tools abroad, in England and Germany, for example, where merchant work is made for export, but machine shops there are not supplied with such tools. Some of the best makers in England, Messrs. Craven Brothers of Manchester, for an example, never had an engraving of their tools, and, as we believe, no trade circulars. They photograph machines when completed, and send prints to ac company tenders, but there is no regular manufacture of tools, or such uniformity as will permit engravings to be used.

The system in vogue in England, and, as we believe, in Europe generally, can be best illustrated by a typical case that occurred about 12 years ago.

The writer, who was supplying certain machine tools for wood and iron, made in this country, was requested to call on a prominent locomotive superintendent to receive instructions for a tender. "I want," said he, "a machine to bore holes in wood, and I observe that when there are to be holes of several sizes in one piece the augers must be changed and the work rehandled. I want a spindle for each auger, so that all the holes can be bored at one handling."

To have presented this officer with a trade catalogue of wood boring machines then in use would have availed nothing, except, perhaps, a courteous dismissal.

We saw at once the advantage of what he proposed, and knew also that no such machines were made at the time. Careful drawings were made for a multiple spindle machine and sent in with a specification. The result was a second invitation to call on the officer, when his remarks were in substance as follows: "Your proposed machine seems well arranged, as far as it goes, but its functions are confined to revolving the augers and moving them up and down. One man, or even a boy, can attend to this, but it requires a number of men to handle and present the timber so the augers can be set in position. Now is it not easier to move the augers laterally across the timber, and can you not assist by power the movement of the timber endwise?"

We had been designing one kind or another of wood boring machines for 20 years, and stood there before this officer, conscious of not knowing even the rudiments of what he wanted and required, but saw at once that he was correct, and a new machine was designed, with four spindles, all to traverse across the timber, and a self acting "roller bed" that would move the timber endwise.

The drawing was sent in with a specification, and in a short time came back the official order for the machine. It was constructed by Messrs. Bement & Son, now Bement & Miles, of Philadelphia, and cost about $800. This was the father, so to speak, of a numerous tribe that followed. Most of the leading makers in this country now make machines of the kind, which were, as above related, originally designed by Mr. Adams of the London & Southwestern Railway, who furnished all the "ideas" of the modern multiple spindle wood boring machine, now common in all countries.

We could illustrate the advantages of special practice by a number of instances of the same kind, where important improvements came about by a disregard of standard machines and machine manufacture. It may cheapen machines, but does not improve them, in fact becomes a barrier to improvement, so there are at least two sides to the argument. It may be more comfortable and profitable to manufacture machine tools if people can be found to buy them, but it is not a very advanced

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method, or practicable with the highest class of customers who buy them.

One firm we know of engrave their machines in true elevation, to a scale of $\frac{1}{24}$, and have done so for 25 years past. This is a kind of compromise between the common trade circular plan and drawings, and has done very well, but calls for high skill in engraving to prevent a "flat" appearance. It is the old art of shading, with India ink, now quite forgotten, and replaced by photography.—*Industry.*

Basic Bessemer Costs.

F. Torduer read a paper before the Association des Ingenieurs sortis de l'école de Liége in October, 1891, entitled "Note on the Manufacture of Steel," by the Thomas Gilchrist process, in which, besides giving many interesting details of practice, he discussed very freely the costs of manufacture. Portions of this paper, with comments thereon, have appeared from time to time in the trade journals of this country.

Since there is at present no basic Bessemer steel being made in the United States it is possible that this article of Mr. Torduer's in its entirety might not prove of very much interest, but in the light of the present tariff agitation and of the fact that we may be compelled to more nearly meet the cost figures that he shows, the following notes may be of value.

While these, of course, bear directly on basic work and, perforce, contain some remarks on that particular practice, still the result in so far as labor is concerned is just as applicable to acid practice, be it open hearth or Bessemer.

In making any comparison between the work, figures and costs given by F. Torduer and the possible results on similar work in this country, the first thought is, Are his figures correct? It naturally follows, if they are correct, that due attention must be given to the difference in the rates paid for labor in Belgium and in the United States, the consequent difference in the cost of the raw materials and the variations in practice that would arise in transplanting the process to this side of the water. No sharp line of demarcation will be drawn between these divisions and they will undoubtedly overlap one another in this article. Taking them up in their order, however, as nearly as possible, the question as to the accuracy of his figures first attracts attention. I refer here solely to the rates for labor, the number of men employed, the amounts of the various supplies needed, the cost price of the same and the consequent cost of his finished material.

Mr. Torduer's costs are based on an annual production of 90,000 tons of ingots—that is, 150 tons each 12 hours. This is an extremely small output for such a plant as is here outlined. Three ten-ton vessels should turn out at least double this amount—say 300 tons each 12 hours, or one heat every 24 minutes, two vessels being in service all the time and one in repair. Such a rate of speed is perfectly attainable with "needle" or "plug" bottoms, the casting arrangements being so constructsd as to permit of slow pouring. This increase of output would tend to still further reduce the final cost Mr. Torduer has noted this point, but apparently thinks such a large output could not be sold. The natural question then arises, Why build such a large plant?

The first costs given are for unloading the stock or raw materials, and of these the first item is coal. It is possible that this is done by contract, and the price, one franc for ten metric tons, say two cents per gross ton, is rather high, especially when the low price of his labor is considered. Torduer figures on a consumption of 330 to 363 pounds of fuel per ton of ingots.

Comparing this with the best acid practice of about 200 pounds of steam fuel per ton of ingots (*vide* Notes on the Bessemer Process—H. M. Howe, Transactions Iron and Steel Institute, 1890), and remembering that the plant now under discussion is a very slow running one, the figure seems too low in quantity of fuel.

It is undoubtedly as true of the rest of his costs for unloading as it was of the coal—*i. e*, that the figure he quotes is, if anything, high for that class of work in this country, and it is therefore safe to assume that if he is not accurate he is at any rate high enough to cover a reasonable margin for incidentals. As to the quantities unloaded the lime is somewhat less than is called for in his table of costs, but not enough to cast any doubt on the general accuracy of the figures. The direct process being used and consequently only a dolomite cupola being in operation we can readily see why he expends only 6½ tons of coke.

Turning next to the list of wages furnished, the average rate per day of the men noted thereon is $0.687. *The Iron Age*, February 16, 1893, says that Belgian steel workers averaged 68 cents per day during 1891. This may be considered as a further evidence of Mr. Torduer's correctness.

Under this first item that is now being considered there remain still two questions: 1. As to the number of men employed. 2. The quantities of materials used in converting 1 ton of iron into steel ingots.

1. Excluding the men unloading the stock or raw materials, but 88 hands per shift of 12 hours are employed on the wage list given by Mr. Torduer. While this figure might, perhaps, be reached in a plant that embodied all the labor saving devices known to the steel maker of this age, there is not, I think, a basic Bessemer works extant that can anywhere near approach such an economy of labor as here shown. Of course, very much depends on the manner in which the labor accounts are kept, but Mr. Torduer shows by the titles of the positions that he has endeavored to enumerate all the various posts, even if he has not always used enough men. Two firemen, one water tender and two ash wheelers—a total of five—using poor coal is a very small number for a plant of this size. Almost every item in his labor list can be criticised in the same way. Note that only one locomotive engineer is mentioned. Are we to presume, then, that this one locomotive brings all the fluid iron from the blast furnaces, moves the ingots from the casting pit to the rolling mills and handles the bottoms between the vessels and the drying ovens? Or does the plant contain other and more economical means to encompass these and many other little odds and ends that are not mentioned, but which constantly occur in practice? One lime charger is expected to handle over 4000 pounds of lime every 42 minutes—that is to say, he must load it from the place where it has been dumped by the unloaders of the stock, move it to and charge it into the convertor. I doubt very much if one man is capable of such a feat.

No laborers, as we use the word, are mentioned on this schedule, and there do not seem to be any men on the list who could be used for lining the vessels. This is an important and expensive detail in a basic Bessemer plant, where the longest vessel lining life seldom exceeds 200 heats, the average being about 150, and it must not be overlooked in an estimate of cost. As Mr. Torduer does not furnish a sketch of the plant that he bases his work figures on, it is difficult perhaps to accurately criticise the number of men he considers necessary for an output of 150 tons of ingots per 12 hours.

2. Turning next to the table headed "Cost of Conversion," it is found that this apparently is intended to contain all items of expense and also to show the amounts used of some of the articles.

The loss of iron per ton of ingots is certainly high—16 to 20 per cent. The quantity of coal used has already been criticised. Mr. Torduer mentions in this table both dolomite and lime. There is unfortunately a certain haziness about the nomenclature adopted in the various works for the basic materials used. Strictly speaking, the term dolomite should be applied only to a mineral of the following composition: $CaCO_3$ = 54.4 per cent., $MgCO_3$ = 45.6 per cent., and calcite to a pure calcium carbonate. Since these do not occur in any large deposits in this absolutely pure condition, the names are naturally applied to stones which nearly approach the composition cited. In basic steel works, however, the word dolomite has been applied to the raw stone, whether it be magnesian or calcareous, and has again been used for the same stone after it has been "dead burnt" and prepared for its admixture with tar for use as a vessel lining. In the few cases where calcined dolomite was used as a basic addition to the charge of molten iron it was called lime, as was also the calcined calcite which later was found to be the proper material to use for this purpose.

From my reading of the text I understand that Mr. Torduer burns his material for basic refractories, called dolomite, on the spot, and charges the coke and labor into the general cost sheet, and that he buys his material for basic additions, called lime, in a calcined state. It seems probable that he has followed the practice adopted by plants conveniently situated to deposits of both dolomite and calcite, and proposes using the dolomite when "dead burnt" for the vessel linings, and the calcite, when calcined—*i. e.*, lime—for the basic additions. The amounts used are very similar to the figures given by other works and will be again noticed.

The cost price of the raw dolomite is given as $1 per ton, and of the lime (calcined) $1.60 per ton. The initial costs of these two stones when quarried are undoubtedly very nearly equal, since both must be as pure as possible in their respective ways. They are also much cheaper than in this country, but if the figures given are correct, and these are the only figures of Mr. Torduer's that I have any serious quarrel with, then the cost for burning lime, including the loss by calcination, seems absurdly low.

These two costs are the only ones that seem absolutely incongruous, and since there is no good reason for doubting that the dolomite could be laid down at the works for the figure given the onus of the error rests on the lime, except there be a very great difference in the distance of these materials from the plant, causing a marked difference in the freight rate.

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For example, suppose the raw stone in both cases costs 35 cents per ton at the quarry, then:

	Dolomite.	Lime.
Cost of stone	$0 35	$0.35
Loss by calcination		.28
Cost of stone per ton of lime		.73
Fuel, labor, repairs		.70
Freight rate	.65	.17
Cost at Charleroi	$1.10	$1.60

It is only in this way that I can conceive of the figures being correct, and it may be that the local conditions are such as to produce this result.

There are other apparent errors, or false assumptions made as to the number of men required to run the plant and in the quantities of the various materials required per ton of steel, but none of these are of sufficient importance to materially alter the result, and, as previously remarked, without a more complete knowledge of the plant it is impossible to correctly criticise or revise the statements on these points.

Taking the figures given as correct the cost sheets herewith will show the main differences between the Charleroi figures (see Sheet I), the figures for a plant running single turn, using cupola melted metal and making a slightly larger output (see Sheet II), and for a plant running double turn on direct metal (see Sheet III), the latter two cases being estimated for Eastern Pennsylvania.

Sheet I.—Charleroi, Direct Process, Double Turn; F. Torduer; 150 *Tons of Ingots Each* 12 *Hours.*

Items.	Cost price.	Weight per ton of ingots.	Cost per ton of ingots.
Iron (16 to 20 per cent. loss)	$10 51	220 to 440 lb.	$2.10
Coal	1.70	330 to 363 lb.	.28
Coke	3.20	88 to 99 lb.	.144
Dolomite (probably raw stone)	1 00	121 to 132 lb.	.06
Lime (18 to 19 per cent)	1.60	396 to 418 lb.	.324
Tar, per 100 kg	1.40	1 gallon.	.084
Fire brick, sand, &c			.17
Molds and stools			.19
Black lead stoppers			.07
Sundries			.28
Railroad expenses, shifting			.02
Labor			.418
General expenses			.100
Sinking fund			.100
Ferromanganese			.300
Total			$4.644
Less value of slag			.60
			$4 04
Add cost of iron			10.51
Total cost of ingots			$14.55

Charleroi.— F. Torduer.— Unloading Stock; Labor Each 24 *Hours.*

	Francs.	Dollars.
Coal: 45,000 kg. (99,000 pounds), at 1 franc (20 cents) each 10 tons	4.50	.90
Lime: 54,000 kg. (118,800 pounds) at francs 1.60 (32 cents) each 10 tons	8.64	1.73
Dolomite: 16,500 kg. (36 300 pounds), at francs 1.25 (25 cents) each 10 tons	2.06	.41
Coke: 13,000 kg. (28,600 pounds), at francs 1.50 (30 cents) each 10 tons	1 95	.39
Sundries	5.00	1.00
Totals	22.15	4.43
Charge one-half of this to each 12-hour turn	11.08	2.22

Charleroi Wage List.—F. Torduer.

Position.	Number.	Rate per man. Francs.	Rate per man. Dollars.	Cost per 150 tons. Francs.	Cost per 150 tons. Dollars.
Firemen	2	3.50	.70	7.00	1.40
Water tenders	1	3.50	.70	3.50	.70
Ash wheelers	2	3.25	.65	6.50	1.30
Spiegel cupola melter and charger	1	4.50	.90	4.50	.90
Helper	1	3.00	.60	3.00	.60
Engineer iron ladle	1	4.00	.80	4.00	.80
Weighmaster	1	3.50	.70	3.50	.70
1 Vesselman	1	4.50	.90	4.50	.90
2 Vesselman	1	3.80	.76	3.80	.76
Troughmen	2	3.50	.70	7 00	1 40
Ladlemen 1	1	5.00	1.00	5.00	1.00
Ladlemen 2	1	4.25	.85	4.25	.85
Ladlemen 3	1	4.00	.80	4.00	.80
Pitmen 1	1	5.50	1.10	5.50	1.10
Pitmen 2	1	4.75	.95	4.75	.95
Pitmen 3	1	4 25	.85	4.25	.85
Pitmen 4	1	4.00	.80	4 00	.80
Pitmen 5	1	4.00	.80	4.00	.80
Ingot handlers	4	4.00	.80	16.00	3.20
Weigher and marker	1	4 25	.85	4.25	.85
Hyd. valve men	1	4.50	90	4.50	.90
Hyd. valve men	1	3.75	.75	3.75	.75
Hyd. valve boys	2	2 00	.40	4 00	.80
Blowing engineer	1	4.50	.90	4.50	.90
Helper boy	1	2.25	.45	2.25	.45
Helper boy	1	2.00	.4	2.00	.40
Engineer, pressure	1	3.50	.70	3.50	.70
Engineer, blowers	1	3.00	.60	3.00	.60
Cinderman	1	3.50	.70	3.50	70
Clean-up under vessels	4	3 60	.72	14.40	2.88
Crane oiler	1	3.00	.60	3.00	.60
Lime charger	1	4.00	.80	4.00	.80
Messenger for two foremen	1	1.75	.35	1.75	.35
Test smith	1	4.25	.85	4.25	.85
Helper	1	1.75	.35	1.75	.35
Tool smith	1	3.80	.76	3.80	.76
Striker	1	3.00	.60	3.00	.60
Refractories, foreman	1	6.00	1.20	6.00	1.20
Dolomite cupula....1	1	3.75	.75	3.75	.75
Dolomite cupola....2	1	3.25	.65	3.25	.65
Dolomite cupola....3	2	3.00	.60	6.00	1.20
Engineer dolomite grinding mill	1	3.00	.60	3.00	.60
Helpers	3	3.00	.60	9.00	1.80
Bottomman....1	1	4.50	.90	4.50	.90
Bottomman....2	1	4 00	.80	4.00	.80
Bottomman....3	3	3.00	.60	9.00	1.80
Heater (fireman)	1	2.00	.40	2.00	.40
Dolomite brickmaker....1	1	4.00	.80	4.00	.80
Dolomite brickmaker....2	1	3.50	.70	3.50	.70
Dolomite brickmaker....3	1	3 00	.60	3.00	.60
Dolomite brickmaker....4	1	3.00	.60	3 00	.60
Stopper maker	1	4.00	.80	4.00	.80
Boss mason	1	6.00	1.20	6.00	1.20
Mason	1	4 50	.90	4.50	90
Mason	1	4.25	.85	4 25	.85
Mason	2	4.00	.80	4.00	.80
Helpers	2	3.00	.60	6 00	1.20
Helpers	4	2.75	.55	11.00	2.20
Foreman repair gang	1	4.00	.80	4.00	.80
Helpers	4	3.25	65	13.0	2.60
Total					58.20
			For	300	tons
Engineers	1	7.00	1.40	7.00	1.40
Assistant engineers	4	4.00	.80	16.00	3.20
Total					4.60
For one turn, 150 tons					2.30
Total of wages and engineers					60.50
Add stock unloading					2.22
Add Sunday labor					.255
Total					62.975

Hence labor per ton equals 42 cents.

It is assumed on the two estimated cost sheets shown herewith that 83 per cent. of ingots will be produced, 3 per cent. of steel scrap will be made and that an absolute loss of 14 per cent. will be shown.

Since the metal will be charged into the convertor colder when brought direct from the blast furnace than when remelted in the cupola, the losses are considered to be equal. That is to say that the increased loss from vessel eruptions in the direct process will equal the loss in the cupola melting of the indirect process.

It is much more essential to the obtaining of a lower loss in the basic than in the acid Bessemer process that the initial heat of the metal should be high. The basic metal, low in silicon, is charged into the vessel and immediately comes into contact with from 12 to 16 per cent. of relatively cold lime. This, of course, chills and thickens the metal and tends to produce much "throwing-out" during the first stages of the blow. The higher the initial temperature the less the loss will be at this time.

While the absolute loss may thus be the same on both sheets II and III the cost per ton of ingots might be higher on III than on II, as shown in the following calculations. It has, however, for simplicity been taken as the same, and this result could be reached in practice if a cupola for melting cheap iron scrap and rough steel scrap was run and this metal mixed with the direct iron from the furnaces. The "metal mix" for the cupolas of Sheet II is as follows:

Sheet II.—Estimate for American Plant, Indirect Process, Single Turn; 180 *Tons of Ingots, Each* 12 *Hours.*

Items.	Cost price.	Weight per ton of ingots.	Cost per ton of ingots.
Pig iron (14 per cent. loss; 3 per cent. scrap)	$12.00		$1.809
Coal	2.20	500 lb.	.550
Wood			.01
Coke	3.50	250 lb.	.437
Dolomite ("dead burnt")	10.00	90 lb.	.450
Calcite	1.10		.017
Lime	4 00	320 lb.	.569
Tar	12c. per gal.	2 gals.	.240
Fire brick			.048
Fire stone			.032
Fire clay			.033
Kaolin			003
Gannister			.024
Cupola blocks			.002
Cupola tuyeres			.001
Molds and stools			.200
Sleeves			.025
Nozzles			.005
Stoppers			.009
Shifting			.003
Insurance and taxes			.010
Stationery			.006
Incidentals			.002
Laboratory			.079
Oils, waste, &c			.030
Car account			.007
Salaries			.050
Repairs, labor			.220
Repairs, material			.070
Repairs, shop account			.033
Labor			1.600
Ferremanganese	58.50		.704
Spilgeleisen	23.00		.540
Total			$7.818
Less value of slag			1 500
			$6.318
Add cost of pig iron			12.000
Total cost of ingots			$18.318

Per cent.	Cost per ton.	
87.5 pig iron	$12.00	$10.50
2.5 rough steel scrap	10.50	.26
10.0 burnt or cast iron scrap	10.00	1.00
Total		$11.76

Since 83 per cent. of ingots are produced the cost of this "metal mix" per ton of ingots is $14.17, less credit for 3 per cent. of steel scrap at $10 per ton, $0.361, equaling $13.809.

The direct metal, on the other hand, costs $14.457, less credit for 3 per cent. steel scrap at $10 per ton, $0.361, equaling $14.096.

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Since the pig iron costs $12 per ton the cost of the loss is $1 809.

It will be noticed, however, that Mr. Torduer does not calculate his loss in this way, but simply says that 20 per cent. on an iron casting, $10.51, equals $2.10. It happens that 17 per cent. loss on $12 iron nearly equals the same

Sheet III.—Estimate for American Plant. Direct Process, Double Turn; 300 Tons of Ingots Each 12 Hours.

Items.	Cost price.	Weight per ton of ingots.	Cost per ton of ingots.
Iron (14 per cent. loss; 3 per cent. scrap	$12.00		$1.809
Coal	2.20	400 lb.	.440
Wood			.005
Coke (for heating ladles, &c.)	3.50		.010
Dolomite ("dead burnt")	10 00	90 lb.	.450
Calcite			
Lime	4.00	320 lb.	.569
Tar	12c. per gal.	2 gals	.240
Fire brick			.030
Fire stone			
Fire clay			.016
Kaolin			.001
Gannister			.010
Cupola blocks			
Cupola tuyeres			
Molds and stools			.200
Sleeves			.025
Nozzles			.005
Stoppers			.009
Shifting			.002
Insurance and taxes			.007
Stationery			.005
Incidentals			.002
Laboratory			.045
Oils, waste, &c.			.025
Car account			.005
Salaries			.040
Repairs, labor			.180
Repairs, material			.050
Repairs, shop account			.020
Labor			1.:00
Ferromanganese	58.50		.704
Spiegeleisen	23.00		.540
Total			$6.944
Less value of slag			1.500
			$5 444
Add cost of pig iron			12.000
Total cost of ingots			$17.444

figure, but his is not the correct method, and I shall, therefore, use the result obtained by the method shown here. Comparing cost sheets I, II and III, but more especially I and III, it will be noticed that Mr. Torduer apparently omits the following items:

Wood	0.005
Fire clay	0.016
Kaolin	0.001
Gannister	0.010
Sleeves	0.025
Nozzles	0 005
Laboratory	0.045
Oils, waste, &c	0.025
Insurance and taxes	0.007
Stationery	0.005
Incidentals	0.002
Car account	0 005
Repairs, labor	0.18
Repairs, material	0 05
Repairs, shop account	0.02
Spiegeleisen	0.54
Total	0.941

He inserts the following three:

General expenses	0.10
Sinking fund	0.10
Sundries	0.28
Total	0.48

for which no exact equivalents are to be found on either cost sheets II or III.

The three items of general expenses, sinking fund and sundries undoubtedly cover many of the expenses that are enumerated more in detail on the sheets I present. The sum of these three items is $0.48; subtracting that from the total that has just been found ($0.941 — $0.48 = $0 461) there remains $0.461 unaccounted for in his schedule.

Considering this in the light of the low wages and the low cost of raw materials that have been noted in this article, remembering also that no charge at all is made for spiegeleisen and that the use of only about one-half the amount of ferromanganese required for the quality of steel that it would be necessary to manufacture in this country is permitted, it looks very much as though the previous assumption that his figures are correct in the main, in spite of the apparent errors and discrepancies, still holds good.

Mr. Torduer does not say that his costs are based on the use of coke or anthracite coal as a recarburizer, and in fact includes in his labor figures the men required to run a spiegel cupola; still, as he mentions the growing use of this practice, and omits to charge for any spiegeleisen, it must be assumed that he indorses it and calculates his costs in this manner.

If the amount charged for spiegeleisen in the American cost sheet be omitted, the total is $0.401, and then Mr. Torduer's three items exceed by $0.081. This difference is not great, and may tend to show that if any error exists it is on the high side.

No calculations on the cost of basic Bessemer steel should be undertaken unless the value of the slag be considered, though it is probably questionable if the full value for the slag produced could be obtained in this country at first. Any new article, however good it may be, requires some time for its introduction. This item of revenue cannot be omitted from any fair calculation of the cost of basic Bessemer metal, as it would eventually become a valuable by-product of the plant.

It is, I believe, a well known and openly stated fact, by the friends as well as by the enemies of this process, that the cost of conversion is greater than by the acid Bessemer. It is therefore only just that due credit should be given for any advantages that may be found in this method. The production of this valuable fertilizing agent, which has a world wide commercial value, and the difference in the cost of basic and acid pig irons are the two factors which should be counted on to overcome this extra expense for conversion, and perhaps possibly make it less than by the acid process.

It may also be well to note just here that no commercial estimate of the value of the basic Bessemer process for any particular locality should be formed without taking into consideration the grade of steel that is to be made. For the production of a "dead soft" steel this process possesses many advantages over the acid method.

As will be noticed on the accompanying cost sheet, the cost of conversion is for

Charleroi	$4.64
Sheet II	7.818
Sheet III	6.955

A difference of $3.178 in the one case and of $2.315 in the other.

(To be concluded.)

The absence of large orders is being keenly felt among Ohio manufacturers of iron and steel and kindred products, consequently, it is to be expected that many will take more than the required time for stock taking in January. With bar iron at 1.35 cents, half extras, Chicago delivery, and sheets, both black and galvanized, down to the lowest prices yet recorded, there is not much to create enthusiasm. There was cause for gratification over the settlement of the wages scale, but it was immediately counteracted by a lack of business in sight and the publication of the tariff bill, which has caused a great deal of complaint from all quarters. In the manufacturing centers it has put a damper on everything. No matter what the duty is, Ohio manufacturers want it to be specific; if they have to fight they want to fight fair. Whether the tariff trouble is responsible for the present dullness or not, one thing is sure—that is, that several new enterprises which had been projected and were nearing organization have been temporarily abandoned, and may have received their death warrant.

The U. S. Cruiser "New York."

The official report of the Trial Board on the recent final trial of the armored cruiser "New York" was rendered to the Navy Department a few days ago. After enumerating some minor defects of no material consequence, the board submit their opinion of the new cruiser in the following terms of satisfaction:

1. That the guns, gun carriages and turrets, their fittings and appurtenances work properly and that the ship is well built and sufficiently strong to stand the shock caused by firing. 2. That the hull, engines, boilers and dependencies have not upon this trial exhibited any weakness, breaking down or deterioration. During the two hours' trial at sea under full boiler power at natural draft the highest steam pressure was 160 pounds. The average steam pressure was 140 pounds. Highest number of revolutions, 112. Average number of revolutions, 106. The first day out the wind was of force five from the southwest, with moderate but choppy sea. The second day the wind blew strong from northwest, abating the sea considerably. Under these conditions the ship was remarkably steady, especially in the trough of the sea on the first day. Her rolling motion was slight and easy, though a good number of the crew were made seasick.

The ready obedience of the ship to her helm drew forth the favorable comment of the pilot, as it had impressed the members of the Speed Trial Board in May last; and this board is of opinion that no question of unseaworthiness or of instability will ever arise with regard to the "New York;" that, when she has been given suitable opportunity for getting into proper shape as a well-organized, well-equipped and well-drilled man-of-war, she will have no superior afloat of her class.

The mean speed at full power, at natural draft, as shown by two Bliss patent logs, was 15.84 knots. This low speed was probably due to the poor quality of the coal used, to great draft of water, and to foul bottom.

The annual meeting of the American Institute of Mining Engineers will be held at the Princess Anne Hotel, Virginia Beach, near Norfolk, Va., beginning Tuesday, February 20. John Graham, Jr., of Norfolk, is chairman of the local committee.

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The Depression in Shipping Interests Abroad

In a general way it is well known that there has been widespread depression in foreign shipping interests during the past two years, but definite and reliable figures bearing on the subject are not readily accessible. Special interest therefore attaches to data carefully collected with the assistance of well-informed specialists in England and on the Continent, and laid before the Institution of Engineers and Shipbuilders in Scotland by John Inglis, the recently elected president, in his inaugural address.

Taking up first the affairs of some of the great English shipowning companies, it appears that the last year's accounts of four of them show profits, actual or nominal. Thus the Peninsular and Oriental Steam Navigation Company, with a capital of $11,298,000, declared a profit of $680,800, as the result of the operations of the company during the last year, for which a report has been submitted to the stockholders. This well established line has a fleet of more than fifty steamers, maintaining service on an elaborate system of routes connecting London with the East, including the Australian colonies. The Peninsular and Oriental Company receive an annual mail subsidy from the British Government amounting to $1,652,000 and an Admiralty subvention of $60,460. Without the money received under these Government contracts there would have been a deficit. Another important line which had a balance to its credit was the Cunard Steamship Company, with a capital of $7,792,000 but showing a profit of only $33,700. Payments are made to this line under contracts for ocean mail service and for Admiralty subventions, the annual payment by the British Government on the former account being about $245,000 and on the latter $65,700. A third line which showed a profit, although by a very narrow margin, was the Royal Mail Steam Packet Company. On their capital of $4,383,000 a profit of a trifle less than $1500 was realized for the year. The amount received by the Royal Mail Company from the British Government for mail services is about $440,000 per annum. A fourth company who can claim a profit on the business of the last year is the Shaw, Savill and Albion Company. With a capital of $2,270,000, a profit of $58,800 was shown. This line is engaged in the Australian trade and besides several large passenger steamers has a number of freight steamers and sailing ships.

Turning now to other lines, some of those which seem most firmly established have experienced serious losses in current business, a result not due to casualties in their fleets but to the depressed state of trade. The Union Steamship Company, with a capital of $3,400,000, have lost in one year $336,000. The Castle Steam Packet Company during the same period have lost $195,000, their capital being $2,450,000. Both these companies have fine fleets of steamers transporting passengers and cargo between England and South Africa. The amounts received by them from the British Government for mail service are small. Another line showing a debit balance is the Orient Steam Navigation Company, owning a number of well known steamers in service between England and the East. With a capital of $2,270,000, the Orient Line showed a loss on the last year's business of $209,000, in spite of the fact that the receipts for carrying ocean mails amounted to about $415,000. Still another important line for the business of which definite figures can be given is the Pacific Steam Navigation Company, the operations of which extend to South America and particularly the West Coast. This company, with a capital of $7,193,000 lost about $280,000 during the past fiscal year. The annual receipts of the company for British mail service amount to about $97,000.

Taking up next the two largest French steamship companies, it appears that were it not for State aid they would make a very poor showing. Thus the Compagnie Generale Transatlantique, with $7,792,000 capital and owning 167,000 tons of shipping, receive every year about $2,170,000 in subsidies and only distribute in dividends about $390,000 annually. The Messageries Maritimes have $11,688,000 capital, 202,000 tons of shipping and receive subsidies amounting to $2,698,000 a year; the sum paid annually to shareholders in dividends is about $585,000. It is estimated that in addition to the steamship subsidies, amounting to about $5,000,000 per annum, the French Government will have to pay about $1,650,000 yearly in navigation bounties under the new bounty law adopted in January, 1893. In Germany, the important North German Lloyds have a capital of about $9,740,000 and about 197,000 tons in shipping. The available profits of this company last year, notwithstanding a subsidy of $1,000,000, were only $146,000.

Drop Press and Drop Lifter.

The six-poppet drop press made by the Miner & Peck Mfg. Company of New Haven, Conn., is intended for use in stamping metal ceiling plates, metal shingles, and all work requiring square dies. This machine is made in several sizes, that illustrated in Fig. 1 being of sufficient size to take in a die 27 inches square. The method here shown of holding the square die is believed to be preferable to that of four poppets holding at the corners. The hammer is arranged to hold the soft metal by four bolts with projecting heads.

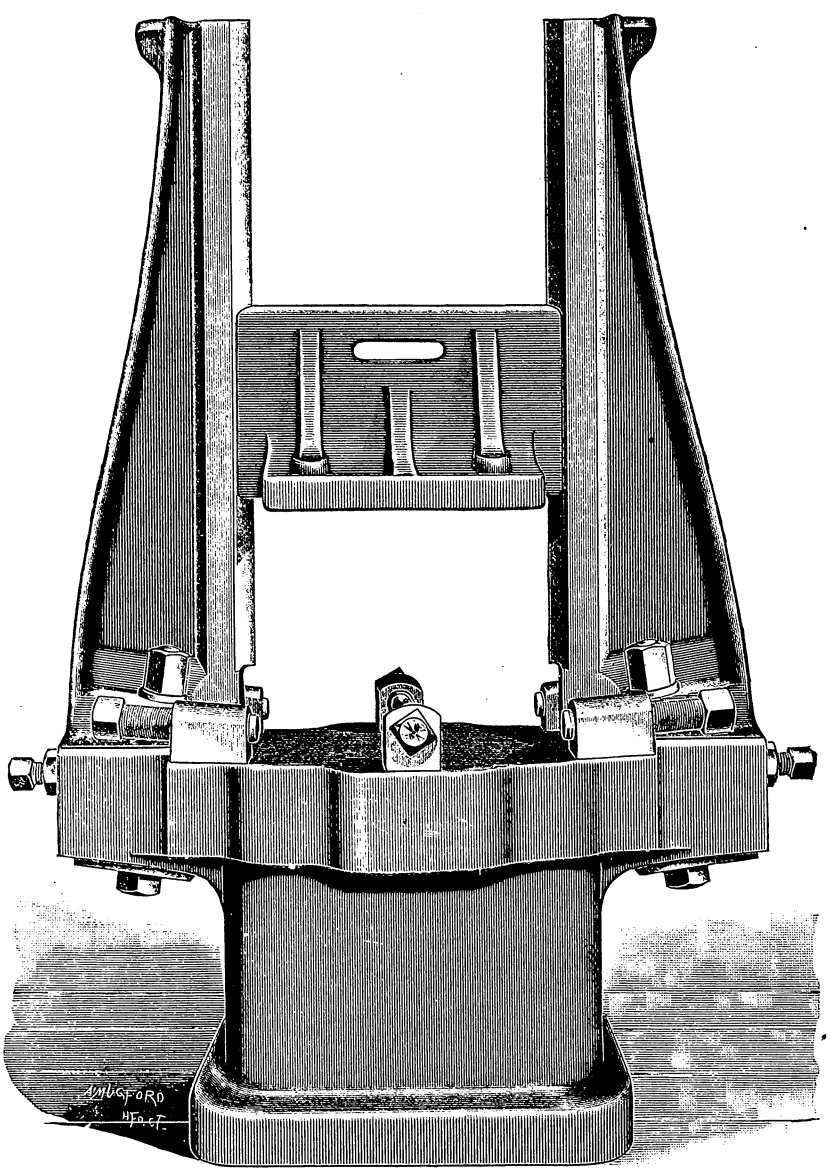


Fig. 1.

THE MINER & PECK DROP PRESS.

The poppets are fitted by the Peck improved process, are finished all over, and in such a manner that the screws have a perfect range. The holes for the poppets are bored out and poppets fitted to them and securely and accu-

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rately held. The bolts for holding the guide rods are very large and have long nuts carefully fitted to insure them against coming loose, while under the heads of the nuts are large iron plates to relieve the guide rods from jar and its injurious effects.

These drops are arranged to be worked, if desired, by hand or foot power over a flanged pulley; but the manufacturers recommend that they be used with the Peck automatic lifter, shown in Fig. 2, for the reason that with this attachment much more, and more uniform, work can be produced than by foot or hand, and with less fatigue to the operator.

The frame of this lifter is of new design and is much heavier than the earlier forms. The length of the bearings has been increased, and on the main shaft, instead of making back bearing smaller, as in the former pattern, it is continued through of the same size as the crank bearing. Instead of having collars on the shaft at the bearings, the hubs of the lift and the dog cranks are made to act as collars, thus leaving the shaft of one size its entire length, with no shoulders to weaken it.

The strength of the gear and pinion has also been increased. The pillow blocks on the back of the shaft are bushed, these bushings being of uniform size, so that new ones can be inserted when the others become worn. In the place of cup screws, tapped into the frame to hold the main bearing caps, bolts are passed through the frame and held with check nuts. In the larger sizes the makers prefer not to have the sockets divided and with rubber springs inserted in the flanges, but to insert a rubber cylinder in the cavity in the hammer under the lifter belt. This arrangement has the advantage of allowing the pinion on the back shaft to be placed in the center of the back shaft, instead of at the end next to the bearing; and, thus arranged, should any extra strain accidentally come on the pinion, the shaft will spring and relieve the frame, whereas if the pinion is close to the frame an extra strain, such as the breaking of a tooth of the gear or the pinion, would be liable to break the frame. The crank illustrated is provided with fine adjustment, designed for silver and other fine work, and enables the blow to be changed in length by half inches. This form of crank is placed on lifters only when specially ordered. The shafts are made of hammered crucible steel; cranks, ratchet and dog of forged steel, and all the other parts of carefully selected materials.

These machines are now in successful operation in the stamping works of Lyles & Mills, 231 William street, New York.

A Curious Occupation.—In the cost accounts of South Staffordshire, England, rolling mills there is an item which finds no place in similar accounts in this country. It appears on the credit side, and represents the amount paid by an individual known as the "breezeman" for the privilege of hauling away, without cost to the company, the cinders falling from the grates of furnaces. The consideration is usually about half a crown for two weeks for each furnace burning lump coal, and it is further agreed that the boiler ashes be removed free of cost, although they have no value. The cinders from the furnaces are taken by the breezeman to an open space, where they are spread on the ground about a foot thick. Women who are employed for the purpose then rake out all the clinkers and bats, leaving nothing but dust and partly burned cinders, which are still combustible matter. This is wheeled to a large tub with water running through it, and dumped therein. The water is agitated by means of a long rake, and as soon as the dust is washed off and the black cinders float on the surface of the water they are removed with a large sieve of about 1-inch mesh, and at once become a marketable fuel known as "breeze," used extensively in the shops where hand made nails are wrought into shape by women, and in shops making light axles, &c., also in all blacksmith shops. It meets with a ready sale, and carts having huge sideboards, containing breeze, are a common sight on the roads between Birmingham and Dudley. The "breezeman" derives his income from the sale of breeze, less the amount paid to the company for the privilege and the cost of labor. Usually he makes a good living. He rents the furnaces for a year and takes chances on having a large stock on hand on account of nailers' or axle makers' labor troubles.

It is stated that at several Lake Superior mines men have freely offered to go to work for their board alone. This has certainly been the case at many of the lumber camps in the mining country. Some time ago the Chandler Mine on the Vermillion range took off a steam shovel that was loading cars from stock pile and put in its place a gang of men. Figured on the steam shovel basis the pay of the men was to be 50 cents a day and possibly a trifle more later. On the announcement of work at this wage over 200 men—four times the number that could be worked—rushed down to the stock pile, grabbed up shovels and began to handle ore. It was with great difficulty that the mine management was able to cut this zealous crew to a size that could do work to advantage. It is evident enough that there is no unwillingness to work on the part of these idle and starving miners on the Lake Superior ranges.

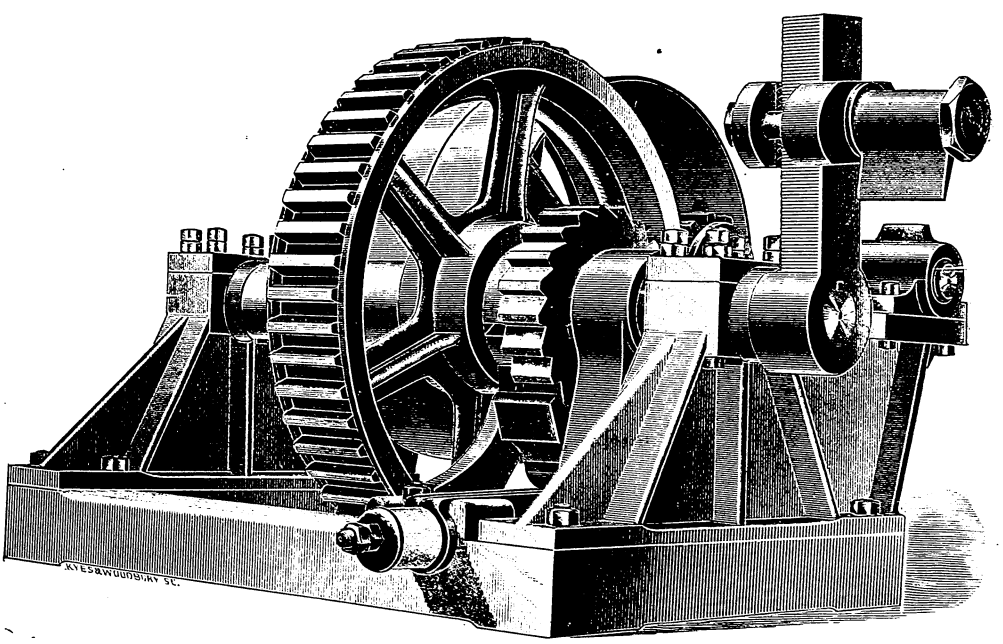


Fig. 2.

THE MINER & PECK DROP LIFTER.

The fine exhibit of steel made at the World's Fair by Singer, Nimick & Co. of Pittsburgh has been removed to the office of W. E. Stockton, their Western sales agent, at 16 and 18 West Lake street, Chicago. The special features of this exhibit was that a very great variety of specimens were shown of small tools, drop forgings, parts of machines, hardware specialties, skates, &c., made by numerous manufacturers from the company's steel. In no better way could the reputation of this steel for fine work have been demonstrated. The specimens thus shown fill two large glass cases.

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The Tesla Engine.

At the last meeting of the New York Electrical Society Nikola Tesla delivered an address, from which we take the following:

You have seen a few designs of engines described by the eminent speaker who is one of the most competent to talk on the subject, and who has shown us a great many complicated mechanisms. They are exactly adapted to illustrating what I have to say, and I would ask whether it is not worth while to attempt to simplify those mechanisms, which we have been using heretofore for the production of electric currents. When we look at a steam engine and inquire where the power comes from that drives the steam engine, we will always find that the power comes from a little box—a cylinder with a piston in it—and all the other appurtenances are really but to keep it going. You may do away with the fly wheel, with the cross heads, with the eccentrics, with all the appliances, provided that you can in some other simple way govern the motion of the mechanism. So then my first idea was to apply the motion of the piston, which is freely movable, to a magnetic field, to move a magnet or a coil in a magnetic field and so generate currents by this direct motion. Now let us see what we can do in that respect. First, we reduce the weight of the engine for the same pressure and the same piston speed to one-thirtieth or one fortieth if not one-fiftieth of its weight. Furthermore, we do away with all mechanical frictions. The engine designed according to my ideas has a mechanical efficiency of 99¾ per cent. Now, that is in itself a very big item and renders it worth while endeavoring to make this mechanism a commercial success. But there are other far greater things. You will find that engineers often say what an advantage it is to apply the direct motion of the steam piston to a pump. In reality the advantage in a pump is but a very minute one. The water column has got an enormous inertia, and what we do gain in the direct acting pump is merely a matter of overcoming some additional frictions which we have in the ordinary engine. We may take the mechanical efficiency—I gather the data from various works—we may take the efficiency as say 81 to 82 per cent. at the full load. But the efficiency is much less on a varying load. Then, furthermore, we have got these variously estimated. I take the figures which I have found to be fair, giving this as the efficiency. Now the dynamo again has got mechanical losses due to friction, and, furthermore, the wire is never utilized fully in the dynamo. In my construction the dynamo may consist of a simple coil of the magnet, and a simpler coil, which is all immersed in the magnetic field. There is no useless wire. Consequently dynamo and engine, if they are reduced considerably in weight, increase in efficiency. There is only one engine which can equal it in output, and that is the turbine. With the steam turbine we can obtain an enormous output, and that is the reason why the steam turbine, in my opinion, may be found a valuable adaptation for driving dynamos; and then convert the motion by means of alternating dynamos; and I think the steam turbine has in itself a physical cause why it cannot surpass a certain efficiency, and that is that we drive turbines by impact. A turbine might be very efficient if the medium which propels it were incompressible and homogeneous. But it cannot be efficient if we drive it by means of isolated shocks. Furthermore, we cannot in a turbine gain all the expansion. These causes, I think, will limit the efficiency obtained in turbines. But in reciprocating mechanisms we can, provided we obtain a sufficiently high speed of the piston, expand the steam at an enormous rate. It is perfectly practicable in these mechanisms which I have been working up to obtain, if you want, a speed of 100 meters a second, and while I do not contemplate producing such speeds yet it is quite possible to do it. But since we can produce higher speeds we might as well increase the speed two or three times, and so augment the activity of the mechanism and raise the efficiency. Furthermore, as I am enabled now to work without a packing, I found that in these mechanisms the packing is actually objectionable, the expansion occurring at an enormous rate, and the engine being of such character that the exhaust can be reduced to pretty nearly the atmospheric pressure very easily. The mechanical friction is reduced to such a small figure that we can raise the temperature of the steam very considerably. You know that in high pressure steam engines one of the greatest troubles is the lubrication. We can go so far with the mineral oil, we can go so far with ordinary oil, but then we reach a point at which we cannot go any further; the lubricant will not work; and I am informed by very able practical engineers that about 250 pounds per square inch of steam pressure is as high as we practically go. With this engine we can go much higher. I am now preparing a boiler which will give me up to 350 pounds pressure. It is very important, of course, to get the pressure very high. In these mechanisms we are confronted with two things. For what are they going to be used—for light or for power? If we want to drive motors we must have a long stroke and a slow frequency. If we want to operate lamps then we want a very short stroke and a very rapid motion. To have a high speed with short stroke we must have a great initial pressure, because, you know, the number of vibrations increases only as the square root of the pressure. So if we want to have twice the number of vibrations we must have four times the pressure. But, on the other hand, four times the pressure and twice the number of vibrations means eight times the output. So it is very important in this mechanism in which the power depends on the square to obtain as high a pressure as possible. It is on this line now that I am working.

We have had such reciprocating engines as far back as 1868 or 1870, and it would be a very erroneous idea to think that I had evolved something radically novel in that part of the mechanism.

It is more economical to produce rapid vibrations than low vibrations. But so far as the economy of the dynamo is concerned, and so far as the economy of the engine in general is concerned, it is better to produce a long stroke, because a long stroke means a high velocity.

I have an apparatus which runs lights in the laboratory, and shortly I think I will have something which will be ready for practical application. I think I am not mistaken in believing that we are going to have very shortly a means at hand of producing twice as much electricity from coal as we can produce at the present time—provided I am not mistaken. This is subject, of course, to a test, but I am quite confident that it can be done. This is not, however, a subject which occupies me altogether. There are also other subjects.

The Consolidation of Mexican Iron Interests.

The newly organized Mexican National Iron & Steel Company, with a capital stock of $3,000,000, are now in complete possession of the iron and steel plants and deposits formerly controlled by the Durango Iron Mountain Company. A temporary organization was effected on November 18, and the permanent organization with regular election of officers will be accomplished on January 1. Mr. Richard Honey will be president, but the other officers are not as yet definitely fixed upon.

The object and plan of the new company is to operate not only the mining of the vast deposit of ore at Durango, but to put in complete working order various manufacturing establishments already built at various points in the republic. The desire is to operate to the best advantage and interest of the Republic, and decrease rather than increase the price of iron used in Mexico. In an interview given the correspondent of *The Iron Age*, J. S. McCoughan of the company stated that his party can do this, if the Government of Mexico will do its part.

He professes that he and his company are willing that the import duty on iron ores be very materially lowered, if the authorities will then but stand by the standard rate of duties and treat every one alike.

By over $200,000 spent in improvements last summer and fall, the Durango home plant now represents an expenditure of $600,000. The improvements just made consist in the remodeling of the blast furnace, the addition of a hot blast stove and a 600 horse-power blowing engine, and other additions of a minor nature to the already large and very complete plant. In addition, the new corporation are making ready to begin the manufacture of light road rails, I-beams and various kinds of structural iron for the supply of the building trade. About 200 men are now employed at the Durango Works, and this number may possibly be increased in time.

Next year enlargement will be made of the company works at San Miguel, in the State of Hidalgo, and the steel plant there specially put in order for large operations at a total expense of $500,000. The plant at Encarnacian is running exclusively on charcoal bar iron, which is equal to Swedish goods and is making for itself a good place and fine reputation in the iron trade.

The above and all the other works of the company in the Republic, including those at Acapulco, are to be steadily operated and worked to their full capacity of production in the future.

Shipments from the deposits of Durango and other mines owned by the organization will also probably be increased. Four hundred carloads of iron ore were shipped out from Durango last summer, going to Monterey, San Luis Potosi, San Miguel, Allende and other points. If the import duty on iron ore were removed in the tariff revision now being figured on by the United States the lead smelters of Kansas City would be added to the shipping points. Ne-

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gotiations are also on for shipping large consignments of ore to Europe via Tampico.

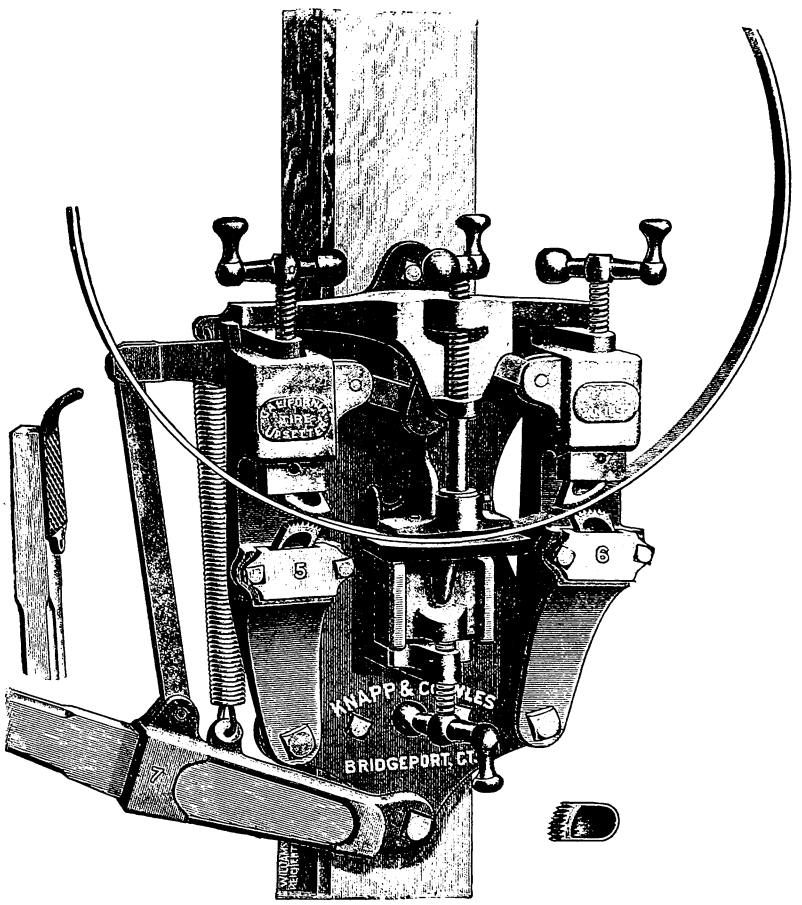
By the plans in the mind of the company, which have ample capital to carry them out, the famous Iron Mountain of Durango, which has been worked for 50 years with no particular loss to its mammoth storage of mineral, will send out an increasing amount of its valuable body to the world of commerce.

The Durango formation is claimed to be the largest deposit of iron ore in the world, and has been noted as such for hundreds of years. The Iron Mountain was given extended mention by Baron von Humboldt when traveling in Mexico in 1803, and has been the subject of much attention in the later years of the century.

The collapse of the great bridge now under construction between East Louisville and Jeffersonville, Ind., which occurred last Friday, was one of the greatest disasters of the kind experienced of late years. The accident was caused by the strong current and heavy wind carrying away the iron and timber false work of the 500-foot span in the middle of the river, the fall of which brought down the other spans with it. Many workmen were drowned or buried under the falling mass of *débris*. The structure was the work of the Phœnix Bridge Company of Phœnixville, Pa., and was being erected by them. Every precaution had been taken to prevent disaster, and it is stated that the company have received a dispatch from the engineer in charge of the railroad for which the bridge was being built, exonerating them from all blame.

The California Tire Upsetter.

With this machine, which is made by the Knapp & Cowles Mfg. Company of Bridgeport, Conn., tires can be shortened without cutting and without the use of a hammer. To operate the machine the center plate is lowered to conform to the circle of the tire, which is placed in position as shown. The center plate is then screwed down so that the jaws firmly grip the tire. The toothed jaws 5 and 6 are then adjusted properly to grip the tire when the lever 7 is depressed, thereby bringing, by means of the connections shown, the gripping jaws toward each other and upsetting the tire. If the first compression is not sufficient the left hand screw is loosened, the lever raised and the screw retightened. In this way two or three compressions can be obtained at one heat. Bar iron can be upset by adjusting the center plate in line with the work.



THE CALIFORNIA TIRE UPSETTER.

A proposition is advanced to reopen the Charlestown Navy Yard. The resources of this yard are such that boats of comparatively small size could be built there, and much repairing could be done. A few years ago, through neglect or inattention, the Charlestown yard was allowed to get into bad condition and it was necessary to make a number of repairs before vessels could be kept at the docks there. For this reason the Navy Department declined to send ships or to build them at that port; but at last the docks have been put into good condition again, under an appropriation made by the Government for that purpose, and there is at present no good reason why the yard should not become what it formerly was, one of the most important Government work yards for the navy to be found on the Atlantic seaboard.

San Francisco News.

SAN FRANCISCO, December 11, 1893.

During the past two weeks we have had the first heavy rains of the season. In fact, the rains were pretty constant for one week. These rains have put the ground in good shape for the labors of the farmer, and there will be a goodly breadth of land seeded to wheat and barley, with the promise, should later rains be sufficient, of bountiful crops. Everything, therefore, favors the outlook of the agriculturist—everything except the prices of produce, and there is no reason for hoping that they will be any better next year than now. Farmers are disgusted with the prices that they have received during the year—in the case of wheat, the great staple of California, 16 per cent. lower than ever before in our history. Farmers and jobbers have been waiting, hoping against hope that prospects would brighten and that prices would improve, but they have not. It is just possible that fruit will command better prices in 1894 than it has done this year, but agriculturists are not sanguine, and, therefore, I do not expect any marked revival of trade before next fall. In the city the demand for building hardware has fallen behind that of 1892 for the same time, although there are nearly as many buildings being contracted for as there were a year ago. In other departments the demand is very light. There is but a limited demand for machinery at present and a decided dullness is prevalent. The demand for agricultural machinery has about come to an end for the year. Here the outlook is probably about as good as that for any preceding year. It is true that the great houses of the city have saved a good deal in the matter of freights when compared with what they used to pay, but lower prices have taken all the profit out of the business. The lowering of freights has led to the lowering of prices, and not only on goods, but right along the line. In fact, in many departments prices have been absolutely down to cost, and less money has been made than there was in 1892. Happy where the importer has not fallen behind, and where he was always able to get a new dollar back in exchange for an old one. But all our houses are possessed of abundant capital, and well able to stand financial strains and the pressure of hard times. They have made money in the past, and when a change takes place they will hardly even remember the dull year of grace 1893. As noted, the reduction in freights was in one respect disappointing, as it brought goods here at low rates to compete with stocks already in the market; but it will add to the field for San Francisco's trade, and its beneficial results will be felt even a score of years from now. The year 1893 will be pointed out by our mercantile historians as the one when the chains of railroad and steamship were first broken by the combined efforts of the banded merchants of San Francisco. The Clearing House exchanges are a pretty fair index of the conditions of trade amongst us. For the week ending Saturday, December 9, they were $12,546,474, as against $16,661,619 for the corresponding period in 1892. Here is a falling off of about 25 per

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cent. in volume of trade, and it is just as true in hardware, iron and steel, machinery, &c., as in aught else. Of course as in hardware, nails, &c., there have been reductions in price. The quantity of goods disposed of has not fallen off so much as the above would seem to indicate.

There will be a very fair display of machinery, hardware, &c., at the winter fair in this city. Some of our manufacturers of machinery are making preparations for a very large display, and here the East and the West will be able to compare notes and each to benefit somewhat by and learn somewhat from the other. Our largest manufacturers and importers of agricultural machinery are contemplating making a display that shall cost thousands of dollars, so that Eastern manufacturers must needs look to their laurels. All their fair buildings have made good headway and by January 1 will probably be ready for the reception of exhibits.

There have been no particular changes in prices in any line since my last letter. As a general rule it may be said that there cannot be any advance, as competition is too keen, while quotations are too low to render it possible to effect a reduction except at a loss. Pig iron keeps at $18 to $22, according to quality; nails at $1.65 as a basic price; tin plate at $5.50, and pig tin at 21¾ cents.

The Ironton Structural Steel Company of Duluth, Minn., have just made a successful test of their new principle of structural beam rolling machinery, and have accomplished a result that is entirely novel in the history of steel manufacture. A 24-inch steel beam 30 feet long was rolled by a single set of rolls in one operation and without removing the billet from the original rolls. The beam was rolled from a steel billet 37 inches long, 30 inches wide, and 7 inches thick in 15 passes through the rolls. It is a standard section, 80 pounds to the foot. A few weeks ago a 15-inch beam was successfully rolled by the process, which is the invention of James E. York, general manager of the works. The mill is constructed on the universal plan, with sets of horizontal and vertical rolls, capable of being adjusted so as to turn out varying sizes and thicknesses on the same train. It is claimed that the cost of turning a steel ingot into a finished beam is reduced 40 per cent. by this process. There is only one other firm in the United States capable of rolling a 24-inch steel beam, and there the work is done by the ordinary process.

A new forge shop is to be built and equipped for the North Carolina Agricultural and Mechanical College, Raleigh, N. C. This institution is referred to as meeting with great success.

One must go abroad to learn what is going on at home. The London *Engineer* prints a long leader on President Cleveland's tariff message, and in the course of its wise review remarks: "In the United States almost every 'interest' is controlled by a 'ring,' and the system has been pushed to lengths which are almost ridiculous. Thus, for example, a 'ring' was formed to control nails. But nails are sold in kegs, and very soon after the nail ring had been formed a keg ring was established, on somewhat antagonistic principles." The nail manufacturers in this country dissemble well. While they are industriously losing money in cutting nails, they are paying tribute, too, to the "keg ring." Since our nail manufacturers make their own kegs, they have probably gone into this "ring" for the amusement of their bookkeepers.

Vacuum Breaker.

When a back flow of water from a condenser occurs all passages up to the check valve are filled with water, and before the condenser can resume its proper function the water must be discharged. A discharge will naturally take place as soon as pressure in exhaust rises above atmospheric pressure, but this in itself may be too much of a disturbance to the regular running of the engine, and may necessitate several revolutions to recover regular speed by the change of condition. To effect a prompt discharge of this water the vacuum breaker shown here has been designed by L. Schutte & Co. of Philadelphia.

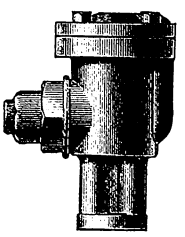


Fig. 1.—Perspective View.

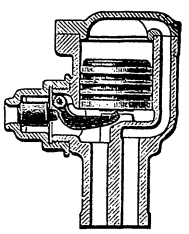


Fig. 2.—Inside View.



Fig. 3.—Fitting.



Fig. 4.—Fitting, Sectional View.

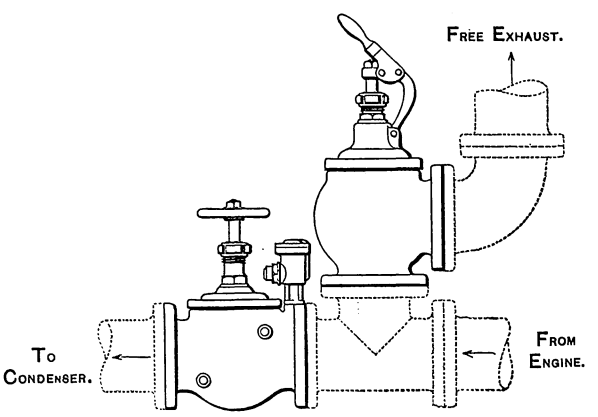


Fig. 5.—Check Valve with Vacuum Breaker Attached.

VACUUM BREAKER.

As will be seen, the vacuum breaker consists of a valve closing against the atmosphere and actuated by a piston. A passage below the piston communicates with the condenser side of the check valve, and another passage above the piston leads to the engine side. The weight of the piston keeps the air valve closed. The slightest difference in pressure caused by a back flow of water will cause, the piston to rise and allow the air valve to open; and in the opposite case, when exhaust pressure rises the piston will drop, the air valve close and the condenser resume its functions without any perceptible change in the speed of the engines. The vacuum breaker may be attached either to the check valve in the manner before described, or by means of pipes and the special fitting shown in Figs. 3 and 4 to the engine and condenser side of the exhaust pipe. Fig. 5 shows the check valve with vacuum breaker attached.

Trade-Marks.

A decision of considerable interest to manufacturers and others using trade-marks has recently been handed down by the United States Supreme Court in the case of a suit brought by a firm of millers to restrain another firm of millers from using the word "Columbia" in connection with their special brand of flour. The court refused to grant the application of the plaintiffs, and denied their exclusive right to use the word "Columbia" as a trade-mark for flour; laying down, at the same time, the following comprehensive propositions as the sole rule and practice in the establishment of a valid proprietorship in trade-marks:

1. That to acquire the right to the exclusive use of a name, device or symbol as a trade-mark, it must appear that it was adopted for the purpose of identifying the origin or ownership of the article to which it is attached, or that such trade-mark must point distinctively, either by itself or by association, to the origin, manufacture or ownership of the article on which it is stamped. It must be designed as its primary object and purpose to indicate the owner or producer of the commodity, and to distinguish it from like articles manufactured by others.

2. That if the device, mark or symbol was adopted or placed upon the article for the purpose of identifying its class, grade, style or quality, or for any purpose other than a reference to or indication of its ownership, it cannot be sustained as a valid trade-mark.

3. That the exclusive right to the use of the mark or device claimed as a trade mark is founded upon priority of appropriation.

4. Such trade-mark cannot consist of words in common use as designating locality, section or region of country.

An importer from Great Britain doing business in Dublin and Liverpool while here recently on a visit to the exposition called on his way back on a firm in this city of whom he had bought

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goods for over 20 years. In conversation he remarked that he had just bought a traction engine for shipment to Great Britain. The senior member of the house here (being themselves manufacturers of some classes of machinery) asked in surprise if he had secured it as a curiosity, knowing such goods were originally made there and are still largely. The visitor said it was purely a business transaction, that a similar article there would cost about $1500. while this one in round figures cost $1000 laid down there, besides being much better in every way.

THE WEEK.

Detroit, Pittsburgh, Buffalo, Philadelphia and other large labor centers are rising nobly to the situation in making provision for the relief of their unemployed poor by means of public works and organized private charity.

One of the few remaining refuges is about to be closed to forgers and embezzlers. Argentina, it is announced, has entered into an extradition treaty with Great Britain, which covers these offenses.

Samuel Gompers has been re-elected president of the American Federation of Labor.

Representative Chickering has introduced a bill in Congress directing the Secretary of War to have surveys made for a ship canal from the great lakes to the Hudson River.

The City Council of St. Paul has recently paid out $9000, in sums of $1.50 per half day, to the unemployed of the city, and has now voted $5000 more for the same purpose. Only $1 per half day will, however, be paid henceforth.

Tramps are flocking into Kansas in great numbers in consequence of a circular recently issued by Governor Lewelling instructing the police not to molest them and declaring the vagrant law unconstitutional. The Governor has a fellow feeling for the vagabond fraternity, as he confesses to having been a member of it in his early years.

New York and Cincinnati are now in telephonic communication.

According to the annual report of the Director of the Mint, just published, there has been an increase of $318,295,000 in the aggregate circulation of gold and a decrease of $111,600,000 in the aggregate of silver in the principal countries of the world during the 12 months covered by his report. He puts the gold circulation of the world at $3,901,900,000, and that of silver at $3,931,100,000.

The Federation of Labor now in session in Chicago has passed a resolution of thanks to Governor Altgeld for pardoning the anarchists. What is the connection?

The contract for furnishing the first smokeless powder for use by the United States army was last week divided between two firms, the Leonard Powder Company and the California Powder Works, each to furnish 5000 pounds. The division was made in order to compare the merits of the two powders.

A friendly act of the French Government is the presentation to the State of New York of the major portion of its World's Fair educational exhibit, consisting of the work of pupils in the primary, secondary and normal schools of France, as well as a pedagogic library, containing text books used in the public schools, works of reference &c. The collection will be placed in the Capitol at Albany.

At the monthly meeting of the Board of Trade and Transportation in New York last week a report was adopted recommending a system of revenue marine as an adjunct to the United States navy.

Darius Davison, the naval architect, is, it is said, working on the plans of a ship that is, he says, to be the coming Atlantic liner. The vessel is to be 1000 feet long, 80 feet wide, 70 feet in depth, and to have a displacement of 45,000 tons. She will be moved by four propellers driven by a 50,000 horse-power engine, and the distinctive feature of the ship is a projecting bow and stern, each 150 feet long, an entirely new departure in marine architecture.

The King of Korea is rapidly adopting the conveniences of Western civilization. His Majesty has lately purchased in America an incandescent electric light plant, which is now being installed in his palace, consisting of 2000 lamps of 16 candle power, with steam engine, dynamos, &c., complete.

Germany's naval experts have decided that the best color to paint their cruisers and torpedo boats, in order to make them as difficult of observation as possible, is a kind of dirty buff. They recommend that the whole of the vessels should be uniformly coated with this color, and that nothing on their decks or upper works should contrast with it.

A motion has been brought forward in the English House of Commons asking that a committee be appointed to inquire into the management and expenditure of the British section of the Columbian Exposition. Assertions are made that the signatures on certain documents were forged.

A very significant illustration of the dullness in railway business is shown in a recent announcement that the Pennsylvania Railroad managers are cutting down expenses on their lines in every possible direction.

Northwestern stocks of wheat in elevators last Saturday were estimated to be 28,408,525 bushels, an increase for the week of 1,250,000 bushels in addition to the grain in mill storage.

It is announced as probable that a trunk line pool for export traffic will be established soon after the beginning of next year, with the object of bringing about a uniform restoration of east bound railroad freight rates between Chicago and New York, more particularly in respect to the grain traffic.

During the lake shipping season just closed 10,000,000 barrels of flour were received and handled at Buffalo, by far the largest record of any flour depot in existence. The season began April 16 and closed December 17. The average number of barrels handled daily was 40,000, but on some days as many as 150,000 were taken out of vessels and stored in warehouses pending reshipment by rail and canal.

At a recent meeting of the British Association the Callendar platinum pyrometer attracted general interest. The difficulty of reading high temperatures, such as that of a furnace, has led to the employment of an electrical method, in which the temperature is determined from the change of electrical resistance of a platinum wire when exposed to the high temperature. Mr. Callendar finds that the law of increase of resistance remains simple and constant for the extremely wide range of temperatures included between the temperature of liquefaction of air and that of a blast furnace, and his pyrometer is founded upon this principle.

It is already known that the William Cramp & Sons' Ship & Engine Building Company, of which G. Douglas Petrie, 39 Cortlandt street, is New York agent, has purchased from the Manganese Bronze & Brass Company, Limited, the formulæ for Parsons' manganese bronze and Parsons' white brass. The former is used for propeller wheels, as well as for any other purposes where a very strong, durable bronze is required, while the latter is valuable as an anti-friction bearing metal. Both of these alloys are now being successfully manufactured by the Cramp Company, the builders of the new cruisers "New York" and "Columbia." The "New York" has two three bladed propellers, and four triple expansion engines, aggregating 16,000 indicated horse-power, while the "Columbia" has three three bladed propellers and three triple expansion engines, aggregating 21,000 indicated horsepower, from which it can be readily understood that a very large amount of manganese bronze and white brass must have been used in their construction. Ten tests of specimens of Parsons' manganese bronze, which were cut from propeller blades cast by the Cramp Company in the last six months show the following average results: Elastic limit, 24,665 pounds; elongation in 2 inches, 20 per cent.; ultimate tensile strength, 60,375 pounds.

The Westinghouse Electric & Mfg. Company of Pittsburgh have just completed the erection of what is claimed to be the largest lighting machines ever built. These machines are for the Louisville Gas Company, Louisville, Ky., and a feature of their construction is that the fly wheel and the armature are combined, which effects a saving of both labor and space. Each machine has a capacity of about 9000 lamps; each plant stands 20 feet high, and the armature is 12 feet in diameter and makes 90 revolutions per minute. Each machine weighs 50 tons, and at a recent test witnessed by a number of experts the results attained were pronounced highly satisfactory. The abovenamed concern are also building the armatures for a 6-ton electric locomotive, which is being constructed at the works of the Baldwin Locomotive Company, in Philadelphia, for the North American Company. They are being wound for 900 volts at 225 revolutions per minute, the equivalent of 35 miles an hour. The motors are calculated to give a pull on the draw bar equal to 30,000 pounds, or one-fourth the weight of the locomotive, which is sufficient to move a very heavy load. The locomotive is to be used for hauling heavy freight trains short distances and for switching purposes, and is purely experimental. It will have four pairs of drivers 56 inches in diameter. If it meets the expectations of its designers other locomotives will be built in the near future.

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The Iron Age

New York, Thursday, December 21, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Employment of Idle Money.

The enormous accumulations of loanable funds in our financial centers opens a wide field for activity for that clever and useful negotiator, the promoter. He is usually quick to discern the direction into which popular favor can be diverted when the time comes to withdraw funds from deposit in banks and trust companies and employ them in active work promising greater remuneration. It may be acknowledged at once that the time has not yet come when moneyed men have sufficiently recovered from their scare to allow them to take hold of new ventures. But a good deal of preparatory work must be done, and it is probable that where it has not been undertaken it will soon be required. The experience of the past year has been hardly such as to encourage much outside capital to jump into the manufacturing branches which *The Iron Age* represents. Nor is the uncertainty concerning what Congress will do with the tariff calculated to encourage investment. Probably the best chance for fresh capital lies in the rehabilitation of some of the manufacturing plants whose owners have failed. We do not, of course, refer to those undertakings which have been forced into receivers' hands simply through internal quarrels and intrigue. As is well known in the iron trade, there are a number of conspicuous cases of this character. But there are a number of works of recognized vitality and capacity for future money making which can be acquired for much less than the actual hard cash invested in them. Their competitors will hardly regard the infusion of fresh blood into them as a blessing.

To the iron, metal and allied trades the first source of orders has already come through the ability of municipalities to market obligations at fair rates. The manufacturers of pumping machinery, the pipe foundries and others have received quite a number of orders lately. The fact that prices obtained are unprecedentedly low has tempered their enthusiasm.

Another line in which an investing movement has started and is likely to develop very rapidly is the construction of suburban electric railroads. It is well known that many of these have proved very remunerative during their short life, so that the promoter of such schemes can make a very good showing by inference. We expect to witness a very rapid and considerable development in this branch, which will give a good deal of work to our industries.

There seems to be little chance for the promoter of standard steam railroads, because the market for this class of securities is overstocked now and because the majority of the great banking institutions who issue them have still their strong boxes filled with bonds underwritten but not placed by them.

There is quite a good deal of preparatory work going on in building circles, but it will take some time before money freely flows into the old channels of real estate improvement.

There is one point which American manufacturers should consider, when contemplating the contingency of the passage of the Wilson bill, and that is, that the present plethora of money would make it relatively easy to raise capital to back up importing partnerships, even if foreign funds did not eagerly seek such opportunities.

The Fate of Compulsory Arbitration.

Labor is able to take care of itself and proposes to fight its own battles. This is the decision in a nutshell which was arrived at last week in the great convention held at Chicago by the American Federation of Labor. A resolution had been submitted by a representative of the Amalgamated Association of Iron and Steel Workers instructing the president of the Federation to formulate a bill and endeavor to have it enacted into law by the legislatures of the different States "making it obligatory on the part of corporations and the representatives of capital to treat and negotiate with the representatives of labor, in conference or otherwise, in the settlement of wages disputes, and in other matters when their services are called for."

The matter was referred to the Committee on Resolutions, who reported non-concurrence, which precipitated a discussion of the expediency of a compulsory arbitration law, with the result that the convention, by an overwhelming vote, sustained the report of the committee. The discussion, as reported, was extremely interesting, as showing how the leading spirits of the great trades unions which constitute the Federation are disposed toward arbitration in general. The influence of the iron and steel workers, it is pleasing to note, was exerted in favor of the civilized method of settling strikes and labor disputes. They were unable, however, to stem the tide of opposition, which came most strongly from representatives of tailors, bakers, tilelayers, &c.

It might be supposed that the lesson of the late great coal strike in Great Britain would have been deeply impressed on the minds of these delegates, who had come together ostensibly for the purpose of considering the best interests of the wage-workers whom they represented. This is the most notable instance in recent industrial history of a great strike giving promise of running on indefinitely, notwithstanding evidences of terrific punishment on both sides. It would have probably been running along yet if the British Government had not interfered and practically compelled a settlement which seems fairly satisfactory to all concerned now that the controversy is over. This was referred to in the discussion, but without much effect. The statement was made by a delegate that arbitration was only possible under special circumstances, and that when these conditions existed a dispute would naturally seek that means of settlement without the intervention of a statute to enforce it. The assertion, however, which seemed to have the greatest force in making the opposition effective was that if arbitration were compulsory by statute the workingman would find himself more often called on to defend himself from a demand for a reduction in his wages than the law would be invoked to secure advances. The prediction was made that with a compulsory statute one compromise after another would be demanded by employers, until labor organizations would be compromised out of existence.

The principal opposition to compulsory arbitration, when these opinions are sifted, seems to arise from the fear that in some way labor organizations will then be supplanted. The rights of labor once acknowledged by the law, and the interests of workingmen from that time carefully guarded by the machinery of government, there would then be very little further use for trades unions and all their complicated and costly machinery. This is an end by no means desired by labor agitators, many of whom are now receiving larger incomes with much less work than if employed in their regular vocations at the bench or the machine. It is, however, the natural drift of this period, and although labor leaders may endeavor to check the movement they will be unable to stay its progress more than temporarily. The temper of the great mass of the people is in favor of some general measure which will put an end to serious strikes in important lines of industry which, when in progress, interfere with the comfort or convenience of the people of a whole community and often of a large part of a State, or, in fact, several States.

The labor question has become so prominent of late years and has so forced attention to it by publicists that it is understood much more fully than at any previous time. The public are less disposed now to let the disputants "fight it out," as though the contest was merely like a dog fight, but regard a labor dispute with much impatience, as something which should not happen, and if it unfortunately does break out they wish it settled as quickly as possible. The American Federation of Labor may maintain its stand against compulsory arbitration

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or against all arbitration, but unless it has something more practical to offer than the old appeal to endurance or brute force the great association will discover at no distant day that its followers have disintegrated by the operation of outside influences and that the occupation of the leaders has gone.

The Western Wire Trade.

It seems but yesterday that attention was called in these columns to the dangerously rapid expansion of the Western wire trade. It was, however, some two years since. At that time the Washburn & Moen Mfg. Company were building a great plant at Waukegan, the Joliet Enterprise Company were building another at Joliet, and the Chicago Wire & Spring Company had in hand a third at Wireton Park, all in the immediate vicinity of Chicago. About that time, also, a fourth wire plant was undertaken by the Clark & Windsor Wire and Spring Company at Joliet, and subsequently another was built by the Superior Barb Wire Company at DeKalb, Ill., which has but recently been put in operation. The expansion of the Western wire trade, if all these enterprises were in active operation to-day, would have been something enormous, especially as the capacity of old works has in the meantime been largely increased. But what was threatened has not come to pass in its entirety. Instead, some of the most ambitious of these schemes have come to grief. The Chicago Wire & Spring Company's great works were not completed for lack of capital, although a large part of the machinery was installed. At Joliet, within the last 12 months, three wire trade failures have occurred—the Joliet Enterprise Company, the Clark & Windsor Wire and Spring Company and the Ashley Wire Company. Of these, the Joliet Enterprise Company failed because the works were laid out on too large a scale for the capital of those interested, but the other concerns have been driven to the wall on account of the unprofitableness of the wire trade. They were well managed, but could not stand the pressure of low prices and a tight money market. The other new establishments are in such strong hands financially that they have gone ahead with no interruption, and will unquestionably be able to survive this era of little or no profit.

Those who contemplate the erection of new wire works in the West, and there are a few, may well pause to contemplate the conditions now prevailing. The works in operation are abundantly able to supply the demand in connection with their colleagues located further East, who market some of their product in the Western States. The time may come when an expansion of production will be necessary, but it now seems remote. When a reverse in business does occur, the bankrupt establishments will again become factors in the trade. They are all well located and well equipped. A different set of capitalists will probably acquire the properties at a low valuation, but that operations will be resumed at some time is inevitable. The disasters which have overtaken the original investors are deplorable, but they were plainly caused by an expansion of the trade beyond its safe requirements.

Maneuvering for position is quite lively at the present time between the sellers and buyers of coke. The period for annual contracts is approaching, and, as is natural, a determined effort will be made to prevent a further decline. While furnacemen profess to look forward to a repetition of the 90-cent coke days, producers have always claimed that $1.25 at oven in the Connellsville region means exhaustion of valuable lands at an actual loss. One fact is much dwelt upon. Under the present sliding scale labor is paid on the basis of a minimum selling price of $1.75 for furnace coke. Our quotation for weeks has been $1.10, and contracts have been made very close to $1, so that the sliding scale is manifestly unjust to the coke operators. It seems reasonable to expect that the principal producer will attempt to arrive at some readjustment. As is well known, the principal interest is identical with the largest aggregation of steel plants in the Pittsburgh district, so that the furnace plants in Pittsburgh, in the Wheeling, Mahoning and Shenango districts are dependent for their supply of coke upon their keenest rival in the iron trade. It is stated that the great steel company referred to is in a very good position to take care of itself in the event of a shut down at the ovens in the Connellsville district, and that, therefore, two ends might be secured through a strike, viz., the lowering of wages and the squeezing of rival steel manufacturers. Against such a course would be the encouragement given to Eastern manufacturers using anthracite and to the producers of coke in West Virginia, aside from sentimental considerations as to the position of the wage earners in the Connellsville district and the men who have partial employment in the Pittsburgh and tributary districts. Still, a strike in the Connellsville coke region is a contingency which the steel trade must not fail to keep in mind during the next six weeks.

Those who advocate the passage of the Wilson bill attempt to make a good deal of capital out of the compensation offered to manufacturers through the potent aid of free raw materials, iron ore and coal. Let us state at the outset that as metallurgical fuel none of the foreign coals available to the Atlantic and Gulf ports can be of any service whatever. Nova Scotia coal is not of such quality as to yield a coke which American ironmasters would be glad to use. In the heavy iron and steel trades the cheapening of cost through a possible lowering in the price of steam fuel would be insignificant. It is, of course, quite another matter with iron ore. Let it be assumed that the blast furnaces within reasonable access to the coast would save the entire duty of 75 cents per ton, or taking the leanest ore likely to be imported, a maximum of $1.50 per ton of pig iron. This compares with a maximum cut of $4.40 on Bessemer pig, $4 on Scotch foundry, makers' brands, $4.75 on Scotch warrants, and over $5 on Middlesborough warrants. Figuring waste, the "compensation" of free iron ore would amount at a maximum to, say, $1.75 on soft steel billets, as compared with a cut of nearly $5 per ton by the proposed duty. The former figure also applies to rails, when the estimated maximum cut in the rate is nearly $9. In the whole line of rolling mill products, the maximum compensation through free ore, provided the American manufacturer got the whole advantage, would not go beyond $2, making the most liberal allowance for waste in manufacture, whereby the quantity of free raw material used would be increased.

It is significant that orders for cars which are now being placed by railroads are stated by the purchasers not to be an outgrowth of present necessities. They have plenty of cars to handle the business now offering. But it is encouraging to note that at the same time the managers of these railroads think that the new cars will be needed at a reasonably early day, and that it is wise to buy them now when so many works are in need of orders and prices are the lowest ever known.

At Pittsburgh each lodge of the Amalgamated Association of Iron, Steel and Tin Workers is working for the relief of its own members. No funds are being drawn from the National treasury for relief, except in rare cases where the said lodges are entirely without money and unable to help their destitute members. There is a general relief movement among the lodges where individual destitution is looked after in extreme cases.

William W. Steele, foreman of the wire department of the Barbee Wire & Iron Works, at Lafayette, Ind., has just completed a massive elephant, 10 feet high and 12 feet long, for the midwinter California exhibit to be held in San Francisco. When placed on exhibition it will be covered with California oranges. The frame will require 80 000 oranges to cover it. The design is a clever piece of mechanical art.

Krupp guns are usually associated with the tragedy of war. An instance has recently occurred, however, says the Philadelphia *Ledger*, where a Krupp gun played its part in a queer little comedy. The Lilliputian Republic of Andorra bought a Krupp cannon which will carry a ball 18 km. As the Republic is only 6 km. wide the cannon cannot be fired without dropping its missile into foreign territory, Italy or France, which might be regarded as a hostile demonstration. Andorra evidently does not require a full grown gun.

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CORRESPONDENCE.

The Boilers at the World's Fair.

To the Editor: Not content with appealing to the courts with a view of preventing the installation of our boiler alongside of their own at the World's Fair, and thus enabling a comparison to be made between the two, the Babcock & Wilcox Company have undertaken to belittle the honor reaped by us and other companies to whom medals were awarded. In a letter recently addressed to certain trade papers and on a placard which they attached to their boilers at the Fair, they state that "They were informed that it was the purpose of the jury to make awards upon boilers based entirely upon the written statements of the competitors, without tests or any personal knowledge in the possession of said jury concerning the comparative operation, construction, economy or durability of said boilers. Believing that an award based on such insufficient knowledge would be of no practical value, they declined to make any such written statements for the purpose of receiving an award."

The Babcock & Wilcox Company seem to be laboring under a misunderstanding of the conditions under which the award was rendered to us at least. The jury, not content with simply reviewing our claims, detailed one of their number to investigate our boiler in actual operation at as many different points as could be reached. The batteries at the World's Fair were not alone subjected to the closest scrutiny and examination, but a number of plants operating in Chicago were visited, as well as in Circleville, Ohio, Pittsburgh, Pa., and also Allentown, Pa., at which latter place a Babcock & Wilcox battery was operating alongside of ours, and a comparison was made between the two.

With reference to a test, it is well known that efforts were made by the Jury of Awards to have tests made on as many boilers in the boiler room as possible. To that end they addressed a circular letter to the exhibitors proposing that each one should bear the expense of having a test made on his plant. None of the other six companies exhibiting in the main boiler room would agree to submit to this charge except ourselves. We not only sought a test, but addressed a letter to the Jury of Awards in which we challenged each competitor in the main boiler room to a test, but we wanted a competitive test or none at all, objecting to having the results of a test conducted scientifically by such men as were proposed to make it, compared with the "dress parade" tests published by other companies.

The attitude of the Babcock & Wilcox Company cannot be considered altogether consistent when it is borne in mind that their representative on the witness stand stated that their boilers had not and would not be entered as an exhibit. Their representative at that time further alleged as one of the reasons which induced them to make so vigorous a fight against our installing the Stirling alongside of theirs, that he considered the Stirling unsafe. If the Babcock & Wilcox Company, or any one else, can point to a single instance in which the Stirling boiler exploded resulting either in loss of life or injury to man or beast, we will pay $2500 to any charity in the city of Chicago that they may designate.

THE STIRLING COMPANY.

CHICAGO, December 11, 1892.

The Duty on Charcoal Iron.

To the Editor: Referring to your leading article in last issue, page 1082, on the tariff on charcoal iron, we wish to call your attention to the fact that while heavy reductions in duty were made in the metal schedule of the tariff of 1883, and even in some cases in the McKinley bill of 1890, the duty on charcoal iron has remained virtually the same since the Morill bill of 1861. The duty then was fixed at $22.40 per ton of 2240 pounds, or not less than 35 per cent. ad valorem, and in 1883 the duty was made $22 per ton, only a reduction of 40 cents per ton, and the McKinley bill of 1890 fixed it "at not less than $22 per ton."

We are not aware that any charcoal bar iron is made in this country, even with the present protection of about 70 per cent. ad valorem, and fail to understand what you mean by "the higher qualities of American materials, the market for which would be practically delivered over to the Swedish producer." A. MILNE & Co.

NEW YORK, December 14, 1893.

To the Editor: Noticing your editorial comments on the duty on Swedish iron in your issue of the 14th inst., and your statement therein that £6. 10/ iron pays $22 per ton duty under the existing law, would ask if you think it necessary for the welfare of the American iron manufacturers to be protected to the tune of over 70 per cent. on iron that does not enter into competition with them because of its superior quality, which thus far they have not been able to produce?

As this iron is essential for many manufacturers here in order to produce high quality goods, it would certainly seem to be an advantage for them to obtain, under a reasonable duty, material—which to them is raw material—that cannot be obtained at all from the domestic iron makers, and consequently no detriment to the latter. SUBSCRIBER.

BOSTON, December 15, 1893.

We did not intend to convey the impression that charcoal bar iron is being produced in this country. During the past few years American manufacturers of high grades of steel have succeeded in capturing a considerable share of the market once held by imported Swedish material. There is very serious danger that they lose not alone this, but that also the higher qualities of American special puddled iron will be crowded out.

PERSONAL.

Chauncey H. Andrews, for many years identified with the iron and steel interests of the Mahoning Valley and at present a large stockholder in several of the prominent manufacturing concerns at that place, is lying seriously ill at his residence in Youngstown, Ohio. His condition is so precarious that it has been deemed advisable to summon by telegraph a number of his near relatives living in Washington and New York.

Warren Delano, Jr., who has been connected with important anthracite coal interests and with the manufacture and use of fire brick, has been appointed vice-president of the Lackawanna Steel & Iron Company, with headquarters at 52 Wall street, New York.

Harry Parrock, formerly superintendent of the Upper Mill of the Union Iron & Steel Company, at Youngstown, Ohio, has been made general manager of the Pomeroy Mill, operated by the above concern. The position made vacant by Mr. Parrock has been given to John Bennington, who was formerly superintendent of the Warren Mill of the Union Iron & Steel Company, at Warren, Ohio.

L. B. Whitney has resigned his connection with A. Whitney & Sons of Philadelphia, manufacturers of car wheels, and associated himself with DeWitt W. Smith at 15 North Seventh street, in that city, where they jointly will look after the interests of the Lidgerwood Mfg. Company, the New York Safety Steam Power Company and the Erie City Iron Works Company.

John Jarrett, secretary of the Sheet Iron Manufacturers' Association, has been confined to his home at Pittsburgh, Pa., during the past ten days. His illness is not such as to cause alarm to his numerous friends.

OBITUARY.

ISAAC C LEWIS.

Isaac C. Lewis, president of the Meriden Britannia Company, Meriden, Conn., died suddenly on the 7th inst. at his home, in that city. Apoplexy was the cause of his death. Mr. Lewis was born in Wallingford, Conn., October 19, 1812. In his fifteenth year he was apprenticed to Hiram Yale to learn the britannia ware trade at Wallingford. In 1834 Mr. Lewis formed a partnership with George Cowles under the title of Lewis & Cowles, and hired rooms in a factory in East Meriden for the manufacture of britannia metal goods. They remained here for about two years when they closed up business, Mr. Cowles going North and Mr. Lewis West. Mr. Lewis returned, however, soon after and commenced business again with the late Lemuel J. Curtis as a partner under the style of Lewis & Curtis. After about two years this partnership was dissolved. Shortly after this dissolution Mr. Lewis purchased a house and small farm and built a shop and put in a horse-power. Business increased to such an extent that a small engine was put in, but this proving insufficient Mr. Lewis bought the factory where he first commenced business with Mr. Cowles. He soon after associated with Daniel B. Wells, a former apprentice, under the name of I. C. Lewis & Co. Mr. Wells died soon after and Mr. Lewis bought his interest. In 1852 the Meriden Britannia Company was formed, with Mr. Lewis as president. He remained president of the company for about 12 years, when he declined to hold the office any longer. He still, however, remained a member of the company and took an active interest in the business. Upon the death of Horace C. Wilcox he was again elected president, and held the position until the time of his death. Mr. Lewis represented Meriden in the State Legislature in 1848, 1859, 1862 and 1866. He was also Mayor of Meriden for two years. Mr. Lewis was directly interested in many of the leading industries of Meriden. He was president of the Miller Bros. Cutlery Company, Chapman Mfg. Company and Meriden Trust & Safe Deposit Company, a director of the Meriden National Bank, trustee of the Meriden Savings Bank, and up

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to six months ago a director in the Wilcox & White Organ Company. He was also interested as a stockholder in several other local enterprises, and had considerable money invested outside of Meriden. Mr. Lewis began life without a dollar, and by his own exertions accumulated a very large fortune. He never had a note protested, never sued any man, and never had a suit brought against him.

ARTHUR I. BEMIS.

Arthur I. Bemis, a long time resident of Springfield, Mass., and a member of the Bemis & Call Hardware and Tool Company of that city, died on the 2d inst. from the effects of a shock suffered a week previously. Mr. Bemis was born at Willimansett, January 18, 1835. When eight years old he removed with his parents to Springfield, where he spent the rest of his life. He received his education in the public schools and then entered the employ of his father in the coal and iron business. About 1860 Mr. Bemis was admitted a partner in the firm of S. C. Bemis & Co., and in 1868, when his father retired from active life, he with his brother, Thomas O. Bemis, and the late S. R. Phillips continued the business under the firm name of Bemis, Phillips & Co. When the present firm of Bemis & Collins was formed he retired permanently from the coal business. Of late years he had been actively identified with the business of the Bemis & Call Hardware and Tool Company, of which corporation he had been a director for 28 years. Mr. Bemis had been a trustee of the Hampden Savings Bank for a long term of years. Mr. Bemis was a man of genial disposition, with a quick sympathy which made for him a great many friends, to whom the news of his death will be a source of sincere sorrow.

CALVIN BRADFORD DOTY.

Calvin Bradford Doty died at his home in Steubenville, at the ripe age of eighty years, after having been practically an invalid and confined to his room for the past seven years. Mr. Doty was a pioneer nailer and iron manufacturer of that place. Mr. Doty was born in Wareham, Mass., December 11, 1813, and was descended from old New England ancestry. He learned his trade of nailing in Wareham, and early in life, as a young man, came with fellow workmen to Pittsburgh.

Later he came to Wheeling and with other nailers formed a company and built the Belmont mill. He sold his interest in this mill, and with 21 other workmen with whom he had been associated for several years formed a company and built the La Belle mill. Besides being an original stockholder, he also held a position in the mill. He was a director in the La Belle until several years ago, when the directorship passed into the hands of his son, Harry L. Doty. Mr. Doty removed to Steubenville about 35 years ago and became a stockholder and manager of the Jefferson mill. He retired from this position in 1885.

WILLIAM HOLMES.

William Holmes, for a number of years a member of the firm of the A. Garrison Foundry Company, at Pittsburgh, died suddenly in that city last week. Mr. Holmes was regarded as one of the best authorities on educational matters in Pittsburgh.

The condition of the car building industry has been strikingly revealed through the placing of an order for 75 passenger cars for the Long Island Railroad. In spite of the efforts of Eastern works to secure it, the order was taken by the Pullman Company at a price which is said to be unparalleled.

Washington News.

(*From our Special Correspondent.*)

WASHINGTON, D. C., December 19, 1893.

The customs provisions of the new tariff bill, with the report of the majority, were submitted to the House today. The minority will follow with their report, which has been prepared by ex-Speaker Reed. No effort will be made to discuss the subject until after the holidays. The bill will then be taken up promptly and carried to a speedy finish under the parliamentary gag system which dominates necessarily under the rules of the House. It is expected that the party men claimed as opposed to the bill (some put the number as high as 40) will be increased by some additions after the Northern members of the majority get among their constituents and see the conditions as they exist at home and hear what employers and wage workers alike have to say.

A vote of 170 on an average attendance in the House would probably defeat the bill. Of this number the minority party might contribute 120 on a fair deal. This subject has been canvassed, but the Louisiana sugar men, for instance, ask the minority to vote with them to protect sugar, but are unwilling to reciprocate and vote for amendments which the minority want. The same one sided arrangements are talked about among the representatives of wool, lumber, iron ore and coal districts. If they make a combine and agree to support the amendments proposed by the minority they can count upon at least 120 minority votes to start with on their own plans.

A consensus of opinion in the House leads to the conclusion that the tariff bill practically as reported from the committee will pass that body, possibly before February 1. In the Senate the prospects are not quite so encouraging for an easy passage through that body.

It was announced in *The Iron Age* several weeks ago that the Senate Committee on Finance had taken up the House tariff bill informally and after some discussion the majority had decided to consider the measure as soon as it was in tangible shape and in anticipation of its transmission from the House. The committee have already commenced a preliminary review of its provisions and will take the bill up in more formal order now that the customs provisions have been finally determined. It is not anticipated that the measure will receive any material modifications in the lower House, although there is some agitation of an attempt to introduce revisions in Committee of the Whole.

There is a disposition on the part of the majority in the Senate Committee to give the manufacturers and wage workers an opportunity to state their views and to make modifications in accordance with a practical knowledge of the interests of industry aside from the question of revenue.

At a conference between the majority and the minority members of the Finance Committee, there was a partial understanding as to the programme which would be pursued in the consideration of the House bill. There was then a disposition on the part of the minority not to enter into a protracted opposition, but simply to propose their amendments and have a fair discussion for the purpose of making a record, and then permitting the bill to come to a vote. If the majority proposed to pass it in the shape it would have assumed by that time to let them do so.

Very recently, however, the minority in the Senate, in view of the universal sentiment in the Northern States and a strong popular sentiment against it in Maryland, Virginia, West Virginia and Alabama, have decided on a different course. It is not improbable that Senators Sherman, Morrill, Aldrich, Allison, Jones and other leaders of the minority will pursue a different line of tactics based upon the sentiment of the people which they construe as a dependence to prevent the passage of the bill at all, or in any form at least which would not be satisfactory to the employers and the employed. The minority have the power to do this, and it is not likely, in the face of public sentiment, that a majority could be had to force a cloture.

Some of the minority Senators are now talking quietly among themselves of protracting the debate in the Senate, if necessary, into the Congressional campaign of next year in order to get the verdict of the people. If they fail to elect a House and Senate which will not be favorable to tariff revision to the extent proposed by the Wilson bill the measure will then be permitted to go through. If they render their verdict against the system of revision proposed it will be an easy matter to prevent the bill from going through in the short session.

The city for the past week has been full of manufacturers, who have come here to protest among the Northern Representatives in the majority against the rates established in the Wilson bill. They, as a rule, have had a cold reception among the Representatives, but in the Senate they have been promised an opportunity to present their views. Some of these gentlemen say that by the time the bill gets under way in the House the people throughout the Northern and some of the Southern States will be heard from in a way which will admit of no doubt as to their position.

It has been admitted to those gentlemen that organized action on the part of the wage workers would have more weight than from the employers, as the stock in trade of the small politician in favor of a revenue tariff has been an effort to prejudice the wage worker against his employer on the ground that the former gets a larger proportion of profit than the wage worker.

It was said of the campaign of 1892 that the wage workers would not "get under the same umbrella with the employer," and hence the result.

It is said that the election of 1892 represented national sentiment on tariff revision, and the elections of 1893, with their tremendous majorities in Massachusetts, New York, New Jersey, Pennsylvania and Ohio, not to speak of Nebraska and Montana, were due to local causes. Therefore the only convincing argument of the fallacy of this conclusion would be an emphatic expression of the views of the wage workers and masses of the people. In the absence of such a demonstration to support the minority movement in the Senate the leaders of that side will not feel justified in an attempt to prevent the passage of the bill unless very radically modified, to the exclusion of all other business.

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MANUFACTURING.

Iron and Steel.

Stack No. 2 of the Dunbar Furnace Company, at Dunbar, Pa., is now being shoveled out preparatory to being put in blast. As this furnace has been idle since August 1, 1892, it cannot be stated just now how soon the furnace will be ready for operations. It is stated on good authority that the plant of the Dunbar Furnace Company has recently changed hands, having been leased by a number of Philadelphia capitalists for a period of three years.

At the present time there are four furnaces in the Mahoning Valley in operation, these being Hubbard Furnace of Andrews & Hitchcock, Haselton of the Andrews Brothers' Company, Mary of the Ohio Iron & Steel Company, and Mattie of the Girard Iron Company, at Girard, Ohio.

The plant of Summers Brothers & Company, Struthers, Ohio, manufacturers of box annealed sheet iron and sheet steel, is in partial operation, the product being light steel sheets. Prospects for the continued operation of this plant for the winter months are reported as very bright. The continued excellent demand which this firm are receiving for their iron and steel sheets is due to the fact that they endeavor at all times to turn out product of the very best quality.

We are advised that the report that the plant of the United States Iron & Tin Plate Mfg. Company, Demmler, Pa., was entirely closed down is without foundation. While it is true that the plant is not being operated to full capacity, it is also a fact that at no time within the past three or four months have operations been entirely suspended. While the demand for sheets is very light at present this firm are doing a large business in tin and terne plate. As their tinning capacity is not large enough to consume their entire output of sheets it is necessary occasionally to run the sheet mills only half time.

The Cleveland Steel Company, Cleveland, Ohio, have been granted a charter of incorporation, with a capital stock of $300,000. The incorporators are Frank Rockefeller, John A. Potter, L. H. Severance and S. A. Sague. This new concern will succeed to the business of the Britton Iron & Steel Company, at Cleveland, Ohio, manufacturers of steel and iron plate and black and galvanized sheets. At present the above plant is idle.

The plant of the W. Dewees Wood Company, at McKeesport, Pa., manufacturers of patent planished sheet iron, is in operation to nearly full capacity.

During the time the Lower Mill of the Union Iron & Steel Company, at Youngstown, Ohio, was idle, a number of improvements were made. Among them was the erection of a new Hazelton porcupine boiler on the 8 inch mill, two of the same type on the 10-inch mill, and a new engine on the 7-inch mill, also the addition of six new double puddling furnaces, equipped with Hazelton boilers.

On January 1, 1894, new wage scales will go into effect at the Homestead Steel Works, Homestead, Pa., Upper and Lower Mills, Pittsburgh and Beaver Falls Mills, Beaver Falls, Pa. It is understood that these new scales involve some heavy reductions in wages, especially to high priced men. At the Beaver Falls Mills it is stated that the new scale calls for reductions amounting to 40 per cent. for some classes of labor.

At Joliet, Ill., on the 9th inst., the sheriff took possession of the personal property of the Ashley Wire Company on a judgment of $11,090 in favor of John Y. Brooks. The Ashley Wire Company gave a mortgage of $67,246.24 last July to the Illinois Steel Company. Their mill has been closed down since June. The plant is a very good one and quite new, having been built within the past two or three years, since the company removed their machinery from the Joliet penitentiary. They were drawers of wire and manufacturers of barb wire.

James Stevens of the Merchant Iron Mill, Rome, N. Y., states that the works will continue to run as during several months past on half time as long as there are sufficient orders to give the men work.

A number of sheet mills in the plant of the Moorhead-McCleane Company, at Pittsburgh, which have been idle for some time, have again been put in operation.

No. 2 furnace of the Sloss Iron & Steel Company, at Birmingham, Ala., produced during one week recently 1204 tons. All of this was foundry except 61 tons. The best previous week's record averaged 140 tons per day.

The Elwood Steel Company of Elwood, Pa., have made an assignment, on account of a disagreement among the stockholders. Liabilities, $25,000; nominal assets, $125,000.

The Slatington Rolling Mill, at Slatington, Pa., has resumed.

The statement that the Passaic Rolling Mill, at Paterson, N. J., has closed for an indefinite period is untrue.

The two furnaces of the Shelby Iron Company, at Shelby, Ala., which have been out of blast since October 4 last, are being relined, with the object of being in position to take advantage of any improvement in the near future in the demand for car wheel iron. The company have a full force at work raising ore.

The schedules of Fuller Brothers & Co., iron commission merchants, at 139 Greenwich street, New York, who failed on August 8, show liabilities of $585,802, of which $59,779 are contingent; nominal assets, $625,931; actual assets, $287,422 Of the latter only about $140,000 will probably come into the assignee's hands, as $150,000 of the assets were hypothecated previous to the assignment to secure debts exceeding that sum. The principal creditors are C. A. Godcharles Company, Milton, Pa., $68,317; Post & Flagg, $54,173; W. H. Godcharles, & Co., Towanda, Pa., $31,331; Apollo Iron & Steel Company, Pittsburgh, $45,701; Frederick Sturges, $63,431; Oliver & Roberts Wire Company, Pittsburgh, $25,500; Dover Iron Company, $15,000; Merchants' Exchange National Bank, $33,500; Fuller, Lord & Co., $18,279; estate of Mary B. Fuller, $15,365; estate of Dudley B. Fuller, $23,819. Some of the creditors are secured.

The Radford Pipe & Foundry Company, whose works are at Radford, Va., have been running steadily for several months past, and are now pushing production to their utmost capacity. They report having taken several sizable contracts of late, and that prospects are excellent for a large tonnage in pipe business next year. The ready sale of municipal bonds tends to encourage water works improvements, some of which have been contemplated for years but laid aside because of difficulty in financing securities.

The Haselton Furnace of the Andrews Brothers Company of Youngstown, Ohio, is reported by the owners to be doing better work than ever before. It is making an average of 175 tons daily, principally Nos. 1 and 2 foundry.

The Muncie Muck Bar Iron Company, now operating the old nail works plant at Muncie, Ind., are turning out 25 tons of muck bars daily.

The stockholders of the Joliet Sheet Rolling Mill Company, at Joliet, Ill., have elected the following Board of Directors: M. Calmer, F. W. Werner, L. F. Beach, Dr. Duncan, L. J. Sehring, D. Rosenheim, C. E. Woodruff. Mr. Woodruff, named in this list, is a well-known Chicago hardware merchant. It is expected that arrangements will be shortly made for a resumption of work. The mill has been idle for months.

A report that the East Chicago Iron & Steel Company of East Chicago, Ind., intended to erect a new 18-inch train of rolls has been widely published. There is not a word of truth in this statement, which has caused the company much annoyance. The report that the Illinois Steel Company are going to erect a new merchant mill at Bay View is also emphatically denied by Superintendent Otjen.

No. 1 Colebrook Furnace of Robert H. Coleman, Lebanon, Pa., has resumed operations under the direction of the assignees after four months of enforced idleness.

The rolling mill at Burlington, Iowa, is to be moved to a city still further West. Youngstown papers state that B. M Campbell, Harry G. Hamilton and Morgan Evans of that city have gone West to negotiate the deal and that it will probably go to Seattle, Wash. The controlling interest in the Burlington mill is owned by Richard Brown. Judge Wilson and J. F. Holcomb formerly owned stock in the concern. Harry G. Hamilton, now assisting in engineering the deal, was formerly general superintendent.

The embarrassment of a large Lehigh Valley furnace company, to which brief allusion was made in *The Iron Age*, has since culminated in the failure of the Crane Iron Company of Catasauqua, Robert F. Kennedy of Philadelphia, and Leonard Peckitt, superintendent, being appointed receivers. The failure to pay the interest due on the bonds and other obligations of the company on November 1 is what brought on the climax. The total bonded indebtedness at this time was reported to be $700,000. The funded debt consisted of first mortgage sixes, $925,000, due May 1, 1900, of which $448,000 are outstanding, the company having bought in the balance. There are also $350,000 of bonds hypothecated for loans. The company, who were formed in 1889, operated four furnaces at Catasauqua, and leased the Macungie Furnace. In 1891 the total amount of iron made was 89,003 tons, and during 1892 this was increased to 114,955 tons.

The two Lucy furnaces, at Pittsburgh, which have been idle for about four months, resumed operations on Monday morning, the 18th inst. These two stacks are 85 x 20 feet, and have a combined weekly capacity of about 4000 tons.

The Wheeling Steel Works of the Wheeling Steel & Iron Company, Wheeling, W. Va., have been idle since last July. During the shut down extensive repairs and improvements were made to the plant, and as these have been completed the firm are now in position to put the plant in operation again as soon as the condition of trade warrants. The wage scale under which these works are operated does not expire until January 1, 1894, but the firm have already been notified by their employees that they will return to work and agree to accept the same reductions in wages granted in other Bessemer steel plants in the Ohio Valley. It will be remembered that the new wage scales adopted by the different steel concerns in the Wheeling district called for a reduction of about 33 per cent.

The receiver's sale of the effects of the American Steel Wheel Company, advertised for December 13, was adjourned to January 10. The sale will take place at Norwood, N. J.

The nut and bolt works of J. H. Sternberg & Sons, Reading, Pa., will work ten hours a day hereafter, instead of eight, as has been done for some time past.

From Pueblo, Col., comes the announcement that the steel works of the Colorado Fuel & Iron Company will open up in all departments early in January. It is stated that the orders for rails now booked will keep the plant running for some months to come.

A special meeting of the stockholders of the Bethlehem Iron Company, Bethlehem, Pa., will be held on February 14, 1894, for the purpose of voting on a proposition to increase the capital stock of the concern from $5,000,000 to $10,000,000.

At Pittsburgh the Carnegie Steel Company, Limited, have filed a bill in equity against W. V. McCracken and William Semple, Jr., doing business as McCracken & Semple, the Pittsburgh, Akron & Western Railroad Company, and W. A. Lynch, receiver of the railroad company. On July 29, 1893, it is stated, McCracken made a promissory note for $70,000, payable on demand, to the Pittsburgh, Akron & Western Railroad Company, and it was indorsed by the railroad company to the Carnegie Steel Company, Limited. There were also deposited in the hands of the steel company as collateral security for the payment of the note 160 $1000 first mortgage 5 per cent. gold bonds of the railroad company. In September demand was made for the payment of the note, but it was refused and the note was protested. The plaintiff asks for a decree authorizing the sale of the bonds, and that the plaintiff may be authorized to purchase and hold the bonds free of any claim of any of the defendants.

The new Bessemer Steel plant of the National Tube Works Company, at McKeesport, Pa., built by the Pittsburgh Iron & Steel Engineering Company of Pittsburgh and illustrated in *The Iron Age* of November 16, was put in partial operation last week. So far the operations of this plant have been entirely satisfactory to all concerned.

The order recently issued for the closing down of the entire plant of the Pennsylvania Steel Company, at Steelton, Pa., from December 23 to February 1, has been countermanded and operations will be continued until January 1 and perhaps longer. Enough orders have been received to keep the works running until the first of the year, and if additional orders are received the plant will be kept running until these are filled.

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The Lloyd Booth Company, Youngstown, Ohio, are now building one of the largest and most complete blooming mills in the country for the new Bessemer plant of the Ohio Steel Company at that place. The mill will be of the reversing type, and was designed by Julian Kennedy of Pittsburgh, who is consulting engineer of the Ohio Steel Company. The rolls and pinions are made of cast steel, and the pinions are 35 inches in diameter on the pitch line. The housings are very heavy, weighing about 19 tons each. The screwing down gear for raising and lowering the top roll will be manipulated by electricity. The roll tables for handling the blooms are also being built by the Lloyd Booth Company, and will be about 35 feet long, each table having 26 driving rolls. These will also be operated by electric power.

Last week notice was given by the New Castle Wire Nail Company, New Castle, Pa., to the effect that the wire nail and rod mills of that concern would be run on single turn until further notice.

The H. W. Minnemeyer Mfg. Company of Allegheny, Pa., have been granted a charter of incorporation, with a capital stock of $25,000. The incorporators are Henry W. Minnemeyer, C. E. Wolff and Paul C. Wolff, all of Allegheny, Pa.

Last week the Edgar Thomson Steel Works, Bessemer, Pa., were running on steel billets, but on Monday morning, the 18th inst., the manufacture of rails was resumed.

The South or old Scranton mill of the Lackawanna Steel & Iron Company of Scranton, Pa., started double turn yesterday, being the only rail mill in the country which is running double turn. Work will begin first on the 15,000-ton order for the Boston & Albany Railroad. Wages of all the tonnage hands have been reduced from 10 to 35 per cent. Orders have also been given to start two of the four idle furnaces of the works, one furnace having been running all along.

Sylvester & Co., Somerville Spike Works, whose office is at 8 Oliver street, Boston, advise us that they have purchased the interest of the late Arthur G. Thompkins in the Danvers Iron Works, Danversport, Mass., and shall continue to operate it in connection with their works at Somerville, Mass, as soon as the necessary repairs and alterations can be made.

Machinery.

The Westinghouse Air Brake Company of Pittsburgh, with works at Wilmerding, Pa., have declared the regular quarterly dividend of 5 per cent.

The National Water Tube Boiler Company of New Brunswick, N. J., have sold their plant of 1500 horse-power boilers, which they had at the World's Columbian Exposition, to the Ohio Steel Company, Youngstown, Ohio.

The property of the Auburn Stove Foundry Company, at Auburn, Maine, has been damaged by fire to the extent of $4[illegible],000.

The foundry plant of Baker & Shevlin, Saratoga Springs, N. Y., is at present rushed with machinery and devices for the big paper mills owned by George West in that section of the State.

The Penn Elevator Engineering Company is the name of a new concern applying for a charter of incorporation under the laws of Pennsylvania. The company are erecting at Bloomsburg, Columbia County, Pa., a two-story brick factory building, 50 x 200 feet, which they will equip with machinery of the latest and most improved design suitable for building elevators of all kinds. The ground floor will contain the machine shop and wood working department, and the upper floor will be devoted to paint and pattern shops, drafting and office rooms. The factory is conveniently situated near three railroads, viz: Philadelphia & Reading Railroad, Pennsylvania Railroad, and Delaware, Lackawanna & Western Railroad, a switch from the latter road entering the company's yard. Facilities for transit by water are also afforded by means of the Pennsylvania Canal, running to Baltimore. The officers of the company are George R. Stevens, president; John P. Casey, vice-president, and D. S. Cann, secretary. The two former were lately with Morse, Williams & Co. of Philadelphia, and the latter is a member of the firm of Cann & Saul, steel merchants, Philadelphia.

The Hercules Ice Machine Company are now running the Hercules Iron Works plant at Aurora, Ill. The Hercules Iron Works made an assignment July 10 last, owing to the entire loss of the Cold Storage Building located at Jackson Park, the amount of loss being in the neighborhood of $500,000. The assets of the company have been purchased by the Hercules Ice Machine Company, a new corporation organized for that purpose, having a capital of $500,000. Since the reorganization, about two months since, the company have contracted for about $100,000 worth of work, their business now being the manufacture of ice and refrigerating machines. They employ in ordinary times from 160 to 200 hands, and their machines are shipped to all parts of the Union and to foreign countries. The Hercules Iron Works shipped during the past year machines to Costa Rica and Cuba. The buildings of the various departments are arranged to be extended without any inconvenience, as none of the structures are now equal in extent to the original designs. The plant has a very excellent equipment of tools especially suited for the business, and the entire material used in the construction of the machines is made within their own works, except portions of the steam engine, which are purchased from the E. P. Allis Company of Milwaukee.

Plimpton & Son's foundry and machine shops, at Clearfield, Pa., have been burned at a loss of $5000.

About a year ago Cooperstown, N. Y., capitalists invested about $10,000 in the Maddox Wire Belting Company, the plant of which was removed from Massachusetts. The plant is now closed and is to be sold on a judgment for $400.

Eleven molders employed in the foundry department of Klotz & Kromer's machine shops, at Sandusky, Ohio, have quit work on account of a reduction in wages.

The Rand Drill Company's plant, at Tarrytown, N. Y., has resumed operations on full time.

The Frech Machine Company, manufacturers of metal working machinery, at 76 West Van Buren street, Chicago, made an assignment on the 9th inst. in favor of Hugo Pam, as assignee. Assets are scheduled at $5000 and liabilities $4000. The company attribute the failure to their inability to raise funds to meet the claims of several pressing creditors. The assets of the concern are not readily convertible into cash, as they consist largely of valuable patents and machinery.

E. C. Wehrfritz is building a machine shop at Little Rock, Ark.

The Nameless Iron Works of Shakopee, Minn., have begun the manufacture of a new machine called the one-roller disintegrator, to prepare clay for brick machines. It is estimated that it will feed enough clay to supply a machine manufacturing 100,000 brick in ten hours, preparing the clay from the bank for the brick machine to make a first class brick. The clay is not squeezed through rollers as is the case where two rollers are used, but is shaved.

The Reading Foundry, Reading, Pa., has closed down on account of a lack of orders.

The American Well Works, at Aurora, Ill, have just completed a new boiler plant for their own use, in which they have embodied a number of original features which secure very great economy. They are large manufacturers of boilers as well as of engines to be used with their well sinking machinery.

The J. M. Carpenter Tap & Die Company of Pawtucket, R. I., are now preparing a new line of stocks, taps and dies intended specially for bicycle work. These will be ready January 1 and will be of the same high grade as those now made by this company.

The Phosphor-Bronze Smelting Company, Limited, of Philadelphia, are removing their offices to their new foundry and smelting works at 2200 Washington avenue, in that city.

Maris & Beekley of 2343 Callowhill street, Philadelphia, have furnished two of their traveling cranes—10 tons and 5 tons capacity, respectively—to the New Jersey and Pennsylvania Concentrating Works, Edison, N. J.

The January dividend disbursements of five of the Westinghouse interests at Pittsburgh amounted to $508,500. This amount was distributed as follows: Westinghouse Air Brake Company, $250,000; Philadelphia Natural Gas Company, $112,500; Westinghouse Electric & Mfg. Company, preferred stock, $125,000; Union Switch & Signal Company, preferred stock, $6000; Standard Underground Cable Company, $15,000. It is stated that the business of the Westinghouse Electric & Mfg. Company for November slightly exceeded $500,000. Two thousand men are now on the pay rolls of the concern and are working full time.

A reduction of 15 per cent. in the wages of the employees of the foundry of the Allentown Rolling Mill, Allentown, Pa., has been made.

The Cleveland Machine Screw Company, Cleveland, Ohio, have sustained a loss of $10,000 by fire.

Hardware.

The Granite Filter Company have been incorporated at St. Louis, Mo. The capital is $20,000, $10,000 paid in. The incorporators are A. L. Emery, O. H. Wineger and Edward Morrison. The company will manufacture a filter invented by Mr. Emery.

The American Shear Company, Hotchkissville, Conn., manufacturers of shears and pocket knives, have shut down for the present.

The J. A. Wright Company of Keene, N. H., have been incorporated. They will manufacture polish. The capital stock is fixed at $30,000.

The striking molders of the Penn Hardware Company, Reading, Pa., held a meeting on the 12th inst., and decided not to return to work. They struck last August.

At a meeting of the National Cutlery Company, held in Rockford, Ill., on the 12th inst., Justin W. Meehan of Chicago was elected chairman and George B. Kelley of Rockford secretary. The necessary papers for incorporation have been forwarded to the Secretary of State. The capital stock of the new company is $75,000, all of which has been subscribed. The company will probably locate in Rockford, but if not will build their plant in Chicago.

The H. P. Nail Company, Cleveland, Ohio, have decided to shut down their works. Already some 200 or 300 men have been discharged, and in the course of the next few days all of the 700 men employed by the company will be thrown out of work. The shut down is attributed by the company to a lack of orders.

Des Moines Scale & Wire Works, Des Moines, Iowa, advise us that trade this fall, considering the depression of general business, has been very satisfactory. They manufacture wagon, track and hopper scales.

Cleveland Twist Drill Company, Cleveland, Ohio, expect to close down their factory for the holidays. This is their usual custom and they take advantage of the opportunity to take their inventory and do such general repairs as are necessary. At the present time they are running their factory full time but with a reduced number of hands. The company have a large stock of goods on hand, so that they will be able to fill all orders promptly during the time in which the factory is closed.

Walter W. Woodruff & Sons, Mount Carmel, Conn., manufacturers of coach and carriage hardware, are making a specialty of fine malleable iron castings from owners' patterns. Only best work will be done, and for this, it is claimed, their facilities are particularly well adapted.

Mobile papers state that J. J. Simmons of St. Louis, manufacturer of the Jewel refrigerator, is making arrangements for the transfer of his manufacturing operations to Mobile.

The Harry Svensgaard Bicycle Company of Fergus Falls, Minn., are in the hands of a receiver to close out the business. We are advised that there is a good bicycling opening in that part of the West, and that there will undoubtedly be a well selected stock of wheels and a complete bicycle outfit thrown on the market early in the spring at a very low rate. The business has been extensively advertised, and is known in the Dakotas, Montana, Iowa and Wisconsin.

Anglo-American Iron & Metal Company, 213 Pearl street, New York, have issued a circular in which reference is made to the reports which have been circulating in the trade to the effect that they are not in a position to promptly fill orders for cycle material. These reports they contradict most emphatically and intimate that they are energetically pushing their business.

The Lawrence Barbed Wire Factory is one of the manufacturing institutions in Kansas that has no occasion to complain of dull times, says the Lawrence *Gazette*. The wire drawing mill runs until 10 p.m., draw-

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ing enough wire to supply the barbed wire mill running at full capacity day and night. Even with their largely increased plant, operated to its limit, they are unable to keep up with their orders. More room and more machinery are to be added within 60 days. The company recently began making bale ties and their business in this one item has grown beyond all expectations.

Wyeth Hardware & Mfg. Company, St. Joseph, Mo., advise us that while their business has suffered during the year on account of the general depression all over the country, they have recently completed and will by January 1 be settled in their new six story building, located at 609 to 621 North Second street in that city. This building has been specially arranged for the hardware business, and is fitted with the latest improved appliances. Electric light and steam plants have been put in. Side tracks and switches will be laid which will accommodate 40 cars. There are tracks in the building by which three cars can be loaded at one time. The company state that in their hardware and cutlery departments they will send out 25 traveling representatives about January 1. They will also send out 10 men to represent their saddlery department.

A correspondent at Akron, Ohio, mentions that about 90 per cent. of the manufacturing establishments in that city will start up on or about January 1, thus giving employment to a majority of the workingmen who have been idle for nearly six months. These establishments are those mainly of manufacturers of agricultural implements, most of whom look forward to increasing their output considerably.

Miscellaneous.

The Reading Traction Company, at Reading, Pa., have placed the order for their new car house with the Berlin Iron Bridge Company of East Berlin, Conn. The side walls will be of brick, the roof of iron. The building will be 85 feet in width and 180 feet in length The width is divided into two parts of 42½ feet each, a row of columns supporting trusses at the center.

The Heath Rail Joint Company of Superior, Wis., have secured an order for 14,000 joints, and have several other good sized orders in sight. Recent changes made in the machinery have economized the cost of production, so that the company now find themselves in a most prosperous condition.

The report that a cut of from 20 to 39 per cent. had been made in the wages of the employees of the Pullman Works, at Wilmington, Del., is denied by the superintendent. On the other hand, the wages of some of the men have been increased, while the force is being increased by 300 additional hands, bringing the number of employees up to 600 men.

Among recently authorized corporations in Illinois are the following: Cumming Foundry Company, Chicago; capital stock, $100,000; incorporators, Oscar Ludwig, R. D. Wardwell, William S. Cumming. Loretto Iron Company, Chicago; to mine iron ore; capital stock, $400,000; incorporators, Thomas J. Callinan, William H. O'Brien and Morris St. Paul Thomas. Fuller Incandescent Heat & Light Company, at Chicago; capital stock, $1,000,000; incorporators, J. T. Kretzinger, C. E. V. Akerberg, M. F. Gallagher. Barnes Car Company, at East St. Louis; capital stock, $1,000,000; incorporators, Adiel Sherwood, Joseph B. O'Connor, Charles Voyce. Keystone Cash Register Company, Chicago; capital stock, $250,000; incorporators, Charles F. Ansell, J. D. Sperry, Fred Kubec. Universal Electric Heat & Light Company, Chicago; capital stock, $100,000; J. T. Kretzinger, C. E. V. Akerberg, M. F. Gallagher. Turney Electric Mfg. Company, Chicago; capital stock, $75,000; incorporators, Eugene T. Turney, Walter H. Crowdus and William E. Mason.

The Gilbert Car Works, at Troy, N. Y., have shut down.

The Wilbur F. Washburn Brass & Iron Works, at Yonkers, N. Y., have temporarily suspended. Insufficient capital and slow collections were the cause.

The business of C. Aultman & Co., manufacturers of engines, threshers and other farming implements, at Canton, Ohio, has gone into the hands of receivers. The company are said to be solvent, as their assets are not far from $2,700,000, while their liabilities are about $1,000,000.

The Philadelphia Natural Gas Company of Pittsburgh have declared the regular quarterly dividend of 1½ per cent.

TRADE REPORT

Deeper gloom is settling down on the Iron trade, and there are few crumbs of comfort for those engaged in this great industry. Pittsburgh and its adjacent districts are enjoying the melancholy distinction of crowding competing sections to the wall and threaten, with a further lowering of wages at some of the mills, to drag the level of prices even lower. In Eastern Pennsylvania the Iron manufacturers have been appealing quite successfully to their local financial institutions to withdraw accommodations from the Western rivals, and consumers throughout the Eastern territory are being plied with arguments to show them the danger of delivering themselves into the hands of distant producers.

It is really only one branch in which the widely heralded Eastern campaign of a Pittsburgh concern has been signally unsuccessful, and that is in the Steel Rail trade. The fruit of this victory by the Eastern competitor is the starting double turn on the part of the Lackawanna mill, with a heavy tonnage of orders on hand. The Colorado mill has captured an order for 26,000 for the Union Pacific Company at a price which, its officers state, leaves some profit. They intimate that they are figuring on other work too.

In Pig Iron the general markets are very dull so far as Foundry grades are concerned. The attitude of the Southern producers will not be thoroughly tested until some of the larger Cast Iron Pipe contracts come into the market which are now under negotiation. Among them it may be interesting to mention is one for 8000 tons for Mexico. From Philadelphia comes the significant news that capitalists close to the iron trade have bought considerable quantities of Pig Iron for investment. It is not believed that the holdings of the Crane Company, which are to be sold, are large enough to create a lasting impression.

In Pittsburgh Gray Forge has dropped to $10, while Bessemer Pig has sold at $10.75.

Steel Billets are squarely down to $16.50 at Pittsburgh, and are correspondingly weak in the East. Wire Rods, for which the off season has come, are offered at $24 at Western mills. In connection with the Wire trade it may be mentioned that the 25,000 keg order for Wire Nails for the Standard Oil Company was captured by a local mill. Every important concern in the country fought for the contract. In the structural trade a moderate amount of work is coming up. A battle royal will probably be fought next month at Chicago for the elevated work which will be given out there. The demoralization in prices for all rolling mill products continues.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., December 19, 1893.

The situation as regards Iron and Steel in this vicinity is in a most unsatisfactory condition, and unfortunately there is not much prospect of any immediate improvement. Steel has supplanted Iron to such an extent that the latter is almost totally ignored at most of the large mills, and as the West claims to be making Steel at a much lower cost than can be done here, the bulk of the business is taken by mills west of the Alleghenies. It is also a fact that Bessemer Pig is being shipped from Pittsburgh to this market, and if things go on as they have been doing during the past six months there will be very little left for either mills or furnaces hereabouts. These conditions are probably only temporary, but in the meanwhile they are terribly trying, especially as no definite opinion can be formed as to the time or the manner in which relief will be found. There are all sorts of theories, but the one generally accepted is that the business is being done at a loss and sometimes from financial necessity rather than as ordinary business operations. Be that as it may, manufacturers of the highest standing, and with plants equipped with all modern improvements, say they cannot come anywhere near the prices quoted from Pittsburgh, and will cease operations rather than attempt to meet competition of that character. What may be done after the turn of the year nobody seems to know, but for 1893 business is practically at an end, and with less work in hand than at any time within many years, probably not since 1873, and perhaps not then.

Pig Iron.—Business could hardly be duller than it has been during the past week, but neither buyer nor seller seems to care much about it. Consumers have no desire to load up under present conditions, neither are producers inclined to enter many orders at such prices as the market would at this time afford. Consumers have an idea that there is a possibility of prices being lower, while there is no immediate probability of them being higher. Producers are satisfied that they cannot continue in business if further concessions are required, neither are they willing to tie themselves to heavy engagements at current market rates, the natural outcome being a "stand off" on both sides. Taking an outside view of the situation, it would be hard to suggest any course other than that adopted by both of these interests. The chances are that things will drift along for some time without any material change in prices, although considering the increase in production and the almost total suspension of consumption during the next two or three weeks, prices may go a little lower before there is anything like liberal buying. Ultimately there can be no question as to the course of the market, but how long before the turning point is reached is something no one can foresee. It is significant, however, that some heavy speculative purchases are being made by capitalists who are closely identified with the trade. Money has been quietly invested wherever it was most needed and whenever prices were made attractive. Doubtless the figures were very low, but the Iron was bought as a speculation, and would not have been bought unless special inducements were offered. These, with purchases made some two or three weeks ago by legiti-

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mate consumers, have relieved the market temporarily, so that while there is more Iron being made, pressure to sell is as yet no greater than it has been all along. General quotations for Philadelphia deliveries are about as follows:

No. 1 Foundry	$13.75 @ $14.25
No. 2 Foundry	13.00 @ 13.25
Standard Gray Forge	11.75 @ 12.25
Ordinary Gray Forge	11.25 @ 11.50

Steel Billets.—Demand very light, although prices are lower to-day than ever. Good buyers could place orders at $19 @ $19.25, delivered, for 1000 ton lots, but current requirements are very small, and chiefly for small lots, 50 to 100 tons, and sometimes 200 to 300, at prices varying from $19 50 to $19.75, delivered. The feeling is very weak, however, and lower prices are confidently expected before any large amount of business can be secured.

Finished Material.—Small lots are in pretty good demand, but large orders are not in the market at present. Most of the mills will shut down at the end of the week, and are not likely to start up until after the turn of the year, although in the meanwhile there is very little inquiry for any but immediate deliveries, so that there is nothing definite in regard to the amount of work likely to come out after the holidays. The outlook is unfortunately far from encouraging, and it is to be feared that the depression will extend further than people are inclined to expect, as there is nothing in sight that will be likely to bring immediate relief. Prices are at the very lowest point yet reached, and on bids for good sized lots there is little doubt that orders could be placed at still further concessions. Nominal quotations are about as follows:

Grooved Skelp, delivered	1.40¢	@ 1.45¢
Best Refined Bars	1.40¢	@ 1.45¢
At interior points	1.30¢	@ 1.35¢
Tank Steel	1.45¢	@ 1.55¢
Heavy Plates	1.50¢	@ 1.60¢
Shell	1.60¢	@ 1.75¢
Flange	1.90¢	@ 2.00¢
Angles	1.60¢	@ 1.70¢
Beams and Channels	1.65¢	@ 1.80¢

Old Material.—Market dull and lower. There is no demand of any account, and as holders are inclined to realize, purchases can be made at extremely low figures—so low, indeed, that they sometimes are hardly enough to pay freight and handling. General quotations are about as follows:

No. 1 Wrought Scrap, delivered	$11.50	@ $12.00
Machinery Cast, delivered	10.00	@ 11.00
Heavy Steel Scrap, delivered	11.00	@ 12.00
Old Iron Rails, delivered	14.00	@ 14.50
Old Street Rails, delivered	15.00	@ 16.00
Wrought Turnings, delivered	9.50	@ 10.00
Cast Borings, delivered	6.50	@ 7.00

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, December 20, 1893.

Business in Pig Iron during the week ending to-night has been in the main confined to filling small orders from the jobbing foundries in this district, which only in a few instances reached as high as 500 tons. There was no large demand either for spot or forward delivery, but there were moderate sales of No. 2 Foundry Coke Iron at $7.90 @ $8 ℔ ton, f.o.b. Birmingham, which is a decline of 25¢ @ 35¢ ℔ ton from the prices obtained two or three weeks ago. There were moderate orders from the East for various kind of Iron, yet none of them were large, and the aggregate sales of all kinds were not important, but were larger than in any week in the recent dull times. The pending of tariff revision tends to restrict purchases of Pig Iron, and there appears to be an undertone of confidence that there must be a pretty fair consumptive demand when the rates are once settled, if they are not made so low as to destroy our home industries, and it is surely not probable that the dominant party will carry the matter so far as that. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$12.25 @ $12.50
Southern Coke, No. 2	10.75 @ 11.00
Southern Coke, No. 3	10.50 @ 10.75
Ohio Soft Stone Coal, No. 1	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2	14.50 @ 14.75
Lake Superior Coke, No. 1	15.00 @ 15.25
Lake Superior Coke, No. 2	14.00 @ 14.25
Hanging Rock Charcoal, No. 1	18.50 @ 19.00
Hanging Rock Charcoal, No. 2	17.50 @ 18.00
Tennessee Charcoal, No. 1	14.00 @ 14.25
Tennessee Charcoal, No. 2	13.00 @ 13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @ 18.00
Lake Superior Car Wheel and Malleable	17.00 @ 17.25

Forge.

Gray Forge	10.00 @ 10.50
Mottled Coke	9.75 @ 10.00

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, December 20, 1893.

Pig Iron.—Trade in all kinds of Coke Iron is quiet, but there are indications that after the new year opens a number of concerns will be in the market for a considerable quantity of Iron. Consumers are now exceedingly careful not to take any more stock than is absolutely necessary to meet their requirements. Orders for single carloads in almost every case name definite quantities, which are not to be exceeded. Quotations at present are purely nominal and indicate the prices asked for small lots only, and they can be shaded materially on round lots. Offers are being made of Iron from second hands or from the stock of bankrupt foundries at very low rates. Transactions in Lake Superior Charcoal have been a little more frequent. Several lots were sold the past week to malleable companies for immediate shipment at a slight concession for spot cash. Quotations are now as follows for cash:

Lake Superior Charcoal	$15.50 @ $16.00
Local Coke Foundry, No. 1	13.50 @ 14.00
Local Coke Foundry, No. 2	12.75 @ 13.00
Local Coke Foundry, No. 3	12.25 @ 12.75
Local Scotch	14.00 @ 14.50
Ohio Strong Softeners No. 1	15.50 @ 16.00
Southern Silvery, No. 1	@ 13.75
Southern Silvery, No. 2	@ 13.25
Southern Coke, No. 2	12.15 @ 12.40
Southern Coke, No. 3	11.65 @ 11.90
Southern, No. 1, Soft	12.40 @ 12.65
Southern, No. 2, Soft	11.65 @ 11.90
Tennessee Charcoal, No. 1	16.00 @ 16.50
Southern Gray Forge	10.60 @ 10.85
Alabama Car Wheel	18.25 @ 18.50
Jackson County Silvery	16.00 @ 16.50
Other Ohio Silvery	15.00 @ 15.50

Bars.—The Bar trade is disappointed in the condition of the car industry. The car orders so far placed have not brought out any business in car specifications for Bars. General trade is fair, but prices are weak and the bottom has apparently not been struck. New mills further West are demoralizing the market by selling at lower than Chicago prices. Soft Steel is also crowding Bar Iron and manufacturers are in some cases offering Iron and Steel at the same price and with the same scale of extras. Quotations on mill shipments are now 1.30¢ @ 1.35¢, Chicago, half extras, for Soft Steel. Jobbers are selling moderate quantities from stock with prices ranging from 1.55¢ to 1.65¢ according to quantity.

Structural Material.—It is reported that the Milwaukee viaduct has been awarded to the Detroit Bridge & Iron Works, in which case, it is said, the material will be furnished by the Cleveland Mill Company. The Beam market is quiet, but considerable figuring is being done on building projects, which are mainly located outside of the city. An important extension of the Lake street elevated is expected to be ready for bids in January. Quotations are as follows, Chicago delivery: Beams 1.65¢ @ 1.75¢; Tees, 1.90¢ @ 2¢; Angles and Universal Plates, 1.60¢ @ 1.65¢. Small lots are sold from stock at an advance of 10¢ @ 15¢ ℔ 100 above these prices.

Plates.—A slightly better movement is reported both for mill orders and in small lots from stock. The better makers are picking up more business, and prospects are a trifle brighter in this line. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.60¢ @ 1.70¢; Shell Steel, 1.80¢ @ 1.90¢; Flange Steel, 2¢ @ 2.10¢; Fire Box, 2.75¢ @ 5¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2¢ @ 2.10¢; Tank Steel, 1.90¢ @ 2¢; Shell Steel, 2 20¢ @ 2.40¢; Flange Steel, 2 50¢ @ 2.65¢; Boiler Tubes, 70 and 5 % off.

Sheets.—Very little business is doing in Black Sheets, but some inquiries are reported for shipment during the early months of the coming year. Prices remain as before at 2.65¢ @ 2.70¢, Chicago, for mill shipments of No. 27 Common, with small lots from stock selling at 2.90¢ @ 3¢. An improved tone is noted in mill business in Galvanized Iron. Prices, however, are unchanged and mill shipments of Juniata are quoted at 70 and 10 and 10 % and with small lots at 70 and 5 % @ 70 and 10 %. Good transactions have taken place in Sheets with prices ranging from 25 % to 30 % off, according to quantity.

Merchant Steel.—While new business is light, as usual at this season of the year, specifications are going forward rather freely to the mills on season contracts. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel, 1.90¢ @ 2¢; Ordinary Bessemer Machinery, 1 60¢ @ 1 65¢; Ordinary Bessemer Tire, 1.55¢ @ 1.60¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

Billets.—Business in this line is quiet, with quotations nominally $19.25 @ $19.50.

Rails and Track Supplies.—The large business in Rails known to have been placed in the East and the order just given to the Colorado Fuel & Iron Company for 26,000 tons by the Union Pacific Railroad inspire strong hopes of good buying by the railroad systems making their headquarters here, but so far the local railroad interests have not been inclined to enter the market. The Rail mills are, however, making repairs and getting matters in shape so as to be ready to start as soon as sufficient business is secured. Quotations range from $25 to $27 for Steel Rails, according to quantity; 1.55¢ @ 1.60¢ for Splice Bars; 2.55¢ @ 2 60¢ for Track Bolts with Hexagon Nuts, and 1.90¢ @ 1.95¢ for Spikes.

Old Rails and Car Wheels.—No transactions are reported in Old Iron

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Rails. The railroad companies having stocks on hand are asking $14, which is considered a prohibitory price by dealers and consumers. Old Steel Rails are also neglected, with nominal quotations $7.50 @ $10, according to length. Transactions are reported in Old Car Wheels, but only in a speculative way. Consumers are doing nothing.

Scrap.—Dealers report very little inquiry at present. Consumers are holding off until after the close of the year. Under the circumstances all quotations are nominal, but are continued in the absence of transactions. Quotations are as follows: No. 1 Forge, $11; No. 1 Mill, $8.25 @ $8 50; Sheet Iron, $4.50; Pipes and Flues, $8; Axles, $16; Horseshoes, $11; Fish Plates, $12; Spikes and Bolts, $10; Cast Borings, $4.50; Wrought Turnings, $6.50; Axle Turnings, $8; Heavy Cast, $9 50; Stove Plate, $7.75; Malleable Cast, $8; Mixed Steel, $7, gross ton; Leaf Steel, $14 50.

Metals.—Lake Copper is quiet, but prices are firm at 11¢ for car lots, and 11.25¢ for small lots. Casting Copper is quoted at 10½¢, but the local demand has fallen off. Spelter is dull and weaker, being quoted at 3 50¢ @ 3 55¢. Pig Lead dropped during the week to 3 05¢, but has reacted to 3.10¢, although the demand is rather light.

St. Louis.

(*By Telegraph.*)

Office of *The Iron Age*, Bank of Commerce Building, St. Louis, December 20, 1893.

Pig Iron. — The conditions prevailing last month continue, dullness, amounting almost to stagnation, being the only feature of the market. Consumers are cleaning up their stocks preparatory to the annual inventory, and will not be in the market until after the turn of the year. Prices are unchanged, as follows, for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	$13.25 @ $13.50
Southern Coke, No. 2 Foundry	11.50 @ 11.75
Southern Coke, No. 3 Foundry	10.75 @ 11.00
Southern Gray Forge	10.25 @ 11.50
Southern Car Wheel	17.25 @ 18.25
Lake Superior Car Wheel	16.50 @ 17.00
Ohio Softeners	16.00 @ 16.50

Bar Iron.—There is no improvement noticeable in this department; sales are made from mill as low as 1.35¢, half rates, f.o.b. St. Louis, and it is intimated that this price has been shaded. Jobbers report a dull trade at 1.70¢ @ 1.80¢.

Barb Wire. — The demand has dwindled down to almost nothing and prices have weakened in sympathy. Mills quote Painted at $1.95 @ $2, with Galvanized at 40¢ ℔ cwt. advance. Jobbers report sales as being extremely light and quote Painted at $2.10 and Galvanized at $2 50.

Wire Nails.—The Wire Nail market seems to be practically demoralized, and carload lots are quoted as low as $1.30, and in extreme cases $1.25 is made. Jobbers ask $1.45 @ $1.50.

Rails and Track Supplies.—Trade in this department continues dull and prices are unchanged, as follows: Splice Bars, 1.65¢ @ 1.70¢; Spikes, 1.95¢ @ 2¢; Bolts, Square Nuts, 2.10¢; with Hexagon Nuts, 2.50¢; Links and Pins, 1.85¢ @ 1.90¢. Old Iron Rails, are unchanged at $13.50; Steel Rails are looking up a little and negotiations are in progress for several good orders. We quote $26.50. @ $27.

Pig Lead.—This metal seems to have settled down to a 3¢ basis. Producers refuse to entertain a lower figure than this and consumers are now paying this price. The transactions are few and not heavy.

Spelter.—Outside of an occasional carload order there is nothing to note. Sellers ask 3 50¢ @ 3 55¢, which consumers would doubtless willingly pay if they had any use for the metal at this time, but it appears they have not. The sales for delivery next year are not heavy.

Pittsburgh.

(*By Mail.*)

Office of *The Iron Age*, Hamilton Building, Pittsburgh, December 19, 1893.

The same unfavorable report of the condition of the Iron and Steel trades must be presented again this week. As we get to the close of the year the decrease in amount of business being offered becomes more marked, and as a direct consequence competition becomes keener and prices are shoved lower. For some time past the condition of the market has been such that there is no established price for anything. A quotation on a certain article based on an actual sale given this week may be considerably out of the way next week. The facilities of some of the larger Pittsburgh establishments to turn out material at a low cost have certainly been severely tested during the past two or three months. Nevertheless they go right on taking order after order at prices that other concerns could not touch, and seem to regret that they cannot take everything that is offered. With new and lower wage scales to go into effect in several of the plants of a large Pittsburgh maker at the first of the year it is not improbable that the severest competition is yet to come. No improvement in business can come until after the first of the year, but it is the universal hope that the long desired turn in trade is not far off. The present condition of business is unnatural and cannot always exist.

Pig Iron.—The only new event of the week was the agreement made by the city furnaces to lower the price of standard Gray Forge Iron 50¢ ℔ ton, or from $10.50 to $10, Pittsburgh. This price means $9 35 in the Mahoning Valley and must be crowding cost very hard. Notwithstanding the reduction in price there has as yet been no perceptible increase in demand, but this may come later on. Bessemer is also in very light demand with prices a shade lower. One of the Lucy Furnaces has gone in after being banked some four or five months. Pittsburgh is now making nearly as much Iron as ever before in her history, and this fact, more than anything else could do, proves the superiority of this district over all other places for the cheap production of Pig Iron. We quote as follows:

Neutral Gray Forge	$10.00 @	cash.
All-Ore Mill	10.00 @ $10.25	"
No. 1 Foundry	11 75 @ 12.00	"
No. 2 Foundry	11.25 @ 11.50	"
Bessemer	10.75 @ 11.00	"

We note a sale of 2000 tons of Bessemer for first three months of next year at a price equal to about $10.75, delivered at buyer's mill. Also a sale of 2000 tons of low phosphorus Bessemer, same delivery, at a shade under $14, delivered.

Ferromanganese.—Very dull. We quote $51.50 @ $52, delivered, for 80 % domestic.

Structural Material.—While a good deal of new work is coming up in the West, very little new business is being offered from this vicinity. Past events warrant the statement that Pittsburgh will get its full share of the trade, regardless of where deliveries may have to be made. While we repeat quotations of last week it should be noted that these are only nominal and continue to be shaded as occasion requires. We quote as follows: Beams and Channels up to 15 inches, 1.45¢ @ 1.60¢, according to size of order; Angles and Universal Plates, 1.45¢ @ 1.50¢; Tees, 1.70¢ @ 1.75¢.

Plates and Sheets.—Two good sized orders for Tank Steel were placed here last week at a price that certainly meant little or no profit to the seller. Demand in general is quiet, but occasionally a good order comes up, which generally calls out from makers quotations which a few months since would have been thought impossible. We quote as follows: Tank Steel, 1.35¢ @ 1.37½¢; Shell, 1.55¢ @ 1 60¢; Flange, 1 65¢ @ 1 75¢; Marine, 1.75¢ @ 1.85¢; Ordinary Fire Box, 1 85¢ @ 1 95¢, and Railroad Fire Box, 2¢ @ 2.15¢. The Sheet trade is at a standstill and we make nominal quotations as follows: No. 24 Soft Steel Sheets, 2.40¢; No. 26, 2.50¢, and No. 27, 2.60¢.

Steel.—Business is very light and no improvement is expected until after the first of the year. On account of the limited way the mills are being operated, a purchase of 500 tons of Billets now is equivalent to a purchase of 2000 tons when consumers were operating their plants to full capacity. There is no established price. For a fair sized order, with favorable terms of settlement, $16 50 at maker's mill could be done. For small orders $16.75 @ $17 is asked. We note a sale of 300 tons at $17 at maker's mill for January delivery. The new Bessemer plant of the National Tube Works Company is now in successful operation.

Rails.—The local mill was on Billets last week, but went back to Rails yesterday. Nothing new developed during the week.

Muck Bars.—We quote at $20.50 @ $21, delivered at buyer's mill, for best grades. We note a sale of 500 tons at $21, delivered, for January. Demand is very light.

Bars.—The demand shows a marked falling off this month, and mills here and in the Valley are running very light. Very little stock is being made, owing to the uncertainty of the future. Prices are weak, and for good orders with desirable specifications exceptionally low prices continue to be made. Valley mills continue to quote 1.30¢ at mill for Bar Iron, which is shaded, however, for desirable specifications. Soft Steel Bars are quoted at 1.30¢ @ 1.35¢. These prices are also shaded to some extent.

Wire Rods.—Nothing new developed during the week and we continue to quote $24.50, at mill, for delivery in the first quarter of next year. This price would be shaded for desirable business.

Skelp Iron and Steel.—We quote Grooved Steel Skelp at 1.10¢ @ 1.15¢; Sheared, 1.20¢ @ 1.25¢; Grooved Iron Skelp, 1.30¢ @ 1.35¢; Sheared, 1.45¢ @ 1.50¢.

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Barb Wire.—As is usual at this season of the year the demand is light, but it is expected that orders for delivery next spring will soon be placed. In fact, some business of this nature has already been done. We quote as follows: Four Point Galvanized 2 15¢ @ 2 20¢ in carload lots, and 2.25¢ @ 2.30¢ in less quantities. We quote Plain Wire at 1.40¢ @ 1.45¢ for Nos. 6 to 9 in carload lots.

Wire Nails.—Business has dropped off considerably during this month, and as a result one large mill has gone on single turn, while another will probably close altogether as soon as orders now on hand have been filled. Makers state that the probable passage of the Wilson bill is causing much of the uncertainty surrounding the future of the Wire Nail trade. We quote Wire Nails at $1.15 in carload lots at mill. Cut Nails are in fair demand and are ruling at 95¢ @ $1, at mill, according to nature of order.

Connellsville Coke.—A number of contracts for Furnace Coke are now under negotiation and will probably be closed this week or next. As yet but little has been done in this direction, furnaces holding off to some extent. For the week ending December 9 there were 8425 ovens in the Connellsville region in blast and 9088 idle, with a total estimated production for the above week of 79,750 tons. We continue to quote Furnace Coke at $1.10, Foundry at $1.30 to dealers and $1.45 to consumers, Crushed Coke $1.75 to consumers, all in tons of 2000 lb, f.o.b. cars in Connellsville region.

Financial.

The last weeks of the fast closing year bring little indication of solid improvement in the general business situation. Trade and speculation continue alike dull. Announcements of suspension of work in mills and factories are again an unpleasant feature of the daily press reports, and the large volume of unemployed labor increases rather than diminishes. President Gompers of the Federation of Labor places the number of the unemployed at 3,000,000, and many of them have but small prospect of work during the entire winter. In numerous lines of trade and manufacture in which distinct signs of improvement were visible a few weeks ago, a partial relapse to dullness seems to have set in. This is especially true of the woolen and textile trades, as well as in the leather, hat, glove and other cognate industries, which are suffering from severe depression. At the same time supplies are becoming exhausted after months of reduced production, and the pressure of actual needs has induced a moderate activity in certain lines of trade, notably the metal and provision industries, which, however, does not counterbalance the unfavorable features displayed by the general trade reports.

Railway earnings, a sure gauge of the general business condition of the country, make a poor showing for the first weeks of this month, and as the bulk of the grain traffic has already been handled for this season, the roads which depend largely on that freight for their earnings are unlikely to make a better exhibit of returns in the near future. The *Financial Chronicle* computes the gross earnings of 130 railroads for November at $46,610,334, a decrease of $3,331,411 as compared with the same month of last year. From January 1 to November 30 124 railroads earned $479,912,167, a decrease of $6,533 360 as compared with the corresponding period of last year. The aggregate gross earnings of all roads reporting for the first week in December show a decrease of 13.3 % as compared with last year, the loss being larger than for any week since last September. This unfavorable average is also fairly reflected in the returns which have come in for the second week of the month.

Business failures in the United States last week, as reported by *Bradstreet's*, numbered 337, against 383 in the previous week and 298 a year ago. *Dun's Review* makes the failures for the week number 339 in the United States, against 279 last year. The list for the week includes seven banks, with one of the oldest private banks for $500,000, an agricultural machinery establishment for $1,000,000, an iron works for $500,000, a heavy tobacco dealer for $500,000, a lumber concern for $150,000 and a dry goods concern for $150,000, making $2,500,000 for five failures. The current week has already seen one or two further failures of magnitude, which will bring the record for the month up to a very heavy figure.

The monthly statement of exports and imports for the month of November shows a large balance of trade in favor of this country, exports reaching $90,000,000, while imports were only $49,000,000. About the most notable change of the week in the financial world is found in Saturday's statement of the New York banks, which shows for the first time in many weeks an actual decrease in the surplus reserve. The loss, however, was only $400,000, and the surplus still stands at $78,000,000, insuring a continuance of the present low rates of interest. The exports of specie made last week—which have not been supplemented this week, in spite of expectations—were easily counterbalanced by receipts of currency from the interior, which kept up to about the average of the former week. A gratifying feature of the statement is the fact that loans and discounts show a further increase of $3,078,000. This is, however, described as largely on warehouse receipts for grain and cotton. Stock Exchange loans make still but a small figure, and the demand for money from manufacturing and other interests continues slight. Meanwhile the banks continue in a more or less congested condition, which, although it may not be increased in intensity, shows no present signs of material relief. Until the confidence of the country is restored by the removal of the existing condition of uncertainty in regard to the tariff and financial legislation, no practical man expects to see any general recovery of industry and speculation.

The loan market maintains its easy condition, money on call being in abundant supply at rates ruling from 1 to 1½ per cent., averaging the lower figure, with renewals at the same rates. Call loans on actual stock collateral were even made as low as ½ per cent. last week. The supply is large from many sources, both of call and time money. The latter accommodation is freely offered at about 2 per cent. from 30 to 60 days, 3 per cent. from 90 days to 4 months, and 3½ @ 4 per cent. for 6 months. The demand does not, however, increase, and would-be lenders have the usual difficulty in placing their money. Mercantile paper is in good demand, and the best kinds find a ready market. The supply is not large. Ruling rates are 3¼ @ 4 per cent. for indorsed bills, 4½ @ 5 for best single names, and 5 @ 5½ for others.

Business on the Stock Exchange has been barren of interest during the greater part of the week. Speculation continues confined almost entirely to professional traders, and the volume of transactions has been very narrow outside half a dozen stocks. Sugar received some attention from the professionals at the close of last week, and rose sharply several points for some unexplained reason, easing off again to its former level during the present week. Saturday's market closed dull and depressed, opening on Monday in a similar condition. A mysterious trouble in New England shares on the latter day, due to large selling orders of that stock, served to rouse the market. Many of the other railroad stocks declined in sympathy, but not to the same extent as New England, which on Tuesday suffered a further sharp fall of 5 points, selling a trifle under 20, as against 30 a week ago. A drive was made by the bears on the Vanderbilt stocks, St. Paul and other issues, but the market maintained a gratifying strength throughout, closing firm, with prices showing but slight declines. The outside fluctuations in the more active stocks are shown in the following list, together with closing prices on December 20:

	Highest.	Lowest.	Closing, Dec. 20.
Am. Sugar Ref.	84	79½	81⅛
Atchison, T. & S. Fé	19⅝	17⅜	17¾
Balt. & Ohio	71⅓	70	70¾
Chicago Gas	68½	64	64⅛
Chic., B. & Q.	78⅝	76	76¾
Chic., Mil. & St. Paul	63⅜	59⅛	60
Chic., Rock Isl. & Pac.	68¾	65⅝	66¾
Del. & Hudson	135⅝	131¼	131¼
Del., Lack & Western	164¾	160	162½
Gen. Electric	39⅓	35¾	36¾
Lake Shore	126⅜	121	123
Louisville & Nashville	50	48½	48⅝
Manhattan	129½	125	127⅓
Missouri Pacific	24⅞	23	23
National Lead, Common.	26	23⅛	23¾
New Jersey Central	117	116	116
New York Central	102	99⅝	100
N. Y., L. E. & Western.	15⅝	14⅞	15
Northern Pacific, Pfd.	22¼	19¾	20
Philadelphia & Reading	20⅝	18⅝	18¾
Richmond & West Pt., Terml	2¾	2⅓	2¾
St. Paul & Omaha	38½	36¼	37
Union Pacific	21⅝	19⅜	20
Western Union	88⅜	85	85⅛

Railway and miscellaneous bonds have not been in request to the extent of the business in these issues of the past few weeks. The first-class, paying bonds have, in fact, been generally absorbed, and there is no real demand for those of a speculative kind. The market closes weak, with prices showing a considerable decline. Government bonds are firm, the latest quotations being as follows:

	Bid.	Asked.
2s, 1891, registered	95½	.....
4s, registered	113¼	114
4s, coupon	114½	115¼

The market for sterling exchange has been firm and active, but still below the gold exporting point. There is a good inquiry from remitters, but the receipts of commercial bills, which have been moderately large, have largely met the increased demand. Actual business was done on Wednesday at $4 84½ @ $4.85 for 60 days, $4.86¾ for demand, $4.87½ for cables and $4.83¾ @ $4.84 for commercial. Domestic exchange on New York is quoted as follows: New Orleans, commercial 125 discount, bank par; Charleston, buying $\frac{1}{16}$ discount, selling $\frac{1}{16}$ premium; San Francisco, sight 5, telegraph 10 premium; Savannah, buying ⅛ discount, selling par a ⅛ premium.

Bar silver closed in London on Wednesday at 32$\frac{15}{16}$ pence, and in New

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York at 70⅛¢ per ounce. Nearly 1,000,000 ounces of the metal have been exported during the week by New York houses.

Shipments of anthracite coal for the month of November were nearly 4 000,000 tons, an increase of 150,000 tons over those of the same month of last year.

Wheat rules at the lowest prices known, with shipments below the average. Corn is stronger on a reduction of the earlier crop estimates, with some considerable export sales. Cotton prices, while continuing low, have experienced some advance during the week on free buying for export account.

Metal Market.

Copper.—Business has been quiet throughout the week. Prices have undergone no radical change, but quotations made in various sources are considerably apart and leave a ripple on the surface that seems to have a rather annoying effect in more quarters than one. Copper was supposed to be well under control and sellers who represent the producers profess to maintain something like uniform prices. In some quarters it is denied that there is any understanding or agreement and that prices have not been cut below a level that is supposed to represent sellers' ideas of value. There is what may be termed strong circumstantial evidence that, whatever the surface appearances may be, the market is slightly free from restraint and not particularly strong as viewed from the statistical position. Producers of most brands of Lake Superior Ingots quote 10½¢ and claim to be sold ahead. Lots from second hands could have been secured at ⅛¢ less, however, and on the Metal Exchange there were offers to sell at 10.30¢ @ 10.35¢ for January delivery. Electrolytic is quoted at 9⅞¢ @ 10¢. and ordinary casting stock at 9½¢ @ 9¾¢, according to brand and quantity, but those prices represent sellers' idea of value rather than actual trading basis where large lots may be involved.

Pig Tin.—The movement in prices has been very narrow, and the line of value is practically the same at this writing as it was a week ago. Speculation remains dormant, pending developments in the tariff matter or other incentive. Dealers have purchased cautiously, and consumers have bought even more sparingly than usual at this season of the year. The bulk of business was at prices on the basis of 20.50¢ net cash for Straits, in 10-ton lots, near future delivery. Semi-official data show that 1450 tons were shipped from the Straits to Great Britain and America during the first half of December, besides 375 tons to Continental Europe, against a total of 655 tons during the corresponding period last year. Since July 1 about 770 tons have arrived here, the greater portion of which is in bond, and there are now about 650 tons afloat for this point.

Pig Lead.—Dealings have been on a very moderate scale and there is no sign of livelier demand, except perhaps in a speculative circle, where it not frequently happens that "demand" is nicely timed for effect upon prices. In other words, the best bidding has been from sources in which manipulation is common. Consumers have been influenced very little up to the present time. In any event they have purchased moderately and seem to have given little more than passing attention to the speculative manouvering. The sales effected were chiefly at 3 20¢ @ 3 22½¢ for carload and larger lots, near future delivery. Bullion price has been down to 3.10¢ during the week and moved up to 3.20¢ subsequently, while 3.27½¢ for January and 3.30¢ for February were bid on the Exchange.

Spelter.—Western brands are very irregular in price at the present time. Some may be had at 3 70¢, while 3.80¢ is generally quoted for what is classed as prime and 3.90¢ reported paid for choice. The demand is slow and hesitant. The offering is uneven. Upon the whole the market shows rather poor form, and a turn for the better is dependent in a good measure upon the policy of producers in the matter of restricting their output.

Antimony.—There has been only a moderate business doing and prices are barely steady at 9½¢ for Hallett's and 10¢ for Cookson's in round lots.

Tin Plate.—In some quarters very fair sales were reported for ordinary Coke Plates for spring and summer delivery. Such reports, however, were few and strictly the exception. The general statement was that business has been slow in both prompt and forward deliveries. Prices show little change, but the buyer seems to have gained advantage on such changes as have taken place, more particularly on spot stock. Spot quotations are as follows: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., $5.30; Bessemer full weight, $5.30; light weights, $4.85 @ $4.90 for 100 lb, $4.80 for 95 lb, $4.62½ for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60; Siemens Steel, IC basis, $5.65; IX basis, $6.75 @ $6.80. Charcoals—Melyn grade, IC, $6.35; Crosses, $7.87½; Allaway grade, IC, $5.60; Crosses, $6.75; Grange grade, IC, $5.75; Crosses, $6.85. Charcoal Ternes—Worcester, 14 x 20, scarce; do., 20 x 28, $11.35; M. F., 14 x 20, $7.35 @ $7 37½; do., 20 x 28, $14.75; Dean grade, 14 x 20, $5.35; do., 20 x 28, $10.50 @ $10.60; D. R. D. grade, 14 x 20, $5.15; do., 20 x 28, $10.10; Alyn, 14 x 20, $5.35; do., 20 x 28, $10.50; Wasters—S. T. P. grade, 14 x 20, $4.75; do., 20 x 28, $9; Abercarne grade, 14 x 20, $4.60; do., 20 x 28, $8.87½.

The monthly production of Copper in the United States since July, 1892, has been as follows, the first column giving the aggregate returns from the reporting mines, which include the principal Lake, Montana and Arizona producers; the second being the metal from pyrites and from a number of smaller outside sources, being estimated:

American Product.

1892.	Reporting mines. Gross tons.	Outside sources. Gross tons.	Total. Gross tons
July	9,294	924	10,218
August	10,807	870	11,677
September.	9,710	994	10,704
October	9,668	1,289	10,957
November.	9,888	1,036	10,924
December..	9,872	1,174	11,046
Total six months	59,239	6,287	65,526
1893.			
January	9,187	989	10,176
February..	8,213	1,042	9,245
March	9,065	1,321	10,386
April	11,775	1,042	12,817
May	12,706	1,042	13,748
June	11,524	1,042	12,566
Total six months	62,470	6,478	68,938
1893.			
July	11,049	1,042	12,091
August	11,745	1,042	12,787
September.	11,750	1,042	12,792
October	11,503	1,042	12,545
November..	10,705	1,042	11,747

The product of the foreign reporting mines and the United States exports were as follows:

1892.	Foreign reporting mines. Gross tons.	1892.	United States exports. Gross tons.
July	6,358	July	3,450
August	6,888	August	1,545
September	5,478	September	1,458
October	6,476	October	3,144
November	6,789	November	3,897
December	7,666	December	4,486
Total six months	39,655	Total six months	17,980
1893.		1893.	
January	5,736	January	3,171
February	6,762	February	1,815
March	6,896	March	2,334
April	6,913	April	3,450
May	6,806	May	4,482
June	7,935	June	5,109
Total six months	41,048	Total six months	20,361
1893.		1893.	
July	6,095	July	7,181
August	7,057	August	9,127
September	6 303	September	13,131
October	7,081	October	11,478
November	6,953	November	7,821

New York.

Office of *The Iron Age*, 96-102 Reade street, New York, December 20, 1893.

Pig Iron.—Transactions in Pig Iron are very light. The failure of the Crane Iron Company restricts the quantity of standard Lehigh Iron available for the markets, although it is understood that the furnaces may be started to work up raw material on hand. Some of the pledged stock of Iron may be sold peremptorily to satisfy advances. We quote: Northern brands, $14 @ $15 for No. 1; $13 @ $14.25 for No. 2; $12.25 @ $12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, $13 @ $14 for No. 1; $12 @ $13 for No. 2; $11.50 @ $12.25 for No. 3; $11.75 @ $12.25 for No. 2 Soft, and $12.25 @ $12.50 for No. 1 Soft. Gray Forge is $11.25 @ $12.

Spiegeleisen and Ferromanganese.—Practically nothing is doing in foreign material of this class. We quote: Spiegeleisen, 10 % @ 12 %, $21.50 @ $22, and 20 %, $25 50 @ $26, on cars, Jersey City. Ferromanganese remains nominally $55 @ $55 50.

Billets and Rods.—The market is weaker, in sympathy with Pittsburgh advices. We quote nominally: Domestic Billets, $19.50 @ $22, and foreign Billets, $28 @ $28.50, tidewater; domestic Wire Rods, $27 @ $28, and foreign Rods, $39 @ $39.50, tidewater.

Steel Rails.—One small order for a few hundred tons for a coal road was taken for immediate delivery by the Pittsburgh Mill. The South Mill of the Lackawanna Company starts to day double turn for a considerable period. Local officers of the Colorado Company state that the Union Pacific order taken by them is for 26,000 tons and not 30,000 tons, as printed in press dispatches. The price for 1894 delivery remains $24 80 at tidewater.

Track Material.—We quote as follows for small lots: Spikes, 1.70¢ @ 1.90¢; Fish Plates, 1.25¢ @ 1.40¢; Track Bolts, Square Nuts, 2.10¢ @ 2.40¢, and Hexagon Nuts, 2.30¢ @ 2.50¢, delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—The material for the Scribner Building was taken this week by a Pittsburgh mill. A lot of about 250 tons of Angles for the Ocean Grove Auditorium was secured by another Western works. A number of stories printed in the daily press are untrue. Among them that of

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an indefinite stoppage of the Passaic Rolling Mill, and that of a consolidation of interests by the Columbia Works, the Elmira Bridge Company and the Jackson Architectural Works. Very little is doing in Plates, and Bars are very dull. We quote nominally: Beams up to 15 inch, 1.65¢ @ 1.80¢, 20-inch, 1.80¢ @ 2¢, 24-inch, 2¢ @ 2.25¢, for round lots; Angles, 1.55¢ @ 1.75¢; Universal Mill Plates, 1.50¢ @ 1.75¢; Tees, 1.80¢ @ 2¢; Channels, 1.65¢ @ 2¢, on dock. Steel Plates are 1.45¢ @ 1.60¢ for Tank; 1.60¢ @ 1.90¢ for Shell; $1.90 @ 2.15¢ for Flange, and 2.25¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.45¢ @ 1.9¢, on dock, and Common 1.35¢ @ 1.50¢; Soft Steel Bars are 1.45¢ @ 1.70¢; Scrap Axles are quotable at 1.65¢ @ 2¢, delivered; Steel Axles, 1.65¢ @ 1.90¢, and Links and Pins, 1.65¢ @ 1.80¢; Steel Hoops, 1.70¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ ₩ 45-lb bundle, at mill; Machinery Steel, 1 45¢ @ 1.50¢; Toe Calk, 1.90¢ @ 2¢ and Sleigh Shoe, 1.65¢ @ 1.75¢, delivered.

Old Material.—The only transaction recorded is a sale of 200 tons of Old Iron Rails, special makes, at $12. The market is lifeless and weak.

The Lukens Iron & Steel Company of Coatesville, Pa., have appointed W. E. Clark as their New England representative, with offices at 8 Oliver street, Boston. Mr. Clark is well known to the Iron and Steel trade in Boston, having been for many years connected with William M. Horne & Co.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, December 20, 1893.

Pig Tin prices are about 10/ lower and the market is very tame at the decline. Early in the week there were reports of the payment of prices in the East relatively higher than those that ruled here. Some merchants gave a premium of 15/ over spot prices. Other buyers failed to respond in the face of Straits shipments of 1900 tons during the first half of the month and expected heavier shipments during the last fortnight, together with disappointment in American demand, upon which there was much buying a short time ago. An additional weak feature turned up in the form of weaker advices from the East. At present the market is feverish, with Straits quoted at £75. 5/ for prompt, and £76. 5/ for three months futures.

Copper has undergone comparatively little change in price, and there is no change in the general situation. Dealers sold forward quite freely on the advance that took place early in the week, and there was also more or less realizing by outside holders. Those sales operated as an offset to the strength previously developed from large orders from India, and caused a reaction from previous highest figures to present rates, or a decline of 5/ from the highest point. Transactions in furnace material have been limited, as smelters are unwilling to pay the prices demanded. Spot stocks decreased 1110 tons during the first half of the month and the visible supply has fallen off 555 tons. Chili charters were 1500 tons. Owing to the fact that four largest producers of Refined Copper have withdrawn from the market, Tough Cake and Best Selected English will probably rule higher in the future than other kinds. At the close the market was quiet. Quotations were £43 for Merchant Bar prompts; £43. 10/ for three months' futures, and £40. 10/ for Best Selected English.

Tin Plate has been in somewhat more active demand, but except for moderate quantities of Bessemer Cokes few orders have been placed. Business is restricted in nearly all lines by the lowness of prices made by buyers. The sales made have been chiefly from stock on hand, and for early delivery. Business has been resumed at the Waterloo works. Liverpool quotations are as follows:

IC Charcoal, Alloway grade	12/3 @ 12/9
IC Bessemer Steel, Coke finish	11/3 @ 11/6
IC Siemens " " "	11/6 @ 11/9
IC Coke, B. V. grade, 14 x 20	11/3 @ 11/6
Charcoal Terne, Dean grade	10/9 @ 11/

Pig Lead has been in only moderate demand, but prices are steadier at £9. 10/ for soft Spanish.

Spelter is weaker in prices and finds slow sale. Present quotations about £16. 12/6 for ordinary Silesian.

There is no change in the Iron or Steel trade, except that prices for warrants have ruled lower, receding to 43/6 for Scotch, 35/7½ for Cleveland, and 45/6 for Hematite.

A. R. Whitney & Co. of New York are just completing a shipment to Hayti of the iron work for a dock, consisting of a number of steel cylinders, No. 10 gauge, stiffened with angles, to be filled with concrete and fitted with a heavy shoe on top. For the same party they are sending out an iron warehouse, a railroad bridge and two small foot bridges.

An export order just placed for Cuba was for 500 tons of cast iron pipe and 300 tons of wrought iron pipe. The former was taken at $17.50, at works, by the Bessemer, Ala., shop, being probably the first export order of this character taken by a Southern pipe foundry.

McMann & Taylor, 42 Cliff street, New York, dealers in steam fittings, plumbers' supplies, &c., have been made agents for this territory of the Eddy Valve Company. They will carry their goods in stock.

At the close of the year with such a record for dull trade as 1893 it is somewhat cheering to learn that there are a few concerns whose books show an increase in business. Among the number is the New York Iron Roofing & Corrugating Company, controlling two factories at Jersey City and Philadelphia respectively. They state that during this year their business has reached 3500 tons of black sheets, corrugated and painted and for other forms of roofing and siding, also 400 tons of galvanized roofing. This is a marked increase over 1892.

The annual returns of the Clyde shipbuilding industry show that the total output for 1893 was 208,000 tons, against 336,000 tons last year.

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HARDWARE.

Condition of Trade.

THE year draws to a close with the falling off in business which is expected at this season. The approach of the holidays, the withdrawal of travelers from the road, the attention being given to plans for the new year's business, the effect of the financial disturbance and business depression of the past six months, the uncertainties of Tariff legislation, the weakness in the prices of some staple goods and the probability of lower prices in other lines—are influences which at this time are conspiring to make the trade defer all unnecessary purchases. The volume of business is therefore, to a good degree, limited to a few seasonable supplies and such goods as are needed for immediate sale. The improvement in the financial condition is a matter for congratulation, with the prospect of a better state of things in the near future than has characterized the last part of the present year.

Chicago.

(*By Telegraph.*)

The Shelf Hardware jobbers have enjoyed a comparatively fair trade the past week, but believe that business is now about over for this year. Salesmen are very generally on their way home to pass the holidays, and there will be few orders transmitted by mail direct from country buyers. Manufacturers' agents report a quiet condition of affairs in almost every line. A good demand has been experienced for Heavy Hardware. The trade in Iron and Steel is fair from small consumers, but there has been an unusually large movement in Sleigh stock, on which prices have risen owing to the scarcity of material. A stiff advance is asked on made-up Cutters.

St. Louis.

(*By Telegraph.*)

There is very little doing in the Hardware trade. The closing half of December is about as dull a period in the jobbing Hardware trade as they experience during the entire year, and this week appears to be even more so than usual. Salesmen are all in off the road, and arrangements are now in progress for the new year. So far as the jobbing Hardware trade is concerned the present year is practically gone and 1894 is now being discussed. The present year will go down in history as one of the most disastrous which the Hardware trade has experienced for 20 years past, and many will be glad when January 1 comes so as to blot 1893 out altogether. What little trade there is, is mostly holiday goods for local or nearby delivery. Collections are steadily improving.

Louisville.

W. B. BELKNAP & Co.—The fine, open, seasonable winter that we have had so far in this part of the country has conspired to make business fairly good. Prices, however, have not shown any special strength or any tendency to advance so far, but it would seem impossible that a continued demand, with the production being constantly limited by the closing down of various mills, could help but find some response after the first of the year.

The restoration of confidence is coming on slowly but surely. In New Albany, for instance, where the woolen mill and plate glass works had suspended, both of these concerns are now in operation, giving welcome employment to a large number of operatives. The rolling mills both there and at this place are running part of the time, enough to keep men together and customers supplied.

Some of the larger corporations here which passsd dividends in July have already declared them for January, thus putting their stock or their securities on a paying basis and making the holders feel much more comfortable, The purely Christmas business is less marked than usual. The more expensive lines of goods have not been laid in by the merchants as heretofore, a wise precaution, as consumers are hardly able to indulge in such luxuries.

The smaller or country towns appear to be doing well, as are the people in the country; all sorts of farm products are sold readily at good prices. The suffering, with which there is naturally and commendably much sympathy, is mainly confined to the towns, to which large numbers of people have flocked with the idea that they would be taken care of by charitable individuals and organizations. Free coal, free soup houses, wayfarers' rests and other such inducements are held out in name and in fact, and the great army of the unemployed is not suffering from deserters, but rather from incessant recruiting. Very much has been made of the situation in the public prints. Many of those who never have anything to do because of their lack of skill or industry have come to look upon themselves as the wards if not of the nation, of the municipality which suits them best. Fortunately we have here an unusually well ordered board of organized charities, and much of the care of the real unfortunates as well as the detection of the impostors is laid upon it. The sensation of the day is the collapse of a span of the new Jeffersonville bridge, which occurred this morning, carrying down into the river over 40 men, half of whom were drowned.

Cleveland.

THE W. BINGHAM COMPANY.—The usual falling off in trade incident to this season of the year is perhaps a little more marked now than usual. The uncertainty of Tariff legislation, the unprecedented weakness in the price of staples and the general conservatism of all buyers are the prime factors in the present reduced sales. The country was never so bare of goods, and when the turn comes there will be such a demand for all kinds of goods as was never before known—but when will the turn come? That is the question. Orders for Wire and Wire Nails are being freely placed at the present low prices, and it seems almost impossible for these staples to go lower than they are at present. Season goods are selling unusually well. The stringency of the money market has disappeared and collections are fair.

In closing this year we wish all our friends throughout the trade a Merry Christmas and a Happy and Prosperous New Year.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—The middle of December finds our trade well up to expectations based on October and November business. The demand continues fairly steady and will continue so as long as we have our salesmen on the road. We look for a fair mail order trade during the first part of the coming month, perhaps proportionately better than usual, as dealers are by no means stocked sufficiently to run them through the mid-winter months.

We hope that tariff discussion in Congress will not be prolonged, as we fear an uncertainty more than we do the final passage of a new revenue measure. The concerted action to secure the retention of specific duties on Tin and Terne Plates as opposed to ad valorem duties has our hearty approval.

Omaha.

LEE-CLARKE-ANDREESEN HARDWARE COMPANY.—The experiences of the past two weeks have not been without their bright side as regards the jobbing Hardware trade of this section. The increased volume of business that was expected as the holidays approached has not been disappointing. The month opened auspiciously, and the colder weather, together with some snow, has given a stimulus to business which ought to show a gratifying effect at the close.

As the year draws toward a close the usual figuring and speculating on the general results of the annual "round-up" are indulged in. During the first six months there was considerable activity, and the amount of business done was much larger than for the corresponding six months of the previous year. During the last six months of the year there has been a considerable falling off in the volume of business, and the question is whether the decrease has been sufficient to wipe

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out the gains made the first half of the year. We are inclined to the opinion that the total sales for the year will fall slightly below those of 1892.

It must be remembered, however, that 1892 was a "banner" year, and it could not be expected that the total volume of business this year would reach the figures of 1892, especially in view of the shortage of crops of all kinds and other disastrous experiences. Still, with all the drawbacks, this year will exceed 1891, both in regard to the volume of business as well as profits.

Portland, Ore.

CORBETT, FAILING & ROBERTSON.—Trade jogs along at the same even gait that we have at last accustomed ourselves to expect. The building season, which—as regards weather—we do not expect to stop, is at a standstill. This, of course, is owing to the depression prevailing in all lines. There is little inducement to build either business blocks or dwellings.

The holiday trade is not expected to amount to much this season. The trade requirement is for staple goods only, and at the prevailing low prices even, they do not tend to swell the volume of sales.

Collections do not show any improvement, and it is hard to say from what source they can be made.

Prices show no change, except Sisal Rope, the local Cordage works having reduced the card price to 7¢, a price never made before.

New Orleans.

A. BALDWIN & CO.—Business has quieted down considerably in the past week, and merchants are evidently waiting for the new year to see what will develop in the business situation. Even retailers are complaining of the small amount of business. Holiday goods are evidently not moving in such quantities as to make the retail merchants happy.

We usually look for a considerable dropping off of country orders in the jobbing department, as most of the merchants in the country are busy waiting on their holiday trade.

Baltimore.

CARLIN & FULTON. — During the present month the demand has been fairly good for goods appropriate to the season and orders have at least been numerous if not heavy.

The drop of the temperature to freezing point, with a fall of the beautiful snow, has helped the sale of Sleigh Bells and Skates, while the appetizing visions of sausage and mince pies have made an active demand for Meat Cutters and Stuffers.

The traveling salesmen generally return to their homes for the enjoyment of Christmas with their families, and we therefore expect few orders until the new year. Most of our customers overhaul their stocks, take their inventories, balance their books and are not disposed to purchase except for urgent wants.

After the holidays shall have passed we look for an improvement in trade, and in the South, though the present price of cotton is far from being satisfactory, yet a new crop must be planted and the demand for such necessary supplies begins almost with the first of next month.

This is the season of the year when most of the failures occur and when we hear oftener than at any other time from the debtor so unfortunate as to be compelled to assign and to prefer among his creditors some few of his relatives, but who has also found a kind friend willing to loan him enough to offer 25 cents on the dollar.

So far this year such cases are rare, notwithstanding the general depression that has existed, and we believe collections upon the whole have been as satisfactory as they have ever been, even in far better times.

Boston.

BIGELOW & DOWSE.—A stranger visiting the different Hardware jobbers would be inclined to remark that the trade was not feeling the hard times, as everything would indicate to him a rushing business. The bulky goods sold at this season fill the packing rooms, and the various packers seem to emulate each other in making an unusual noise with their hammers, &c. Notwithstanding all their bustle, the volume of business is still below that of last year. Lower prices will account for a proportion of the falling off, but customers' orders are small, and there is the same labor required to pack them and prepare them for shipment as if they were twice the size in quantity and in value. In times like these retailers find it to their advantage to send their orders to wholesale dealers, who supply their wants quickly and at such prices that they would be losers if they waited to send orders to factories, where they must make their orders larger and run the chances of a decline before the goods are sold. There is evidently a place for the jobber in times like the present, and they will try to merit the customers' confidence so as to retain their trade when the market changes and it is safe to buy for future advances. Prices are ruling very low, and there are many orders being placed for seasonable goods for spring delivery.

Philadelphia.

SUPPLEE HARDWARE COMPANY — Looking at trade from the present reduced standard or standpoint, it has continued moderately active during the last two weeks, but the trade during the two weeks preceding the Christmas holidays has for some years past been weeks of exceeding activity. Therefore a comparison of trade between this year and the same weeks of 1891 and 1892 shows it has been far below the average. This we find has been general throughout the entire country, if we accept the estimate given one year ago that the bank clearings over the entire country during the month of December were many millions in excess of the previous month, and while the bank clearings for November, 1893, was 25 per cent. less than November, 1892, December is likely to fall far short of the percentage of November, 1892.

Our country trade from agricultural districts has been far more active during the last few weeks than the city trade, both in the demand for general Hardware and season and holiday goods. From a comparison of the retail trade of our city, not confined to Hardware alone, but the general trade, one would scarcely realize he was living in the same month of the year. The holiday trade has suffered in the retail department severely in comparison with former years, and they report that where a person spent a $5 bill a year ago, he is now dividing it into from four to five portions and confining his purchases to more useful and needed articles in making his selection.

It is possible, however, that the economy practiced for the holiday season shown in our city may not be shown throughout the country, although it is probable that it is the case in all locations where they depend largely upon manufacturing industries, as the railroad earnings are somewhat of a barometer, and they report reduced earnings of about 12 per cent., and President Roberts of the Pennsylvania Railroad Company has instructed all heads of departments to enforce most rigid economy and to curtail all expenditures to the lowest possible point, and to reduce the number of employees to a minimum consistent with the safe administration of the service.

Collections are not so favorable as they have been in some of the preceding weeks.

The jobbing houses, as a rule, are arranging their force for taking the yearly inventory, and the greater part of what might be unoccupied time will be taken up with this business within the next few weeks, and the results of the year 1893 will therefore be known possibly soon after January 20.

The hard winter before the wage earner in the manufacturing districts is to be deplored. The writer has, within a few days, visited the neighborhood of our manufacturing districts, located in the upper portion of our city, where the effects of our recent panic are still visibly shown, and where a dead feeling still prevails. No animation of life is seen from the various factory windows, but closed and locked doors, with smokeless chimneys, greet one on every side.

While monetary conditions are favorable for resumption of work the demand for the goods produced in these factories is missing. Where an occasional mill has started up it is an exception, because others employing a larger number of hands have recently closed. Men, women and children stand idly about, and neighboring stores have reduced their force and reduced the wages of those who remain with them. Where thousands of turkeys and chickens hung from the grocers' doors and windows one year ago in this neighborhood the evidence now is that thousands of persons in this location will depend for their Christmas dinner upon charities' funds, and in this our Relief Association has been very active. The change from last year to this in that location is as if jumping from fairy land to a stern reality.

With this state of affairs in manufacturing districts, it is no wonder that the financial circles were amazed, and is it not wonderful that such a mischievous bill as that introduced by Senator Voorhees in the United States Senate within the last few days should have been brought forward? The bill provides that the Secretary of the Treasury shall purchase silver bullion in sufficient quantities to coin not less than $2,000,000 per month, and shows upon the face how little consideration is given by some of our representatives in Washington to either demands of public interest or the distress of those who have recently suffered from unwise legislation. How any one should be so reckless of the interests of the country it is difficult to understand. The idle mills, the millions of unemployed, the financial, mercantile and industrial failures are all brushed aside with sweeping indifference. It is now plainly seen—which was earlier supposed—that the leader of the Senate had no heart in repeal of the so-called Sherman clause further than public opinion and President Cleveland's whip. It is asserted, however, that the intention is not serious further than to secure the votes of the silver Senators for other purposes;

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but why play the game of battledore and shuttlecock when so great a danger is manifest?

The Secretary of the Treasury, Mr. Carlisle, recently stated that the silver question was now settled for many years to come. This had a pacifying effect to quiet the unrest, and while these words still sound in one's ears Congress is asked to enact a law compelling the compulsory coinage and force its acceptance by the retirement of bank notes of denominations less than $10. This financial heresy of compelling 70,000,000 people to throw aside the convenience of these notes is bad enough, but in itself small in comparison to the danger of a renewed panic, as this law would be just as much worse than the Sherman law as the Sherman law was a better law than the Bland silver law, which existed prior to the enactment of the Sherman law. The Bland law was given a fair trial and it was found not possible to force this silver on the country and public opinion demanded its repeal. That not being possible the Sherman law was enacted. It is not at all probable that President Cleveland would sign such a law if enacted, nor would it be possible to pass it over his veto.

The worst feature, however, is the indifference to the recent object lesson of the severest panic this country has ever experienced, and at a time when we are slowly but painfully recovering from the effects, to strike a blow again at public confidence is certainly an unexplained mystery.

Notes on Prices.

Wire Nails.—The market still continues to show a declining tendency and carload lots of Wire Nails at mill are much more readily obtainable at $1.10 than they were a week or two ago, and it is understood that sales have been made at $1.05. The regular demand for early delivery is very moderate, but the low prices which are ruling have had the effect of inducing the placing of some fair orders. The trade are, however, to a large extent deferring purchases until after the first of the year, but at the same time buyers are watching the market carefully, so as to be ready to place their orders when there are indications of a strengthening in price.

Chicago, by Telegraph.—Matters are quiet in Wire Nails. There is more or less inquiry for spring delivery, but few Nails are wanted for December or early January. Factory lots are quoted at $1.25 to $1.30, Chicago, and small lots from stock are selling at $1.35 to $1.40.

Cut Nails.—With the unsatisfactory condition of the market the mills are to a considerable extent reducing their production and avoiding as far as possible undue accumulation of stocks. The price in the East is represented by the quotation of 90 cents for carload lots, f.o.b. mill, and is regarded by many as being as low a figure as is obtainable on regular specifications. There is, however, reason for believing that this price has been slightly shaded. Small lots from store in New York are quoted at $1.20 to $1.25.

Chicago, by Telegraph.—Business in Cut Steel Nails is very quiet and will probably continue so until after the turn of the year. The reported fire at Lake Side did no damage to the works proper, but only affected the keg factory, which is operated by outside parties. The works are in active operation and will not shut down for the holidays. Prices are unchanged at $1.15 to $1.20, according to the character of the order, while small lots from stock are selling at $1.25.

Barb Wire.—Barb Wire as well as other leading staples feels the effect of low prices made by manufacturers who are especially desirous of realizing on their product, and as a result still lower prices have been developed. It is understood that some sales have been made by Western makers in large lots at $2 for Four-Point Galvanized at mill. The market is fairly represented by the quotations of leading manufacturers of $2.10 for Galvanized and $1.70 for Painted, with 5 cents off in carload lots. One or two of the manufacturers, however, refuse to meet current prices, and for the time being have practically withdrawn from the market. The legitimate demand is light, but some business is induced by the extremely low prices which are offering. Small lots from store in New York are quoted at $2.35 to $2 40 for Galvanized.

Chicago, by Telegraph. — Manufacturers who deal largely with the retail trade report as much Barb Wire sold now as last year up to the same date. The tonnage being made up of small orders, a better price is realized than if the orders were as large as are usually placed by jobbers. Manufacturers who cultivate relations with jobbers report a very quiet trade. Prices continue to be quoted at $2.35 to $2.40, Chicago, for Galvanized Barb Wire in factory lots; $2 50 to $2.55 in small lots.

Plain Wire.—The market for Plain Wire is weak and irregular, and somewhat lower prices have been developed within the past two weeks. The condition of the market is reflected in the following quotations of a well known concern, which are subject to an abatement of 5 cents on carload lots:

	Annealed.	Galvanized.
Nos. 6 to 9	$1.35	$1.75
" 10 and 11	1.45	1.85
" 12 and 12½	1.55	1.95
" 13 and 14	1.70	2.10

Some of the manufacturers, however, refuse to meet these prices and are naming slightly higher figures.

Lanterns. — Buhl Stamping Company, Detroit, Mich., one of whose Lanterns is illustrated in this issue, quote these goods at the following net prices:

Mascot assortment, three square lift Lanterns, assorted colors, two dash Lanterns and one head light, per case	$5.00
Brilliant assortment, 12 square lift Lanterns, assorted colors, per case.	6.00
Dash Board Reflector Lanterns, japanned blue, per dozen	5.50
1894 Tubular head light, per dozen..	21.00

Venetian Ironwork Outfits — The materials for Venetian Ironwork described in our last issue as put on the market by A. J. Weed & Co., 106-108 Liberty street, New York, are subject to a trade discount of 20 per cent. A manual relating to this work gives complete list prices on the goods.

Hammock Hooks.—Stearns' Hammock Hooks, manufactured by E. C. Stearns & Co., Syracuse, N. Y., No. 200 of which was illustrated in *The Iron Age* December 7, 1893, are sold at net prices as follows:

No.		Per doz.
200.	Steel Plate Hammock Hook	$0.60
20.	Hammock Hook	.60
24.	Hammock Hook	.60

Hair Curlers. — The Unique Self Heating Hair Curler, as illustrated in *The Iron Age* December 14, 1893, is manufactured by the Unique Novelty Company, Detroit, Mich., and sold on 30 days time, or 3 per cent. discount for cash in ten days from the following net prices:

	Per dozen.
Nickel	$16
Silver	24
Gold	36

Steel Broiler.—The Steel Broiler illustrated in our issue of December 7, 1893, and manufactured by the Cleveland Stamping & Tool Company, Cleveland, Ohio, is sold at $1 each, from which a discount of 70 and 10 per cent. is allowed.

Adjustable Paint Burner. — The Quick Meal Adjustable Paint Burner, manufactured by Quick Meal Stove Company, St. Louis, Mo., and illustrated in our issue December 7, 1893, is sold at $5 each, less a discount of 30 per cent.

Glass.—The week has developed few or no changes in the condition of the Glass market, although some additional factories in the West were put in operation. It is reported that some of the factories making Glass have orders which will keep them employed for some time. Local trade is limited to small orders, which is not unusual at this season of the year. Prices are reported from Pittsburgh as being 85 and 5 and 5 per cent. discount for single and 85 and 10 and 5 per cent. discount for double strength Glass. Western prices from factory are given as 85 and 7½ per cent. discount for single and from 85 and 10 and 10 to 85 and 15 per cent. discount for double strength Glass. It is understood that Western prices are in some cases made at the foregoing figures, delivered at destination. The continuous tank system used in modernly arranged Glass plants allows the production of Glass at a less cost than where pots are used. This and other improvements will aid in solving the question of making Glass profitably at a low selling price. There is a lack of uniformity in quotations made by various Plate Glass factories. It is reported that the price at which Plate Glass is being sold allows of its use as a substitute for Window Glass of the larger sizes.

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ANCIENT HARDWARE

BY A. W. PARMELEE.

A paper read before the Massachusetts Hardware Dealers' Association, December 13, 1893.

Mr. President and Gentlemen of the Hardware Association:

Your committee, in asking me to speak to you this evening, intimate that I am a patriarch, and that I have seen American Hardware develop from its very beginning. When we reflect that less than 50 years ago nearly all our Hardware was imported from other countries, and that many at this table have in their lifetime seen American Hardware manufactures grow from nothing to their present magnificent proportions, I do almost feel like one of the old Hardware pioneers of America.

PREHISTORIC AMERICA.

But, Mr. Chairman, I can show that I am not one of the very first. A grave has been unearthed on this continent, covered by strata of soil and geological formation which science tells us must have taken 10,000 years to form. Its hewn stone casing and inscriptions give unquestioned evidence of the chisel and the hammer. The ornaments and the kitchen Hardware, inclosed with the body, are cunningly wrought and well devised. History and poetry look for stories of great battles and noble deeds in these graves; art looks for statues and ornamental devices; neither art nor poetry will aid me in looking up the details of the Hardware business at that time, and hence I must do it for myself. This grave and the thousand other evidences of prehistoric nations point to a people who knew as much in their way as we do in ours. Evidences accumulate that nations have flourished and disappeared upon this continent so far back in time that the mind cannot conceive it. We have mummies that are older than any in Egypt. These, in turn, are antedated by other peoples long since lost in antiquity. Ages before the flood they were growing corn in Ohio and mining copper, silver and gold in various localities; they were weaving cloth, making dyes of all colors from herbs, berries and minerals. The facts revealed point to a people who filled teeth with gold and who operated for cataract in the eye—one of the most delicate attempts known to our modern surgery. If these remote people could do these things shall we suppose that they did not have the finest of tools, and that they did not know all about fashioning, tempering and polishing them? From whom should they obtain these and similar tools except from the Hardware merchant? Shall we doubt that there was the Hardware store, and that it had its sign and its imposing show window? There was unquestionably the Hardware merchant; and he was distinctively a Hardware merchant. The same man who sold implements of war and of husbandry manifestly did not also keep doves; nor did he deal in rare needlework or art images. There was the Hardware merchant and, perforce, the Hardware manufacturer. We are obliged to admit also that there was the ubiquitous Hardware drummer.

The American nations built public works as great or greater than any known in Europe. The Peruvians had public roads 2000 miles long. Humboldt pronounced them among the most stupendous works ever produced by man. They built magnificent bridges of stone, and even invented suspension bridges thousands of years before they were introduced to Europe. In Central America and Mexico the wonderful ruins tell of a dense population. One city covers a space 6 miles in diameter. Its long avenues are lined with ruins of public building, palaces, factories, edifices and halls, in continuous lines, like our modern cities. These evidences of former grandeur cover an immense territory, including many of our Southern and Western States. One fort on the Little Miami River, Ohio, has a circuit of 4 or 5 miles, and an embankment 20 feet high. It could garrison 60,000 men with their families and provisions.

They had a chain of fortifications reaching from the State of New York across Ohio to the Wabash, and many other works of equal magnitude; yet nowhere in history can I find an ancient spade, or shovel, or wheelbarrow.

MOUND BUILDERS.

In the valleys of the Mississippi and tributaries and throughout Ohio and many other portions of this country are evidences of prehistoric man which baffle our present knowledge. Whatever the purpose of these mounds was, the fact that there are over 10,000 of them in Ohio gives some idea of the extent of the ancient people who built them. They are far more numerous in Southern localities and in the Gulf of Mexico. To have such works possible, under any circumstances, there must have been settled life with its accumulations and its organized industries. They had their manufacturers and merchants; and they used implements of agriculture, of war and of peace. No trace of their dwellings, or their factories, or their stores is left. Their circular earthwork inclosures are perfect circles, and their square inclosures are perfect squares. They are constructed with geometrical precision, which implies a knowledge of science. Implements made of copper, silver, obsidion and greenstone, finely wrought, are found in abundance. Their axes, single and double, adzes, chisels, drills or gravers, lance heads, knives, bracelets, pendants and the like, of copper; their ornaments made of silver and mica from the Alleghenies, and shells from the Gulf of Mexico, all testify to their organized industries. They had the art of spinning and weaving.

In a Minnesota mine a mass of copper weighing nearly 6 tons has been found, which was evidently detached by prehistoric man. It lay upon a cob work of round logs or skids, the ends of which showed plainly the marks of a small axe or cutting tool, and the mass of copper had been raised several feet along the foot of the lode on timbers by means of wedges. Copper mauls, or sledges, weighing 25 pounds were also found. The whole copper region of Lake Superior shows the work of ancient miners at all the mines of any importance. Their settlements extended into Virginia, Michigan, Wisconsin, Iowa, Illinois, Indiana and Missouri. They were not ancestors of the wild Indian.

Some of the wrought ornaments of the mound builders equal in finish and beauty the finest manufactured by the ancient Peruvians. They made chain, and they had a great store of copper, flax and other rich commodities. They were in some way related to the ancients of Yucatan, Guatemala and Southern Mexico. The fact that they extended through Texas to South America indicates an exceedingly large and very populous condition in the remote past. In Central America, mostly buried in heavy forests, are wonderful ruins of great cities and temples. In Colorado and California are ruins of more permanent structures of stone, which, in their day, might have excelled the famous Pueblos of New Mexico. There was a higher degree of civilization in the ancient times than has been shown by the people of the same race there in our time. Ruins throughout North and South America display intelligence, skill and much labor. Aqueducts and subterranean reservoirs and cavernous passages show the extent of their knowledge and engineering skill.

MEXICO.

The history of the conquest of Mexico reads like a fairy tale. Our present object, however, is to reflect that these great peoples had their merchants, their manufacturers; and that they engaged in the Hardware business as we do to-day; and that if we can discover the nature and extent of their Hardware, we can, in a large measure, find out their condition and habits and their stage of civilization. The ancient graves disclose almost every article of Hardware known to us at the present day; bodkins, screws, horseshoes, shawl pins, buckles, knives, helmets, shields, tweezers, door keys, sheep shears, &c.

While it appears that in very ancient times the natives of Central America possessed copper implements for tilling the fields and knew the use of the chisel, researches show that the use of the axe and hatchet in various forms, the blow pipe, the cooper adze and the meat chopping knife are far back in time. They made nails, and they are believed to have brought the manufacture of bronze to great perfection, and are even said to have possessed the art of tempering brass.

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PRIMITIVE HARDWARE.

We are on the threshold of investigations in this country which shall reveal the evidence of man on this continent so far back in the ages that our previous estimates of the development of man shall be dwarfed into insignificance. However savage his state may be assumed to have been, primitive man must have possessed implements, weapons, domestic utensils, Hardware—implements more or less rough, but still implements for cleaving wood, constructing places of shelter, carving his food, catching and preparing his fish, trapping his game and other similar uses. Man has never existed without a defensive weapon. We patiently search for these tools and implements, and our search has been and will be rewarded.

Those of us who have seen iron pipes buried in the earth return to oxides and to sand in a few years' time and those of us who wonder what becomes of all our pins can understand that through the ages that have lapsed all traces of ordinary implements of Hardware may well have disappeared again and again. Nevertheless, bones and implements have been found in certain strata of the earth, the age of which is known to geologists. Some of these long preceded the flood. The more enduring stone is naturally found where perishable Hardware of other varieties has disappeared.

BONE IMPLEMENTS.

It is evident that if we have met with the bones of the cave bear and of man in conjunction with relics of his industry, such as implements and utensils, we can assert with some degree of certainty that Hardware was known at the time of the cave bear, and that man lived in the quarternary epoch.

It is interesting to note that in diluvial beds the Hatchet and the Axe have been found—stone, to be sure, but in such perfection as to be the shape of the same article reproduced down through all the ages, until to-day we sell the same Hatchet and the same Axe, in pattern.

In a prehistoric cave in France there has been found the remains of the bear and of man, together with numerous well made implements of stag or reindeer's horn, carefully fashioned and beveled, with holes drilled therein; knives and other weapons, and the bear's tooth carved in the shape of a bird's head and drilled. This cave had a cement floor or layer of made ground of an ossiferous and vegetable character, strengthened with fragments of stone. There were also ashes and charcoal, showing the existence of a fire.

The jaw bone of the great bear, with an immense canine tooth left in place, and the whole carved, finished and fashioned into the shape of a convenient and formidable weapon, further testifies to the skill and workmanship of the people in that remote age.

During the Glacial Period man's greatest need was fire. This he doubtless obtained by rapidly revolving a pointed stick against inflammable woods, resin or grease of wild animals by means of the bow drill.

EARLY HARDWARE MANUFACTURE.

The use of the bow appears to have been known from the beginning of time, and the bow drill of our present day appears through all the history of antiquity. The flint arrow head and the long bow are also common to mankind in all ages and in all lands. Stone implements of various kinds, and in some cases for uses which we can hardly conjecture, also appear to have accompanied man almost from his earliest stages. The varying types of these stone implements mark the date of the starting point of manufactures and the arts. We find among them flint knives, scrapers, agricultural implements and domestic utensils. We have found in this country immense beds of flint flakes, showing that these implements were made at regular factories, and the chips and imperfect implements found in these beds indicate that they were made upon a very large scale, and that there was the manufacturer and hence the merchant and, of course, the drummer. We find also the mines from which the suitable flint was extracted, and that the mines were shored up and protected with posts and lumber, to stay the earth in place, much as we do mining to-day. It is also manifest that there were varieties and different qualities of these various implements, some of them being made from the common flint, while others are made from obsidion, quartz, jasper, agate and jade.

The manufacture of tomahawks, scrapers and chisels and the skill required in fitting them to handles gave employment to large numbers of men, These men were skilled mechanics, and had all the questions of wages, hours of labor, &c., which we have to-day. Perhaps they had their labor unions. These are the primitive Hardware manufacturers.

The potter's art we are not discussing, but it also dates back to the earliest epoch of man. How soon the potter's wheel or lathe was known we cannot yet determine.

Implements made of reindeer horn, sharks' teeth, teeth of the cave bear and of polished bone are also found; while the needle, having an eye pierced at the base, was manifestly known to the cave dwellers and to earliest man. Bodkins, stilettos, saws and needles are found. The perfect flint drill, with sharpened point and cutting edge, also appears in the Stone Age. The spoon made from the reindeer's horn, and delicate instruments made from polished horn and bone; the flint saw and the chisel, the bone harpoon and the horn comb were in use by the cave dwellers.

SIMILARITY IN FORM.

These people on this continent, far back in time, have a remarkable similarity to man in other parts of the world. They passed through the same periods with much the same experience in knowledge and development as in the better known countries of Europe. Their Stone Age, their Bronze Age and their Iron Age are distinctly marked. They had on this continent the same stories of the flood; the same rules of art and of architecture; the same pyramids; the same common form of arch; the same belief in immortality: the same compass; the same knowledge of astronomy; a similarity in languages and in alphabets. The plow is found in ancient Egypt and in ancient Peru; the axe of the Stone Age in Europe is the axe of the Stone Age in this country. The stone arrow head of Switzerland is the same as the stone arrow head of America.

The bronze chisel and the spear head of oldest Europe are almost identical with those of North America. Both countries knew the use of the magnet; the signs of the zodiac; and they calculated eclipses and watched the periods of the planets and constellations. The carpenters' and masons' tools of oldest Europe are almost identical with those we use to-day. Even the obelisks of Egypt have their counterpart in America. The division of time employed at Thebes was strikingly similar to that found in use in Mexico. The round towers of ancient Ireland and Scotland are the same as those in New Mexico and Colorado. Ancient Phœnician idols of the horned god Baal are the same as those found in Dakota and Peru. Coins of ancient Tyre and of Central America are strikingly similar in size and in the device thereon.

COINCIDENCES.

We find in this country mounds shaped like the elephant, yet it is known that the elephant never existed here. In ancient Mexico also idols and bas-reliefs faithfully portraying the elephant have been found.

These coincidences are mentioned to show that at various times, through vast antiquity, the old world and the new have in some way come together and have interchanged knowledge, arts, forms of government, implements of war and of agriculture.

Now, who were the venturesome and ambitious men who undertook these voyages, and what was their incentive? I answer that it was the traders, and that they sold implements of war, of husbandry, of the chase, and of the domestic life; in other words, they sold Hardware and were the drummers. They pushed out into all quarters of the earth. Hardware and civilization have gone together since the Glacial Period.

The Hardware implements found in these ancient graves record the progress of man and fix his stage in the advancement of the race. Since time began commerce has been the great educator, explorer and mover of the world, and in the forefront of these exploits is the Hardware merchant.

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VULCAN.

Vulcan unquestionably had an existence in fact, and it is only the halo of time and imagination that deifies him. He was a smith, armorer and chariot builder. He made Horseshoes of brass, and was an unusually good Hardware manufacturer. (Any of us who are unusually good in our line will doubtless go down to posterity in much the same exalted memory.) He is said to have forged thunderbolts, but we Hardwaremen know that he would not make up any stock for which there was not a demand. If he "forged" at all, it suggests the anvil and heated iron; but all his products were brass and plainly locate him in the Bronze Age. His goods had a large sale on account of their quality.

Whoever was the original of the Venus of Mythology, it is plain that she needed kitchen Hardware, manicure sets, and I had almost said a pocket knife, but I am in some doubt as to whether she wore a pocket.

COLUMBUS.

Recent events at Chicago have exalted the name of Columbus, but we of the trade know that Columbus was, in fact, a hardware drummer. He carried a line of pocket knives, hatchets, fish-hooks and small wares, and was seeking to extend his trade. At a dinner given by the Hardware Association, in Spain, after one of his trips, he won a wager on some quite ordinary trick with an egg. He told those people at home that he had "discovered" us. Discovered us! Forsooth! Our people worked off some coon skins and other articles with which the market was much overstocked, and induced him to give us several hawk bells for a single skin. These hawk bells were worth more to our women than all the surplus skins in the market; for they enabled them to adorn themselves with European novelties and to walk the streets of our cities in all the pride and glory of decorated beauty. Moreover Columbus died poor, as is still the custom of hardware commercial men. Many drummers from other lands had visited us before, far back in time, and many shall do it again.

We cannot help thinking of people in far countries, or in far off ages, as benighted and unused to the advantages we enjoy.

When we read of the beauty and wealth of Helen of Troy we are prone to believe that she was, nevertheless, a barbarian, and, in the absence of our modern silver plated fork, she tore her food asunder (perhaps by putting one foot on it), and in general lived and conducted herself in a very crude manner. We must rest assured, however, that her household utensils covered not only all the devices for utility and convenience known to us, but were, moreover, probably adorned and embellished with workmanship such as we rarely see.

ASSORTED SIZES.

When we read of the magnificent bronze shields and the shining helmets of Ulysses' army we are carried away with the sublimity and poetry of the situation, but our subject for this evening is Hardware. Would it be unpoetical for me to wonder who sold Ulysses those shining helmets, and whether they originally came one dozen in a box, nested and assorted sizes, and whether the drummers who failed to get the order were blamed by their houses? May we believe that Ulysses claimed that some of the boxes were one-sixth of a dozen short or that he took off 2 per cent. when he did not pay within ten days? The license of our trade gives us the right to inquire, but poetry is silent on these points and may even take offense at our temerity.

The dawn of the bronze epoch revolutionized the Hardware trade, and hence the civilized world. The copper mines of Lake Superior and of Minnesota have manifestly been worked in prehistoric ages. Evidences of brass foundries have been found in various places upon this continent. It is already made plain that the inhabitants of North America for a long time worked the pure copper into Hardware implements. How long they did this before they discovered that an alloy of copper and tin would make bronze we do not know, but it was thousands of years. Every day, however, brings new developments, and in time the history of the Hardware trade on this continent will be unfolded.

BRONZE AGE.

The transition from the Stone Age to the Bronze Age can be read in the disclosures of the lake dwellers of Switzerland. This wonderful people lived through the Stone Age and for long ages continued on until they lapped over into the Bronze Age. Some of their settlements disclose only stone implements, while others of a later date show the bronze chisel, the bronze winged hatchet, the bronze knife, the hexagonal hammer, the tanged knife of ornamental design, the socket knife and the bronze sickel; they show also the bronze fish hook, barbed, and in exact similitude of our present device. The ornamental hat pin, as now used, together with other articles of utility and ornamentation, are plentiful. The stone mold for casting the copper or bronze hatchet is of exceedingly ancient date, but probably the use of sand was far more common, and hence we have less traces of that method.

EGYPT.

It is a singular fact that the ancient Egyptians show no evidence of previous barbarism and gradual development, but they spring upon the world at once in a high state of cultivation. It is also remarkable that in all ancient Europe they show no evidence of having used copper before they discovered the advantage of an alloy with tin. They appear to have begun abruptly to use bronze. Is it possible that developments on this continent shall prove that the art was introduced to them by the inhabitants of this land?

TALES OF THE TOMBS.

While we grope in the dark, seeking to find the modes of living, method of work, details of trade and other interesting facts with reference to most of the ancient peoples, we are certainly indebted to ancient Egypt for its picture writing. We must be exceedingly thankful for the inspiration which caused them to decorate their tombs and all available places with those famous flat pictures of angular men and women engaged in the ordinary pursuits of life. They unfold to us a better story of their every day life than could be obtained in any other way. A painting from the tomb of Rameses III, at Thebes, shows an Egyptian kitchen, with the various processes of preparing the feast. It plainly shows our present butcher knife, the poker, pots and kettles, wash basin, various pans and bowls, soup ladles, ropes passing through rings, kitchen tables and the syphon of various sizes. The fire and bake oven quite nearly approach our modern stove, and the tray upon which the servant handed viands to the guest was the same device we use to-day. Bronze spoons and ornamental ladles of various lengths, as well as those of shell and alabaster, are found at Thebes. Small strainers or colanders also abound, and doors appear with the ordinary butt hinges and with ornamental strap hinges of our exact patterns.

BOLTS, WIRE, TOOLS, ETC.

We also find the shutter bolt like that we use to-day. Their well known skill in glass blowing leaves no doubt of their knowledge of the blow pipe and the crucible. Ancient sculptures represent the lantern, and Herodotus mentions a *fête* of lanterns which took place at a certain season of the year. They made cotton and linen cloth, which, together with mummy cloth, they manufactured on a large scale. This necessitated needles of all descriptions for the marvelous needle work they produced.

They made gold and silver wire far back in antiquity, doubtless drawing it through holes in metal plates, as we do. Wire drawing was first attempted with the more ductile metals like gold and silver, and at a much later period followed brass and iron wire. They had the flax hackle or comb, the knitting needle, spindles for weaving and the smoothing "iron" for cloth. Paintings at Thebes show the carpenter at work with the square, the bow drill and the marking awl. Others show the hand saw, the cooper's adze and the breast drill just as we use them now. Another painting shows the currier at work, between 3000 and 4000 years ago, and the circular knife he uses is precisely similar to that of our modern currier. The tools known to be in common use by the Egyptian carpenters were the axe, chisel, various kinds of hatchets, mallet, hand saw, two sorts of planes, plummet, square, rule, the hone and the leather bag containing nails. The cutting tools were

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all of bronze, the blades being fastened to the handles by thongs of hide.

The bow drill is of the earliest date, and appears to have been always known on this continent as well as in Europe. The Egyptian carpenter had his tool chest, made of inlaid or veneered wood of various hues; and one painting represents an assistant spreading glue with a brush, and having his glue pot over the fire. It is noticeable that the chest handles on the carpenter's chest are of the same pattern as we use for that purpose to-day.

EGYPTIAN HARDWARE MERCHANT.

The Egyptian mummies, and these various paintings, and the mention of various writers, reveal to us to-day that these people had, in common use, the door knocker, pitchfork, flail, sickle, grass hook, plow, hoe, cattle yoke, hooped barrels and firkins, harrow, razor, hand mirrors, the comb, bellows, wooden mallets, levers, lifting cranes, door hasps, the butchers' steel, the balance scale with weights, the pole axe, forceps, try square, the wedge, and nails and tacks in variety. All these things point to the Hardware merchant and to the manufacturer of these various articles of Hardware and nails; and they open a wide realm for speculation as to their business customs, their competition, their bad debts and other details. We may wonder what manufacturer made those nails and whether the nail business was close then as now, and whether the redolent mummy would make nails again if he could return to earth to-day.

CARPENTER TOOLS.

Now as to the hand saw. It is a curious fact that the one shown on the tomb at Thebes, 4000 years ago, is the same in outline and construction as those we use to-day. How long it took for the evolution of the saw to establish that exact shape, and that particular place for the handle, we may not know; but we may well wonder that with our ingenuity and our constant endeavor to improve everything, we have never found that some other shape for the hand saw is better.

There is such an abundance of Hardware all through antiquity that I do not like to find fault; but I am struck with the fact that nowhere can I find the bolt and nut. Hence, of course, there is no ancient wrench of any kind.

Nor can I find the auger or bit, though the Egyptians had the breast drill — probably using it with any durable borer to worry out a hole, with the aid of emery or similar material. I can find no screw driver in ancient times, and no sign of the common slotted head screw.

PREHISTORIC DISCOUNTS.

It is manifest that if Vulcan could have sent to the nearest Hardware store for carriage and tire bolts, wood screws and assorted auger bits, he could have reduced the selling price of his chariots 66⅔ per cent. In the absence of axle nuts also, the picture shows something that looks like a corn cob used for a cotter pin. Vulcan had to make up for the absence of these things by good workmanship and beautifully mortised joints.

Archimedes is said to have invented the screw, but he does not appear to have described it, or to have put it on the market profitably. His experiments were more in the nature of a contrivance for raising water by means of the inclined plane.

FUTURE DISCOVERIES.

America has not yet revealed her mysteries, but the similarity of man and his advancement in all parts of the world prove to us that on this continent former generations have gone through the same stages of development, and have had intercourse with other nations of the earth, and have had knowledge of their progress and industries, and we may measure America's history by the revelation of other lands.

Who shall foretell the ruined cities that shall yet be unearthed on this continent or the wonderful tale of lost nations which they shall reveal? America has not yet uncovered her Pompeii, nor has she yet dug down to the ruins of previous cities found beneath the sites of her present busy marts. Who shall look ahead until all vestiges of our present civilization are lost in futurity, and all evidence of progress in Hardware and in art have decayed, and when all traces of our literature and history have disappeared?

TUBAL CAIN.

The Book of Genesis says that Tubal Cain forged iron for all kinds of purposes, and also wrought in bronze. The fact that his name should have come down through the ages as a cunning artificer, skilled to work in brass, means a great deal. It does not mean that he discovered or invented the use of metals, but it does mean that he, in some way, represented the progress of the mechanic arts in his section, and that he was a large manufacturer whose wares were sold to such distant parts that his name has become famous in the Hardware trade, and has been handed down to us almost as a saint. His traveling men doubtless pierced to many lands; his catalogue was complete and extensive, and the name of his concern was a guarantee of the quality of the goods.

HIRAM AND SOLOMON.

Hiram of Tyre, a widow's son, is also spoken of as a worker in brass, filled with wisdom and understanding, and cunning to work all works in brass. This includes a large line of goods, and no traveling man need be ashamed to offer it in any market.

We read that King Solomon sent for Hiram; and it is probable that he placed an order for Hardware for the temple which would make us turn green with envy. Josephus gives us a copy of Solomon's order for lumber, stating the terms of payment, time of delivery, &c., but, unfortunately, the specifications for the Hardware have not been preserved, to my knowledge.

HERODOTUS.

Herodotus speaks of a colossal basin, made of bronze, which was 60 times the size of that presented to the Temple of Jupiter Orios in Scythia. Its capacity was 600 amphoræ, and it was six fingers in thickness. In order to produce objects of this magnitude it was, of course, necessary to have large bronze foundries.

There can be no doubt that they existed throughout the Bronze Age, and that their products of various sorts have been marketed as we sell our Hardware products of to-day.

Prehistoric man was also so skilled in the melting and casting of bronze that he could travel from place to place and work at separate jobs in the villages. A hollow made in the ground was a suitable furnace, and with bellows and sand from the gutter he executed orders for metal work of various dimensions. History says he made nails and tacks and even worm screws with surprising facility. His fuel was the dry wood of the forest.

ANCIENT ART.

Hardware made rapid and magnificent strides after the dawn of the bronze era. Good designers lent their aid, and implements and weapons soon grew to be beautiful in outline and rich in ornamentation. Our best art of to-day but copies the Hardware which mankind devised long before the iron epoch began. Bronze swords, stilettoes, hatchets, paper knives, razors, combs, all implements of the kitchen, agricultural implements, tools of the artisan and decorations for the house soon became not only perfect for utility, but rich and elaborate in artistic merit. The reign of man became supreme and the day of progress dawned.

PALESTINE.

It brings the subject home to us more vividly to reflect that the boyhood of our Saviour was passed in a house attached to which was a carpenter's shop. On the walls of the shop hung the socket firmer chisel in various sizes, the hand saw, marking awl, the breast drill, and other tools familiar to us. The work bench held the plane, the rule, the square, and they were substantially the same as ours.

POMPEII.

I desired to give some time to the intensely interesting disclosures of Pompeii, in the Hardware development, but the subject is too great to begin upon. I can only hastily say that in the wonderful museum at Naples we find almost everything known to our latest Hardware of to-day, and in such elegance of design and workmanship that we are lost in admiration. They show many of the implements that we fail to find in other researches, and bring the past to our very doors. They have the dividers,

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the steelyard, the fine metal rule, pliers, scales, nail puller, adjustable plane, beautiful surgical implements of all kinds, including surgical scissors and forceps of various shapes, all known implements for the toilet, saddlery most elaborate, locks, keys, door knockers, masons' trowel, scythe, soldering iron, anvil, plummet, liquid measures; and every known device for the kitchen and the bath, and even the bronze stove of artistic design.

THE IRON AGE.

Some authorities claim that iron was known about 1400 B. C., others limit it to a later period—after the capture of Troy. Heroid and Plutarch are of this latter opinion. Homer, however, mentions its use. Tubal Cain is said to have been cunning in iron; but no distinct mention of iron weapons or tools is made until after the Exodus. The Jews were acquainted with iron; and Moses mentions an iron furnace.

The difficulties of smelting the ore and reducing it to a malleable state rendered it less likely to be employed and much slower of discovery.

Who can predict the glories of the Iron Age, almost at the threshold of which we are now standing? Its magnificent achievements are already more wonderful than the tales of mythology. The forces of nature yet to be discovered will demand some accompanying development in the variety of goods we manufacture and sell. It is, indeed, a privilege to have so important a part in the advancement of civilization, which through the merchant and the salesman shall irresistibly spread to the uttermost parts of the earth. In this great work, my friends, we all have our part, and in faithfully performing it we are best serving our fellow man.

The Hardware Club of New York.

A MEETING of the Hardware Club of New York will be held in the parlors of the Cosmopolitan Hotel, corner of Chambers street and West Broadway, on Friday, December 22, at 2.30 p.m. The special object of the meeting is to receive reports from the Board of Governors as to the progress of the club, and to decide in regard to the furnishing of the rooms, which it is expected will soon be ready for occupancy. In view of the interest and importance of this meeting it is hoped that there will be a full attendance of the members.

Hardware Jobbers' Association of Pittsburgh and Wheeling.

THE regular monthly meeting of the Hardware Jobbers' Association of Pittsburgh and Wheeling was held in the offices of the Bindley Hardware Company, Pittsburgh, Pa., on Tuesday, December 12. W. C. Reitz of the Bindley Hardware Company, occupied the chair, while Mr. Fitzsimmons of James C. Lindsay & Co., Pittsburgh, was secretary. Among the concerns represented at the meeting were the Bindley Hardware Company, Logan, Gregg & Co., James C. Lindsay & Co. of Pittsburgh, Ott Brothers & Co., and Greer & Laing of Wheeling, W. Va. After some routine business had been transacted a number of communications from Hardware jobbers' associations located in New York, Rochester, N. Y., and several other places were taken up and necessary action taken. An informal discussion of the probable effects on the Hardware trade by the passage of the Wilson bill was then had. and after a full and thorough discussion of this subject, the following resolutions were adopted:

Whereas, The new tariff act known as the Wilson bill, as recommended by the Ways and Means Committee of the House of Representatives, and indorsed by President Cleveland (who urges its passage), is a direct blow to the industries of this country, which for thirty years has enjoyed under a protective system almost uninterrupted and marvelous prosperity; therefore.

Resolved, That we, the Hardware Jobbers' Association of Pittsburgh, Pa., and Wheeling, W. Va., do most solemnly protest against the passage, in its present shape, of the Wilson bill, and beg the committee to consider the depressed condition of the country caused by this unnecessary agitation.

Resolved, That kindred associations throughout the country be requested to send similar protests to the members of the House from their respective districts.

Resolved, That a copy of this resolution be forwarded immediately to Hon. John Dalzell, who so ably represents this district, for use in the committee.

Preliminary to the above meeting the members of the association assembled at the rooms of the Duquesne Club, in Pittsburgh, where a dinner was served and several hours were spent in social and profitable intercourse. The next regular monthly meeting of the association will be held in Pittsburgh, on Tuesday, January 2, 1894.

Massachusetts Hardware Dealers' Association.

THE Massachusetts Hardware Dealers' Association held their regular monthly meeting on Wednesday evening, 13th inst., at the United States Hotel, Boston. President Janvrin occupied the chair. After the business of the association had been transacted the members adjourned for dinner, at the conclusion of which the chairman introduced Professor Blish of the School of Oratory, who entertained the association with poems and humorous stories, all of which were favorably received. A. W. Parmelee, president of the Wire Goods Company, Worcester, was then introduced as the speaker of the evening, and read a very elaborate and able paper on ancient Hardware. This interesting paper is printed in full on another page. It was attentively listened to and highly appreciated, and in due course Mr. Parmelee received a vote of thanks from the members present.

The membership of the association is receiving constant accessions, fourteen new members having been added to the roll at the meeting reported above, as follows:

THOMAS RICHARDSON, Chelsea.
JOHN M. SMITH. Lawrence.
E. P. FLANDERS, Lawrence.
M. E. AUSTIN, Lawrence.
CORYDON H. FELLOWS, Haverhill.
J. H. SAYWARD, Haverhill.
M. WARREN HANSCOM, Haverhill.
FRANK B. DOW, Lowell.
J. ADAMS BARTLETT. Lowell.
AUSTIN WHITCOMB, Beverly.
JOSEPH W. HARDING, Lynn,
J. EDWIN PRICE, East Cambridge.
J. F. PENNELL, East Cambridge.
A. J. SILBERSTEIN, Boston.

The association is thus in a very flourishing condition, and has thus far fulfilled the best expectations of its founders.

The next meeting of the association, which will also be its first anniversary, will take place on February 14, and will be designated as ladies' night.

Bicycles for 1894.

SECOND ARTICLE.

Hardware Trade. — There is a marked tendency among manufacturers to deal directly with the retail Hardware trade, instead of with agents or through jobbers; and this, it is believed, will be of mutual benefit to both manufacturer and dealer. Exclusive control of a line of wheels is likely to be given to one dealer in a place, rather than selling to all or any who would buy.

Prices.—Although manufacturers are reticent about announcing prices before the first of the year, or until their plans for 1894 are matured, list prices of high grade machines for the coming year will range from $150 to $100, and prices having a wider range than during the past year, it is suggested that they will probably show less fluctuation.

The Relay Mfg. Company, Reading, Pa., announce that their Relay road racer special, weighing 28 pounds, will list $125; their road racer, 30 pounds, $115; their regular roadster, 38 pounds, $100, and their ladies wheel, $100. Rouse, Hazard & Co., Peoria, Ill., will reduce the list price of their Overland from $125 to $100.

Weights.—The popular range of weights include machines from 36 to 19 pounds, and the lighter wheels will usually carry the higher lists.

Style.—In most cases 1893 lines will prevail, with such improvements as have been suggested by experience and which it is considered will improve the machines. There is quite a general lengthening of the upright tube from the crank shaft to the seat post, resulting in a more nearly horizontal top tube. Other minor improvements include wider bearings, crank axle brackets, &c.

Tires and Rims.—Developments are being made in tires, of which a large number of new ones are being put upon the market. The principal features claimed for these are, less liability to puncture, greater ease in repairing, and greater facility in put-

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ting on and taking off of the rims. Steel, aluminum and wood rims will be used, some of the wood rims being made of one solid piece, while others are laminated, or built up of glued layers.

THE PURITAN CYCLE WORKS COMPANY. Portland, Maine, will list their machines as they did for 1893: Model A, $150, weighing 23 pounds; Model B, $125, a roadster weighing 28 pounds, and Model D, $105, weighing 31 pounds. The company remark that Model D will be a first-class wheel in every respect; in workmanship and finish just as good as Model A. They will supply wood or steel rims with the Model A to order, giving riders of this machine a choice of tires, saddles, &c.; in fact, building the machine to order. In 1894 the company will sell direct to retailers, as they believe this is the way to enable retailers to pay their bills, giving them the extra discount now given to the jobber.

MCKEE & HARRINGTON, 173-175 Grand street, New York, and Lyndhurst, N. J., will make improvements in their Lyndhurst 1894 machines in several respects over their 1893 wheels, They will be made up in three hights of frame and will be fitted with wood rims. The crank axle will be adjustable on both ends to provide for alignment of gears.

METROPOLITAN CYCLE COMPANY, Reading, Pa., have raised the seat post of all their Neversink machines for 1894, and will use either Morgan & Wright or Eastern Rubber Company's tires, as desired. The company remark that they had no complaints of their 1893 frame straining, breaking or giving way in any particular, which they attribute to its construction. In this frame, they state, they get straight tensile and crushing strains, making their wheels easier riding, less fatiguing and more durable than the diamond pattern frame. They also manufacture a wheel of the Humber pattern; while they have several other styles in process of construction.

THE PEERLESS MFG. COMPANY, Cleveland, Ohio, makers of Triangle Bicycles, will have a line consisting of a full roadster, weighing 31 pounds, including mud guards and rubber pedals; a ladies' wheel, 30 pounds, including everything; a light roadster at 25 pounds and a 19-pound track racer. All these machines are referred to as being of the latest design and as strictly high grade in every feature, and, in addition, they possess some special mechanical features which would commend them to those in search of a high grade wheel. The company have put in their factory a considerable amount of improved and specially designed machinery. They have also made three additions to an already completed factory to enable them to turn out Bicycles promptly in large numbers.

H. B. SMITH MACHINE COMPANY, Smithville, N. J., will continue the manufacture of Lever Bicycles for the coming year. The line will include the special Pony Star, with solid or cushion tires; the Rover Star, with solid, cushion or pneumatic tires; the new Diamond frame lever safety, with solid, cushion or pneumatic tires: the ladies' lever Bicycle, with cushion tires; also a Diamond frame chain safety, Humber style. The Hotchkiss and Norcross Railroad Bicycles will be manufactured to order. Such slight improvements in details and tires will be added to their machines as the trade demand.

ELMORE MFG. COMPANY, Elmore, Ohio, will have for 1894 a line of Elmore Cycles, consisting of a roadster weighing 32 pounds, a ladies' wheel weighing 35 pounds, and a convertible tandem weighing 55 pounds. The company have made a few very important changes in both the roadster and ladies' wheel. The seat pillar on the roadster has been raised 3 inches, making the top tube nearly horizontal; and improvements have also been made in the handle bar and bearings. The ladies' wheel will be of the V-frame pattern. The tandem is designed as an ideal touring machine, light, attractive in design and moderate in cost, compared with the price of a single wheel.

THE MONARCH CYCLE COMPANY, Chicago, Ill., will make very few changes in connection with their line of Monarch wheels for 1894, especially in their road racer pattern and ladies' machine. The company remark that their pattern of 1893 is modern even for 1894. Their Model B will be changed in connection with the upright tube from the crank shaft to the seat post, this in future to be made straight instead of with a curve. The line includes Monarch road racer, Monarch roadster, Model A and B and ladies' Monarch.

THE ROCHESTER CYCLE MFG. COMPANY, Rochester, N. Y., will present for the selection of their agents for the season of 1894 eight different patterns, all of which, it is remarked, will be first class in every particular, containing all modern improvements, giving agents either hollow steel or wood rims and a choice of tires. They will continue making their double diamond frame, with double ball bearings, in three patterns: Rochester roadster, scorcher and high frame scorcher. In connection with these they are bringing out for '94 a complete line of single diamond frame Humber patterns, in the Rochester road racer, high frame road racer, Model A and ladies' Rochester. Among other features, the Rochester Model A will have wood rims, detachable saucer shaped drop forged sprocket wheel, bringing the chain directly over the crank axle ball bearing; crank axle of specially made steel, which will have no threads cut on it, thus adding to its strength; dust proof barrel pattern crank hanger, with ball races well separated, and Rochester pedals with covered centers. The machine complete, with tools and tool bag, will weigh 27 pounds. The weight of the ladies' Rochester, all on, will be 30 pounds.

THE YOST MFG. CO., Toledo, Ohio, will have a line of Falcon machines for 1894, composed of the Falcon road wheel, listed at $100 to $115, according to handle bar and tire used; the Falconess, for ladies; Falcon Junior, 24 and 26 inch, and Falcon Junior combination, 24 and 26 inch. Especial new features will include the Yost metallic fastened tire; the Cable adjustable handle bar, which can be thrown to any angle desired without the aid of a wrench, and can be changed so as to give either an upward or a downward turn; and a chain adjusting device. The machines will have long steering head, tapered front forks and large dust proof bearings. After exhaustive experiments the company have adopted larger balls throughout the bearings in their wheels, as this is found to lessen the friction very materially. All bushings and cones are cut from a solid bar of cold drawn steel and after being properly hardened are polished smooth to size by special machinery.

ROUSE, HAZARD & CO., Peoria, Ill., have absorbed the Rouse-Duryea Cycle Company, and will manufacture the Sylph, which has heretofore been made by the latter company. The Sylph has been greatly improved for 1894 and will be made in 30, 28, 26 and 22 pound weights. They are to be of the highest grade in every particular, and more attractive in design and finish. The Overland, made by the company, will be improved but slightly, as it gave perfect satisfaction during the past year and is considered thoroughly up to date. The list price of the Overland will be reduced from $125 to $100. The company will continue to make a specialty of the sundries of all kinds which they have handled many years. Their special bargain department will also be continued, and they will offer dealers Bicycles at greatly reduced prices as in years past. The company have been assigned large exclusive territory on the Western Wheel Works line of Bicycles, which goods they have handled for the last 14 years. These goods have heretofore been sold indiscriminately through numerous jobbers or any dealer that cared to handle them. But one agent in a town will now be appointed, to whom will be given the exclusive control of the line.

RELAY MFG. COMPANY, Reading, Pa., will list their Relay wheels for 1894 as follows: Road racer, special, 28 pounds, $125; road racer, 30 pounds, with new chain adjustment features, $115; regular roadster, 38 pounds, with brake attachments, $100; roadster, stripped, 35 pounds, $100; ladies' wheel, with a very low frame for easy mounting, $100. The road racer special has a specially constructed crank axle bracket of new design entirely dust proof, the diameter of which is in keeping with other proportions of tubes of the frame. Another feature is that which allows the rear wheel to be taken out without taking the chain apart. Riders who have handled an oily, dirty chain on the road in order to remove a rear wheel, it is remarked, will appreciate this improvement It also does away with the rear fork adjusting screws. The frame has been hightened, bringing the top tube nearly horizontal. There has also been introduced an entirely new principle of crank axle bracket, very wide in the bearings, yet without increasing the tread, and which will be oil containing. The company intend giving with every Relay gratis the Century Cyclometer, which they consider the most compact, simple and best.

Trade Items.

THE traveling representatives of the Reading Hardware Company, Reading, Pa., recently held their annual convention in the offices of that firm in the above named city. Among those present at the convention were W. H. Bennet, in charge of the Chicago branch office; Orton Hill, who looks after the trade in the Northeast; W. A. Kerr, who is in charge of the Southwestern trade; Fred. L. Stellwagen, New York; F. B. Henderson, Philadelphia; Isaac M. Rhodes, who looks after the Middle States, and W. E. Bartholomew of the Pacific Slope.

THE inactivity in the building trades, as well as difficulty in collecting on outstanding accounts, is causing havoc in the ranks of those who handle building materials and house furnishings. The Henry Dibblee Company, 150 Michigan avenue, Chicago, an important concern in this line, failed on the 13th inst., having confessed judgments to the amount of about $35,800. The amounts claimed by the creditors separately were: The Northwestern National Bank, $15,939; A. A. Sprague, O. S. A. Sprague, C. H. Morse, and A. C. Bartlett, $11,160; Silas A. Barton, $7561, and Mrs. P. McDowell, $1062. The company made a specialty of high class mantels and grates.

THE CHICAGO STAMPING COMPANY, 227 to 231 South Green street, Chicago,

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announce the appointment of W. L. Goodrich to the entire charge of their city and country sales. Mr. Goodrich has been connected with the Metal and Tinware trade for the past 25 years, and has a very wide acquaintance throughout the Hardware interests of the Northwest.

WE WOULD COMMEND to the attention of manufacturers who are desirous of making arrangements for the representation of their goods to the trade the announcement among the Special Notices in this issue signed "W. S. G.," a gentleman who has a wide acquaintance with the trade and is desirous of obtaining one or two agencies in addition to those of manufacturers whom he is now representing.

JOHN H. BAIRD, who represented the Jos. Dixon Crucible Company of Jersey City, at the World's Fair, has published a charming little *brochure* giving his reminiscences of the exposition. Mr. Baird is of a poetic temperament, and has been deeply impressed by the greatness of the fair, so that the vigorous prose in which he has clothed his thoughts glows with enthusiasm. The many friends of Mr. Baird will value this work as a memento of his personality as well as a souvenir of the exposition itself.

THE RAZORINE MFG. COMPANY, 2 West Fourteenth street, New York, have prepared card stands upon which are fastened a dozen cakes of Razorine for advertising purposes. Above the packages is printed matter calling attention to the merits of the preparation and announcing that by its use the dullest razor can be sharpened. The company are prepared to offer liberal inducements to merchants to insure the more rapid introduction of this specialty.

MUDGE & BENJAMIN is the style of a firm which has recently entered the Hardware and House Furnishing Goods business at Olean, N. Y. They will give particular attention to retailing, but will also, they advise us, conduct a wholesale business. The new firm will be glad to receive catalogues, circulars, &c., from manufacturers and importers.

A NEW HARDWARE STORE has just been opened at Beeville, Texas, by Burrows Bros., who will conduct it in connection with their establishment at Rockport, Texas.

IN A LARGE FIRE at Syracuse, N. Y., on December 8 the large and well-known wholesale Hardware house of Robert McCarthy & Son was burned out. The entire stock, as well as the building, was destroyed. The loss is estimated at about $70,000, which is very nearly covered by insurance. The present year completed Mr. McCarthy's forty-eighth year in business. Mr. McCarthy is referred to as not only the oldest active merchant in Syracuse, but the oldest merchant as well. We are advised that as soon as arrangements can be made the business will be continued.

R. S. THOMPSON, senior member of the firm of R. S. Thompson & Son, Pine Bluff, Ark., died on December 5. On the previous evening Mr. Thompson was suddenly attacked with heart failure, from which he never completely rallied, though he was conscious until a short time before his death. The business of the firm will be hereafter conducted by R. C. Thompson.

JOHN D. WARREN of Burlington, Iowa, who has been connected with Simmons Hardware Company, St. Louis, for a number of years as a salesman, has established the Manufacturers' Distributing Company, with headquarters at Chicago. Under his charge will also be the output of a Burlington factory, of a distinctive line of shelving, together with a catalogue case, cabinet and desk combined, which embody ideas resulting from years of travel and observation as to what is best suited to the requirements of Hardware merchants.

THE BILLINGS & SPENCER COMPANY of Hartford, Conn., have opened a Western office at 59 South Canal street, Chicago, Ill., in charge of W. A. Davis. A complete line of all their goods will be shown there.

THE JEFFREY MFG. COMPANY, Columbus, Ohio, have ready for distribution a complete catalogue, showing full size illustrations of every Chain Link made by them. It also includes a complete price-list of their specialties and will be of value to users of material in their line.

THE PHILADELPHIA BRANCH HOUSE of Jenkins Bros. will shortly remove from their present address to 117 North Fourth street.

BRONSON SUPPLY COMPANY, 72 Beekman street, New York, have been offering special inducements, which hold good until December 31, to merchants on season goods suitable for holiday and regular trade. They selected five leading sellers from the production of their several companies and have made the price extremely low. Two are of their Seamless Steel Never Break Ware, a brass Umbrella Holder of the Ideal specialties, one from the Puritan line of cooking utensils and a baking and roasting Pan of the Excelsior kind. They direct the attention of the trade to the plan and refer to it as producing satisfactory results.

THE BILLINGS & SPENCER COMPANY of Hartford, Conn., have disposed of their interest in the Spencer Nail Puller. In future any information regarding this device may be obtained by addressing C. M. Spencer, Windsor, Conn.

THE HARDWARE AND CARRIAGE MATERIAL BUSINESS formerly carried on by the firm of Chas. Wing & Co., Amesbury, Mass., is now being conducted under the style of the Chas. Wing Company. Wm. W. Hawkes is president and treasurer of the new company and Chas. A. Steere secretary.

Hermann Boker & Co.

HERMANN BOKER & CO., 101–103 Duane street, New York, have completed arrangements for the marketing of several new lines of goods. One of these will be the Screw Drivers made by Augusta Machine Works, Augusta, Maine. The assortment consists of 28 styles and sizes, including the patterns known as New York Nos. 1 and 2, handy, plain, ratchet and spiral. Another line will be that of Wm. Wilkinson & Co., Reading, Pa., makers of American Sheep Shears. These include Hand Forged, Solid Steel and California patterns, and also Grass, Horse or Mule and Hedge Shears. They are prepared to make special patterns in suitable quantities, stamped any brand to suit customers. In addition to the above Messrs. Boker & Co. also have the agency for Johnson & Bro. Files. For all the above goods they are sole agents in this country, Canada, and for foreign markets, and control the entire product.

Price-Lists, Circulars, &c.

HULBERT BROTHERS & CO., 26 West Twenty-third street, New York: Seasonable goods for fall and winter. Circulars illustrate single and double Chest Weights, Fencing Foils, Venetian Bent Iron Work, Torkelson Double Barrel Hammerless Breech Loader, Hopkins & Allen Acme Hammerless Double Action Revolvers, Rifles, &c.

THE J. D. SMITH FOUNDRY SUPPLY COMPANY, Cincinnati, Ohio: Supplementary Catalogue No. 16. A full line of Monk's Molders' Solid Steel Tools are shown, including a number of the latest shapes and sizes of handy tools, suggested by practical molders. Illustrations of the goods are accompanied by descriptions and prices.

CENTRAL ELECTRIC HEATING COMPANY, 26–28 Cortlandt street, New York: Electric Heating apparatus for cooking, and for domestic and industrial purposes generally, and for heating cars, buildings, steamships, &c. Illustrations are shown of Portable Heaters; Laundry, Tailor, Hat Irons, &c.; Soldering Coppers, Ovens, Clothes Boilers, Spiders, Chafing Dishes, Farina Boilers, Stew Pans, Tea Kettles, Tea and Coffee Pots, Coffee Urns, &c. An illustration represents an electric kitchen, showing Electric Cooking Utensils in use. Each article or utensil is connected to a separate electric wire, so that electricity for generating heat may be turned on or off at pleasure.

NORTON DOOR CHECK AND SPRING COMPANY, Charles S. Penhallow, treasurer, 505 Sears Building, Boston: the Norton Door Check and Spring. The device is described in an illustrated circular. It is explained that the parts of the device are so arranged that the greater the force exerted to close the door the greater resistance will be offered, consequently no slam or jar can occur.

BRYDEN HORSE SHOE COMPANY, Catasauqua, Pa: Boss Horse and Mule Shoes. A neat memorandum book bound in celluloid and leather for 1894 is being distributed by the company. Any customer of a merchant who is a horseshoer can obtain one of these books, it is announced, by sending his address to the factory.

THE STANDARD LIGHTING COMPANY, Cleveland, Ohio: 1894 calendar. The company issue a tasty calendar. Attention is directed to their New Process Vapor Stove, which is among the most prominent of their manufactured goods.

THE CLEVELAND STAMPING & TOOL COMPANY, Cleveland, Ohio: Solid Steel Seamless Hollow Ware. An illustrated price-list shows Spiders, Griddles and Broilers in this ware. In addition to these goods the manufacturers press, cut, stamp and draw all kinds of sheet metal into all kinds of shapes, and make all kinds of dies and presses. Prices will be made on articles to be made or on machinery to make them by the company.

WABASH ANTI-RATTLER COMPANY, Wabash, Ind.: I.X.L. steel anti-rattler and superior wire anti-rattler. An illustrated circular describes the wire one as being shaped so as to be easily put in place; and the steel one as possessing the same advantages. Both styles are packed in quarter gross pair boxes.

S. C. JOHNSON, Racine, Wis.: Wrought Steel Center Neck Yoke. Pamphlets, with illustrations, describe the Center as being made of sheet steel stamped into form, allowing it to be bent under great pressure, but not

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broken. The Centers are furnished separate or the Yokes complete.

THE WISCONSIN REFRIGERATOR COMPANY, Eau Claire, Wis.: Illustrated catalogue and price-list for 1894. A pamphlet of 36 pages bound in stiff paper covers describes the Wisconsin Peerless, hard wood, dry air household Refrigerators, Ice Chests, grocers' hotel and butchers' sectional Refrigerators, sideboard Refrigerators, &c. The general construction of these Refrigerators is thoroughly explained and sectional cuts are given showing how the walls and flues are arranged and the manner in which the air is kept in constant circulation in the interior. Stress is laid on the use of mineral wool filling and its high rank as a non-conductor of heat. The ice rack is made of galvanized steel beams to prevent the rack from bending or sagging, the lock brings the door to a tight joint automatically, and the drip cup has an extension pipe which brings the drip water to the front of the Refrigerator, so that the pan is always in plain sight. The styles of Refrigerators illustrated comprise a very great variety of pleasing patterns, the sideboard constructions being particularly attractive. Allusion is made to the selection of the company's Refrigerator by the United States Government for exhibition in the National Museum of Hygiene, at Washington. The demand for their goods has been so great that each year since 1891 they have been obliged to enlarge their plant and increase their productive capacity.

J. M. Warren & Co.

THE WAREHOUSES of J. M. Warren & Co., Troy, N. Y., were badly damaged by fire on the 14th inst. The warehouses are 50 x 80 feet in dimensions, one being five stories high and the other six stories high. The fire originated on the fifth floor of the latter building. The roofs of the warehouses were entirely consumed, and the two upper floors of one building and the top floor of the other were very badly burned, the stock in these lofts being a total loss. The fire also destroyed a bridge connecting one of the warehouses with the firm's main building, in which the store and office are located, and which is five stories in hight, 50 x 80 feet in dimensions. When this bridge was destroyed by the flames it was feared they would communicate with the main building, but by vigorous work on the part of the firemen this was avoided, the loss in the store building being one of water only. The lower floors of the warehouse were, of course, thoroughly saturated with water, which makes the firm's loss very heavy, but not accurately known at the present time. The entire loss is roughly estimated at $100,000, which, it is thought, is almost covered by insurance. The condition of the buildings and stock is such that the firm are necessarily inconvenienced very much at present, and it may be a few days before they will be able to resume their business in full, but as their main building is intact and the goods only damaged by moisture they hope within a week at least to be in good running order. J. M. Warren & Co. are the oldest Hardware firm in Troy, the original business having been founded by Jacob Hart and Henry Nazro in 1809. The firm style was changed to Hart & Pitcher in 1821, and in 1824 became Craft, Hart & Pitcher. Mr. Craft retired in 1830 and was succeeded by Hart & Pitcher. The following year the firm of Pitcher, Hart & Card was formed. They were succeeded by Hart, Lesley & Warren in 1836. Joseph M. Warren became a partner in 1840, and the name was changed to Warren, Hart & Lesley. In 1855 Mr. Warren and Charles W. Tillinghast succeed to the business under the name of J. M. Warren & Co. Walter P. Warren was admitted to partnership in 1864, as was also Thomas A. Tillinghast in 1867. Walter P. Warren withdrew in 1871, while Thomas A. Tillinghast died in 1879. In 1870 the firm erected the handsome structure they now occupy. The present organization were incorporated in February, 1887.

Foreign Correspondence.

THE following communication, which refers to the practice of sending catalogues in English to Spanish speaking countries, is from a gentleman who has recently returned from a trip through South and Central America. The suggestion is deserving of attention:

It should interest Hardware manufacturers in the United States of America to learn that much time and money are wasted by sending trade circulars, catalogues, &c., printed in English for circulation in South and Central America, where Spanish is the language of commerce, as of the people. This fact has been already noted and promptly acted upon by the leading manufacturers of Europe, whose circulars and other advertising matter are read and attended to, while those of their North American rivals, published in English, often find a resting place in the waste paper basket. Being unintelligible, they are uninteresting,

The writer speaks from an experience gained in many miles of travel through those countries, and not being in the Hardware line he can afford to give the tip gratis.

As bearing on this subject it is of interest to know that the export agent in this city for a number of American agricultural implement makers, perceiving the necessity of having within the limits of his office facilities for at once ascertaining the contents of the constantly increasing number of foreign letters from many sections of the globe, has secured the services of a stenographer-typewriter who is equal to the translation either way of anything in English, German, French, Spanish, Italian and Hungarian. Such letters on receipt are submitted for translation, and a typewritten copy is made, which is attached to the original. This insures expedition and the keeping of business secrets among trusted employees, besides minimizing errors, as the work is done by one who is familiar with the office's customs and history. While, at the same time, such answer as is made is given in the native language of the party to whom it is addressed. This must be of much advantage to him, for it must be remembered that comparatively few cities are as cosmopolitan as New York, and abroad it is not so easy to get translations, especially in smaller towns. Many foreign merchants for obvious reasons much prefer to read their communications first themselves, especially if customs and other questions are involved. A little thought will make it plain to those doing an export trade how much more can be accomplished by sending letters, circulars, invoices, catalogues or any class of literature of this nature when feasible and practicable in the language of those who are expected to read it. Many are following this method, and many have done so for years, but the more this plan is extended the better will be the results.

Trade in Australia.

ADVICES which have recently come to hand indicate that a moderate improvement has taken place in Australian affairs, and late mails are bringing somewhat better orders. While there is nothing marked in this direction, the situation has apparently cleared considerably, and the Australian people are realizing more and more that the real wealth of the country must largely come out of the ground in the way of crops or minerals. This conviction is inducing many to leave centers of population, such as Melbourne, Ballarat and Bendigo in Victoria, which have a population approximately of 525,000 souls in a total population for that colony of about 1,000,000, and turn their attention to tilling and developing the soil. While the collapse there was very severe and will doubtless take years to repair, it is thought that everything is on a sounder and healthier basis, which will ultimately greatly benefit the colonies. The present wool clip is believed to be the largest ever taken, and is estimated to be worth £20,000,000. This fleece, owing to the equable climate, is said to be of very fine quality and indispensable for blending with other wools in the production of fine cloths. Should tariff changes here result in placing this important staple on the free list it would be of great assistance to the Australian colonies from the fact that it would provide a broader market and enhance the price. At present this product goes almost exclusively to England, as do the greater portion of their other exports, which include hides, fruits, wine, butter, tallow, &c.

Another phase of the question is, as presented by exporters, that should this product be brought here largely it would provide return cargoes for vessels from this country, taking out raw materials and manufactured goods, which would not only enlarge our market but have a tendency to modify freight rates. Vessels could then be chartered at a lower rate, if assurance were given of a cargo back, instead of either lying there for weeks or going elsewhere for freight. The present crop of wheat, which is now being garnered, is very large and promises well. The output of gold from the mines is also said to be greater than formerly, It has been the custom heretofore to settle the large balance of trade against the colonies with borrowed capital, drawn largely from Great Britain. As this resource has been curtailed, the only way to compensate for the loss will be to cultivate and raise more. Large amounts of money are tied up by the process of liquidation, owing to the system on which loans have long been made. This will require from two to six years, and in extreme cases much more time. Great amounts have long been advanced on station (synonymous with our word ranch) and similar property, which will take time to turn over except at great sacrifices. Another sign which is regarded as favorable to the future welfare of Australia is the recent floating of loans in Victoria, New South Wales and Western Australia, aggregating £5,000,000

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in round figures, at from 1 to 3 per cent. above par.

It Is Reported--

That the Hardware store of Brindley, Drennan & Co., Swanton, Ohio, was burglarized on the 4th inst. About $25 worth of goods were taken.

That the Hardware dealers of New Albany, Ind., have donated to that city a supply of Picks to be used in the street repairs.

That William Jenkins' Hardware store, at Oxford, Mass., was robbed on the 31st inst. Razors and Pocket Knives comprised the booty.

That John Holker has retired from the firm of William Holker & Co., dealers in Stoves, House Furnishing Goods, &c., Newburyport, Mass., and William Holker will hereafter conduct the business alone.

That J. M. Schram's Hardware store at Ridgway, Pa., was destroyed by fire on the 12th inst. Loss, $7000; fully insured.

That the Hardware store of A. M. Churchill, Morrisville, Vt., was slightly damaged by a fire in that place on the 13th inst.

That a newsboy, while attempting to sell a paper in S. L. Boyce & Son's Hardware store at Port Huron, Mich., on the 9th inst., entered the office during the bookkeeper's absence, and unlocking the money drawer of the safe, abstracted a pocketbook containing $40. The boy was subsequently arrested.

That F. A. Beltz, Boyd, Minn., has sold a half interest in his Hardware store to P. Golden.

That in the tornado which visited Harrisburg, Ill., on the 15th inst., the Hardware store of J. S. Ferguson was unroofed.

That A. F. Anderson has bought the Hardware store of H. S. Rich & Co., Red Wing, Minn.

That M. M. Davidson has sold his Hardware stock at Tipton, Iowa, to William Muhs of Milwaukee. Mr. Muhs will take possession the first of the year.

That on the 12th inst. fire destroyed the Hardware store of Bartlett & Mallett, Groton, S. D. Loss on stock, $7000; insurance, $4500; loss on building, $2000; insurance, $1400.

That D. Thompson has bought A. H. Nichols' Hardware store, at Marlette, Mich.

That U. P. Solberg has purchased a new Hardware store at Sioux Center, Iowa.

That A. L. Johnson's Hardware store, at Blaine, Wash., was burglarized on the 5th inst. The thieves broke in the side window and carried away about $100 worth of Pistols and Cutlery.

That V. P. Moore, Adairville, Ky., has sold a half interest in his Hardware store to Morris Barker of Keysburg.

That J. W. James has sold his Hardware store at Point Pleasant, Ohio, to Hoopman Bros. of Byesville. Possession will be taken January 1.

That Steer & Church, Coleman, Mich., have purchased S. S. Tower's stock of Hardware and removed it to their store.

That Mr. Yost has recently entered the Hardware business at St. Louis, Mich.

That F. C. Dickson has leased the Weyh Building, Armour, S. D., and will put in a complete stock of Hardware. Mr. Taylor, a nephew of Mr. Dickson, will have charge of the store.

That Grate Bros., Hardware merchants, Carondelet, Mo., hope to have their new brick store completed by the first of the year.

That Huddle & Shoemaker, Ashley, Ohio, have sold out their entire stock of Hardware, Farming Implements, &c., to Wesley McCurdy and John Olds. The firm name will be Olds & McCurdy.

That the Hardware firm of Godley & Watson, Oberlin, Ohio, was dissolved on the 4th inst, and a new partnership formed. Mr. Godley purchased the half interest of Mr. Watson and subsequently sold it to David E. Morris, the firm name becoming Godley & Morris.

That R. W. Maben of Garner, Iowa, has traded his stock of furniture for a stock of Hardware in the southern part of the State.

That the Hardware firms of C. S. Bucktel and S. G. Empey, Tobias, Neb., have consolidated, and will hereafter be managed by C. S. Bucktel. A part of both stocks will be moved to Swanton, and a branch store opened there.

That Baily & Storch, Hardware merchants, Fullerton, Neb., have purchased the Hardware stock of Sprague Bros., Belgrade, Neb., and will conduct it as a branch store.

Paints and Colors.

In the wholesale branch of the trade interest has centered largely upon what may happen after the turn of the year. The natural tendency is to look for something since competition in certain lines is more formidable than it was a year ago, the cost of some varieties of base material lower and the outlook darker for manufacturers who may endeavor to arbitrarily maintain prices. Actual business is commonplace in the strictest meaning of the term. There is practically nothing doing in round lots of goods for future delivery, and spot dealings are practically of a retail character. There is no sign of speculation in any line of goods. In fact, the only speculation is mental, with the possible action of the National Lead Company the center of gravitation.

White Lead.—There is virtually no market at present. What does exist as apology for a market is a very poor affair. It is retail in character, small at that, and affected at all manner of prices.

Red Lead and Litharge.—The quiet condition of affairs that prevailed a week ago exists at the present time.

Orange Mineral.—Foreign sorts are a trifle irregular in price. American is unchanged and very slow of sale.

Zincs.—While prices are not quoted lower by manufacturers, the market for American Oxide shows rather weak tone. Foreign brands sell at somewhat irregular prices in jobbing circles, but importers quote the old list and discounts.

Colors.—Dry Colors of all descriptions have met with limited sale during the past week. Oil Colors are not offered as freely as they were at the time that the price of Oil was down to 38¢ @ 40¢.

Oils and Turpentine.

Features of distinctly new character have not materialized. A certain amount of curiosity still centers around Linseed Oil, owing to the further rise in cost of raw material, and the movements in price of Lard have served to excite at least livelier curious interest in Lard Oil and Cotton Seed products. However, it does not appear that much business has been brought about in any of the respective lines. Other branches of the market have experienced the tameness that is common at this season of the year, and prices have undergone but little variation.

Linseed Oil.—At the higher prices established last week merely a routine business has been done.

Cotton Seed Oils.—From the extreme lowest prices touched last week there has been a recovery of about 1¢ on prime Crude and prime Summer Yellow, with partial reaction on the lower grades. Business has been moderate and the demand has continued tame.

Lard Oil.—High grade stock holds its own remarkably well, city brands going at 72¢ @ 73¢ and Western at 1¢ @ 2¢ less. The lower grades have not fared as well in point of movement and do not bring relatively as good prices.

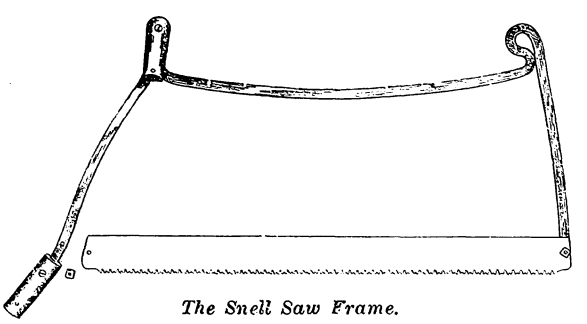
Fish Oils.—Little, if anything, more than routine business in crude Sperm, Whale or Menhaden Oils have been effected. The Pressed and Bleached products have also been quiet and without important change in value.

Mineral Oils.—The general features of the market are without noteworthy change. Paraffines and cylinder stocks are in good demand, especially for export. For higher cold test Black Oils there is a fair inquiry, and neutral filtered are in moderate request. Prices are unchanged.

Spirits Turpentine.—It has been what may fairly be termed a very even market. Late dealings were at 29¢ for regular and 29½¢ for machine barrels.

The Snell Saw Frame.

Butler Mfg. Company, Boston, Mass., are offering a steel frame for wood saws as herewith shown. The spring in the frame, it is stated, brings from 80 to 100 pounds tension on the blade, making it impossible for the blade to double or to break. The frame is fitted with wooden handles, and, it is remarked, has little weight, but just enough to make it work fast; that a large log can be sawed through without coming in contact with the frame, and that it will last the purchaser a lifetime.



The Snell Saw Frame.

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Vest Pocket Magazine Camera.

Magic Introduction Company, 321 Broadway, New York, are just marketing a vest pocket magazine snap shot nickeled camera, as illustrated in Figs.

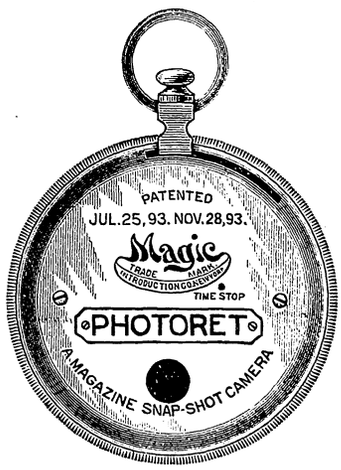


Fig. 1.—Vest Pocket Magazine Camera, Three-Quarter Size.

1, 2, 3 and 4, which they have named Photoret. As will be seen in Fig. 1, it takes the form of a watch. It is $2\frac{3}{8}$ inches across the face and $\frac{3}{4}$ inch thick. Its convenience and portability make it possible to carry it about the person, ready for use in an instant to catch any desired view. The negatives can be developed and printed by the individual, the Magic Introduction Com-



Fig. 2.—Sectional View, Indicating One Complete Revolution and Six Exposures.

pany, or any professional, at the option of the operator. By a simple device snap shots, or time exposures, can be taken at will. It is not the intention here to minutely describe the method of operation, the company having issued a primer of 32 pages covering the whole subject, which can be had on



Fig. 3.—Sectional View, Showing Camera with New Film Ready for Six Exposures.

application. Fig. 1 shows the general appearance of the Photoret. The lens, which is protected by a brass shutter, is just back of the large black spot. A film having been placed in the camera, by pressing the stem push button, the shutter is made to expose the film. Time exposures are obtained by inserting a pin or similar piece of metal in the small hole over the words "time stop," which permits the time to be regulated. Fig. 2 illustrates the manner in which the fact that the camera is unwound and ready for a new film is indicated. Every time an exposure is made it is automatically recorded by numbers 1 to 6 engraved on the film holder, which shows through the aperture. Fig. 3 shows that the camera has received a new film and is ready for use. Fig. 4 illustrates the way in which the goods are sent out. A round metal film box, $2\frac{1}{4} \times \frac{7}{8}$ inches in size, is divided horizontally in the center. Each side has a metal screw cap, and the separate compartments are for fresh films and those already used. The caps are suitably labeled and to prevent confusion are not interchangeable. The

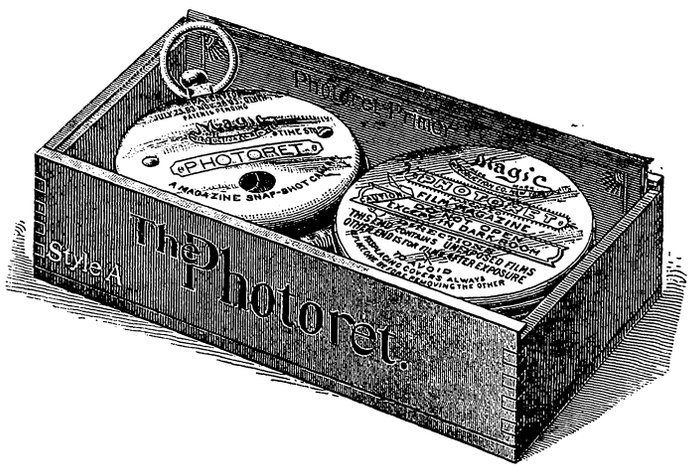
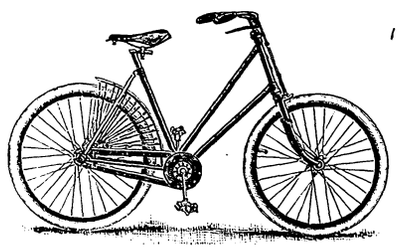


Fig. 4.—Box Containing Photoret and Film Magazine.

camera and film box, with primer, giving full directions, are packed in a neat varnished, dovetailed wooden box, with slide cover, the extreme dimensions of which are 5 x $2\frac{3}{4}$ x $1\frac{3}{8}$ inches. The negatives obtained are a little over half an inch square, while specimen enlargements up to $3\frac{1}{2} \times 3\frac{1}{2}$ inches are shown in the printed matter issued by the Company. Various sets of supplies are sent for any who wish to complete the detail of making a picture.

Ladies' Rochester Safety.

Rochester Cycle Mfg. Company, 75 South St. Paul street, Rochester, N. Y., are putting a ladies' safety on the market, as illustrated herewith. The wheel has a frame of weldless steel tubing and steel drop forgings. The wheels are 26-inch front and rear, fitted with wood rims, drawn tangent spokes enlarged at both ends and nipples of hard brass. Pneumatic tires $1\frac{3}{4}$ inch are used; also $\frac{7}{8}$-inch handle bars tapered to $\frac{3}{4}$ inch, of the raised pattern, fitted with cork handles and Sager ladies' saddle. The

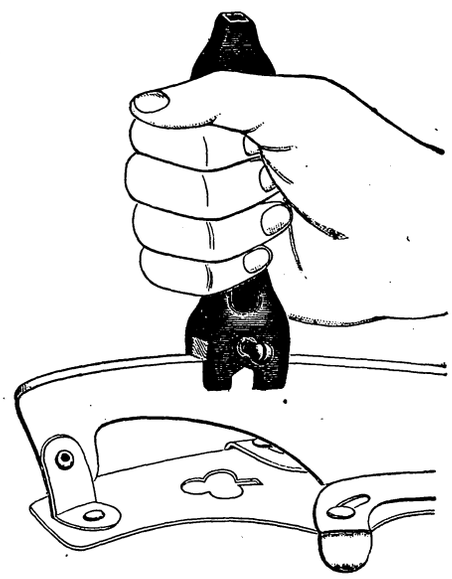


Ladies' Rochester Safety.

machine has special tool steel round detachable cranks, 6 inches long; $\frac{5}{16}$-inch hardened block steel chain; plunger brake to front wheel and 11-inch ball bearing steering head. Tool steel ball bearings are supplied to all parts; metal guards to rear wheel and chain; also laced dress guards. The tread is 6 inches and the machine is geared to 56 inches unless otherwise ordered. The weight of the whole is 30 pounds. The following are optional: Loop seat post, 59 or 62 gear, color of rims and Rochester regular drop bars.

Boys' Lightning Skate Sharpener.

The cut herewith given represents the Boys' Lightning skate sharpener, put on the market by the Sandwich Novelty Company, Sandwich, Ill. The sharpener has in combination a skate key and wrench, all made of malleable iron, and referred to as light, strong and durable. It is remarked that the files are of the best hardened steel, that they are square, with four sides available for use, thus lasting a long time, and that when worn out



Boys' Lightning Skate Sharpener.

they can be replaced at slight expense. The manufacturers claim that with the sharpener a boy can put the dullest pair of skates in fine shape in from 3 to 5 minutes.

John G. Rollins & Co., 4 Stone street, New York, and Old Swan wharf, London, are introducing into this country a carbon for arc electric lights, which they refer to as being of high grade and superior in quality. They are made of a peculiar grade of coke obtained in Europe, the source of supply, it is claimed, being controlled by the manufacturers for whom they act.

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Myers' Sure Grip Hay Sling Carriers.

The accompanying cuts represent hay sling carriers, put on the market by F. E. Myers & Bro., Ashland, Ohio. Their object in the construction of this machine was to make a device that would have unusual capacity for unloading hay, sheaf grain, corn fodder and all kinds of crops, by using what is termed a sling in the wagon whereby the load is divided into three or four bundles as the operator may desire, or its construction is adapted to the use of two hay forks, one on each pulley block, as shown in Fig. 1. By removing one pulley block, as in Fig. 2, it may be operated as an ordinary hay carrier with one hay fork. The pulleys are arranged with loose pins, so the block may be easily removed. It is explained that to make a carrier that will answer for these different methods of unloading hay and grain requires a lock that will register and retain any sized bundle at any point of elevation. The machine was therefore constructed with a rope lock, which is accomplished by tilting the pulley in the carrier, allowing the rubber block to remain in a fixed position, as shown in Fig. 2. It is stated that when the carrier is retained in the stop while elevating the bundle the working parts are perfectly free, but that the instant the pulley blocks strike the depending bail, or are tripped by the hand trip, and the carrier moves away from the stop the weight of the load causes the rope sheave to travel back against the rubber block, gripping the rope firmly and retaining the bundle. It is also stated that the operation of retaining the bundle is a self-compensating device, and additional load means additional power with which to retain it, making a positive and reliable lock for retaining any sized bundle at any elevation. To allow a bundle of hay to be carried over into a mow, in barns without cross timbers, immediately after it is elevated sufficiently to be free from the load a tripping device is attached to the depending arm, whereby the operator in the wagon has full control to release the carrier from the stop the instant the load is elevated sufficiently to travel into the mow by simply tripping the lock device by means of the small rope. Attention is called to the fact that the carrier is swivel reversible, that it will operate equally well in either direction from the stop, the stop being so arranged as to allow the carrier to approach it in any manner or from any direction it may come, and that it will reverse whether in the stop or away from the stop. The rope wheel in the carrier is six inches in diameter, to give it power in elevating the bundle. The carrier is constructed throughout of malleable iron and steel, and is made unusually strong in all its parts, as it is designed for hard usage and to elevate heavy loads. It is remarked that the slings used in connection with the carrier trip in the center and have two spreaders to each half.

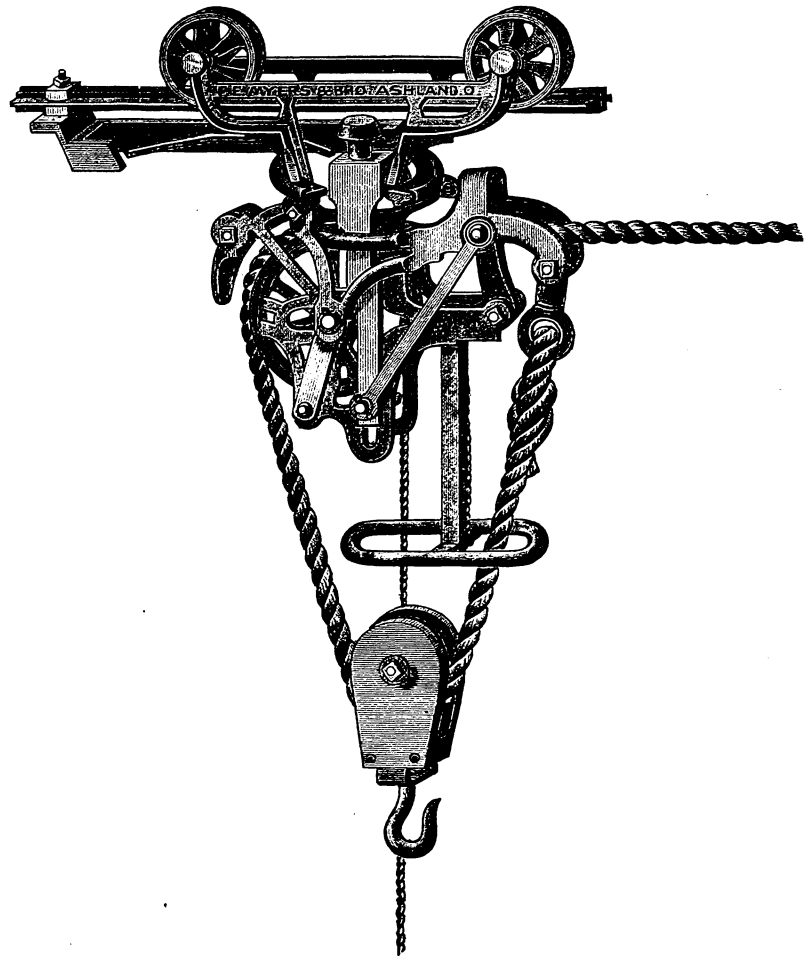


Fig. 2.—Hay Carrier No. 496.

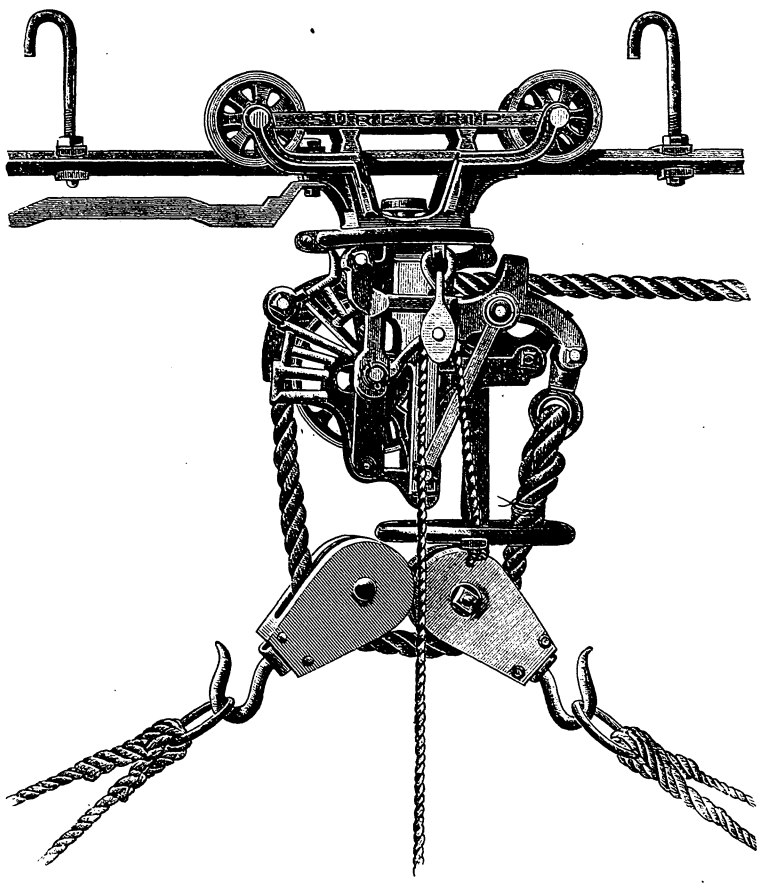


Fig. 1.—Hay Carrier No. 489.

Gross Mfg. Company, 20 Murray street, New York, are introducing a novelty known as an apron supporter, adapted for either sex. It is simply a strip of flat steel ⅛ inch wide, nickeled, with rounded edges, so made that when adjusted to the person it fits any figure. When in use a light pressure keeps it in place, obviating the use of strings, bands, buttons, &c. It is quickly slipped through the apron band, and can be had in 11 sizes from 22 to 32 inches, and larger ones to order. The same principle is applied as a bib or napkin supporter for use around the neck. These may be had in 10 to 16 inch sizes. With the latter are furnished two clamps for holding a bib, napkin, towel or similar article, ac-

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cording to the use for which it is intended. Both articles are made in steel, nickeled or japanned.

The Bardsley Liquid Door Check and Spring.

J. Bardsley, 149-151 Baxter street, New York, is introducing a door check and spring, as shown in the accompanying illustrations. The checking is done by means of a liquid, with which, it is remarked, as there is almost an entire absence of friction, the whole of the spring power is devoted to closing the door. In Fig. 1 the device is shown attached to the hinged side of a right hand door, while in Fig. 2 it is attached by means of a bracket to the side of a left hand door away from the hinges. The check and spring is made in five sizes, of sufficient range to operate doors from small to large sizes. As announced in his advertisement in another column, Mr. Bardsley is desirous of obtaining agents for the sale of this door check and spring in the principal towns and cities.

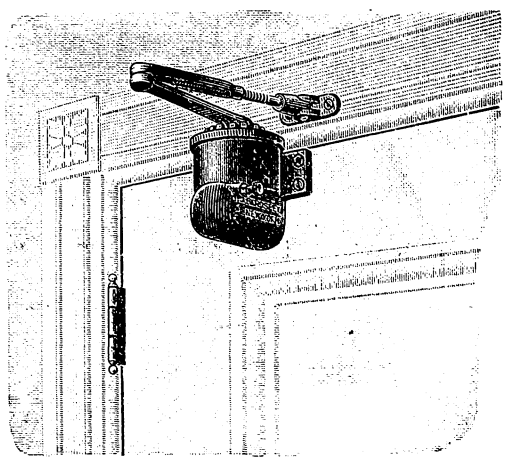


Fig. 1.—Bardsley's Liquid Door Check and Spring.

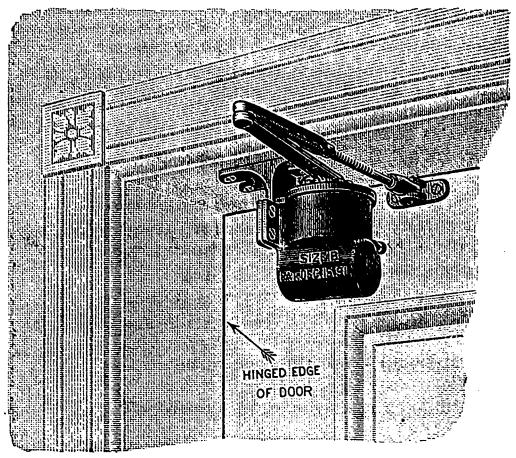
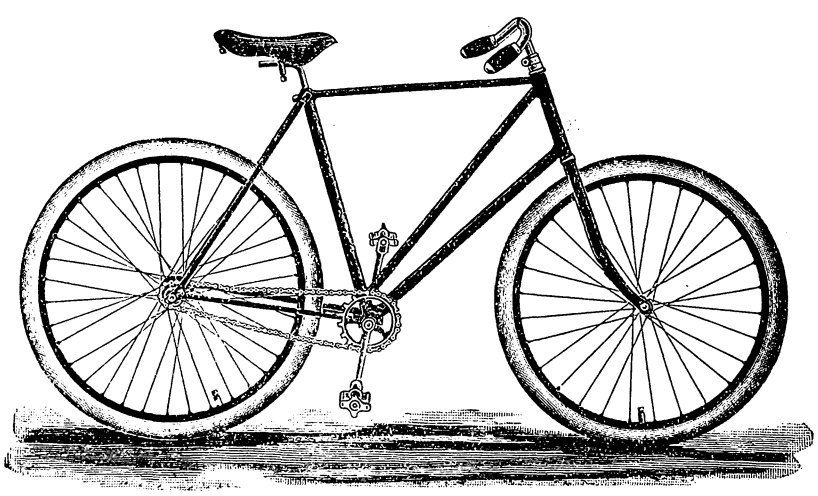


Fig. 2.—Check and Spring Attached to Left Hand Side of Door.

The '94 Winton.

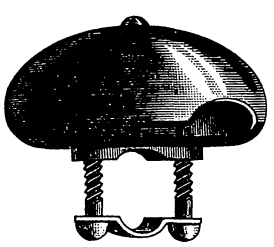
In addition to their double frame machine, the Winton Bicycle Company, Cleveland, Ohio, will market a line of wheels like the one shown in the accompanying cut. While following the regular Humber lines the wheel has an additional brace to insure special strength with rigidity at the crank hanger, and to permit a reduction of weights without fear of break downs. It has a narrow tread, long head and high frame, being made for the general run of riders, instead of for racing exclusively. The machines have 43-inch wheel base, special bearings, wood rims, tangent spokes, with tires optional. The line includes a 22-pound racer, 25 pound light roadster and a 28 pound full roadster stripped, or 32 pounds all on. It is stated that these machines are of the highest grade throughout.



The '94 Winton.

Bicycle Bell.

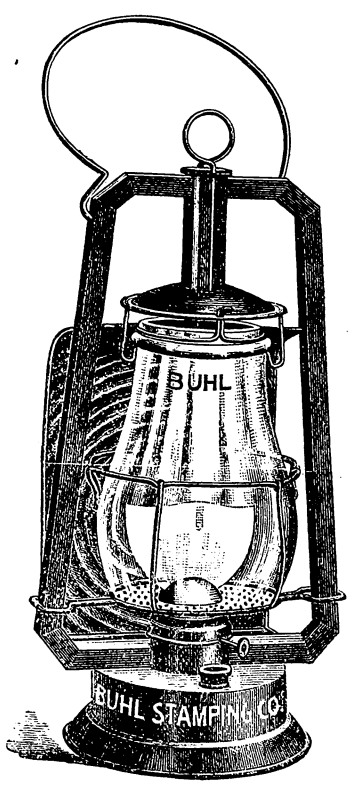
Haines & Zimmerman, 407 Cherry street, Philadelphia, are putting on the market the bicycle bell shown in the accompanying cut. The bell is 2 inches in diameter, has a closed base and double stroke, and is designed to fit any standard handle bar in the market. The gong, it is claimed, works easily and possesses a fine tone. The bell is of an unusually small size and is made up in response to the demand for a well made, low priced article.



Bicycle Bell.

Buhl Dash Lantern.

The accompanying cut of a dash lantern represents one of the six pieces contained in the Mascot assortment of the Buhl Stamping Company, Detroit, Mich. These goods are furnished in colored hard enamel finish. It is remarked that the lanterns contain the latest improvements, never leak, give a steady bright light and never go out in the wind. The Brilliant assortment put up by the company contains one dozen square lift tubular lanterns, assorted red, blue, russet and maroon colors. The assortments are referred to as being especially adapted to the wants of small customers and hardware jobbers during such a year of business depression as the present.



Buhl Dash Lantern.

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Current Hardware Prices.

DECEMBER 20, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range 'of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓@33⅓&10%
Excelsior....₩ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Am. Wrought, Horse shoe brand.11@11½¢
Armitage's Mouse Hole.....10½@11¢
Eagle Anvils, ₩ ℔ 9¢.....15@15&5%
Moore & Barnes Mfg. Co.....33⅓%
S. & H., machine finished..10½¢@11½¢
Trenton.....10@10½¢
Wilkinson's.....10½@11¢
Peter Wright's.....11@11½%

Anvil Vise and Drill—

Allen Anvil and Vise $3.00.....40&10%
Cheney Anvil and Vise.....25%
Millers Falls Co., $18.00.....20%
Star.....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—

Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....50%
Common Augers and Bits.....70@70&10%
Cincinnati Bell-Hangers' Bits.....30&10
Forstner Pat. Auger Bits.....15%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
C. E. Jennings & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits. ₩ set 32½ quarters, No. 5, $5; No. 30, $3.50.25%
Russell Jennings' Augers and Bits.25&10%
Lewis' Patent Single twist.....45%
L'Hommedieu Car Bits.....15&10%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
Snell's Bits.....60&5%

Bit Stock Drills—

Cleveland.....50&10&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Steer's, No. 1, $26; No. 2, $18.....35@40%
Stearn's No. 2, $48.....20%
Swan's.....40%

Gimlet Bits—

Bee.....25@25&5%
Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25....40&10%
Double Cut:
Shepardson's.....45@45&10%
Ct. Valley Mfg. Co.....30&10%
Hartwell's.....₩ gro., $10.00..40&10%
Douglass'.....40&10%
Ives.....60@60&10%

Hollow Augers—

Bonney's Adjustable, ₩ doz $48.....50%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%
Douglass'.....33⅓@33⅓&10%
French, Swift & Co. (Beecher).....33⅓@33⅓&10%
Ives'.....33⅓@33⅓&10%
Ives' Expansive, each $4.50.....50&5%
Stearns'.....20&10%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Snell's.....25@25&10%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%
Watrous'.....25@25&10%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@ 1.40
Awls, Handled Brad....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *ets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00	$7.50
First qual., other brands	6.50 / 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1.....3¼¢@4¢; 4½¢@5¢
Nos. 7 to 14.....70%
Nos. 15 to 28.....47½%
Nos. 19 to 22.....70%
Concord Axles, loose collar..4½¢@5¢
Concord Axles, solid collar..5¢@6¢
} 3% cash

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

No.	2000	20	30
Chatillon, ₩ doz.	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-in., $1.80; 12-inch, $2.00; 13½-inch, $2.50; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Dover.....₩ doz $1.00@$1.20
Dover (Standard Co.).....₩ doz $1.00
Duplex (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)...₩ doz. $3.50
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Improved Acme (H. & R. Mfg. Co.)....₩ gro. $9.00
Silver & Co.....₩ doz $5.50
Spiral.....₩ gro $4.25 @ $4.50
Triple (H. & R. Mfg. Co.).....₩ gro $16.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Dodge, Genuine Kentucky....70@70&10%
Kentucky Durham.....70&10%
Kentucky, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Texas Star.....50&10@50&10&5%
Western, Sargent's list.....70&10%

Door—

Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Gong, Abbe's.....33⅓&10%
Gong, Barton's.....40&10@50%
Gong, Yankee.....45&10%
Lever, R. & E. Mfg. Co's.....60&10&2%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Pull, Brook's.....50&10&2%

Electric—

Bigelow & Dowse.....20%
Wollensak's.....20%

Hand—

Extra Heavy Brass.....70%
Light Brass.....70&10@70&10&5%
Silver Chime.....33⅓&10%
White.....70%
Globe Cone's Patent).....25&10@35%

Miscellaneous—

Call.....45@50%
Farm Bells.....₩ ℔ 3¢&3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Hand Bellows.....40&10@50%
Molders'.....40&10@50%

Belting, Rubber—

Common Standard.....75@75&10%
Extra.....60&10@60&10&10%
Standard.....70&5@70&10%
N.Y.B.&P. Co., Carbon.....60@60&5%
N.Y.B.&P.Co., Diamond.....50@50&5%
N.Y.B.&P.Co., Para.....40@40&5%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters..15%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron..60@60&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%
See also *Machines, Hoisting.*

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....80&5@80&10%
Genuine Eagle, Norway, list Oct. '84.....80&5@80&10%
Eagle, Norway, list Oct. '84.80&10@80&15
Phila. pattern, list Oct. 7, '84.....80%
R.B.&W., old list.....70%
Bolt Ends, list Jan. 1, 1890.80&10@80&25%
Machine, list Jan. 1, 1890. .80&10@80&25%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Cast Iron Shutter Bolts.....70&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wr't B. K.Flush, Common.....55&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Shutter, all Iron, Stanley's.....60&10@60&10&10%
Wrought Square.....70&10@75%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%

Stove and Plow—

Plow.....60&10&5@60&10&10%
Stove.....60&10@60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
American Screw Company:
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16 '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Clark's.....33⅓@35%
Enterprise Mfg. Co.....20%
Ives' Tap Borers.....33⅓&5%

Borax—

Per ℔.....9½¢@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Boxes, Miter.

Spliker's Excelsior, 3 in. $7.50, 4 in $8 50, 5 in. $13.00, 6 in. $15.00.....20%

Braces—

American Bit Brace and Tool Co.,
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber s.....50&10%
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Davis Patent.....50&10%
Fray's Genuine Spofford s...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123. 207 to 414.....50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15

Brackets—

Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henls' Self-Basting. } Inch..... 9 10 9x11
Per doz...$4.50 5.50 6.50
Morgan Odorless.....₩ doz. $12, 50%
New Haven.....50%
Queen City.....33⅓%
Wire Goods Co.....65&10%

Buckets, Well—

Galvanized—

Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00
Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers.*

Butts—

Brass—

Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%
Cast Brass, Tiebout's.....50%
Wrought Brass.....80@85&10%

Cast Iron—

Fast Joint, Broad.....50&10@60%
Fast Joint, Narrow.....50&10&5@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Loose Pin, Acorns.....
Loose Pin, Acorns, Japanned....
Loose Pin, Acorns, Japanned, Plated Tips.....
Mayer's Hinges.....
Parliament Butts.....
} 75&5@ 75&10 &5

Wrought Steel

Fast Joint, Broad.....
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Inside Blind, Light.....
Inside Blind, Regular.....
Loose Joint, Broad.....
Loose Pin.....
Table Butts, Back Flaps, &c....
Bronzed Wrought Butts....50@50&10%
} List Jan. 2, 1893, 40@40&10%

Cages, Bird—

Hendryx, Brass or Enameled.....50&10%
Hendryx, Wood.....40&10%

Calipers—See *Compasses.*

Calks Toe—

Burke's, One Prong, Blunt.....5½@6¢
Burke's, One Prong, Sharp.....6½@7¢
Burke's, Two Prong, Blunt.....7½@8¢
Gautier, One Prong, Blunt.....5½@6¢

Can Openers—See *Openers, Can.*

Cans, Milk—

S. S. & Co.: 5-gal., $3.00; 8-gal., $4 40; 10-gal., $4.75 each.....40&10

Cans, Oil—

Galvanized Blue Band, 1 gal., ₩ doz. $2.25
Galvanized Blue Band, 5 gal., Tip-Top, ₩ doz., $12.00
Galvanized Blue Band, 5 gal., Faucet, ₩ doz., $8.00
Glass Oil, Friend.....₩ doz. $2.75

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co.....₩ 1000
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire $1.60
E. B. Grnd. Edge, Cent. Fire, 1-10's.....47@50¢
E. B. Trimmed Edge, 1-10's.....47@50¢
F. L. Waterproof, 1-10's.....35@37¢
G. D.....27@30¢
Musket. Waterproof, 1-10's.....50@53¢
S. B. Genuine Imported.....45¢

Primers—

Berdan Primers, $1.00.....2%
B. L. Caps (Sturtevant Shells) $1 00....2%
All other Primers, $1.20.....2%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.....25%

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

B. B. Caps, Con. Ball, Swgd., $2.00.....2%
B. B. Caps, Round Ball, $1.75.....2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal. $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Cent. Fire, Military and Sporting.....15&5&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Primed Shells and Bullets.....15&5&2%
Rim Fire Cartridges.....15&5&2%
Rim Fire Military.....15&2%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed.....
Plate.....
Shallow Socket...
} Brass.....55@55&10%
} Others....60@60&10%
Deep Socket.....40&10%
Giant Truck Casters.....35%
Gwinner's Common Sense.....45%
Gwinner's Hercules.....45%
Martin's Patent (Phœnix).45&10@50&10%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Socket Truck Casters.....50@50&10%
Stationary Truck Casters.....50&10%
Tucker's Patent, low list.....45%
Yale Casters, low list.....45%
Yale, Gem.....70%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised May, 1893.....60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.50	3.40	3.25

Less than cask lots, add ½¢@½¢ ₩ ℔
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12, 1892.....60@60&10%
Barnes' Reinforced Sash.....60&10%
Barnes' Victor Sash.....65%
Covert Halter.....60&2%
Covert Heel Chain.....50&2%
Covert Traces.....35&2%
Galvanized Pump Chain.
5 ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.75
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔.....₩ 100 ℔ $7.00
Jack Chain, Iron and Brass, list July 10, 1893.....60&10%
Oneida Halter Chain.....60@60&5%

Chalk—

See also Crayons.
Blue, case lots...₩ gr 75¢; mall lots 80¢
Red, case lots...₩ gr 67¢; small lots, 72¢
White, case lots. ₩ gr 50¢; small lots, 52¢

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Chalk Lines—See *Lines.*

Checks, Door—
Unity 50%

Chisels—
Socket Framing and Firmer
Mix, New Haven, Ohio Tool Co., P. S. & W., Witherby ..... 75&10@75&10&10%
Buck Bros. 30%
Douglass ..... 75@75&5%
Merrill ..... 60&10@60&10&5%
L. & I. J. White ..... 30@30&5%

Tanged and Miscellaneous.
Buck Bros. 30%
Butchers' ..... $4.75@$5.00 to 2
Cold Chisels, fair quality, ₩ ℔ ... 14@16¢
Spear & Jacksons' ..... $5 to 2
Tanged Firmers ..... 50@50&10%

Chucks—
Seach Pat. ..... each, $8.00 ..... 20%
Danbury ..... each, $6.00, 30@30&5%
Graham Patent ..... 33⅓&5%
Morse's Adjustable, each, $7.00, 20@20&5%
Syracuse, Balz Pat 25%
Skinner's Patent Chucks,
Combination Lathe Chucks ..... 33⅓&5%
Drill Chucks 15%
Independent Lathe Chucks 40%
Universal Lathe Chucks 40%
Union Mfg. Co.
Combination 40%
Independent 40%
Universal 40%
Victor $8.50, 25%

Churns—
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.

Clamps—
Adjustable, Cincinnati ..... 15&10%
Adjustable, Hammers ..... 15@15&5%
Adjustable, Stearn's ..... 30@30&10%
Barnes' Machinists' Clamps ..... 33⅓&5%
Cabinet, Sargent's ..... 70&10%
Carpenter's, Cincinnati ..... 25&10%
Carriage Makers', P., S. & W Co.. 40&10%
Carriage Makers', Sargent's... 75@75&5%
Eberhard Mfg. Co. ..... 40&5@40&10%
R. I. Tool Co.'s Wrought Iron 25%
Saw Clamps, see Vises, Saw Filers'.
Stearn's Adjustable Cabinet and Corner ..... 30@30&10%
Warner's ..... 40&10@40&10&5%

Cleavers, Butchers'—
Beatty's ..... 40@40&5%
Bradley's ..... 25@30%
Foster Bros. 30%
New Haven Edge Tool Co.'s 40%
P., S. & W ..... 33⅓&5@33⅓&10%
Schulte, Lohoff & Co. ..... 40@40&5%
L. & I. J. White ..... 20&5%

Clips—
Baker Axle Clips 25%
Norway, Axle, ¼ & 5-16 ..... 55&5&5%
Norway Spring Bar Clips, 5-16.. 60&5&5%
2d grade Norway Axle, ¼ & 5-16.... 65&5%
Steel Felloe Clips ..... ₩ ℔, 5¢
Superior Axle Clips ..... 66⅔&5&70%
Wrought Iron Felloe Clips ..... ₩ ℔, 5½¢

Cloth and Netting, Wire
—See *Wire, &c.*

Cockeyes 50%

Cocks Brass—
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.).. ....60&2@60&10

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Brass, Pope & Steven's list... ..... 40%
Chapman Mfg. Company, new list.... 40%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list 40%
Medford Fancy Goods Co..... 40&10&50%

Combs Curry—
American Curry Comb Co. ..... 33⅓&40%
Fitch's ....50&10@50&10&10%
Kohler's Humane ..... ₩ doz., $1.75
Kohler's Magic Oscillating... ₩ doz., $2.00
Rubber, per doz., $10.00 ..... 25%

Compasses, Dividers &c.
Compasses, Calipers, Dividers. 70&10@75%
Bemis & Call Co.'s
Dividers 65%
Calipers, Call's Patent Inside 55%
Calipers, Double 65%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Compasses ..... 50&5%
Excelsior 50%
Starrett's
Combination Dividers 25%
Lock Calipers and Dividers 25%
Spring Calipers and Dividers....25&10%
Stevens & Co.'s ..... 25&10%

Coolers, Water—
S. S. & Co.: 2-gal., $2.00; 3-gal., $2.50; 4-gal., $2.75; 6-gal., $3.40 each....33⅓&5

Coopers' Tools—
See *Tools, Coopers'.*

Cord—Sash—
Braided, Crown Drab and Fancy, ₩ ℔, 55¢ 30%
Braided, Crown White, ₩ ℔, 50¢...50%
Cable Laid Italian Sash..... ₩ ℔, 19@20¢
Common ..... ₩ ℔, 8½@9¢
Common Russia Sash..... ₩ ℔, 12½&@18¢
Egyptian, India Hemp, Braided..... 26¢
India Cable Laid Sash..... ₩ ℔, 11½&@12¢
Massachusetts, White ..... 25¢
Ossawan Mills—
Braided, Giant, Drab and Fancy, ₩ ℔ 35¢ 10%
Braided, Giant, White, ₩ ℔ 30¢.... 20%
Patent, good quality ..... ₩ ℔, 10@11¢
Patent Russia Sash..... ₩ ℔, 13½@ 14¢
Samson—
Braided, Drab Cotton ..... ₩ ℔, 42¢
Braided, Italian Hemp ..... ₩ ℔, 40¢
Braided, Linen ..... ₩ ℔, 56¢
Braided, White Cotton ..... ₩ ℔, 37¢
Semper Idem. Braided, White..... 26¢
Silver Lake—
A quality, Drab, 55¢ 25%
A quality, White, 50¢ 25%
B quality, Drab, 35¢ 10%
B quality, White, 30¢ 10%
Sylvan Spring, Extra Braided, Drab. 39¢
Sylvan Spring, Extra Braided, White. 34¢
Tate's Solid Braided—
Economy, Drab ..... ₩ ℔, 27¢
Economy, White ..... ₩ ℔, 22¢
Hercules, Drab ..... ₩ ℔, 30¢
Hercules, White ..... ₩ ℔, 25¢
White Cotton Braided, fair.. ₩ ℔, 23@24¢

Wire Picture—
Braided or Twisted ..... 30&5@30&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers, Nut—
Acme.
Japanned, ₩ gro., $30 ..... 50%
Nickel Plated, ₩ gro. $30 ..... 10%
Blake's Pattern, ₩ doz., $2.00 ..... 10%
Table (H. & B. Mfg. Co) 40%
Turner & Seymour Mfg. Co 50%

Cradles—
Grain ..... 50&2@50&5&2%

Crayons—
White Crayons, ₩ gross ..... 7@8¢
D. M. Steward Mfg. Co.:
Metal Workers', ₩ gross, $2.50 ..... 25%
Railroad, ₩ gross, 2.00 ..... 25%
Rolling Mill, ₩ gross, 2.50 ..... 25%
Soapstone Pencils, ₩ gross, 1.50 ..... 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—
See *Combs, Curry.*

Curtain Pins—
See *Pins, Curtain.*

Cutters—
Meat—
American 30%

Nos.	1	2	3	4	8	5
Each	$5	$7	$10	$25	$50	$60

Enterprise 25%

Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15

Dixon's, ₩ doz. ..... 40@40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Draw Cut, each:

Nos.	5	2	6	8
	$50	$75	$80	$225

..... 20@25%
Hale's, ₩ doz. 70%

Nos.	11	12	13
	$27.00	$33.00	$45.00

Home No. 1, ₩ doz., $26.00..... 55&10%
Little Giant, ₩ doz. ..... 40&10@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

Miles' Challenge, ₩ doz. ..... 45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Triumph No. 505, ₩ doz., $21.00..25@30%
Woodruff's, ₩ doz. ..... 40@40&5%

Nos.	100	150
	$15.00	$18.00

Beef Shavers (Enterprise) 20%
Chadborn's Smoked Beef Cutter, ₩ doz., $66.00

Slaw and Kraut—
Tucker & Dorsey Mfg. Co.:
Kraut Cutters 40%
Slaw Cutters, 1 Knife, ₩ gross.. $21.00
Slaw Cutters, 2 Knife, ₩ gross... 30.00

Tobacco
Acme ..... ₩ doz., $20.00, 40%
All Iron ..... ₩ doz., $4.25
Champion ..... 20&10@30%
Nashua Lock Co.'s.. ₩ doz., $18.00, 50@55%
Sargent's ..... ₩ doz., $24.00, 55&10
Wilson's 55%

Washer—
Appleton's ..... ₩ doz., $16.00, 60&10%
Bonney's ..... 30&10%
Cincinnati ..... 25&10%
Johnson's ..... ₩ doz., $11.00, 33⅓&
Penny's.. ₩ doz.,, Pol. $14; Jap'd, $16, 55%
Smith's Pat.... ₩ doz., $12.00, 20&10&10%

Diggers, Post Hole, &c.—
Cronk's Post Bars, ₩ doz., $60.00, 50&5&50&10%
Eureka Diggers..... ₩ doz. $12.00@$13.00
Fletcher Post Hole Augers, ₩ doz., $36.00, 20@20&10%
Gem, Improved ₩ doz.,. $9.00@$10.00 net
Gibbs' Columbia ..... ₩ doz., $13.00
Gibbs' Imperial ..... ₩ doz., $7.50
Gibbs' National ..... ₩ doz., $12.00
Gibb's Post Hole Digger..... ₩ doz., $15.00
Kohler's Hercules ..... ₩ doz., $14.00
Kohler's Invincible ..... ₩ doz., $12.00
Kohler's Little Giant ..... ₩ doz., $18.00
Kohler's New Champion.... ₩ doz., $8.00
Samson, ₩ doz., $34.00 ..... 25@25&10%
Scheidler ..... ₩ doz., $18.00
Shimer's Hollow Handle.. ₩ doz., $24.00, 50%
Vaughan's Post Hole Auger, ₩ doz., $8.50@$9.50

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers.
Money, ₩ doz. ..... $18@$50
Waddel's Improved, No. 1. ₩ doz. $15.00
Waddel's Improved No 2. ₩ doz. $18.00
Waddel's Desk and Drawer..each $7.50
Waddel's Desk and Show case. each $7.50

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Blacksmiths' ..... each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Automatic Boring Tools..... $1.75@$1.85
Breast, Bartholomew's.... each $2.50 ..... 25&10@40%
Breast, Millers Falls..... each $3.00, 25%
Breast, P. S. & W ..... 40&10%
Breast, Wilson's ..... 30&5%
Chicopee Automatic Drill ..... 20&10%
Goodell Automatic Drills ..... 40&5%
Ratchet, Curtis & Curtis 30%
Ratchet, Ingersoll's 25%
Ratchet, Merrill's ..... 20@20&5%
Ratchet, Moore's Triple Action.... 25@30%
Ratchet, Parker's ..... 20@20&5%
Ratchet, Weston's ..... 20@25%
Ratchet, Whitney's ..... 20&10%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00 ..... 20&10%

Twist Drills—
Cleveland ..... 50&10&10%
Diamond, W. & B ..... 50&10&10%
Graham's Pat. Groove Shank. 50&10&10%
Morse ..... 50&10&10%
New Process ..... 50&10&10%
Standard ..... 50&10&10%
Syracuse (Metal list)... ..... 50&10%

Drill Bits or Bit Stock
Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Allard's Spiral, new list 25%
Brace Screw Drivers ..... 25&10%
Buck Bros. 30%
Buck Bros.' Screw Driver Bits.... 27½&5%
Clark's Pat ..... 30@33⅓&5
Cincinnati ..... 25&10%
Champion ..... 25&10%
Disston's 50%
Douglass Mfg. Co. ..... 20@20&10%
Ellrich's Socket and Ratchet..25@25&10%
Fray's Hol. H'dle Sets...No. 3, $12.00, 45%
Gay & Parsons 35%
Goodell's Automatic 50%
Knapp & Cowles
No. 1 ..... 60&20@70%
No. 2 ..... 60&10&10@70&5%
No. 3 ..... 60&5@60&10%
Nos. 4 and 00, Acme and Ideal...50&5@50&10&5%
Kolb's Common Sense.. ₩ doz., $6.00, 25&10%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
P. S. & W 70%
Sargent & Co.'s
No. 1, Forged Blade ..... 60&10&10%
Nos. 20, 40 and 60 ..... 66⅔&10&10%
Screw Driver Bits, Parr's.. ₩ gross, $6.25
Screw Driver Bits ..... ₩ doz., 50@75¢
Stanley R. & L. Co.'s
No. 64, Varnished Handles..... 65&10%
No. 86 ..... 70&10%
Stearns'..... 25&10&5%
Syracuse Screw-Driver Bits.....30&30&5%
C. T. Williamson Wire Novelty Co.....50%

Egg Beaters—See *Beaters, Egg.*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F.FF.
10-₩ cans, 10 in case	6 ¢	6½¢	5 ¢
10-℔ cans, less than 10.....	10 ¢	10 ¢	7½¢
Kegs, ₩ ℔	4½¢	5 ¢	2½¢
¼ kegs, ₩ ℔...	4½¢	5½¢	2½¢
¼ kegs, ₩ ℔...	5 ¢	5½¢	3 ¢

Enameled and Tinned Ware—See *Ware, Hollow*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—
Brass Thread ..... 60@60&10%
Door Lock....Same dis. as Door Locks.
Wood 25%

Expanded Metal—
List No. 5.
Door Mats, Galvanized 25%
Fencing, Painted Sheets 20%
Lathing 10%
Netting, Painted Sheets 20%
Tree Guards, Paneled 15%
Window Guards, Paneled 15%

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Austin & Eddy No. 2008 ..... ₩ gr., $9.00
Mackrell's, ₩ doz., $1.00 ..... 20@20&10%
Security Gravity ..... ₩ gr., $9.00
Van Sand's Old Pat., $15 ₩ gr..... 55&10%
Van Sand's Screw Pat, $15 ₩ gr.. 60&10%
Zimmerman's ..... 50&10%

Faucets—
B. & L. B. Co.
West's Lock, Open and Shut Key... 50%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots.... 50&10%
Boss Metallic Key 50%
Cork Lined ..... 70&5@70&10%
Diamond Lock 40%
Fenn's 40%
Fenn's Cork Stops ..... 33⅓&5
Frary's Pat. Petroleum 60%
IXL, 1st quality, Cork Lined 50%
Metallic Key, Leather Lined ..... 60&10@60&10&10%
No Brand, Red Cedar (in bbls.) .... 50&10%
No Brand Metal Key 60%
O. K. Western Pattern Cork Lined.... 50%
Perfection, Fla. Red Cedar (in boxes).. 40%
Reliable Cork Lined 60%
Self Measuring
Enterprise, ₩ doz., $36.00 ..... 20%
Lane's ₩ doz., $36.00 ..... 25&10%
John Sommers'
Peerless Best Block Tin Key 40%
Star 60%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list.... 60%
Western Pattern Metal Key 40%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—
Derby and Cincinnati ..... 45&5%
Brewster ..... 50&5%

Files—
Domestic—
American ..... 66⅔&10@66⅔&10&5%
Arcade ..... 60&10&5@60&10&10%
Eagle ..... 60&10&10@70%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Nicholson Files, Rasps, &c. 60&10&5@60&10&10%
Nicholson (X.F.) Files 25%
Nicholson's Royal Files (Seconds).... 75% (extra prices on certain sizes.)
Other makers, best brands..60&10&5@70%
Fair brands ..... 70&10@70&10&10%
Second quality ..... 80@80&5%
Arcade Horse Rasps.... 60&10@60&10&5%
Chelsea Horse Rasps, Hand Cut...50&10%
Heller's Horse Rasps ..... 50&10@60%
McCaffrey's Horse Rasps ..... 50&10%
Trojan Horse Rasps ..... 60&10&5%

Imported—
Butcher ..... Butcher's list, 20%
Stubs ..... Stubbs' list 25&30%

Fixtures Grindstone—
Moore's 55%
P., S. & W. Co. ..... 50&10%
Reading Hardware Co. ..... 30&10%
Sargent's Patent ..... 70&10%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Hay, Manure, &c. Asso. List, 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—
Saw—
Red, Polished and Varnished.... ₩ doz., $1.50, 25%
White Vermont..... ₩ gro.. $9.00@$10.00

Screen, Window and Door—
Bonanza Window Screens..50&5@50&10%
Cortland ..... 40@40&5%
Empire Fancy Screen Doors, ₩ doz .. $12
Phillips' Window Screen Frames ..... 50@50&5%
Porter's Pat. Window and Door Frame, 33⅓&10%
Stearns' Frames and Corners. 25@25&10%
Warner's Screen Corner Irons.. 33⅓&10%

Freezers, Ice Cream—
American 60%
Arctic ..... 70@70&5%
Blizzard 70%
Boss and Pet ..... 60&10&10%
Buffalo Champion ..... 65@65&5%
Confectioners' Machine 50%
Crown 60%
Double Action Crown 60%
Gem 65%
Giant 60%
Good Luck ..... 65@65&5%
Granite State ..... 65@65&5%
Keystone, P., D. & Co., each, $1.50.... 20%
Model ..... 60@60&5%
Peerless ..... 60&10%
Shepard's Lightning ..... 65@65&5%
Standard ..... 60@60&5%
Standard Double Action ..... 60@60&5%
Star 60%
White Mountain ..... 60@60&5%
Zero 70%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fruit Pickers—
See *Pickers, Fruit.*

Fry Pans—See *Pans, Fry.*

Funnels—
Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro. 30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz. 25%

Furnaces, Soldering—
Burgess No. 3 Gem, Copper reservoir.$8.50
Burgess No. 3 Gem tin reservoir....$7.00
Clayton & Lambert No. 1 Fire-Pot, complete $6.00

Fuse—Dls. 10@2% cash. ₩ ℔. 1000 ft.
Common Cotton Fuse, for dry gr'nd..$3.00
Common Hemp Fuse, for dry ground. 2.80
Double Taped Fuse, for very wet gr. 5.60
Single Taped Fuse, for wet ground. 4.75
Triple Taped Fuse, for very wet gr. 6.40
Large Gutta Percha Fuse, for water. 15.00
Small Gutta Percha Fuse, for water. 10.00

Gates Molasses—
Boss, ₩ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 ..... 60&10&10%
Lincoln's Pattern ..... 70@70&10%
Stebbin's Genuine ..... 60&10&10%
Stebbin's Pattern ..... 80&10@80&10&5%
Stebbin's Tinned Ends ..... 40&10%
Weed's ..... 20&10%

Gauges—
Barrett's Comb. Roller Gauge ..... ₩ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale ..... ₩ doz. $5.00
Without Scale ..... ₩ doz. $4.00
Marking, Mortise, &c. ..... 60&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 20&10%
Starrett's Surface, Center and Scratch, 25&10%
Wire, Brown & Sharpe's ..... 10@20%
Wire, Morse's 25%
Wire, P., S. & W. Co. ..... 10&10%
Wire, Wheeler, Madden & Co..... 10%

Gimlets—
Nail and Spike ..... 50&10&5%
Diamond Gimlets ..... ₩ gr $5.00
Eureka Gimlets ..... 60&10%
Double Cut, Douglass' ..... 40&10%
Double Cut, Ives' ..... 60@60&5%
Double Cut, Shepardson's ..... 45@45&5%

Glue—
Dodd's Liquid Glue ..... 25@25&5%
Improved Process ..... 25@25&5%
Le Page's Liquid ..... 25@25&5%
Upton's Liquid 35%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Axleine, tin boxes ..... ₩ gross $12.00
Dixon's Everlasting...10-℔ pails, ea. 85¢
Dixon's Everlasting, in bxs.. ₩ doz 1 ℔ $1.20; 2 ℔ $2.00
English Coach, 5-℔ tin pails. ₩ doz, $3.50
English Coach, wooden boxes ..... ₩ gross $8.50
Fraser's ..... Keg ₩ ℔ 4¢, Pail ₩ ℔ 5¢
Fraser's, in boxes ..... ₩ gr $9.50
Lower grades, special brands. ₩ gr $5.50@$7.00
Tiger, 5-℔ tin pails ..... ₩ doz $2.85
Tiger, wooden boxes ..... ₩ gross $7.00

Grindstones—
Family, regular list 60%
Family, Cleveland Stone Co. 20%

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
Sewing, Brass Fer. ₩ gr..... ..... $1.75
Pat. Sewing, Long ..... ₩ doz $1.20
Pat. Sewing, Short. ₩ doz..... 45@50%
Pat Peg Leather Top. ₩ doz 45@50%
Pat. Peg, Plain Top. ₩ doz ..... 40@45%

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Halters—

Covert's Adj. Rope Halters.....40&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ¾-in., Hemp.....50&2%
Covert's Rope, Jute.....60&10&10&2%
Covert's Saddlery Works Halters...33⅓&%
Covert's Saddlery Works Handy Web Halters.....33⅓&%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓&%

Hammers—

Handled Hammers—

Atha Tool Co. / Buffalo Hammer Co. / Humason & Beckley / Verree.....50&10%

Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
C. Hammond & Son.....40&10&—%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Maydole's, list Dec. 1, '85.....25&10&35%
Peck, Stow & Wilcox.....35@40%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Horseshoe Turning Hammers.....50%
Regular Y. & P., A. E. Nail.....50%
Other Hammers.....50&10%
Nelson Tool Works.....40&10%
Sargent's.....40@40&10%
Warner & Nobles, new list.....25&10

Heavy Hammers and Sledges—

3 ℔ and under...₩ ℔40¢ / 3 to 5 ℔...₩ ℔36¢ / Over 5 ℔...₩ ℔30¢ — 75&10@75&10 &5%
Wilkinson's Smiths.....10½¢@11¢₩ ℔

Handcuffs and Leg Irons

—See *Police Goods.*

Handles—

Cross-Cut Saw Handles—

Atkins', new list.....40%
Champion.....15%
Ely's Perfection.....₩ doz., $3.00
Sensible.....40%

Iron, Wrought or Cast—

Barn Door, ₩ doz $1.40.....10&10%
Bronze Iron Drop Latches..₩ doz 70¢ net
Chest and Lifting.....70@70&10%
Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.08	1.35	1.50

60&10&10%

Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Roggin's Latches.....₩ doz 30¢@35¢

Wood—

Auger, assorted.....₩ gr 5.00
Auger, large.....₩ gr 7.00 — 50%
File, assorted.....₩ gr 2.75
Brad Awl.....₩ gr $2.00
Apple Firmer Chisel, ass'd...₩ gr 5.00
Apple Firmer Chisel, large...₩ gr 6.00
Hickory Firmer Chisel, ass'd.₩ gr 4.50
Hickory Firmer Chisel, large.₩ gr 5.00
Socket Firmer Chisel, ass'd..₩ gr 3.00
Socket Framing Chisel, ass'd.₩ gr 5.00 — 40&10@50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Hoe, Rake, Shovel, &c.....60@60&5%
Pat. Auger, Douglass.....₩ set $1.25
Pat. Auger, Ives'.....30&10%
Pat. Auger, Swan's.....₩ set $1.00
Saw and Plane.....40&10@50%
J. B. Smith & Co.'s Pat. File.....50%

Hangers—

Barn Door, New England.....70@70&5%
Barn Door, old patterns.....70@70&5%
Barry.....50%
Best Anti-Friction.....60&10@60&10&5%
Boss.....60&10@60&10&5%
Carrier Steel Anti-Friction.....50&10%
Champion.....60&10%
Chicago Anti-Friction.....30&10%
Climax Anti-Friction.....55%
Cincinnati Nos. 1, $2.25; 3, $2.50; 4, $2.50.....60@60&10%
Crescent.....60@60&10%
Cronk's Patent, Steel Covered.....50&10%
Duplex (Wood Track).....60&10&5%
Economy, $6.00.....50&10%
Hamilton Wrought Steel Track.....55%
Interstate.....50&10@60%
Kidder's.....50@50&10%
Lane's New Standard.....50@50&5%
Lane's Parlor.....40%
Lane's Standard.....50&5@50&10%
Lundy, Steel Parlor.....40%
Magic.....45&10%
Matchless.....50&10%
Moody.....45%
Moore's Baggage Car Door.....33⅓%
Moore's Elevator.....33⅓%
Moore's Railroad.....55%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15. 40&10@50%
Orleans Steel.....55%
Paragon Nos. 5, 5¼, 7 and 8.....20&10%
Pendulum, Payson's.....40@40&10%
Perfection.....50&10@50&10&5%
Richards'.....30@30&10%
Samson Steel Anti-Friction.....55%
Star.....40&10@40&10&5%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Sterling.....50&10@60%
Terry's Ideal.....50&10@50&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Shield.....50&10@60%
Terry's Solid.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Warner's Pat.....20&10&10%
Wild West.....45&10%
Zenith for Wood Track.....55%

Harness Snaps—See *Snaps.*

Hatchets—

American Axe and Tool Co. / Blood's / Hunt's / Hurd's / Mann's / Peck's / Underhill's — 40 & 10 @ 40 & 10 &5%
C. Hammond & Son.....
Fayette R. Plumb.....
Collins.....10%
Buffalo Hammer Co. / Kelly's / P. S. & W. Co. / Sargent's & Co. / Schulte, Lohoff & Co. / Ten Eyck Edge Tool Co. — 50 @ 50 &10%

Hay and Straw Knives

See *Knives.*

Hinges—

Blind Hinges—

Clark's
Nos. 1, 3, 5, 1868, Old Pattern.....75&10&5%
Nos. 1 and 3, Tip Pattern. 75&10&5%
No 50, Buffalo Noiseless, 40, 60 and 65.....75%
Buffalo Reversible, Nos. 3, 2, 1½, 1 and 0.....70&5%
No. 1, Cottage, for wood only...80&10%
No. 1, Diamond, for wood only...80&5%
Dixie L. & P., Nos. 3, 2½, 2, 1½, 1, 0, 00, 4 and 5.....75&5%
No. 25, Empire Reversible....75&10%
Lull & Porter, Nos. 3, 2½, 2, 1½, 1 0 00, 4 and 5.....75&10&2½%
Mortise Gravity, Nos. 2, 4, 4½, 6, 8, 9 and 10.....50%
Huffer.....50@50&10%
Parker.....75&10%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Reading's Gravity.....75&10@75&10&5%
Sargent's Nos. 3, 5, 11, 12, 13.....75&10@75&10&5%

Gate Hinges—

Automatic.....₩ doz $12.50, 50%
Clark's, Nos. 1 2, 3....60&10@60&10&5%
N. E.....₩ doz $7.80, 60@60&10%
N. E. Reversible..₩ doz $5.60, 60@60&10%
N. Y. State.....₩ doz $4.90,60@60&10%
Western.....₩ doz $4.20, 60@60&10%

Spring Hinges—

Acme.....30%
American, Gem and Star.....20%
Bardsley's Patent Checking.....15%
Barker's Double Acting.....25%
Bommer's Japanned.....35%
Bommer's All other Kinds.....30%
Buckman's.....15@20%
Champion.....60%
Chicago.....30%
Devore, No. 1.....₩ gro , $13.00
Empire and Crown.....20%
Freeport.....₩ gro., $12.00
Geer's Spring and Blank Butts....40%
Hero and Monarch.....55%
Ideal No. 3.....₩ gross $10 00
J. G. C. Covered, ₩ gro.. $30....60&5%
New Idea Nos. 1 and 10.₩ gross $13.00
New Idea Dbl. Acting.....45%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
Oxford.....20%
Reliable.....60%
Rex.....₩ gro., $13.00
Royal.....66⅔%
Samson.....60@60&7½%
Stearns' Noiseless Floor Hinge, ₩ set, $5.00.....20&10@30%
Union Mfg. Co.....25%
Union Spring Hinge Co.'s list, March, 1886.....20%
U. S.....25&10%
Wiles', No. 1, ₩ gro., $16; No. 2....$13

Extra 5@10% given on many of these Hinges.

Wrought Iron Hinges—

List February 14, 1891.
Corrugated Strap and T.....50&10&5%
Strap and T.....50&10@50&10&10%
Plate Hinges { 8, 10 & 12 in., ₩ ℔.....5¢ / "Providence" } over 12 in. ₩ ℔.....4¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 252 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10¢
Screw Hook and Eye.... { ⅝ in., ₩ ℔ 7¾¢ / ½ in., ₩ ℔ 5¾¢ / ⅜ in., ₩ ℔ 4¾¢
Screw Hook and Strap..... { 6 to 12 in., ₩ ℔.. 4¢ / 14 to 20 in., ₩ ℔.. 3½¢ / 22 to 36 in., ₩ ℔.. 3¢

Hoes—

Eye—

Am. Axe and Tool Co., S. & O. Pat. / Sandusky Tool Co., S. & O. Pat — 60&5 @60&10%
Chattanooga Tool Co., S. & O. Pat. 60& 5@60&10%
D. & H. Scovil.....20%
Grub.....60&10%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%

Handled—

Garden, Mortar, &c.....70@70&5&2%
Magic.....₩ doz $4.00
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%

Hog Rings and Ringers—

See *Rings and Ringers—*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow-Ware—

See *Ware, Hollow.*

Holders—

Bag—

Sprengle's Pat.....₩ doz $18....60%

Bit—

Angular.....₩ doz $24.00, 40&5%
Diagonal.....₩ doz $24.00, 40%
Extension.
Barber's, ₩ doz $15.00.....40@40&10%
Ives, ₩ doz $20.00.....60&5@60&10%

File and Tool—

Bals Pat.....₩ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—

Motley's Adj. Sash, Medium Size..... ₩ doz $1.20, 40%

Hooks—

Cast Iron—

Bird Cage, Reading / Bird Cage, Sargent's List / Clothes Line, Sargent's List. — 60&10&10%
Ceiling, Sargent's list.....55&10&10%
Clothes Line, Moore's.....70%
Clothes Line, Reading list 60&10@60&10&10%
Coat and Hat, Moore's.....70%
Coat and Hat, Reading. 60&10@50&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Harness, Reading list..55&10@55&10&10%

Wire—

Atlas, Coat and Hat.....65%
Belt.....80&15@80&20%
Handy Hat and Coat.....50&10@60%
Indestructible Coat and Hat...45@45&5%
Steady Ceiling Hooks.....50&10@60%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Wire Coat and Hat, Standard.60@60&10%
Bright Wire Goods—See Wire.

Wrought Iron—

Cotton.....₩ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg. Co....50%
Wrought Staples Hooks, &c. See Wrought Goods

Miscellaneous—

Bush.....55@60%
Fish Hooks, American.....50%
Grass, No. 2, $2.00; No. 3, $2.10; No. 4, $2.25
Hooks and Eyes—Brass.....60&10&10%
Hooks and Eyes—Malleable Iron. 70@70&10%
Nolin's Grass.....₩ doz $2.25
Whiffletree—Patent.....55%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—

See *Shoes, Horse.*

Hose, Rubber—

Competition, Fair quality....75@75&10%
Competition, Low Grade.....80@80&10
Cotton Garden, ¾ in., coupled:
Fair Quality, ₩ ℔.....7¢
Good Quality, ₩ ℔.....8½¢
Extra.....60&10@60&10&10%
N. Y. B. & P. Co., Dundee.....60@60&5%
N. Y. B. & P. Co., Extra.....40&5@50%
N. Y. B. & P. Co., Para.....25&5%
Standard.....70&10@70&10&5%

Huskers—

Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper.....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber Ware—

See *Ware, Indurated Fiber.*

Irons.

Curling—

Nicol's Patent Curling Iron Heater, ₩ doz.....$1.00
Silver Tipped Grace Darling Curling Iron, ₩ doz.:
No. 65.....$1.75
No. 66.....1.50
No. 67, Mustache.....1.25

Sad—

From 4 to 10, at factory....₩ 100 ℔, $2.30@$2.40
B. B. Sad Irons, ₩ ℔.....3@3½¢
Chinese Laundry (N.E.Butt Co.).8½¢, 15%
Crown Improved.....60&10%
Ideal Irons, new list...50&10@50&10&10%
Mahony's Troy Pol. Irons.....25%
Mrs. Potts' Sad Irons, per set:

No.	50	55	60	65
Small lots	.90	.85	1.05	.95

National Self-Heating.....80%
New England.....5¢. 20@20&5%
Salamander Irons.....25%
Self-Heating.....₩ doz $8.00
Self-Heating Tailors'.....₩ doz $18.00
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%

Soldering—

Soldering Coppers.....₩ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886, 35&2%
Tinker's Dread..₩ doz $1.75; ₩ gro. $18

Pinking—

Pinking Irons, ₩ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—

Daisy.....33⅓%
Lockport.....40%
Victor.....33⅓%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M. list Jan. 1, '91..20%
Stamped Brass Kettles.....₩ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—

Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.

Ames' Bread Knives, ₩ doz $1.50, 15@20%
Ames' Butcher Knives.....25%
Ames' Shoe Knives.....25@30%
Foster Bros.' Butcher, &c.....40%
Jordan's Aa A1 Butchers', list.....net
Moran's Shoe and Bread.....20@20&10%
Nichols' Butcher Knives.....40&10%
Wilson's Butcher Knives, List Dec 8, 1890.....25%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—

Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—

Mix. / New Haven. / P., S. & W. / Witherby. — ...75@75&10&5%
Adjustable Handle.....25@33⅓%
Bradley's.....35%
Douglass.....75@75&5%
Merrill.....60&10@60&10&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Carter's Needle...₩ doz. $11.00@$11.50
Heath's.....₩ doz. $13.00@$13.50
Lightning, from jobbers....$6.50@$7.50
Nolin's Hay.....₩ doz. $7.00@$8.00
Wadsworth's.....40&7½%@40&10%

Mincing—

Am. (2d quality), ₩ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Buffalo Adjustable....₩ doz. $3.00, 33⅓%
Knapp & Cowles.....50&10@60%
Lothrop's.....20&10%
Smith's, ₩ doz., Single, $2; Double $3 45@50%

Knobs—

Bardsley's Wood Door, Shutter &c...15%
Base, Rubber Tip.....70&10&5%
Carriage, Jap.....₩ gro 80¢, 60&10%
Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nickel.....$2.00@$2.25
Drawer, Porcelain....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Picture, Hemacite.....35&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Shutter, Porcelain.....65&10%
Yale & Towne Wood, list Dec., 1885..40%

Ladders.

Davies Extension and Single.....20&5%

Ladies—

Melting, P., S. & W.....35&10@40%
Melting, Reading.....35&10%
Melting, Sargents'.....60@60&5%
Melting, Warner's.....30%

Lanterns—

Tubular—

Anti-Friction, with Guard....₩ doz $4.50
Brass Plated, Sq. Lift, Guard.₩ doz $5.50
Cop. Plated, Sq. Lift, Guard..₩ doz $5.50
O. K., with Guard.....₩ doz $3.75
Regular, with Guard.....₩ doz $3.50
Side Lift, with Guard.....₩ doz $4.00
Square Lift, with Guard.....₩ doz $4.25

Bull's Eye Police—

2¾-inch flash light.....₩ doz $4.00
3-inch flash light.....₩ doz $4.50
2¾-inch regular.....₩ doz $3.6 0
3-inch regular.....₩ doz $3.90

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Hotchkiss.....30%
Humason, Beckley & Co.'s.....70%
Peck, Stow & W. Co.....60&10%
Sargent's.....70&10@70&10&10%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Beardsley & Mouat, Sure Grip.....50%
Excelsior.....50&10&2%
Payson's:
Imperial.....50&10%
Solid Grip.....60&10@60&10&10%
Universal.....60%
Reither's, list Feb. 20, 1891
Brass, Real Bronze or Nickel Plate..30%
Brassed Iron Rods.....60@60&10%
Shaw's.....50&10%
Wollensak's:
Class 3 and 4, Brass.....50%
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Skylight Lifters.....25%

Lines—

Chalk.....60¢
Cotton and Linen Fish.....50%
Cotton Chalk.....55%
Mason's Colored Cotton.....45%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Mason's Linen, No. 3½, $1.50; No 4, $2.00; No 4½, $2.50.
Ossawan Mills:
Braided Chalk.....50%
Cotton Clothes Lines.....₩ ℔ 16¢
Solid Braided Ventilator and Masons' Lines.....25%
Twisted Chalk.....60%
Samson Cotton, No. 4, $2; No. 4½, $2.50 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....25%
Ventilator Cord, Samson Braided, White or Drab Cotton..₩ doz $7.50..20%
Wire Clothes..Nos. 18 19 20
100 ft.....$3.50 $3.00 $2.50

Links, Open—

Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Par- / ker and Corbin... } List, March '84, rev. Jan. 1, '85.33⅓&2%
Barnes Mfg. Co.....40@40&10%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Champion Night Latches.....40%
Eagle and Corbin Trunk.....25&10%
Champion Cab. and Combin.....33⅓%
Romer's.....25%
Yale.....net prices

Door, Locks, Latches, &c

Lower net prices often made on Door Locks.

Barnes Mfg. Co.....40@40&10%
Britain, Graham & Mathes, list Jan. 1890.....60&10&10%
Brooklyn Latches.....50&10%

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Deitz Flat Key.....30%
Mallory, Wheeler & Co list July, '93.....
60&10@70%
Plate.....33⅓&2%
Romer's Night Latches.....15%
R. & E. Mfg. Co., list Mar. 20, 1889.....
60&10@70%
Sargent & Co., List Aug. 1, '93.....60&10@70
Warner's Burglar Proof. ℔ doz. $8.00, 60%
Yale.....net prices

Elevator—

Moore's.....33⅓%

Padlocks—

List June 10, 1891.....50&2%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Barnes Mfg. Co.....40@40&10%
Champion Padlocks.....40%
A. E. Deitz.....40%
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
E. T. Fraim's Keystone Scandinavian,
1010 line.....90&40%
120 line.....90&25%
109 line.....65%
510 line.....70&10%
225, 610 and 209 lines.....70%
All other numbers.....50&5%
Horseshoe.....℔ doz $9, 50@50&10%
Hotchkiss.....30%
Nock's.....30%
Norwich Lock Mfg. Co., old list.....50&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to
505.....15%
Scandinavian.....90&50%
Slaymaker, Barry & Co.
No. 1010 line.....90&50%
No. 41 line.....60%
No. 61 line.....60%
No. 21 line.....80%
Star.....60%
Yale Lock Mfg. Co.'s.....net prices

Sash, &c.—

Attwell Mfg. Co.....25&33⅓%
Champion Safety list January, 1893.70&5%
Clark's No. 1, $10; No. 2, $8 ℔ gr.....33⅓%
Common Sense, Jap'd, Cop'd and
Br'zed.....℔ gr $4.00
Common Sense, Nickel Plated.
℔ gr $10.00
Corbin's Daisy, list Feb. 15, 1886.....70%
Davis Bronze. Barnes Mfg. Co.....60%
Ferguson's.....33⅓%
Fish (Liesche's pat.), No. 100, ℔ gr., $8;
No. 105, ℔ gr., $10.....50%
Giant, list Jan., 1892.....70&5%
Hammond's Window Springs.....40%
Hugunin's New Sash Locks.....25&5&2%
Hugunin's Sash Balances.....25&5&2%
Ives' Patent.....60&10&5@60&10&10%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Monarch.....50%
Payson's Perfect.....60&10&10%
Reading.....66⅔&10@66⅔&10&10%
Security.....70%
Universal.....30%
Victor.....60&10&2%
Walker's.....60&10%
Wolcott's.....60&10&5%

Lumber Tools—

See *Tools, Lumber.*

Lustro—

Four-ounce bottles.....℔ doz, $1.75; ℔ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas		$5.50	$6.75	50%
Jennings'		5.50	6.75	50@50&5%
Snell's, Rice's Pat.		5.50	6.75	40&10&10%
Other Machines		2.25	2 50	
Boss, Carpenters'	3.60			
Boss, Ship Bldrs'	3.85			
Phillip's Patent with Auger		7.00	7.50	
Millers Falls			7.50	25%

Fluting—

American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Combined Fluter and Sad Iron.
℔ doz $15.00.....30%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6 50 each.....35%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25.....30%
Crown Jewel, 6 in.....$3.60 each, 35%
Domestic Fluter.....each, $1.50
Eagle, 3½-inch Rolls, $2.15.....35%
Eagle, 6½-inch Rolls, $2.85.....35%
Geneva Hand Fluter, White Metal,
℔ doz $12, 25%
Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Shepard Hand Fluter, No. 85, per doz $15.50.....40%
Shepard Hand Fluter No. 95, ℔ doz $3.00.....40%
Shepard Hand Fluter, No. 110, ℔ doz $11.00.....40%

Hoisting—

Moore's Anti-Friction Differential Pulley Block.....20%
Moore's Hand Hoist, with Lock Brake.20%
Moore's Rope Differential Pulley Block.....60%
Maris & Beekley (Teal Patent).....30%
See also *Blocks.*

Washing—

Fair and Square.....℔ doz $42.00
Anthony Wayne, ℔ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American.....℔ doz $36.00
Weisell.....℔ doz $24.00
Western Star ℔ doz, No. 2, $36; No. 3 $39

Mallets—

B. & L. Block Co., Hickory & L. V. 30@30&10%
Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%

Mattocks—Regular list.

60&10@60&10&5%

Measures—

Standard Fibreware, No. 1, peck ℔ dozen, $3.50; ½-peck, $3.00

Meat Cutters—

See *Cutters, Meat.*

Menders, Harness—

Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—

Box and Side, List Jan. 1, 1888..60@60&5%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%
Waddell's New Box Mills, Ideal Brand, New List.....60%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Out of Season.

Muzzles—

Safety.....℔ doz, $3.00, 25%

Nails.—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92.....85&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—

	Nos. 6	7	8	9	10	
A. C.	25¢	23¢	22¢	21¢	21¢	40&10%
American	9½¢	9½¢	9½¢	9½¢	9½¢	net
Anchor	23¢	21¢	20¢	19¢	18¢	35%
Ausable	28¢	26¢	25¢	24¢	23¢	40&5&2%
Capewell	19¢	18¢	17¢	16¢	16¢	10&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	40%
Champion	25¢	23¢	22¢	21¢	20¢	10&10&10%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	30&5%
Empire Bronzed				13@14	℔ ℔	
Essex	28¢	26¢	25¢	24¢	23¢	40&10@50%
Lyra	9½¢	9½¢	9½¢	9½¢	9½¢	net
Maud S.	26¢	25¢	22¢	21¢	21¢	50&10&5%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
Putnam	23¢	21¢	20¢	19¢	18¢	15%
Snowden	9½¢	9½¢	9½¢	9½¢	9½¢	net
Standard	23¢	21¢	20¢	19¢	18¢	35%
Vulcan	23¢	21¢	20¢	19¢	18¢	25%
Western	23¢	21¢	20¢	19¢	18¢	50%

Picture—

Brass Head, Combination list.....50&10%
Brass Head, Sargent's list.....60@60&10%
Porcelain Head, Combination list.40&10%
Porcelain Head, Sargent's list.50&10&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Cold Punched	5.00¢	5.10¢ off list
In packages of 100 ℔, add 1-10¢ ℔ ℔, net; in packages less than 100 ℔, add ½¢ ℔ ℔. net.		
Hot Pressed	5.80¢	6.50¢ off list

Oakum—

Best or Government.....℔ ℔ 6¾@7¼¢
Navy.....℔ ℔ 5¢@5¼¢
U. S. Navy.....℔ ℔ 5¾@6¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Broughton's Brass.....50%
Broughton's Zinc.....60%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ℔ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Olmstead's Brass and Copper.....50%
Olmstead's Tin and Zinc.....60%
Prior's Pat. or "Paragon" Brass.....50%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Steel, Draper & Williams.....50%
Wilmot & Hobbs Mfg. Co., Steel Anti-Rust.....10%

Openers, Can—

American.....℔ gross $2.75@$3.00
Champion. ℔ doz $2.00.....60%
Domestic, ℔ doz $2.00.....45%
Duplex.....℔ doz 25¢, 15@2½%
Eureka.....℔ doz $2.50, 10%
Excelsior, No. 1 $2.50; No. 2, $1.50.....40%
Lyman's.....℔ doz $3.75, 20%
Messenger's Comet.....℔ doz $3.00, 2½%
Moore's.....70%
No. 4, French.....℔ doz $2.25, 55@60%
No. 5, Iron Handle.....℔ gr $6.00, 45@50%
Sardine Scissors.....℔ doz $2.75@3.00
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 66⅔@70%
Star.....℔ doz $2.75
Universal, ℔ doz $3.00.....55&5%
World's Best ℔ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%

Packing, Steam—

Rubber—

Standard, fair quality.....70@70&10%
Inferior quality.....75@80%
Extra.....60@60&5%
Jenkins' Standard, ℔ ℔ 80¢.....25@25&5%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
N. Y. B. & P. Co., Standard.....50%

Miscellaneous—

American Packing.....10¢@11¢ ℔ ℔
Cotton Packing.....15¢@17¢ ℔ ℔
Italian Packing.....13¢@14¢ ℔ ℔
Jute.....7¢@8¢ ℔ ℔
Russia Packing.....14¢ ℔ ℔

Pails—

Creamery—

S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 ℔ doz.....5%

Galvanized—

	Quarts	10	12	14
Central Stamping Co.		2.50	2.75	3.00
Fire Buckets		2.75	3.25	3.50
Hill's Heavy Weight, ℔ ds.		3.00	3.25	3.75
Hill's Light Weight, ℔ doz.		$2.75	3.00	3.25
Iron Clad		2.50	2.75	3.00
Sidney Shepard & Co.		2.50	2.75	3.00

Buckets—See Well Buckets.

Indurated Fiber Ware

Fire Pails, deep.....℔ doz $4.80
Fire Pails, round bottom. ℔ doz $5.40
Milk, 14 qt.....℔ doz $5.40
Stable, 14 qt.....℔ doz $6.00
Star Pails, 12 qt.....℔ doz $4.20
} 25%

Standard Fiber Ware—

	Plain.	Decr'd
Buggy Pails	$3 00	
Chamber Pails, 14 qt.	6.00	$7.00
Dairy Pails, 14 qt., ℔ doz.	3.75	4.25
Fire Pails, No. 1, 12 qt., ℔ doz	3.75	
Fire Pails, No. 2, 14 qt., ℔ doz	4.25	
Horse Pails	4.00	
Slop Jars (bal. trap)	7.50	8.50
Sugar Pails	5.00	6.50
Water Pails, 12 qt., ℔ doz.	3.15	3.75

Pans—

Dripping—

Large sizes.....℔ ℔ 5¢
Small sizes.....℔ ℔ 5½¢
Silver & Co. (Covered).....40%

Fry—

Standard List:

No.	0	1	2	3	4
℔ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
℔ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....66⅔&5%

Dust—

Steel Edge, No. 1.....℔ doz $1.75

Roasting and Baking—

Columbian, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each.....60&10%

Paper and Cloth—

Sand and Emery—

List April 19, 1886.....50&10@50&10&10%
Sibley's Emery and Crocus Cloth.....30%

Parers—

Apple—

Advance.....℔ doz $4.75
Baldwin.....℔ doz 5.25
Bonanza.....each 5.00
Daisy.....℔ doz 4.00
Dandy.....each 7.50
Eclipse.....℔ doz 4.00
Eureka, 1888.....each 16.00
Family Bay State.....℔ doz 12.00
Favorite.....℔ doz 5.00
Gold Medal.....℔ doz 4.00
Ideal.....℔ doz 4.00
Improved Bay State...℔ doz 27.00@30.00
Little Star.....℔ doz 4.50
Monarch.....℔ doz 13.50
New Lightning.....℔ doz 5.50
Oriole.....℔ doz 4.00
Penn.....℔ doz 3.00
Perfection.....℔ doz 4.00
Pomona.....℔ doz 4.00
Reading 72.....℔ doz 4.25
Reading 78.....℔ doz 7.00
Rocking Table.....℔ doz 6.00
Turn Table.....℔ doz 4.50
Victor.....℔ doz 13.50
Waverly.....℔ doz 4.00
White Mountain.....℔ doz 4.00

Potato—

Antrim Combination.....℔ doz $5.50
Hoosier.....℔ doz $13.50
Saratoga.....℔ doz $5.50
White Mountain.....℔ doz $4.50

Pencils, Soapstone—

See *Crayons.*

Pickers, Fruit—

Prize Fruit Pickers.....50%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10&5@60&10&10&5%

Picture Nails—

See *Nails, Picture.*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s.....60&10%
Peck, Stow & W. Co....50&10@50&10&5%
Sargent & Co.'s, $17 and $18.....60&10%

Escutcheon—

Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List April 13, 1893.

1¼ and under, Plain.....57½&10%
1¼ and under, Galv.....50&10%
1½ and over, Plain.....67½&10%
1½ and over, Galv.....67½&10%
Boiler Tubes, list Oct. 24, 1892....65&10%
Casing, list Nov. 16, 1892.....52½&10%
Cold Drawn Seamless Steel Tubing...50%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%

Planes and Plane Irons—

Wood Planes—

Molding.....40&10%
Bench, First quality.....45&10%
Bench, Second quality.....50&10%
Bailey's (Stanley R. & L. Co.)..50&10%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....50&10%
Birmingham Plane Co.....60@60&5%
Chapin's Iron Planes.....50@50&5%
Davis' Iron Planes.....50@50&5%
Gage Tool Co.'s Self-Setting...20&10&10%
Meriden Mal. Iron Co.'s.....50@50&5%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Sargent's.....60@60&10%
Standard Tool Co.....50@50&5%
Steers' Iron Planes.....50@50&5%

Plane Irons—

Auburn Thistle.....30&10@30&10&10%
Buck Bros.....
Butcher's.....$5.00@$5.25 to a

Ohio.....} .30&10@30&10&10%
Sandusky.....}
Stanley R. & L. Co.....50&10%
L. & I. J. White.....25%

Plates—

Felloe.....℔ ℔ 6¢@6¼¢

Pliers and Nippers—

Button's Patent.....60%
Carew's Pat. Wire Cutters.....20%
Cronk's 8 in., $15.00; 10 in.....$20
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%
Eureka Pliers and Nippers.....40%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated. 60&5%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in, $21.00 ℔ doz.....40%
Humason & Beckley Mfg. Co. 50@50&10%
Lindsay's Giant.....33⅓&5
Morrill's Parallel. ℔ doz, $12.00....30&5%
P., S. & W. Cast Steel.....50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Russell's Parallel.....25%

Plumbs and Levels—

Regular List.....75&10@75&10&10%
Cook's.....40&10%
Davis Inclinometers.....10&10%
Davis Iron Levels.....30%
Disston's.....50%
Pocket Levels.....70&10@70&10&10%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ℔ doz. No. 1, $6.00; No. 2, $9.00.....33⅓%
Silver & Co., 6-Ring, ℔ doz., $4.00; 3-Ring.....$2.00

Pokes, Animal—

Bishop's American.....℔ doz $3.00
Bishop's I. X. L.....℔ doz $6.00
Bishop's Monarch.....℔ doz $4.50
Bishop's Pioneer.....℔ doz $4.00
Bolding.....℔ doz $6.00
Buckeye, Single Stale.....℔ doz $2.75
Eagle, Double Stale.....℔ doz $5.75
Eagle, Single Stale.....℔ doz $3.75
Metallic Horse Poke.....℔ doz $6.00

Police Goods—

Daley's Improved Handcuffs; 2 Hands, Polished, ℔ doz, $48.00; Nickeled, $57.00; 3 hands, Polished, ℔ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%
R. I. Tool Co., Handcuffs, $10.00 ℔ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ℔ doz 10%
Tower's.....25%

Polish—

Metal—

Gaston's Silver Compound.....33⅓%
Prestoline.....30%
Prestoline Paste.....33⅓%

Stove—

Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Flag.....℔ gro $7.20
Black Flag, 5 and 10 ℔ pails.....℔ ℔ 12¢
Black Flag, liquid, in bottles, ℔ gro $8.00
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Bonnell's Liquid Stove Polish, ℔ gro $9.00
Bonnell's Paste Stove Polish, ℔ gro $6.00
Boynton's Noon Day.....℔ gro, $13.00
Crown Paste.....℔ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ℔ ℔ 12¢
Diamond O. K. Enamel.....℔ gro $19.00
Diamond Rock Nickel Cleaner ℔ gro $10 20
Joseph Dixon's.....℔ gro, $6.00, 10%
Dixon's Plumbago.....℔ ℔ 8¢
Fireside.....℔ gro $2.50
Gem.....℔ gro, $4.50, 10%
Gold Medal.....℔ gro, $6.00, 25%
Japanese.....℔ gro $3.50
Jet Black.....℔ gro $3.50
Lustro.....℔ gro, $4.75
Nickel Plate Paste.....℔ gro $6.00
Parlor Pride Stove Enamel, ℔ gro,
Raven Liquid, 6 oz. bottles.....
℔ gro $8.00
Raven Liquid, 8 oz. bottles..
℔ gro $9.00
Raven Paste in 5 lb. pails (cases of 6 pails), ℔ ℔ 10¢
Raven Water Polish, large boxes.....
℔ gro $7.20
Rising Sun, 5 gro lots.....℔ gro, $5.50
Ruby.....℔ gro, $3.75
Yates' Liquid, 2 3 5 10 gal
℔ gal..$0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ℔ ℔ 12½¢

Poppers, Corn—

Round or Square,
1 qt.....℔ doz $1.00; ℔ gr $8.00
1½ qt.....℔ doz $1.00; ℔ gr $9 00
2 qt.....℔ doz $1.50; ℔ gr $14.00

Post Hole and Tree Augers and Diggers—

See *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%
Tinned.....40&10@40&10&5%

Powder—

In Canisters—

Duck, 1 ℔ each.....
Fine Sporting, 1 ℔ each.....
Rifle, ½ ℔ each.....
Rifle, 1 ℔ each.....

In Kegs—

Duck, 6¼ ℔ kegs.....
Duck, 12½-℔ kegs.....
Duck, 25-℔ kegs.....
Rifle, 6¼-℔ kegs.....
Rifle, 12½-℔ kegs.....
Rifle, 25-℔ kegs.....

For revised prices see Trade Report.

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....25%
Henis.....℔ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....℔ doz $2.75

Pruning Hooks and Shears—See *Shears.*

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Pullers Nail—
Scranton.....₩ doz., $18.00, 33⅓%
Giant, No. 1.....₩ doz., $18.00, 10%
Giant, No. 2.....₩ doz., $15.00, 10%
Pelican.....₩ doz., $9.00, 25%
Eclipse.....₩ doz., $24.00, 40%
Economy.....₩ doz., $6.00

Pulleys—
Hot House, Awning, &c.....66⅔@70%
Japanned Screw.....60@10@10%
Brass Screw.....70%
Japanned Side.....60@10@10%
Moore's Side, Anti Friction.....50%
Moore's Ceiling or End, Anti-Friction.40%
Moore's Dumb Waiter, Anti-Friction.50%
Moore's Electric Light.....33⅓%
Japanned Clothes Line.....60@10%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5.70.....50%
Hay Fork, "F" Common and Patent Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating....60%
Hay Fork, Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00.....40%
Shade Rack.....45%
Tackle Blocks—See Blocks.
Shepard's Niagara, No. 25..₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense.....60%
Empire.....60%
Ideal, Nos. 2, 4, 10 & 15 } 60% less 1¢ ₩
Acme } doz net.
Star.....
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. ..₩ doz. 22¢ net.

Pumps—
Cistern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddler's or Drive, good..₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Springfield Socket..65%
Spring, good quality..₩ doz., $2.50@$2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Check.....55%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44.....55%
Tinners' Hollow Punches, P., S. & W. Co.....20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches.....20&2%
Niagara Solid Punches.....55%

Rail—
Sliding Door, Wr't Brass....₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron..₩ ft., 7¢
Sliding Door, Iron, Painted..₩ ft., 4¢, 40%
Barn Door, Light..In. ½ ⅝ ¾
Per 100 feet.....$2.00 2.50 3.10, 10%
B.D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet.....$3.15 2.70 3.25 Net
Terry's Steel Rail.....₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot.....50&2%
Carrier, double braced, Steel Rail, ₩ foot.....3½@4¢
Lundy Parlor Door, Planed Edge, ₩ ft.7¢
Moore's Steel Rail.....25&10%
Moody Steel Rail ₩ ft., 5¢.....45%

Rakes—
Cast Steel, Association g'ds..70@70&5&2%
Cast Steel, outside g'ds,.....70@70&5&2%
Malleable.....70@70&5%
Gibbs' Lawn Rake.....₩ doz., $4.90
Gibbs' Canton Lawn Rake...₩ doz., $3.75
Gibbs' Acme Lawn Rake....₩ doz., $4.75
Gibbs' Favorite Lawn Rake.₩ doz., $5.90
Gibbs' Crown Lawn Rake, No. 1.....₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake.....₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless.....65%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—
J. R. Torrey Razor Co.....Net prices
Wostenholm and Butcher, $10 to $.....10%
Jordan's AAA1, new list.....Net prices
Jordan's Old Faithful, new list.Net prices
Galvanic.....₩ doz., $15.00
Electric Cutlery Co.....Net prices
Campbell Cutlery Co.....60%

Razor Strops—
See *Strops, Razor.*

Registers —
Moore's Japanned.....75%
Moore's Electroplated.....75%
Moore's Bronze Finishes.....70%
Moore's Solid Bronze.....65%
Moore's Stove Pipe.....33⅓

Rings and Ringers—
Bull Rings—
Union Nut Co.....55%
Sargent's.....75&10%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list.....50@50&10%

Hog—
Top of the Hill Ringers.....₩ doz $2.00
Top of the Hill Rings.....₩ doz $1.25
Hill's Improved Ringers.....₩ doz $1.25
Hill's Old Style Ringers.....₩ doz $1.12½
Hill's Tongs.....₩ doz $3.00
Hill's Rings.....₩ doz bxs $1.00
Perfect Rings.....₩ doz bxs $1.50
Perfect Ringers.....₩ doz $2.15@$2.25
Blair's Hog Ringers.....₩ doz $2.00
Blair's Hog Rings.....₩ doz 90¢@$1.00
Champion Ringers.....₩ doz $2.00
Champion Rings, Double.....₩ doz $2.25
Brown's Ringers.....₩ doz $2.00
Brown's Rings.....₩ doz $1.15@$1.25
Electric Hog Rings.....₩ doz boxes $1.50
Electric Hog Ringers.....₩ doz $2.00
Major Rings.....₩ doz $1.25
Major Ringers.....₩ doz $2.00

Rivets and Burrs—
Norway Iron, list Nov. 17, '87....60&10%
Second quality.....70%
Copper .....60@60&10%
Coppere Iron, Betina Brand.....50&5%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—
Stair, Brass.....25@30%
Stair, Black Walnut.....₩ doz 40¢

Rollers—
Barn Door, Sargent's list. ....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.....70%
Moore's Barn Door Stay.....50%
Thompson Mfg. Co.'s Lawn Rollers ..80%

Rope—The following prices are f.o.b., New York or factory, and are shaded ¼¢@½¢ on large lots; terms, 1½% for cash.
Manila, 7-16 in. diam. and larger.....₩ ℔ 8 @ 8½¢
Manila.....½ in. ₩ ℔ 8½@ 8¾¢
Manila...¼ and 5-16 in. ₩ ℔ 9 @ 9¼¢
Manila, Tarred Rope.....₩ ℔ 7½@ 7¾¢
Manila, Hay Rope, Med'm ₩ ℔ 8 @ 8½¢
Sisal, 7-16 in. and larger. ₩ ℔ 5¾@ 6 ¢
Sisal.....½ in. ₩ ℔ 7¼@ 7½¢
Sisal.....¼ and 5-16 in. ₩ ℔ 6¾@ 7 ¢
Sisal, Hay Rope.....₩ ℔ 5¾@ 6 ¢
Sisal, Tarred Rope.....₩ ℔ 5¼@ 5½¢
Sisal, Medium Lath Yarn.₩ ℔ 5½@ 5¾¢
New Zealand.....7-16 in. and larger.....₩ ℔ 5½@ 5¾¢
New Zealand....⅜ inch, ₩ ℔ 5¾@ 6 ¢
New Zealand, ¼ & 5-16 in. ₩ ℔ 6¼@ 6½¢
New Zealand, Hay Rope. ₩ ℔ 5½@ 5¾¢
New Zealand, Tar'd Rope ₩ ℔ 5 @ 5¼¢
Cotton Rope.....₩ ℔ 13½@16¢
Jute Rope.....₩ ℔ 6½@7¢

Wire—
List February, 1892. All kinds.....45%

Rules—
Boxwood.....80&10&10@80&10&10&10%
Ivory.....50&10%
Starrett's Steel Rules and Straight Edges.....25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—
See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—*See Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—
Note.—Extra 5@10% often given.
Disston's Circular.....45@45&5%
Disston's Cross Cut, list Jan. 1,'93.40&10%
Disston's Hand.....25%
Woodrough & McParlin. Hand, Panel and Rip.....25&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Wheeler, Madden & Clemson Mfg. Co. Hand, Panel and Rip.....30&10% Cross Cuts, list Jan. 1, 1893.....45&10%
Atkins' Circular.....60&10%
Atkins' Cross Cuts, new list.....40%
Atkins' Mulay, Mill and Drag.....50&10%
Atkins' One-Man Saw.....40%
Atkins' Wood Saws.....40%
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip.....25@25&5%
Peace Cross Cuts, list Jan. 1,'93...45&10%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts, list Jan. 1,'93.45&10%
Richardson's Hand, &c.....25@25&5%
C. E. Jennings & Co.'s 25%
Simonds' Circular Saws.....45@45&5%
Simonds' Crescent Ground Cross Cut Saws.....30%
Simonds' Gang, Mill, Mulay and Drag Saws.....45@45&5

Hack Saws—
Griffin's, complete.....40&10@50
Griffin's Hack Saw Blades.....40&10@50
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—
Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab Makers'$15,25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—
Hatch, Counter, No. 171, good quality, ₩ doz $18.00@$16.00
Hatch, Tea, No. 161....₩ doz $6.50@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales.....50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10
Riehle Bros.' Platform.....40%

Scale Beams—
See *Beams, Scale.*

Scissors, Fluting.....45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%
Box, 1 Handle.....₩ doz $2.00
Box, 2 Handle.....₩ doz $3.00@$4.00
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common.....₩ doz $3.50
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—
See *Drivers, Screw*

Screws—
Bench and Hand—
Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....35%

Coach, Lag and Hand-Rail—
Lag, Blunt Point, list Jan. 1, 1890.....80&10@80&25%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....80&10@80&20%
Hand Rail, Sargent's.....70&10%
Hand Rail, H. & B. Mfg. Co....70&10@75%
Hand Rail, Am. Screw Co.....75%

Jack Screws—
Jack Screws, Millers Falls list.50@50&10%
Jack Screws, P., S. & W.....35%
Jack Screws, Sargent.....70%
Jack Screws, Stearns'.....40@40&10%

Cork—
Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Williamson's Forged Worm, Applewood Handle, ₩ doz., $5.00; Rosewood, $5.50.....40%
Detroit Cork Screw Co.....33⅓%

Machine—
Flat Head Iron.....65%
Round Head Iron.....60%

Wood—
List January 1, 1891.
Flat Head Iron.....70%
Round Head Iron.....65%
Flat Head Brass.....70%
Round Head Brass.....65%
Flat Head Bronze.....70%
Round Head, Bronze:...65%
Extra 10& 10% often given.
Rogers' Drive Screws.....82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—
Grain.....40&5@40&10%
Grass.....40&10&50%

Scythe Snaths—
See *Snaths, Scythe.*

Sets—
Awl and Tool—
Aiken's Sets, Awls and Tools, No. 20, ₩ doz$10.00.....60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....45%
Millers Falls Adj. Tool Hdls., No. 1, $12; No. 4. $12; No. 5. $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50...70&10&5%

Nail—
Square.....₩ gr. $4.00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr. $12, 20%

Rivet—
Regular list.....70%

Saw—
Stillman's Genuine....₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $6.50.....55@55&10%
Common Lever.....₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00.....40&20%
No. 11, $16.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00..40&20%
No. 5, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
Leach's..No. 0, $8.00; No. 1, $15...15@20%
Nash's.....20&10@40%
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat.45%
Bemis & Call Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Co.'s Cross Cut.....30&5%
Aiken's Genuine.....$13.00, 50@10&60%
Aiken's Imitation.....₩ doz $3.00@$3.25
Hart's Pat. Lever.....20%
Disston's Star.....25%
Leopold.....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10@50%
Avery's Saw Set and Punch.....50%
Kohler's Royal.....₩ doz $7.00
Kohler's Giant Royal.....₩ doz $12.00
Crescent.....₩ doz $3.00
Lloyd's Acme.....₩ doz $15, 40&10%
Taintor Positive.....₩ doz $18, 50%

Sharpeners, Knife—
Larkins'.
Applewood Handles...₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%

Shaves, Spoke—
Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's ₩ doz. $9.00.....25%

Shears—
American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers..₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers: First quality.....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Hatch Cutlery Co., Solid Steel Forged.60%
Davenport Cutlery Co.....60@60&10%
Clauss brand, Japanned.....70%
Clauss brand, Nickeled, same list.....60%
Galvanic 3½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co.....Net
Campbell Cutlery Co., Jap'd.....75%
Nickel Plated.....65%

Tinners' Snips—
Wrt. Handles, Steel Blades. ..20@20&10%
Niagara Snips and Shears. ...20&10%
Cast Handles, Laid with Steel 40%

Pruning Shears and Hoes
Disston's Combined Pruning Hook and Saw.....₩ doz. $18.00. 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 20&10%
E.S.Lee & Co.'s Pruning Tools.50&10@70%
Pruning Shears, Henry's Pat. ₩ doz. $3.50@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₩ doz $12.00
Dunlap's Saw and Chisel, ₩ doz $8.50,30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co.....60%
Levin Pruner No. 1, $15.00 ₩ doz. 40&3%
Levin Pruner No. 2, $21.00 ₩ doz...40&3%

Tinners', &c.—
Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—
Sliding Door—
M. W. Co., list July, 1888....50&10@60&5%
R. & E., list Dec. 18, 1885..... 55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%

Sliding Shutter—
R. & E., list Dec. 18, 1885.....60&10&2%
Sargent's list.....70%
Reading list.....60&10&10%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list).....20&10&2%
Prize.....40&2%
Star, Club, Rival and Climax Brands.....33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge..33⅓&10&2%
Seibold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax 65&2%

Shells, Loaded—
Standard List, July 19, 1890.....40&10&10@40&10&10&5% 7% cash, 10 days.

Ship Tools—
L. & I. J. White.....20&5

Shoes, Horse, Mule, &c.
Horse—
Burden's, Perkins', Phœnix, Standard, Diamond State, Bryden's Boss and Crescent, at factory.....$4.00
Bryden's Frog Pressure, at factory.$5.00

Mule—
Add $1 ₩ keg to above prices.

Ox Wrought—
Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot—
Small lots.
Drop, up to B, 25-℔ bag....$1.40
Drop, up to B, 5-℔ bag..... .35
Drop, B and larger, 25-℔ bag..... 1.65
Drop, B and larger, 5-℔ bag..... .40
Buck and Chilled, 25-℔ bag..... 1.65
Buck and Chilled, 5-℔ bag .40
Dust Shot, 25-℔ bag..... 2.00
Dust Shot 5-℔ bag..... .45
In ton lots a discount of 5¢ ₩ bag (25 ℔) is made, and 2½¢ for cash.

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&5%
Griffith's Solid C. S. R. R. Goods.....20%
St. Loul. Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....30%
Payne Pettebone & Son.....33⅓ &5%
Remington's (Lowman's Pat.)40&10@50%
Rowland's Black Iron..50&10@50&10&5%
Rowland's Steel.....60&5@60&10%
Terra Haute Shovel & 25%

Shovels and Tongs—
Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves and Sifters—
Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co....50&25&20%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $21.00
Electric Light..₩ doz $1.50; ₩ gro $15.00
A. & W. Sifters.....₩ gr $15.00
Hunter's Genuine. ₩ doz $1.75, ₩ gr $16.50
Hunter's Imitation.....₩ doz $1.75; ₩ gr $15.00

Sieves, Wooden Rim—
	Iron	Plated
Mesh 18, Nested, ₩ doz....	$0.80	$1.00
Mesh 20, Nested, ₩ doz....	.95	1.10
Mesh 24, Nested, ₩ doz..	1.15	1.25

Sinks, Wrought Steel—
Columbus, Painted or Unpainted..... 30@30&10%
Columbus, Galvanized and Enameled. 50@50&10%
New Era, Painted.....40&10@50&5%
New Era Galvanized and Enameled.. 60&10&10@70&5%

Skeins, Thimble—
Western list.....7½&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....75%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—
School, by case.....40@40&10%
Large lots.....40&10&5@50%

Slaw Cutters—See *Cutters.*

Sleds Hand—
Tubular Steel.....₩ doz. $24@50%.00, 40 (Lots of 6 doz. 50%)

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Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.)..... 65%
Fitch's (Bristol)..... 50&10%
Hotchkiss..... 10%
Andrews..... 50%
Sargent's Patent Guarded..... 70&10&10%
German, new list..... 40&10%
Covert..... 50&10&5&2%
Covert, New Patent..... 50&10&5&2%
Covert, New R. E..... 60&10&5&2%
Covered Spring..... 60&10&10%
Covert's Saddlery Works' Triumph..... 33⅓%
John Frost's Snaps..... 75@75&5%
Kelley & Woolworth's Steel Harness... 50&10@60%

Snaths—

Scythe..... 50&2@50&5&2%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8½-inch, ₱ doz., No. 5, $8; No. 5X, $9.
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list.....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list..... 70&10%
Buffalo, S. S. & Co..... 33⅓&2%

Silver Plated—

4 months or 5% cash 30 days:
Meriden Brit. Co., Rogers.....40&15%
Rogers & Hamilton.....40&15%
C. Rogers & Bros.....40&15%
Rogers & Bros.....40&15%
Reed & Barton.....40@40&5%
Wm. Rogers Mfg. Co.....40, 15&5%
Simpson, Hall, Miller & Co.....40, 15&5%
Holmes & Edwards Silver Co....40, 15&5%
L. Boardman & Son.....50&12½%

Miscellaneous—

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10&5%
No. 30 Silver Metal.....50&10&5%
No. 24 German Silver.....50&10&5%
No 50 Nickel Silver.....50&5%
No. 49 Nickel Silver.....50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal.....50&10&6%
18% Rogers' German Silver.....60&6%
22% Rogers' Nickel Silver.....50&6%
Rogers & Hamilton:
Steel Goods.....40&10%
Cimetar, Flatware.....40&15&5%
Cimetar, Steel Goods.....40&10%
Crown Hamilton, Flatware and Cutlery.....30%
German Silver.....50@50&5%
Nickel Silver.....50&5@50&10&5% cash
Brittannia.....60@60&5%
Boardman's Nickel Silver, list July 1, 1891.....60&7½&5%
Boardman's Brittannia Spoons, case lots.....60&5% cash

Springs—

Door—

Torrey's Rod, 39 in.....₱ doz $1.20@1.2
Warner's No. 1, ₱ doz $1.50; No. 2, $3.40.....55@55&10%
Gem (Coil), list April 19, 1886.....20%
Star (Coil), list April 19, 1886.....20&10%
Victor (Coil).....60&10@60&10&5%
Champion (Coil).....60&10@60&10&10%
Cowell's, No. 1, ₱ doz $18.00; No. 2, $15.00.....50@50&10%
Rubber, complete, ₱ doz $4.50.....55&10%
Hercules.....50@50&10%
Phœnix.....33⅓%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll.....60&10@60&10&10&10 or net prices
Cliff's Bolster Springs.....25%

Squares—

Steel and Iron..... } ..80&10&10&80&25%
Nickel-Plated..... }
Try Square and T Bevels.....60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares.....25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor.....50%

Squeezers—

Fodder—

Blair's.....₱ doz $2.00
Blair's "Climax".....₱ doz $1.25

Lemon—

Porcelain Lined, No. 1....₱ doz $6.00.....25&30%
Wood, No. 2.....₱ doz $3.00, 35%
Wood, Common.....₱ doz $1.70@1.75
Dunlap's Improved.....₱ doz $5.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz.....25&10%
Jennings' Star.....₱ doz $2.50
The Boss.....₱ doz $2.50
Dean's..No. 1, ₱ doz $6.50; 2, $3.50; 3, $1.90; Queen, $2.50
Little Giant.....50@50&5%
King.....40&5%
Hotchkiss Straight Flash....₱ doz $12.00
Silver & Co. Glass.....₱ gro. $9.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Barbed Blind, ½ in. and larger, ₱ ℔ 7@7½¢
Barbed Blind, ¾ in.....₱ ℔ 8@8½¢
Fence Staples, Galvanized. } Same price
Fence Staples, Plain..... } as B'rb Wire
See Trd. Rep
Grand Crossing Tack Co.'s list....75&10%

Steelyards

40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods.....35%
Butterfield's Goods.....35%
Lightning Screw Plate.....25@30%
Reece's New Screw Plates.....25@30%
Reversible Ratchet.....30%
Gardner.....25%
Green River.....25@30%

Steps Bench—

Morrill's, ₱ doz, No. 1, $10.00; No. 2, $11.00.....40&20%
Hotchkiss'.....₱ doz, $5, 10@10&10%
Weston's, No. 1, $10, No. 2, $9, 25&10&5%
McGill's, ₱ doz $3.....10%
Cincinnati.....25&10%
Terrell's Nos. 1 and 2, ₱ doz., $3; No. 3, $3.60.....30%
Millers Falls.....25%
Stearns'.....20&10%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892.....33⅓%
Cleveland Stone Co., list Nov. 1892..33⅓%

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₱ ℔....8¢
Sand Stone.....5¢ } 40 @ 40&
Turkey Oil Stone, 4 to 8 in.....80¢ } 10%
Turkey Slips.....$2.00
Lily White Washita.....60¢
Rosy Red Washita.....60¢
Washita Stone, Extra.....50¢
Washita Stone, No. 1.....40¢
Washita Stone, No. 2.....30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Arkansas Stone, No. 1, 3 to 5½ in., $2.80
Arkansas Stone, No. 1 5½ to 8 in., $3.50
33⅓@33⅓&10%
Lake Superior.....₱ ℔ 13¢
Lake Superior Slips.....₱ ℔ 20¢

Stove Polish—

See *Polish, Stove.*

Stretchers Carpet—

Cast Steel, Polished.....₱ doz $2.2
Cast Iron, Steel Points.....₱ doz 75@80¢
Socket.....₱ doz $1.75
Bullard's.....25@25&10%

Strops, Razor—

Genuine Emerson.....60@60&5%
Imitation " ..₱ doz $2.00, 20&10&5%
Torrey's.....Net prices
Badger's Belt and Com.....₱ doz $2.00
Lamont Combination.....₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50%
Electric Cutlery Co.....Net prices
Campbell Cutlery Co.....Net prices

Stuffer, Sausage—

Miles' Challenge, ₱ doz $20.....50@50&5%
Perry....₱ doz, No. 1, $15.00; No. 0, $21.00.....50&5@50&10%
Draw Cut No. 4, each $30.00.....20%
Enterprise Mfg. Co., list Jan 17, '93..25%
Silver's.....40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5.....₱ doz $17.00
Bissell No. 8.....₱ doz $20.00
Bissell, Grand.....₱ doz $36.00
Standard.....₱ doz $24.00
Domestic.....₱ doz $21.00
Domestic, No. 2.....₱ doz $22.00
Grand Rapids.....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic.....₱ doz $15.00
Improved Parlor Queen,
Nickeled.....₱ doz $27.00
Japanned.....₱ doz $24.00
Excelsior.....₱ doz $22.00
Garland.....₱ doz $18.00
Parlor Queen.....₱ doz $24.00
Housewife's Delight.....₱ doz $15.00
Ladies' Friend.....₱ doz $15.00
Ladies' Friend No. 2.....₱ doz $16.00
Advance.....₱ doz $18.00
Our Leader.....₱ doz $19.00
Triumph.....₱ doz $20.00
Supreme.....₱ doz $22.00
Easy. Jap'd, ₱ doz $22.00; Nickel, $24.00
Gilt Edge.....₱ doz $24.00
Acme.....₱ doz $26.00
Imperial.....₱ doz $26.00
Grand Republic.....
Jap'd, ₱ doz $30.00; Nickel, $33.00
Banner.....
Jap'd, ₱ doz, $22.00; Nickel, $24.00
The Star.....₱ doz $21.00
Reliable.....₱ doz $22.00
Rapid. Jap'd, ₱ doz, $22.00; Nickel, $24.00
Our Own.....₱ doz $27.00
Model.....₱ doz $27.00
Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months.....₱ doz $1.00
10 dozen in 6 months.....₱ doz $2.00
Except on L. F., when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co.....80%

Swings—

Davies Lawn.....25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued.....66⅔%
American, Tin'd and Cop'd.....70%
Steel, Bright and Blued.....66⅔%
Steel, Tinned and Coppered.....70%
Swedes Iron, Blued.....72½%
Swedes Iron, Tinned.....75%
American Iron Tacks, Domestic.66⅔%
Swedes Iron Tacks—
S. S., Blued.....66⅔%
S. S., Tinned.....70%
Lanc., Blued.....55%
Lanc., Tinned.....60%
Gimp and Lace Tacks—
S. S., Blued.....62½%
S. S., Tinned.....66⅔%
Lanc., Blued.....55%
Lanc., Tinned.....60%
Basket and Trimmers' Tacks—
Lanc.....52½%
S. S.....55%
Hungarian Nails.....60%
Common and Patent Brads.....55%
Leathered Tacks.....10%
Brush Tacks, S. S.....60%
Looking Glass Tacks, S. S.....35%
Picture-Frame Points, S. S.....35%
Finishing Nails.....60%
Trunk and Clout Nails—
Black.....65%
Tinned or Coppered.....67½%
Basket Nails.....60%
Chair Nails.....52½%
Cigar Box Nails.....45%
Tin Capped Nails.....50%
Extra discount 25&2%

Miscellaneous—

Double Point.....90&10@90&10&10%
Wire Carpet Nails.....50&10%
Claw Handle Carpet.....₱ gross $4.00
Bonnie Blue.....₱ box $1.50
Bill Nye Brad Box.....4 00
Parisian Gilt Nails, cartoon.....50
Home Tacks, No. 50 ₱ case (12 cartons), $36.00; No. 100, ₱ case (12 cartons), $72.00. } 25&2%
Home Nails, No. 200, ₱ case (12 cartons), $30.00; No. 400, ₱ case (12 cartons), $60 00. } 50&2%
Upholsterers' Nails.....50&10%

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list 50&10%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each.....50&10&5%

Tapes, Measuring—

American.....40@40&10%
Excelsior, Special list.....20%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887.....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters; Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves Cincinnati Tool Co.....20%

Lumber—

Ring Peavies, "Blue Line"..₱ doz $20.00
Ring Peavies, Common.....₱ doz $18.00
Steel Socket Peavies.....₱ doz $21.00
Mall. Iron Socket Peavies...₱ doz $19.00
Cant Hooks, "blue Line"....₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks.....₱ doz $18.00

Saw—

Atkins', new list.....40%
Simonds'.....33⅓%

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse.....40@40&5%
Oneida Pattern.....75@75&10%
Game, Blake's Patent.....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₱ doz holes, 9@10¢
Mouse, Round Wire.....₱ doz $1.50 10%
Mouse, Cage, Wire.....₱ doz $2.50 10%
Mouse, Catch-'em-alive..₱ doz $2.50 15%
Mouse, Bonanza.....₱ doz 0.90@$1.00
Rat, Decoy.....₱ gr $10.00, 10%
Ideal.....₱ gr $10.00
Cyclone.....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 75¢; in full cases, ₱ doz. 60@65¢
Hotchkiss Imp. Rat Killer...₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $15.50
Schuyler's Rat Killer.....₱ gro $15.00
Dandy.....₱ doz., $1.75
Waddel's Go Bang, ₱ gro.....$12.50

Fly—

Harper, Champion or Paragon.....₱ doz. $1.75, ₱ gro. $16.50
Balloon, Globe or Acme.....₱ doz. $1.50, ₱ gro. $13.50

Triers—

Butter and Cheese.....25%

Trimmers, Spoke—

Bonney's.....₱ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'.....₱ doz $9.00, 20%
Cincinnati.....25%

Trowels—

Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.25@25&10%
Peace's Plastering.....25@25&5%
Clement & Maynard's.....20@20&5%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%
Cleves' Angle Trowel, ₱ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40%
Thompson Mfg. Co.....40%
Barnes' Barrel Trucks.....40%
Daisy Stove Trucks, Improved pattern, ₱ doz. $18.00

Tubes. Boiler—

See Pipe.

Twine—

Flax Twine—

	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	29¢	31¢
No. 12, ¼ and ⅛ ℔ Balls	22¢	30¢
No. 16, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 24, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 36, ¼ and ⅛ ℔ Balls	18¢	28¢

No. 264 Mattrass, ¼ and ½ ℔ Balls, 52@54
Chalk Line, Cotton, ½ ℔ Balls.....25¢
Mason Line, Linen, ½ ℔ Balls.....55¢
3-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine).....16½¢
3-Ply Hemp, 1 ℔ Balls.....16@16½¢
3-Ply Hemp, 1½ ℔ Balls.....15@15½¢
Cotton Wrapping, 5 Balls to ℔..15@16¢
2, 3, 4 and 5 Ply Jute, ½ ℔ Balls 10¢
Wool.....6½¢@8¢
Paper.....13@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz. 18¢

Vises—

Solid Box.....50&10@60%

Parallel—

Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....50%
Millers' Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Hollands'.....35@40%
Sargent's.....70&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
Massey Quick Action.....20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00....40&10@50%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Hopkins'.....₱ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Economy, ₱ doz., Nos. 110, $10.00; 120, $15.00.....50&10&10&5%

Miscellaneous—

Phœnix Vises.....33⅓%
Phœnix Hand Vises....₱ doz $3.60, 33⅓%
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises.....each $3.00, 40%
Massey Combination Pipe Vise.....40%

Wads—Price Per M.

U.M.C.&W.R.A.—B. E., 11 up..	68¢	Dis. 20&2½
U.M.C.&W.R.A.—B. E., 9&10..	82¢	
U.M.C.&W.R.A.—B. E., 8.....	96¢	
U.M.C.&W.R.A.—B. E., 7.....	$1.10	
U.M.C.&W.R.A.—P. E., 11 up.	1.15	
U.M.C.&W.R.A.—P. E., 9&10..	1.50	
U.M.C.&W.R.A.—P. E., 8.....	1.70	
U.M.C.&W.R.A—P. E., 7.....	1.80	
Eley's B. E., 11 and larger....	$1.70@$1.75	
Eley's P. E., 12 to 20.....	$3.00@$3.25	

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow

Stove Hollow-Ware—
Ground.....60&10@60&10&10%
Unground.....65&10@70&5
White Enameled Ware—
Maslin Kettles.....70&10@75%
Boilers and Saucepans.....60@60&5%
Tinned Boilers and S'pans....60@60&5%
Rustless Hollow Ware.....50@50&5%
Gray Enameled Ware—
Stove.....50%
Maslin Kettles.....60@60&10%
Boilers and Saucepans.....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889.....33⅓% } Extra 10% on many leading articles.
Ironclad Enameled Ware.....dis 33⅓&10% }

Kettles—

Galvanized Tea-Kettles—

Inch	6	7	8	9
Each	55¢	60¢	65¢	75¢

Standard Fiber

	Per Doz. Plain.	Decorated.
Wash-Basins, 10½ in.	$1.80	$2.00
Wash-Basins, 12 in.	2.00	2.50
Keelers, 11½ in.		3.00
Cuspidors		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure	3.50	
Half-peck Measure	3.00	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₱ doz.....$6.00
Basins, Ringed, ₱ doz., No. 2.....2.80
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), ₱ nest.....$5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest.....$2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest.....$1.50
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), ₱ set.....$1.20
25%
See also Pails.

Silver Plated, Hollow

4 mo. or 5 % cash in 30 days.

Reed & Barton..... } 40&5%
Meriden Britannia Co..... }
Simpson, Hall, Miller & Co..... }
Rogers & Brother..... }
Hartford Silver Plate Co..... } 40&5&5%
William Rogers Mfg. Co..... }

Washers—

Size hole..... 5-16 ⅜ ½ ⅝ to 1¼
Washers..... 5½ 4½ 3½ 2¾
In lots less than 200 ℔, ₱ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Washer Cutters—

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Iron.....₱ ℔ 3½¢@3½¢
Steel.....₱ ℔ 3½¢

Weights, Sash—

Solid Eyes.....₱ ton, $18.00@19.00

Well Buckets Galvanized—See *Buckets, Well Galvanized.*

Wheels, Well—

8 in., $2 00; 10 in. $2 50; 12 in., 75 82

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Whips

American Whip Co.: Length.	4½	5	5½	6	6½	7	7½	8 ft.
X. L. Whalebone Driving	$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone	....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whale bone	....	....	....	11.00	12.00	13.00	15.00	....
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors	....	....	....	....	6.00	....	....	....
Americus, 93 Pen Whip	....	....	....	....	6.00	....	....	....
Gents' Light Driving No. 111	....	....	....	....	6.00	....	....	....
Gents' Light Driving No. 106	....	....	....	....	5.00	....	....	....
Hand-made Stocked Java No. 103	....	....	3.75	4.00	....	....	....	....

Per dozen.

A large variety of cheaper grades.....50¢@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....₩ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Wire and Wire Goods—

Iron—

Market,

Br. & Ann., Nos. 0 to 18, 75&10@75&10&5%
Cop'd, Nos. 0 to 18, 75&5%
Galv., Nos. 0 to 18, 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18 ....70@70&10%

Extra 5@10% often given and low net prices often made on large lots.

Stone,
Br. and Ann'd,
Nos. 16 to 18.... ....80%
Nos. 19 to 26.... ..80&5%
Nos. 27 to 36....82½&5%
Extra 10% often given.
Tinned Broom Wire, 18 to 21, ₩ ℔....44¢
Galvanized Fence .....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Ossawan Mills, An'ld and Tinned on Spools.....60&10%
Ossawan Mills, Brass and Copper on Spools.....50&10%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....5%
Stubs' Steel Wire.....$6.00 to $, 50%
Steel Music Wire, 12 to 30, imported.....60@70¢ ₩ ℔
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....85&10@85&10&10%

Wire Cloth and Netting—

Painted Screen Cloth ₩ 100 ft.....$1.50
Galvanized Wire Netting.....75&10@75&10&5%

Wire Barb—

See Trade Report.

Wire Rope—See *Rope, Wire.*

Wrenches—

American Adjustable 40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50@50&10%
Coes' "Mechanics'".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
W. & B. Diamond.....
75&10@80%

Bemis & Call's:
Pat. Combination Bright .....40&5%
Pat. Combination Black.....40&10%
Merrick's Pattern.....45%
Brigg s Pattern.....30&10%
Cylinder or Gas Pipe.....45&5%
No. 3 Pipe.....55%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz., $4.00, 40%
Webster's Pat. Combination 25%
Boardman's.....30%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Eagle.....50&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70@70&5%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

Am. Wringer Co.'s list, July 1, '93..2% cash
Colby Wringer Co., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list July 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	47
Linseed, City, boiled....	..	@	50
Linseed, Western, raw.....	..	@	47
Lard, City, Extra Winter...	73	@	75
Lard, City Prime.....	72	@	73
Lard, City, Extra No. 1.....	..	@	50
Lard, City, No. 1.....	..	@	45
Lard, Western, prime.....	72	@	73
Cotton-seed, Crude, prime..	27	@	28
Cotton-seed, Crude, off grades.....	25	@	..
Cotton-seed, Summer Yellow, prime.....	33	@	34
Cotton-seed, Summer Yellow, off grades.....	30	@	32
Sperm, Crude.....	65	@	..
Sperm, Natural Spring.....	66	@	68
Sperm, Bleached Spring.....	71	@	73
Sperm, Natural Winter.....	71	@	73
Sperm, Bleached Winter.....	76	@	78
Whale, Crude.....	..	@	..
Whale, Natural Winter.....	..	@	45
Whale, Bleached Winter.....	..	@	48
Whale, Extra Bleached.....	..	@	50
Sea Elephant, Bleached Winter.....	..	@	..
Menhaden, Crude, Sound...	35	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed...	39	@	40
Menhaden, Bleached W'ter.	..	@	43
Menhaden, Extra Bleached.	..	@	46
Tallow, City, prime.....	..	@	55
Tallow, Western, prime....	..	@	50
Cocoanut, Ceylon.....	5½	@	5¾
Cocoanut, Cochin.....	6½	@	6¾
Cod, Domestic.....	38	@	40
Cod, Foreign.....	42	@	45
Red Elaine.....	44	@	46
Red Saponified..... ₩ ℔	4¼	@	4¾
Bank ..... per gal	38	@	..
Straits.....	39	@	..
Olive, Italian, bbls.....	58	@	62
Neatsfoot, prime.....	50	@	65
Palm, prime, Lagos.....₩ ℔	7¾	@	8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....per gal	7	@	7½
Black, 29 gravity, 15 cold test.....	7½	@	8
Black, 29 gravity, summer ..	6	@	6½
Cylinder light, filtered.....	14	@	16
Cylinder, dark, filtered.....	10	@	13
Paraffine, 23½ @ 24 gravity..	11	@	12
Paraffine, 25 gravity.....	10	@	11
Paraffine, 28 gravity.....	7½	@	8
Paraffine, red.....	9½	@	10½

Paints and Colors—

Barytes, Foreign, ℔ ton..	$22.00	@	24.00
Barytes, Amer. floated....	29.00	@	32.00
Barytes, Amer. No. 1.....	16.00	@	18.00
Barytes, Amer. No. 2.....	13.00	@	15.00
Barytes, Amer. Nc. 3.....	11.00	@	12.00
Blue, Celestial..... ₩ ℔	6	@	8
Blue, Chinese.....	40	@	50
Blue, Prussian.....	25	@	40
Blue, Ultramarine.....	8	@	25
Brown, Spanish.....	½	@	1
Brown, Vandyke, Amer...	3	@	3½
Brown, Vandyke, English.	6	@	8
Carmine, No. 40, in bulk..	2.75	@	..
Carmine, No. 40, in boxes or barrels.....	2.85	@	..
Carmine, No. 40, in ounce bottles.....	3.75	@	..
Chalk, in bulk..... ₩ ton..	1.75	@	2.00
Chalk, in bbls.. ₩ 100 ℔...	33	@	40
China Clay, English..... ₩ ton.	13.00	@	18.00
Cobalt Oxide, prep'd.....	9.00	@	11.00
Cobalt Oxide, black..... lots 100 ℔.	1.90	@	....
Cobalt Oxide, black..... less 100 ℔.	1.96	@	....
Green, Paris, in bulk.....	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs.....	10½	@	11
Green, Paris, small pack.	12	@	17
Green, Chrome, ordinary.	6	@	12
Green, Chrom., pure.....	22	@	25
Lead, Eng., B.B. white....	8½	@	10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔...	7	@	7¼
Kegs, lots 500 ℔ to 5 tons....	6½	@	6¾
Kegs, lots 5 tons to 12 tons..	6⅝	@	6⅝
Kegs, lots 12 tons and over..	6¼	@	6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price.....	..	@	½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.	..	@	2½
Lead, Red, bbls. and ½ bbls...	6	@	7
Lead, Red, kegs.....	6¼	@	7¼
Litharge, kegs.....	6¼	@	7¼
Litharge, bbls. and ½ bbls.....	6	@	7

Terms, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed.....	1½	@	2½
Ocher, German Washed....	1¼	@	3
Ocher, American.....	½	@	1½
Orange Mineral, English....	8½	@	9
Orange Mineral, French.....	10	@	10½
Orange Mineral, German....	8½	@	9
Orange Mineral, American.	8¼	@	8¾
Paris White, English Cliff-stone.....	1.00	@	1.15
Paris White, American.....	65	@	75
Red, Indian, English.....	5½	@	7
Red, Indian, American.....	2	@	6½
Red, Turkey.....	9	@	14
Red, Tuscan.....	9	@	11
Red, Venetian, American... ₩ 100 ℔..	1.00	@	1.10
Red, Venetian, English.....1.20		@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔.....	4	@	5
Sienna, Ital., Burnt Lumps.	1½	@	3½
Sienna, Ital., Raw, Powd...	4½	@	5½
Sienna, Ital., Raw, Lumps..	1¾	@	3½
Sienna, American, Raw.....	1½	@	1¾
Sienna, American, Burnt and Powdered..... ₩ ℔	1½	@	1¾
Talc, French.....	..	@	1½
Talc, American.....	1¼	@	1½
Terra Alba, Fr'ch. ₩ 100 ℔	95	@	1.25
Terra Alba, English.....	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered..... ₩ ℔	3½	@	4
Umber, Turkey Bnt. Ln.....	2¾	@	3
Umber, Turkey, Raw and Powdered.....	3¼	@	....
Umber, Turkey, R'w Lumps	2½	@	2¾
Umber, Turkey, Bnt. Amer..	1¼	@	1½
Umber, Turkey, R'w Amer.	1¼	@	1¼
Yellow, Chrome.....	10	@	25
Vermilion, American Lead.	11¼	@	12
Vermilion, Quicks'er, bulk..	53	@	..
Vermilion, Quicks'er, bags..	54	@	..
Vermilion, Quicksilver sm'r pkgs.....	62	@	..
Vermillion, English Import.	85	@	90
Vermillion, Imitation, Eng..	8	@	35
Vermillion, Trieste.....	90	@	92½
Vermillion, Chinese.....	92½	@	95
Whiting Common, ₩ 100 ℔	37½	@	42½
Whiting Gilders'.....	45	@	55
Zinc, American, dry....₩ ℔	3½	@	4¼
Zinc, French, Red Seal.....	7¾	@	..
Zinc, Frech, Green Seal	9	@	..
Zinc, Frech, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal...	7½	@	..
Zinc, Antwerp, Green Seal..	7¾	@	..
Zinc, German, L. Z. O.....	6¾	@	7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¾	@	11½
lots less than one ton.....	11	@	11½
Zinc, V. M. in Poppy Oil, Red Seal.....	..	@	..
lots of 1 ton and over.....	10	@	10½
lots of less than 1 ton.....	10¼	@	10¾

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort....	25	@	30
Black, Drop, English.....	12	@	15
Black, Drop, Domestic.....	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory.....	8	@	15
Blue, Chinese.....	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramarine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	16	@	18½
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber, Raw.....	7	@	10
Umber, Burnt.....	7	@	10

Putty—

In barrels and ½ bbls.....	.013½	@	.013¾
In tubs.....	.015¾	@	.01¾
In tin cans.....	.01½	@	.02½
In bladders.....	.01⅞	@	.02½

Spirits Turpentine—

In regular bbls.....	29	@	29¼
In machine bbls.....	29½	@	29¾

Glue—

Low Grade.....₩ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	22
English.....	10	@	15
Irish.....	12	@	..

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

DECEMBER 20, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:	
¾ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in...	₩ lb 1.80 @ 1.90¢
Refined Iron:	
¾ to 2 in. round and square. 1 to 4 in. x ⅜ to 1½ in.... 4½ to 6 in. x ⅜ to 1 in.	₩ lb 1.90 @ 2.00¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.10 @ 2.20¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.00 @ 2.10¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price	₩ lb 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.80¢
"Ulster"	₩ lb 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store—

	Per lb
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2½¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

Black—

Best Refined Iron.

Nos. 14 to 20	@ 3⅛¢
21 to 24	@ 3⅜¢
25 to 26	@ 3⅜¢
27	@ 3⅝¢
28	@ 3¾¢

Common ¼¢ less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 16	@ 2⅝¢
" " " 18 to 20	@ 3¢
" " " 21 to 24	@ 3¼¢
" " " 25 to 26	@ 3⅜¢
" " " 27 to 28	@ 3½¢

Best Bloom Sheets, ¼¢ extra over above prices.
Best Bloom, Galvanized, jobbing dis. 70 @ 70&5%
Ordinary Bessemer, ⅛¢ @ ¼¢ lower than above prices.

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 12¢ @ 13¢
Patent Planished	₩ lb A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel	₩ lb, 8½¢

Foreign Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 20 ¢
Bicken's Special No. 8	₩ lb 30 ¢
" Extra	₩ lb 15 ¢

METALS—

Tin—

	Per lb
Banca, Pigs	22¢ @ 22½¢
Straits, Pigs	21½¢ @ 22¢
Straits in Bars	22½¢ @ 23¢

Tin Plates—

Duty: 2.2¢ ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade.	IC,	10	x14..	@ $6.50
" " "	IC,	12	x12..	@ 6.75
" " "	IC,	14	x20..	@ 6.50
" " "	IC,	20	x28..	@ 13.00
" " "	IX,	10	x14..	@ 8.50
" " "	IX,	12	x12..	@ 8.75
" " "	IX,	14	x20..	@ 8.50
" " "	IX,	20	x28..	@ 17.00
" " "	DC,	12½	x17..	@ 6.00
" " "	DX	12½	x17..	@ 8.00
Allaway Grade	IC,	10	x14..	@ 6.00
" "	IC,	12	x12..	@ 6.25
" "	IC,	14	x20..	@ 6.00
" "	IC,	20	x28..	@ 12.00
" "	IX,	10	x14..	@ 7.50
" "	IX,	12	x13..	@ 7.75
" "	IX,	14	x20..	@ 7.50
" "	IX,	20	x28..	@ 15.00
" "	DC,	12½	x17..	@ 5.50
" "	DX,	12½	x17..	@ 7.00

Coke Plates—Bright—

Steel Coke.—IC,	10 x 14,	14 x 20..	$5.40	@ $5.50
		10 x 20..		@ 8.50
		20 x 28..	11.50	@ 12.00
	IX,	10 x 14,	14 x 20..	@ 7.00
BV Grade—IC,	10 x 14,	14 x 20..		@ 5.50

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC,	14 x 20	@ $5.65
	20 x 28	@ 11.00
	IX, 14 x 20	@ 6.40
	20 x 28	@ 12.80
Abecarne Grade.—IC,	14 x 20	@ 5.55
	20 x 28	@ 10 75
	IX 14 x 20	@ 6 40
	20 x 28	@ 12.80

Tin Boiler Plates—

IXX, 14x 26	112 sheets	@ $13.35
IXX, 14 x 28	112 sheets	@ 14.50
IXX, 14 x 31	112 sheets	@ 16.00

American Terne Plates.—Apollo.

IC, 14 x 20	$6.25
IC, 20 x 28	12.50
IX, 14 x 20	7.25
IX 20 x 28	14.50

Copper—

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35% ad valorem.

Ingot—

Lake	@ 11 ¢
Ansonia grade Arizona	@ 10½¢
Ansonia grade Casting	@ 10 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 25 %, according to size of order. Stubs' gauge standard.

Not wider than	Not longer than	And longer than	Weights per sq. foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	23	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	....
36	96		22	22	22	24	26	30	33	....
36		96	22	22	23	25	27	31	35	....
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60		96	23	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅝ inch diameter and over, ₩ lb 22¢
Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per lb.
14 ounce to square foot and heavier	28¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter, 2¢ ₩ lb additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned	₩ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz.	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.
July 6, 1892.

O. G.	N. G.	Net ⅜	¼	⅝	¾	⅞	1	1¼
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional
Brazed Brass Tubing. (To No. 20 inclusive.)
Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	$1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list	30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2	10	in. 10	12	in. 12	14	in. 14	16	in. 16	18	in. 18	20	in. 20	22	in. 22	24
To No. 20 inclusive	.21		.22		.23		.25		.27		.29		.31		.33	
Nos. 21, 22, 23 and 24	.22		.23		.24		.26		.28		.30		.32		.34	
Nos. 25 and 26	.22½		.23½		.24½		.27		.29		.31		.33		.35	
Nos. 27 and 28	.23		.24		.2		.28		.30		.32		.34		.36	

Common High Brass: Wider than and including	in. 24	26	in. 26	28	in. 28	30	in. 30	32	in. 32	34	in. 34	36	in. 36	38	in. 38	0
To No. 20, inclusive	.36		.39		.42		.46		.50		.55		.60		.65	
Nos. 21, 22, 23 and 24	.37		.40		.43		.47		.51		.56		.61		.68	
Nos. 25 and 26	.38		.41		.44		.48		.52		.57		.63		.71	
Nos. 27 and 28	.39		.42		.45		.49		.53		.58		.65		.75	

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0.30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.62
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2 00
No. 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

— % discount.
Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

	Per lb.		Per lb.
No. 5	49¢	No. 11	58¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No. 10	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive	17¢ ₩ lb
Over 3½ to 5 inches inclusive	18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive	18¢ ₩ lb
Over 3½ to 5 inches inclusive	19¢ ₩ lb

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.	
Western Spelter	4½¢
Bertha (pure)	8¢@8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.	
600 lb casks	5½¢
Per lb	6¢@6½¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.	
American Pig	4¢@4.10
Bar	4½¢
Pipe, subject to discount 20%	6½¢
Tin-Lined Pipe, subject to discount 20%	15¢
Block Tin Pipe, subject to discount 20%	37½¢
Sheet, subject to discount 20%	7¢
Old Lead in exchange, 3½¢ ₩ lb.	

Solder—

½ @ ½	13½¢ @ 14½¢
No. 1	11½¢ @ 12½¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson	₩ lb 11 ¢
Hallett's	10½¢

Aluminum—

Duty: 15¢ ₩ lb.

No. 2 grade metal, in ton lots	₩ lb .75
No. 1 (guaranteed to be 98 % pure and over), in ton lots	₩ lb .90
Lots less than 1 ton	10¢ ₩ lb additional

Old Metals—

Prices Paid in New York.

Heavy Copper	₩ lb 7½¢
Light and Tinned Copper	₩ lb 6½¢
Heavy Brass	₩ lb 5½¢
Light Brass	₩ lb 4½¢
Lead	₩ lb 3 ¢
Tea Lead	₩ lb 2 ¢
Zinc	₩ lb 2½¢
No. 1 Pewter	₩ lb 14 ¢
No. 2 Pewter	₩ lb 7 ¢
Wrought Scrap Iron	₩ gross ton $9.00
Heavy Cast Scrap	₩ gross ton 7.00
Stove Plate Scrap	₩ gross ton 4.50
Burnt Iron	₩ gross ton 3.00

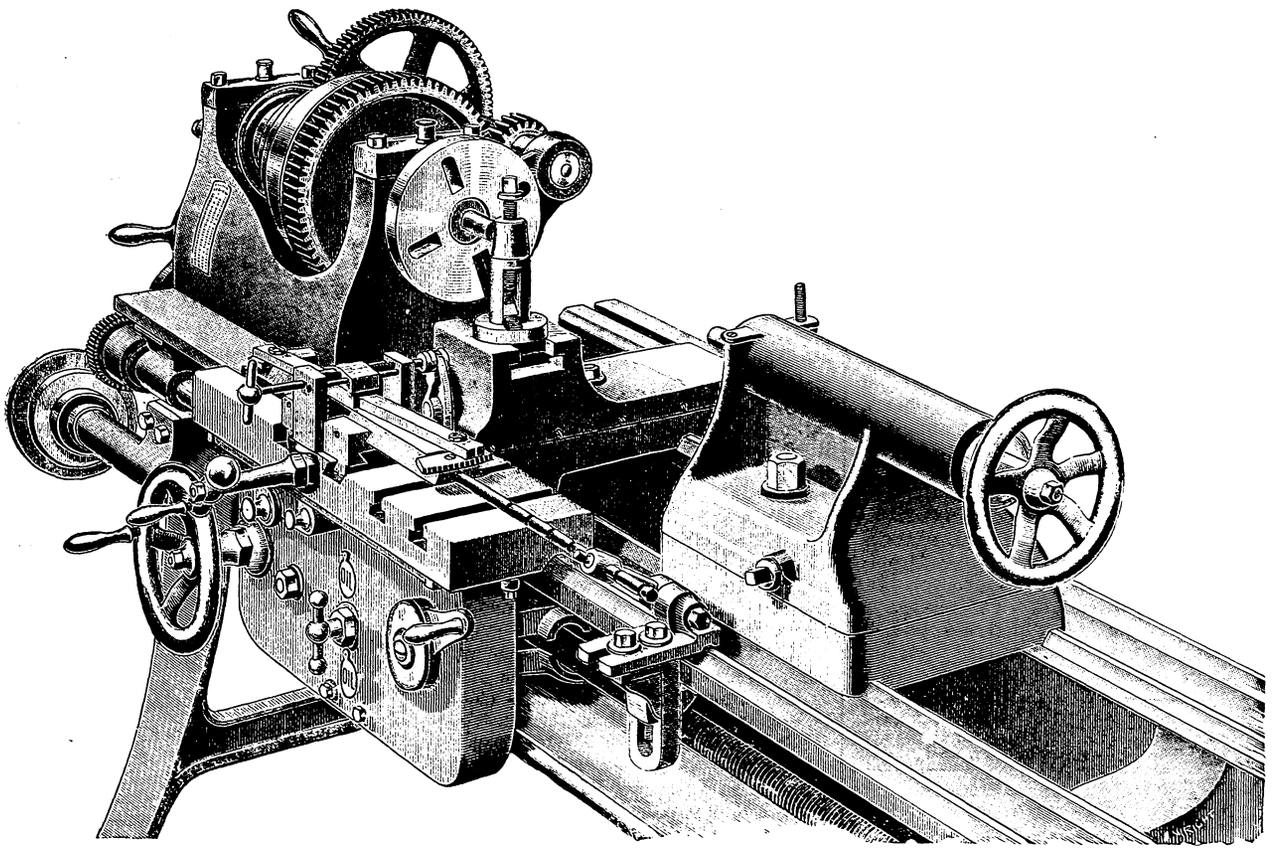
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THE IRON AGE

THURSDAY, DECEMBER 28, 1893.

The Hodge-Frazier Taper Turning Attachment.

This attachment is designed to be used on any lathe. It can be quickly and easily transferred from one lathe to another and can be attached to a plain gib, raise and fall, or compound rest carriage. The device consists of a dovetailed bar fitted to slide in guides carried by the carriage of the lathe. From one end of this bar projects a connecting rod, which is grooved in several places to receive the binding screw of a clamp fastened to the lathe bed. Pivoted at one end to this bar is the taper bar, the other end of which is graduated so that any desired taper can be obtained by securing the bar at the desired angle in relation to the center line of the lathe. Sliding jaws are fitted to the taper bar and are connected to the cross slide. From the above and by reference to the engraving the construction and operation of the device will be understood. This attachment is placed on the market by the Prentiss Tool & Supply Company of 115 Liberty street, New York.



THE HODGE-FRAZIER TAPER TURNING ATTACHMENT.

A few months ago *The Iron Age* made the statement that No. 27 gauge sheet iron for roofing purposes, which is called No. 27 standard, but really weighs $\frac{94}{100}$ pounds per superficial foot, was sold at $2.65 per 100 pounds, free on board mill. Exception was taken to the statement, although it was proved to be correct. We are now able to state positively that this same material is being sold at $2.50 per 100 pounds, free on board mill.

Cost Keeping.

Notwithstanding its vital importance, the matter of accurately obtaining the cost of a manufactured product in detail, or of individual machines or parts of machines, frequently receives but meager attention. The annual balance, or, may be, deficit, is taken as a measure of the relation between the total cost and the selling price of the aggregate product, but just where money is lost and just where it is made is by no means so definitely known. Doubtless in almost every manufacturing business handling a variety of goods certain classes serve by their large profits to carry along the others, which could not stand by themselves.

Even such cost keeping systems as are in operation in some concerns are often so crude or general in their character as to preclude the possibility of obtaining accurate detailed information. Then, too, methods are sometimes incorrect or misleading. The foundryman who merely knows that the average cost of his completed castings is so much per pound is in no position to compete in prices on close estimates with the man who knows individually the cost of his iron in the ladle, and the average expense for snagging, pickling, rattling, &c., so that he may thereto add his known or carefully estimated cost of molding.

Obviously the same holds to an even greater extent in machine manufacture, where the more detailed the information the more serviceable it becomes in determining where to cut in the cost or upon what figure to decide for a selling price.

The indefinite item of factory or establishment expense, covering fixed changes and to be added to the net cost of the article, frequently leads by its improper application to a distortion of the values. This can be avoided only in so far as the various items of this expense are charged directly to the article made, rather than lumped with others in a general percentage.

Nothing is more evident than that no one system of cost keeping is applicable to all classes of manufacture. The following general scheme appears, however, well fitted to the average establishment making a variety of articles of reasonable size :

In the first place, the hours of labor for which a man is to be paid and the time which he devotes to any given article or process are kept entirely separate. Time under the first heading is kept by any approved check or time clock system, and the pay roll made up therefrom. But the labor upon the specified piece is recorded upon a time slip, giving order number, hours worked, name of piece, character of work performed thereon, and number of tool employed to perform the work. This is signed by the workman, and as soon as the operation is completed passes to the foreman, who duly inspects and countersigns it.

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At stated intervals, preferably every morning, these slips are collected, together with any orders, sketches, stock memoranda or the like relative to the same completed work. These records are all filed in a single envelope properly inscribed and numbered. There thus accumulates from day to day a complete record of the progress of the work, which may be consulted at any time. When all slips and orders are collected the filled envelope stands as a complete record of all written orders given, of the date of their fulfillment, of the total amount of stock used, and a detailed individual record of all work done.

In a piece work shop, piece work receipts properly signed by the inspector take the place of the time slips, but still continue to show the progress, and when checked up by piece work price-lists also determine the cost. Outside work upon installation, orders to the purchasing agent, corrections of orders and the like all go into the envelope with the rest.

The marked value of this system lies in the facts that no clerical work is required, unless the cost of the given article is to be figured, and that at any time, no matter how distant from the date of completion of the order, the full record may be taken from the files and the detailed cost determined. This is an important feature where goods are built to be sold at standard prices and costs require to be figured only at intervals.

This system in actual operation has shown itself readily adaptable to existing circumstances, elastic to a remarkable degree and free from the peculiar inconvenience of many book systems, where many pages must be scanned to obtain all the time chargeable to a given order.

Statistics of overland passenger traffic by the Southern Pacific for the month of November show clearly how largely the westward migration exceeds that in the other direction. The returns of passengers carried, which are said to present a very fair similarity to the average figures, are as follows:

	Eastward.	Westward.
First class	1,348	4,793
Second class	1,831	6,468
Totals	3,179	11,261

The carrying capacity of vessels lost on the lakes during the past season, says the *Marine Review*, is about 17,000 tons less than that of the new vessels now under contract in the shipyards, and thus for the first time in eight years there is a halt in the great increase in tonnage. In previous years the tonnage of new vessels under contract each fall has been so much in excess of the losses of the previous season as to cause little attention to be given to the latter.

The dullness in the iron and steel trade has now extended to the natural gas fields of Ohio and Indiana. Manufacturers in this district state that during the hard times of this year they have been able to hold their own in competition for the few orders distributed, but they now assert that, notwithstanding free gas and other advantages, they are not disposed to allow the lowest of present prices to be entered on their order books; consequently, most of the mills are only running half time. A few weeks ago, in passing through the same territory, our correspondent noticed everything going full blast.

Basic Bessemer Costs.

(*Concluded from page* 1121, *December* 21.)

Taking up each item singly and examining it in detail, the following results are obtained:

IRON.

Charleroi exceeds American estimate. $0.291
American estimate exceeds Charleroi.. ——

This excess at Charleroi, in spite of the fact that the iron there costs $1.49 per ton less than on sheets II and III, is caused entirely by the high loss, viz., 20 per cent. According to Torduer, Charleroi only produces 80 per cent. of ingots, the balance is total loss, no credit being given for scrap. The figures that I use here both as to the cost of the pig and to the loss are perfectly attainable, and in so far as the loss is concerned one at least of the continental plants is doing even better, and I know of no reason why the American practice should not equal and perhaps improve on their results.

COAL.

Charleroi excess..... ——
American excess..... 0.16

The cost price of this item is less on Sheet I than on Sheets II and III. The vital point, however, here lies in the weight used per ton. Comparing the foreign consumption of 363 pounds with Mr. Howe's figures for a fast running acid Bessemer, about 200 pounds per ton, it seems, and I have already so remarked in this paper, as though the weight was too low, and I have used much higher figures for the American estimate. In this connection, however, it must not be forgotten that the method of keeping the accounts enters very largely into this result. Mr. Howe plainly says "steam fuel," but I am not sure whether this means boiler fuel alone or all fuel used in or about the converting mill, such as coal for the small locomotives, the ferromanganese furnace, &c.

Mr. Torduer simply uses the word coal. This certainly can only be taken as including all coal chargeable to the converting mill and this, I think, is also what Mr. Howe means. On sheet II I have placed the consumption at 500 pounds, and on sheet III at 400 pounds per ton of ingots. Both of these plants would be very slow running, as compared with Mr. Howe's swift plant, and I do not believe that Mr. Torduer's figures are attainable unless he uses the triple expansion engines spoken of later in his paper. Such engines are not at present in use in the still works in this country. It is very noticeable how little more coal is required to run fast than to run slow, and how rapidly the cost of this item decreases per ton as the tonnage of output increases. The costs on sheets II and III are for bituminous coal. If these plants were constructed with sufficient boiler capacity to run on small sizes of anthracite coal, these figures could be materially reduced.

WOOD, WASTE, OILS, ETC.; REPAIRS, LABOR, MATERIALS, SHOP ACCOUNT.

These are, perhaps, all considered by Mr. Torduer under the head of sundries, although it is hard to see why the repair account is not considered of enough importance to be entered separately, and it is possible that it has been omitted. Since the sum of these items just equals the amount charged for sundries, it is probable that the better American practice, in this case, at least, makes up for the great difference in the cost of the labor.

COKE.

Practically the whole of this item may be charged to the use of the indirect process—cupola melting—and would form a portion of the saving to be effected by running direct. The bulk of the coke used by Charleroi must be charged against the dolomite, since this item is treated as raw stone and no spiegeleisen is used.

Considering, therefore, that all of it is used for burning the dolomite, the total cost—less labor, it being included in the conversion labor—is only 20 cents against 0.45 cents on sheet II and III. This is one of the most striking differences between the plants, but in considering it the marked difference in the cost of labor between the two countries must be borne in mind.

It really seems as though Mr. Torduer was wrong as regards the cost of dolomite per ton, since the text, I think, fully sustains my assumption that he is talking about raw stone; and if that is so, since this stone, quoted at $1 per ton, loses at least 50 per cent. during calcination, the cost per ton of ingots could not be less than twelve cents. This question was touched upon when discussing the comparative costs of the lime and dolomite, but no mention was then made of this particular error. The fuel and labor for burning are charged on the cost sheet, but no allowance is made for the loss during calcination. This adds to the evidence against the correctness of the figures for these items.

CALCITE.

Used as a flux on the cupola and is, therefore, directly chargeable to the Indirect Process.

LIME.

Charleroi excess..... ——
American excess..... .245

Eighteen and nineteen per cent. is the amount used at Charleroi. An average of not over 16 per cent. is the more usual practice, and the results obtained are undoubtedly as good, if not better, than at Charleroi. Note the difference in the first cost—$1.60 as compared to $4—just two and one-half times as expensive in the States as on the Continent. If this same comparison held good in each case—viz., that two and a half times the European cost equaled the American cost, no further inquiry into this great difference in the cost of conversion would be necessary. While it will not hold strictly to this proportion, still there is a constant difference caused by that great underlying fact, low wages in Europe, high wages in America, that cannot be overcome completely by any existing better plants, better processes or smarter workmen that we Americans are supposed to possess.

TAR.

Charleroi excess..... ——
American excess..... 0.156

The cost price here is about one-third greater.

FIRE BRICK, FIRE CLAY, KAOLIN, GANNISTER OR ACID REFRACTORIES.

Charleroi excess..... 0.113
American excess..... ——

It is possible that the vessel nose at Charleroi is lined with acid materials, but I would not propose so doing in the plants estimated on here and also that such acid materials as are required on the dolomite cupola are charged into

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this item, such not being the case on sheets II and III, where the basic refractories are charged on the conversion cost sheet at their cost of manufacture, and this naturally includes the labor of their production, acid refractories, &c.

CUPOLA TUYERES AND BLOCKS.

This lining material for the cupolas is of coruse directly chargeable to indirect process.

MOLDS AND STOOLS.

Charleroi excess..... ——
American excess..... 0.01

There is but a slight difference here between the two countries and it certainly shows better work since the American practice, in spite of the higher first cost of the molds, approaches so near the continental figure per ton of ingots. A varied output requiring many different and odd shapes of molds would increase this cost.

SLEEVES, NOZZLES AND STOPPERS.

Charleroi excess..... 0.031
American excess..... ——

These three items are evidently taken under the one head of stoppers by Mr. Torduer. It will be noticed in this case, as in the fire brick item, that the Belgian cost exceeds the American. From the general tendency of all the other factors, or as one might say, from the internal evidence, we are warranted in assuming that the cost price of all these acid refractories is much less than in the United States. If, then, the cost per ton of ingots is still less with us, it must be because we use very much less of these materials and our practice is therefore more perfect in this particular.

SHIFTING.

Charleroi excess..... 0.018
American excess..... ——

I have previously criticised the wage list of this paper because it did not contain engineers and trainmen enough, according to my idea, to handle the intermediate products of the mill.

Under this particular heading I should include only the work of handling raw stock and finished material, the receiving from and delivery to the railroad companies of the loaded and empty cars, and the necessary handling of these cars over the mill tracks. As this figure exceeds the American practice so greatly it is easily possible that by a different method of keeping the accounts Charleroi charges to this item some of the men that I have accused Mr. Torduer of omitting.

INSURANCE AND TAXES, STATIONARY STEEL INCIDENTALS, LABORATORY CAR ACCOUNT

Charleroi excess..... 0.036
American excess..... ——

Can all be grouped together and charged against the general expense account.

SALARIES.

Charleroi excess..... ——
American excess..... 0.040

This item is entirely omitted, I believe, by Torduer, at least I can find no evidence of its being included under any other head, and as it is, though not large, still an ever present factor, I am inclined to think that there may be other items that I have in the first place put in the "omitted" list, but later on endeavored to include under some other title in this balance sheet, that he has in reality disregarded and which, though small in themselves, would in the aggregate amount to a very considerable sum.

LABOR.

Charleroi excess..... ——
American excess..... 1.082

Referring again to the one or two apparent errors in Mr. Torduer's labor list, and supposing that as many men as were thought necessary were added to that list, if all the items that he has, perhaps, omitted were also inserted, the total cost could not be increased over 50 cents per ton.

It is not here that the great difference in the cost of conversion lies, but in the labor rates.

In the report of the United States Commissioner of Labor for 1890 on the cost of production of steel ingots, p. 342 et seq., the following average daily earnings per man are given:

American establishment—

No. 1.	No. 2.	No. 5.	No. 7.
2.03½	2.35	1.78½	3.02½

an average of $2.29.

Comparing this with the average daily rate of $0.68 paid the Belgian worker, it is not hard to understand why the American labor exceeds that at Charleroi by $1.08 per ton of ingots, nor why in so many other cases where the quantities of materials used are nearly alike, the American cost is so much greater than Belgian.

FERROMANGANESE AND SPIEGELEISEN.

Charleroi excess..... 0.404
American excess..... 0.540

In the first of these items it is presumed that almost double the quantity required abroad will be necessary here. This not because of any error or bad practice at either plant, but on account of the quality of the steel to be made. The American builder, be it of bridges, boats or boilers, does not want and the specifications that he furnishes will not permit of the use of such soft steel as is almost universally used on the Continent. The soft steel, "Flusseisen" of the German steel maker, is true to its name. It is much nearer in its physical qualities to iron than anything made by a so-called steel process in this country. Superior to wrought iron on account of possessing a slightly higher ultimate strength in connection with a greater reduction of area and elongation, it surpasses much of what we Americans call "soft steel" and which would be the class of material furnished by the plant under discussion, in so much as among its other advantages while passing through any subsequent stages of its manufacture, no amount of ill treatment (except burning, and this is extremely difficult to do) can spoil it. Punch it, drift it, ream it if you like, and it will be still the same ductile mass that it was when you commenced. Heat it, chill it, try to harden it, to temper it and its physical characteristics will remain unaltered or, if changed at all, be somewhat softer. This, however, is not the sort of steel that there is a demand for to-day and consequently the American plant would have to stand the extra expense of adding the recarburizer as shown here. As to the spiegeleisen, a portion at least of that undoubtedly could be done away with by the use of fine coke.

Now let us suppose that the pig iron cost $10.51, as at Charleroi, instead of $12, and that the loss was the same as on sheets II and III. In this calculation only the price of the pig iron has been changed, the steel scrap and burnt or cast iron scrap have been left as on the American estimates:

Sheet II—
$7.818 − ($1.809 − $1.729) = $7.738.
Sheet III—
$6.944 − ($1.809 − $1.729) = $6.864.

If now the wages he considered on the comparison of the Belgium daily average of $0.68, as against the American daily average of $2.29, then the cost per ton on sheet II would be $0.476, or a reduction of $1.124, and on sheet III $0.446, or a reduction of $1.054 per ton, hence

Sheet II—
$7.738 − $1.124 = $6.614.
Sheet III—
$6.864 − $1.054 = $5.810.

Now, for the sake of this comparison we will suppose that the American plant makes steel of the same degree of hardness as the Continental Flusseisen. The recarburizer account would be reduced to 35 cents.

Sheet II—
($0.704 + $0.540) − $0.35 = $0.894, and $6.614 − $0.894 = $5.72.
Sheet III—
($0.704 + $0.540) − $0.35 = $0.894, and $5.810 − $0.894 = $4.916.

This shows a cost of conversion for sheet II of $5.72, compared with the Charleroi rate of $4.64, giving an excess of $1.08, and for sheet III $4.916, an excess of $0.276.

This excess remaining against the American single turn plant, $1.08, can hardly be compared intelligently against the Charleroi costs, since the conditions are still very different, but we may well ask why the double turn plant should not show a cheaper cost instead of being $0.276 higher, since we have as nearly as possible made the conditions of it and Charleroi similar, and in the one case of a greater production given it a decided advantage.

By recapitulating the differences we may possibly find where this variation lies:

		Charleroi exceeds American estimate.	American estimate exceeds Charleroi.
Iron		$0.291	.....
Coal		.....	$0.16
Wood, oils, waste, &c.	Sundries	.....	.....
Repairs.			
Coke		.....	.....
Lime		.....	0.245
Tar		.....	0.156
Fire brick, Fire clay, Kaolin and gannister	Fire brick, sand, &c.	0.113	.. ..
Molds and stools		.....	0.010
Sleeves, Nozzles, Stoppers.	Stoppers	0.031	.....
Shifting		. ..	.....
Insurance and taxes, Stationary incidentals, Laboratory car account	General expenses.	0.036	.....
Salaries		.....	.....
Labor		.....	1.082
Ferromanganese		.....	.....
Spiegeleisen		.....	.....

I have purposely omitted from this recapitulation the variations on doubtful items, such as coke, shifting and salaries, also the ferromanganese and spiegeleisen, since it is solely a change in practice, caused by the demands of the trade that makes the difference on these latter items.

Glancing over the column headed "Charleroi exceeds," the increased cost of the iron, in spite of its cheaper initial price, is first noticed. This increase is brought about mainly by the more wasteful and slovenly practice credited to Charleroi by M. Torduer, and also by his method of calculation.

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If the American plant were furnished with iron at a like figure, there is no reason to suppose that the loss would be increased; and, as already shown, the cost of the loss (iron) would be further reduced and the total cost of ingots would be only $15.87, as against the $17.44 now shown on Sheet III. The excess in the two items—fire brick, &c., sleeves, &c.—can, I believe, be directly credited to the better American practice, while the difference in the fourth and last one is mainly chargeable to the increased product given on the estimated sheet to the American plant.

Taking the next column, the extra cost of the coal to the American works is almost entirely the result of the larger amount that I have assumed would be used, and as I have endeavored to throw some doubt on Mr. Torduer's figures for this item it may, perhaps, be permissible to leave it out of the discussion. If it is considered, however, we must be forced then to admit that our practice is not equal to the European in this particular.

As regards the lime, it is the high initial cost which alone causes the great difference, especially as I have calculated on the American plant using a less percentage than Charleroi does. The price used on Sheet III is somewhat less than the current market price. It is supposed, though, that the plant will have its own lime kilns, and this figure will then be easily attainable. If the lime could be had at the continental price given by Mr. Torduer the American plant would again show a saving.

The first cost of the tar is higher here than in Belgium, and this, together with the increased amount that I have estimated on—for I am afraid of Mr. Torduer's figures—accounts for the excess.

The difference in the molds and stools is too slight to discuss.

The great excess in the labor cost is the most striking figure in the whole column, and is in reality the key of the situation. It has previously been shown that this is brought about directly by the enormous difference in the labor rates—*vide* quotation from report of United States Commissioner of Labor—and the fact is also plainly patent by the most cursory comparison of Mr. Torduer's wage list with that of any steel works in this country. This fact—the low labor rates—would also affect the price of every article on the list, and in the case of the other great difference in this column, to wit: the lime costs, a marked effect would be shown there, since 50 per cent. of the cost of the burning and about 60 per cent. of the cost of the raw stone represent the labor expended.

From the result of the analysis of these figures it seems as if the American practice could fully equal the work cited by Mr. Torduer. If then we paid wages correspondingly low, our finished work—for it seems useless to dispute, in the light of what has already been shown, his statement that with ingots at less than $15 beams could be made for not over $18—would cost not more and probably less than the figures he quotes.

It must not be forgotten when looking longingly at these low cost figures who the sufferer would be were any attempt made to reach them or if our policy of government should ever force us to meet them. In every case, and view it in any position that you like, it is always the labor—that is, the laborer, the working man—who must bear practically the whole of this reduction. It can be plainly seen that in the figures used in this article no attention has been paid to the profits of the owner or manufacturer, and in any attempt to meet the Belgian price in the open market the difference would have to be taken from some of the costs enumerated herein.

Practical Application of the Pyrometer.

The growing necessity of uniformity in the quality of iron or steel products has caused a closer study of scientific phases when metal of specified ductility is required. Old methods of judging by the eye are fast becoming obsolete, and with the increasing use of the pyrometer to ascertain and regulate temperatures of furnaces, the old secrets of managers and others, who have passed them from one generation to another, do not possess their former value.

The pyrometer is by no means a modern instrument, but its utility and value are being daily demonstrated. In annealing malleable castings, sheets of iron and steel and other iron and steel products it is required that a certain temperature be maintained in the furnaces for a given number of hours to produce a desired result. To accomplish this it has hitherto been the custom to train men in charge of furnaces so that they could make a tolerably accurate guess regarding the temperature by withdrawing a stopper and peeping into the furnace. This was a method full of uncertainties, and to make results more positive the pyrometer is now fast coming into general use.

For the benefit of those not having an available table at their command we print below the temperatures of iron, steel and other metals under various conditions according to the very latest scientific investigation:

Temperatures.

		Fahrenheit Degrees.
Bright iron becomes	yellow	435
	red	500
	indigo	550
	gray	750
Tin melts		445
Mercury boils		660
Lead melts		612
Zinc melts		775
Silver melts		1,775
Copper melts		1,885
Gold melts		1,900
Iron bar, red in	a dark room	950
	ordinary office	1,075
	daylight, open air	1,450
Cast iron melts	white	2,075
	gray	2,230
Annealing	malleable castings	1,600 to 1,750
	sheet iron, No. 20 and lighter	1,600 to 1,700
	sheet iron, Nos. 18 to 10	1,750 to 1,800
Annealing glassware		800 to 1,000

	Centigrade. Degrees.	Fahrenheit. Degrees.
Bessemer Process:		
Running the slag	1,580	2,876
Running steel into ladle	1,640	2,984
Running steel into mold	1,580	2,876
Annealing furnace, ingot in	1,200	2,192
Ingot under hammer	1,080	1,976
Siemens-Martin Process:		
Gas from producers	720	1,328
Gas entering generator	400	752
Gas leaving generator	1,200	2,192
Air leaving generator	1,000	1,832
Fumes passing to shaft	300	572
End of fusion of charge, open hearth	1,420	2,588
Refining the steel	1,500	2,732
Running into ladle, first	1,580	2,876
Running into ladle, last	1,490	2,714
Glass furnace, between the pots	1,375	2,507
In the pots, refining	1,310	2,390
In the pots, working	1,045	1,913
Siemens, melted for casting	1,310	2,390
Blast Furnace, Gray Bessemer:		
Front of tuyere	1,930	3,506
At tapping	1,570	2,858

By preserving this table and carefully using a pyrometer those in charge of furnaces will avoid mistakes which are often very costly. It is frequently the case when new men are put to work at a furnace that they are entirely too energetic. The furnace is kept too hot and the material spoiled, annealing boxes are burned and general trouble results. On the other hand, an old employee, depending too much on his former success, may grow careless and keep the furnace at too low a temperature. The charge is drawn after the furnace is cooled down, the result is not satisfactory and the material has to go through the process a second time at the expense of the manufacturer. By using a pyrometer and enforcing a system of recording temperatures every hour these troubles can be avoided.

The Bureau of Statistics has published for the Ways and Means Committee a tabulation of the imported merchandise entered for consumption in the years 1890 to 1893, with the rates and amounts of duty collected. This tabulation goes into far greater detail than do the monthly or annual reports relating to imports. Among other figures which may be of interest we note the imports of pig iron are separated into three groups, spiegel and ferro, ferrosilicon and all other. It appears that the imports of ferromanganese and spiegeleisen were during the fiscal years as follows: 1890, 108,771 gross tons; 1891, 54,238 tons; 1892, 55,080 tons, and 1893, 49,157 tons. The imports of ferrosilicon were 51 tons in 1892 and 255 tons in 1893. The imports of "all other" pig iron amounted to 39,299 tons in 1890, 27,307 tons in 1891, 28,145 tons in 1892, and 13,232 tons in 1893. The imports of scrap were:

Imports of Scrap.

	Iron.	Steel.
1890	35,357	2,443
1891	47,730	7,442
1892	29,236	7 551
1893	14,331	5,831

As showing the magnitude of the Swedish business we copy the following table:

Imports of Charcoal Bars, Billets and Shapes.

	Tons.	Value.
1890	26,921	$1,072,912
1891	17,910	760,439
1892	18,401	732,259
1893	15,710	603,243

The imports of beams and structural shapes were as follows:

Imports of Beams and Structural Shapes.

	Pounds
1890	4,848,613
1891	6,954,943
1892	18,235,277
1893	11,241,473

Under the general classification of wheels, or parts thereof, and steel tired wheels and tires we found the following figures, which, of course, deal almost exclusively with tires:

Imports of Tires.

Fiscal years.	Pounds.	Value.
1890	3,247,580	$265,678
18 1	5,821,892	194,089
1892	8,575,915	264,494
1893	15,361,011	458,700

It will be observed that there has been a considerable increase during the fiscal year 1893.

Recently two ships have arrived in New York from Japan, carrying, respectively, 900 and 600 tons of manganese ore. It is stated that the latter lot was purchased by a large Pittsburgh concern.

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Universal Die and Roll Grinding Machine.

This machine—built by the Waterbury Farrel Foundry & Machine Company of Waterbury, Conn.—is designed especially for outside and inside grinding, where the work can be carried on the face plate or in the chuck.

Its novel features are that in changing from cylinder to face grinding the grinding wheel does not have to be run at right angles to the countershaft, but at all times and for all work rotates in about the same plane as the overhead drum on countershaft, and this permits the application of an automatically reversing, traversing mechanism to the wheel carrying side.

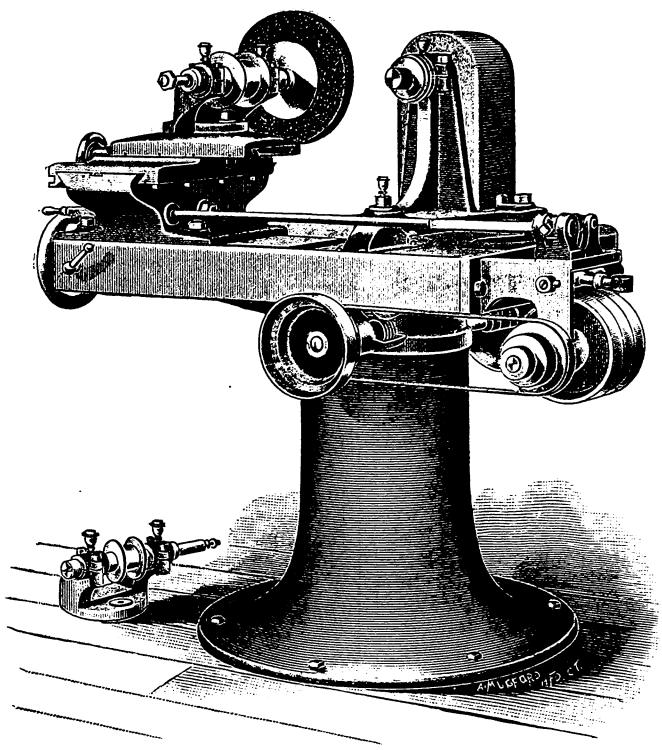


Fig. 1.—Perspective.

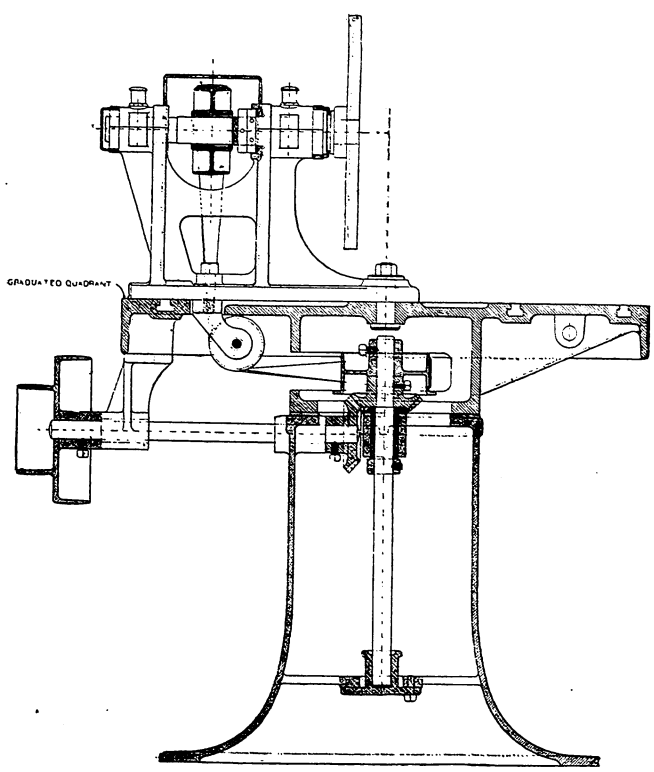


Fig. 2.—Vertical Section.

UNIVERSAL DIE AND ROLL GRINDING MACHINE.

The amount of the traverse may be varied up to 10 inches, and to adapt it to varying sizes of work a suitable position may be quickly given to the base of the traverse carriage, within a limit of 6 inches to or from the work. The head carrying the wheel is movable by screw at right angles to the traverse to an extent of about 4 inches, and being swiveled may be further adjusted in angular position for special cases. The automatic traverse may be quickly thrown out by the small lever handle shown at the left, at which time the motion of the carriage may be entirely regulated by the hand wheel in front of machine (at left of cut). The speed of the feed may be varied through the cone belt shown.

The method of turning the work for face grinding is not clearly shown in the illustration, but may be described as follows: The counter drives a pully which is nearly opposite the cone shown in the center of the engraving, and which through miter gears runs a vertical shaft in the column. On the upper end of this shaft is a pulley which, through idlers, drives the pulley on the main spindle of the carrying head, the idlers being so attached that the head may be swiveled at any angle up to 90°, and for exact adjustment the table is accurately graduated to half degrees. This machine is thoroughly well built of suitable materials, and all bearings are protected by dust proof boxes. Two heads are provided, one with strong spindle for carrying large wheel and one for high speed small wheels, as used for inside grinding. The speeds are well proportioned for economical grinding, and with the automatic traverse the machine is desirable for grinding circular dies and triblets for tubes.

The capacity of the machine may be summed up about as follows:

Largest cylinder which can be ground, 12 inches in diameter, 10 inches long. Will grind 16-inch hole in ring to a depth of 4 inches. Will surface a disk 18 inches in diameter.

Duluth News.

At the Mountain Iron Mine, on the Mesaba, an immense amount of work is being done in steam shovel stripping for the shipping season of 1894. Five large and powerful steam shovels are at work day and night, and four standard gauge and six dummy locomotives are employed. Though the temperature has already touched 36° below zero, the only serious inconvenience has been the stiffening up of the machinery. Owing to deep snows there is but about a foot of frost in the ground, and this readily breaks down under the shovels. Frost has made a little trouble on the sides of cuttings exposed for several days to the weather. It has been plainly demonstrated that even in this climate surface work, so far as men and material are concerned, can be successfully carried on in the coldest weather. Trouble with machinery, however, adds much to this winter work. It is hoped to strip about 500,000 yards of surface at this property before spring, there being an average of 20 feet in depth over the ore. As this is the first fair test of winter work in these surface mines, either for work done or price, it is of very considerable importance.

At the Biwabik also about 500,000 yards are being moved, no machinery being used. By January 500 men will be at work. The conditions here are so different from those at the above mine that one is no guide to the other.

The Oliver is so arranged that no winter work need be done. These three are at present all the "steam shovel mines" on the Mesaba, though the remarks of Chairman Wilson of the Tariff

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Committee would lead one to suppose there was nothing but this class of mines in the range. Surely at such a mine as the Biwabik, where 500 men are at work, the question of "natural labor" would appear to be "relevant."

Contractors and engineers are examining the Minnesota Iron Company's new Mesaba purchase, the Iron King, where over 300,000 yards of stripping are to be moved at once. The Norman, another Minnesota Iron Company purchase, is also to be stripped in a moderate way. During the past week the Minnesota have added another to their list of Mesaba properties by securing 240 acres near the McKinley on payment of $50,000 and agreeing to a 30-cent per ton lease. The Minnesota are now second only to the Consolidated in their Mesaba holdings.

The Franklin, probably the best underground mine in the new range so far, and the Diamond, both closed last week. They discharged 400 men.

On the Vermillion range range the Minnesota is hoisting 2000 tons and the Chandler about 1500 daily. This company's Canton mine, Mesaba, in 11 consecutive days mined and hoisted 6000 tons, working 135 men all told.

At the Gogebic range towns of Ironwood, Hurley, Bessemer and Wakefield there are respectively 3200, 2100, 750 and 600 persons who are absolutely dependent upon charity, and will continue so to be till work is given them. Two mines at Ironwood have started up in the week, and several more may do so; all, however, in a very small way.

At New Philadelphia, Ohio, there is considerable activity during these otherwise dull times. The New Philadelphia Wire Nail Company are running double turn, employing about 150 hands, and are turning out an average of 1100 kegs per day. The New Philadelphia Iron & Steel Company are operating their sheet mills about half time, the orders being for roofing sheets and galvanizing stock. The Spicer Mfg. Company of the same place are pushing their line of rolling mill machinery and labor saving appliances and are kept fairly busy. At Canal Dover, three miles north, in the Tuscarawas Valley, the Reeves Iron Company are operating their bar mills and sheet mills to about two-thirds their capacity. Large orders for car roofing sheets recently entered by the last named company will probably furnish the nucleus of steady work for months to come. The blast furnace of the Penn Iron & Coal Company, Canal Dover, stands as a silent monument of dull times, and there appears to be no prospect of immediate resumption. Ripple & King are running their foundry and machine shop little more than half time, and other industries are quiet. At Cambridge, Ohio, 40 miles south, the Cambridge Iron & Steel Company are operating three out of four sheet mills and two galvanizing pots. The Cambridge Roofing Company and the Cambridge Corrugating Company are not working more than half time. The various roofing concerns at Canton are all working a small force of men part time.

The garbage disposal question has been settled in Chicago by the signing of a contract with a garbage reduction company, who will at once erect five crematories, each of 100 tons daily capacity, at a cost to the city of $25,000 for every crematory built.

The Western Foundrymen's Association.

The regular monthly meeting of the Western Foundrymen's Association was held at Chicago on Wednesday evening, December 20, 1893, President Sargent in the chair. The following amendment to Article 8 of the by laws was presented and adopted:

"ARTICLE VIII. — All proposals for membership shall be made in open meeting by any member. The application, with the indorsement of the member making the proposition, shall be voted upon by the members present, a majority electing."

The secretary read a paper entitled

Furnace vs. Foundry Practice

by E. A. Wheeler, Sharon, Pa.

Pig iron contains about 94 per cent. of pure iron; the other 6 per cent. is chiefly composed of carbon, silicon, manganese, phosphorus and sulphur, and upon the proportion of these elements depends the quality of the iron. Through the aid of chemistry we have learned in what proportion these ingredients should be contained in the pig iron in order to make the best iron, steel or castings. Carbon and silicon are indispensable elements, but phosphorus and sulphur are rank poison, and should be eliminated as much as possible. The furnace operator knows how hard it is to make iron containing the right proportion of carbon and silicon. Although the ores, coke and limestone are carefully weighed into the furnace, the hot blast is held at the same temperature and all the conditions are the same as near as possible, yet we seldom get two casts alike, as the following report of one day's work of six casts at our furnace will show:

	Silicon.	Sulphur.
First cast	2.28	0.013
Second cast	2.43	0.009
Third cast	2.40	0.010
Fourth cast	2.00	0.020
Fifth cast	1.94	0.035
Sixth cast	2.04	0.024

You will see from the above analyses the constant change that is going on in the furnace, and, although the iron was No. 1 in grade, and no difference could be noticed in the fracture, yet it would work very different in foundry castings. This explains why furnacemen sometimes get letters from their customers which read about as follows:

"The last car of iron you sent us is not good; can't use it; plates crack, and the castings are too hard to work in lathe, and it spoiled our last heat."

Now, a little knowledge of chemistry would have saved all this trouble. The last car was too high in carbon and too low in silicon. Had the foundryman said in his order, "Ship me one car of iron, same as last, silicon 2 or 3 per cent.," as the case may be, he would have had the same castings as before, with the same mixture, and no uncertainty about it. Or had he known that the iron was low in silicon, and added a little high silicon pig iron, he would still have been all right. The fact is that silicon plays so important a part in regulating the carbon in iron that no well regulated foundryman can afford to use iron without knowing how much silicon it contains; and with that knowledge he can always have the kind of iron he wants in his castings. Too much silicon makes iron weak and too little makes the iron hard. Good castings for machine work should contain from 2 to 2½ per cent. of silicon; stove plate, 2½ to 3 per cent. If the foundryman will keep on hand a stock of silvery gray iron running 5 per cent. in silicon and knows what his strong irons run in silicon, as he always should know when he buys his iron, he can easily make a correct mixture in the office and not depend upon his wizard mixture for the quality of his iron. Every foundryman should keep his own chemist, or buy his iron on analysis and demand a chemist's card with each car. If this rule is observed, Nos. 2 and 3 and even gray forge can be used and very much cheapen the stock and make equally good castings. The puddling furnace must go, as soft steel is rapidly taking the place of iron, and then the white and mottled iron will have to be melted over in the blast furnace. Forge irons will have to be used in the foundry, and there will be no trouble in doing so, provided you have the correct analyses of the iron and use the right amount of silicon in each charge in the cupola.

The quality of the iron in the blast furnace is governed by the temperature. If the furnace is hot the silicon runs up and the sulphur down; if the furnace is cold the silicon runs down and the sulphur takes its place and we get No. 3, or may be white and mottled iron. I would think a hot or cold cupola would have the same effect on the iron. If the cupola is hot the iron will take up carbon and silicon from the coke and the castings will be soft and good; but if the cupola is cold the iron will take up sulphur and the castings will be hard and poor.

There are so many contingencies connected with the operation of the cupola that it is hardly safe to make any suggestions without knowing all the conditions. The first question is the quality of the coke. If the coke is poor and full of sulphur you cannot get good castings. A great deal depends upon the blast, whether soft or strong. My impression is that most foundrymen use too strong a blast and melt the iron at too high a zone. A soft blast will take a little longer to take off a heat, but there will be great economy in coke and less oxidizing and a better quality of iron when melted. It is very important to use the right percentage of lime for flux, as it purifies the iron and covers it with slag and keeps it hot and prevents oxidizing. Forty years ago the writer was engaged in the foundry business making stoves, and although all other branches of the iron and steel business have been revolutionized, the foundry business seems to plod along in the same old rut, and is governed by the rule of cut and try, and I cannot see that there has been any improvement. Iron is still sold by the fracture and graded Nos. 1, 2 and 3, and silvery gray for a softener.

The foundryman should know how much silicon and sulphur each number contains. I notice your association is talking of one chemist to do the work for all the foundries. That plan will not work, as most of the foundries do not order iron until they want to use it, and often say in the order to ship quick and send tracer to hurry it along. How could they wait to send drillings, perhaps hundreds of miles, and then wait their turn for the analyses? That is too slow even for the average foundryman. All pig iron for making steel, either Bessemer or open hearth, is sold on analysis, and why should not foundries adopt the same rule? For years we have analyzed every cast at our furnace for silicon and sulphur, and once a day

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for phosphorus. Each cast is piled by itself and the date and number of the cast is marked thereon, and by referring to our chemist's book we know just what it is and would be glad to send any one buying iron the correct analysis with each car we ship. A prominent steel man once said to the writer: "I don't care what your iron is made of so it has the correct analysis. I don't care if you make it from all mill cinder." He knew very well that the analysis would not be correct if made from cinder, and so with the foundry; you can depend upon the iron if the analysis is correct.

The writer, when in England a few years ago, was shown through a large foundry and saw an attachment to an ordinary cupola, which seemed to be a good arrangement, and was new to him. It consisted of a square brick bosh inclosed in cast plates to bind it, with an arch roof over the top and high enough to take in the tap hole or trough from the cupola, and was large enough to hold the entire heat that was wanted. The bosh had a hole through the arch tap near the front and a gas flue about 8 inches in diameter leading from into the cupola, say half way up the side, to carry off the gases. The operation was as follows: When the cupola was fitted up the bottom was so arranged that the iron and slag as it melted all ran to the tap hole, and as it was left open and quite large, of course it went into the bosh, which had been well dried out and heated up before the blast was put on, and the blast would pour a large stream of burning gas into the bosh with the iron and slag and keep the iron hot. The practice was to melt the entire heat before commencing to tap out of the bosh for use. I was told by the foreman that this was a great improvement over the old way. First, the iron was homogeneous and the quality was improved, and as the iron was covered with slag it would keep hot enough for use for at least two hours, and then when you commence casting there was no delay waiting for iron, as the melting was all done before the molders quit work. There was one cramp in the arch top such as is used on the neck of a puddling furnace that could be lifted off to get in to repair or start a fire to dry out and heat it up. The whole thing was so simple and inexpensive that I think any one could build such an attachment to his cupola from the description I have given, and if I were in the foundry business I should certainly try it. I inquired of the foreman if such an arrangement were common, and he said not; that it was a trade secret, and other foundrymen were not allowed to go through their works.

It is a well known fact that every time you melt iron in a cupola you deteriorate its grade and you have to use new high silicon iron when melting again to replace the silicon burned out in melting. In a blast furnace it is just the reverse. We can take white and mottled iron or old burned hot blast pipes and grate bars and melt them over and the whole thing will come out good gray iron if the furnace is working well, and it melts well and seems to improve the working of the furnace. If fed in the furnace at the rate of 5 or 10 per cent. of the stock used it will not require any more fuel than if it was not used. I do not see why a cupola could not be constructed, something after the lines of a blast furnace, that would convert old hard scrap into good, soft, merchantable iron. The cupola would have to be, perhaps, 15 feet high, and have a closed top so as to conduct the waste gases down into a small hot blast, and if the blast can be heated up to 900° it will do the work. A little lean ore high in silicon might be requred with the lime to make sufficient slag. I think it would pay some firm who have plenty of means to experiment in this line.

Supplemental Hints for Foundrymen.

Always melt your iron hot and draw it off about as fast as melted and cool in ladle, otherwise you burn out the silicon. Do not try to save coke at the expense of the quality of your iron.

Always get the correct analyses for silicon with each car of iron you buy. Get the card of the chemist who made the analysis, with his signature, to be sure that the analysis is correct.

Silicon governs the quality of the iron in all cases, unless the iron contains over 1 per cent. of manganese. Manganese makes the iron hard.

The price of all foundry iron should be governed by the per cent. of silicon that it contains. The higher the silicon the more valuable the iron, because the more scrap it will carry.

Foundrymen often pay very high prices for strong pig. If they will take the common scrap about their foundries nd mix enough high silicon pig with it to make the castings contain 1¼ to 1½ per cent. silicon, they will find that they have a very strong casting.

Stove plate should contain 2½ to 3 per cent. of silicon.

Machine castings, to work soft, should contain 1½ to 2 per cent. of silicon.

Machine castings hard and strong to stand wear and friction should contain 1¼ to 1½ per cent. of silicon.

Castings containing 1 per cent. of silicon or under work hard and flinty under the tool, and are only fit for plow castings or chilling purposes.

Add one-fourth of 1 per cent. more silicon in your mixture than you want in the castings for loss in melting.

If your iron is too high in combined carbon, and too hard, add more silicon.

If your iron is very gray and soft, and high in graphitic carbon, and runs sluggish, add silicon.

If your iron is too soft and weak for your purpose, reduce the silicon.

W. D. Sargent: How about the next to the last hint? It seems to me that it contradicts the one preceding it. He prescribes the same remedy for exactly opposite conditions.

Mr. Hollis: I do not think I agree entirely with Mr. Wheeler in the amount of silicon which he prescribes for the different kinds of working.

Mr. Sargent: There is the question of obtaining the analyses. Is it very difficult to obtain the analyses signed by a chemist?

Mr. Sargent: I think most furnaces have each cast analyzed. It is easily done. The Illinois Steel Company grade every car in that way. I think a great many furnaces do it.

Mr. Sercomb: I think every furnace company will furnish an analysis.

Mr. Hollis: I think the value of such grading depends upon the furnace piling each cast separately at a time. Unless it is done in that way the analyses would be of little value.

Mr. Sargent: What will be the variation between the grades of iron as to the silicon?

Mr. Hollis: Sometimes there will not be any. The grade of the iron in a general way shows the silicon contained.

Mr. Sargent: It would not then be possible to follow out Mr. Wheeler's idea and grade iron by the silicon?

Mr. Hollis: The grade of the iron does not mean necessarily the silicon contained.

Mr. Moore: The steel furnaces grade their iron according to analysis rather than fracture. It has been my experience that we have had No. 3 iron show higher silicon than some iron that we would grade No. 2. It seems to me in looking over the paper that the author places a little undue stress upon the silicon and ignores somewhat the sulphur, which is certainly as important a factor in the fracture and also in affecting the working in the iron in melting, and afterward the character of it right through.

Mr. Hollis: In regard to the point that the last gentleman raised, that No. 3 iron sometimes gets higher silicon than No. 2, I would say that the physical conditions in which it is cast would largely affect the grade. Anything that would chill the iron quickly in the pig bed would lower the grade. That would account for No. 3 iron having higher silicon than the higher grade.

Mr. Moore: Is it not a fact that taking two grades of iron, say 2 and 3, the difference in fracture is due to either one of these two causes—the physical conditions at the time of the cast or the presence of sulphur?

Mr. Hollis: I think not. I think the sulphur by itself could not account for that difference in the fracture of the iron, but the high sulphur almost invariably accompanies a cold working in the furnace, and such conditions give a low silicon iron, and a closer fracture, closer grain.

Mr. Sercomb: Is it not a fact that in the last year and a half, since there has been an endeavor to sell iron on analysis, it has been somewhat of a failure? The foundries may purchase the iron with a guarantee that there is a certain amount of silicon. You are depending upon some chemist who may make a mistake, and the different conditions of the cupola would cause the different fractures in the different irons, as regards softness or hardness, and you make the complaint to the furnace that the iron is not as it should be, and there is no redress. I believe the foundryman will have to make a study of these analyses and experiment quite a little before he becomes thoroughly versed in the matter. If in the different casts there is such a great variation there would have to be a large number of pigs drilled to get the exact analyses; then it does not seem much work saved, for to-day when you want to buy pigs they will break every one for you.

Mr. Hollis: I think it is common with most blast furnaces to take a sample out of the first third and then another out of the second third, and so on, and then use this as a sample for the cast, which in almost every case would fairly represent the cast.

The President: Do you think it advisable to purchase iron by the percentage, having it guaranteed, rather than by the number?

Mr. Hollis: I think most decidedly so. A sample of cast or pig iron can be taken while running out of the pig beds.

Mr. Sercomb: How would you account for iron that you had used for a year and a half with perfect satisfaction in every respect, so that you would adopt it, and then you would make a purchase of 500 tons that was in such a condition that you were not able to use

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it at all? It was the same iron as far as I was able to see, yet the iron ran to that degree of hardness that it had to be rejected.

Mr. Moore: I presume that most of the foundrymen have had somewhat the same experience. The old reliable casts fail us at times. We had an experience with hard iron during the past year that was quite an expensive one, and we got in quite deep before we knew it. The question was, where was the trouble. It was in several grades of iron and we started at once to ferret the thing out. We started to analyze our iron. We had been getting in some new iron. We could find no trouble in the iron. We then took up the coke, which we thought was all right. We found the coke to be running from 1per cent. to 1¼ in sulphur, and that was "the nigger in the wood pile."

Mr. Sercomb: I would say that we changed our coke and then went back to the same coke again. We found that we would have to change our iron. We then tried Ashland iron and then went right for a while, but pretty soon that became as hard as flint and we had to reject that.

Mr. Moore: I have understood that that condition in the casting is liable to be produced by a high manganese. I would like to hear an expression of opinion.

Mr. Sercomb: I have talked with many foundrymen and no one could give me an explanation of the trouble.

Mr. Sargent: We have used manganese iron and never had any trouble.

Mr. Moore: How high?

Mr. Sargent: As high as 3 or 4 per cent.

Mr. Sargent: I would like to ask if any one can tell what the percentage of silicon to the shrinkage is.

Mr. Hollis: I think you will find that information in a paper by Mr. Keep in the "Transactions" of the Mining Engineers. It is not in direct ratio, as I would call it, up to a certain point. I do not recall the percentage enough to tell it.

Mr. Sercomb: In the matter of analyses has it not been somewhat of a failure?

Mr. Hollis: I think not when analyses are properly applied. The way in which the majority of foundrymen have used them they have been worse than useless. The trouble has principally been that no attention whatever has been paid to sampling. For instance, a foundryman will have some trouble and go out to his stock yard and take up one piece of iron, it may be an odd pig, and take that for the analysis of the whole, instead of systematically going through his pile and taking a large number of pigs. The same thing is true in the way coke is sometimes analyzed. They will take one piece, which as a rule is far from being an average sample. If they would pay more attention to the sampling I think they would get better results.

Mr. Moore: What do you consider a fair sampling of a car, how many pieces?

Mr. Hollis: I think that would depend largely upon the appearance of the iron. If the fracture indicated a variety, it might be 20 or it might be 25 or more. If it were fairly uniform it would be only five or six, possibly eight or ten, unless you should know that it was a single cast.

Mr. Moore: Most cars are from single cast.

Mr. Sargent: According to Mr. Wheeler it is a very simple thing to follow an analysis and get what you want. If Mr. Wheeler is correct it seems to me that the foundry business is far more simple than we had supposed.

Mr. Hollis: I hardly think that the matter is quite as simple as you say. Given a certain brand of iron in which the phosphorus is fairly uniform, then what Mr. Wheeler says is largely correct. The phosphorus, manganese and silicon being uniform, the ratio of combined carbon, which determines the physical properties of that iron, is largely dependent upon the silicon or accompanies the silicon.

Mr. Sargent: Too much stress has been put upon the value of silicon alone as a regulator of cast iron. I am quite certain that the silicon can be all right; in fact, we have made castings that were hard with the silicon 3½ per cent., which is altogether too high, I think, in proportion. We knew at the same time that our sulphur was running from 0.08 to 0.09 or 0.10. There was no question but that the silicon was high enough.

Mr. Hollis: I think there is no question that when you get beyond a certain point with silicon you begin to harden your iron. When you have 3½ per cent. in your iron, all things being equal, you have a little harder iron perhaps. There is a limit in which it is well to have the silicon.

Mr. Moore: You then consider that sulphur is not an important factor?

Mr. Hollis: The sulphur by itself is not. It is chemical properties that usually accompany high sulphur that are detrimental; high sulphur goes with a cold working furnace, low silicon and white iron.

Mr. Moore: In the case I mentioned the sulphur and silicon were both high and the iron in a normal condition.

Mr. Hollis: I think that is exceptional.

Mr. Moore: The one point in that paper which is of benefit to foundrymen is the endeavoring to do the thing by rule, and that is the loss of silicon in melting. It is a question in which we are all at sea. I am interested to know whether the statement that it is about one fourth of 1 per cent. is to be taken as reliable or not. It would be very interesting to have that statement substantiated. My impression has been that it was considerably larger. I presume that would vary somewhat according to the condition of the cupola.

Mr. Sargent: It is somewhat difficult to figure the loss of silicon while you run through two or three different mixtures.

Mr. Moore: I mean with a standard mixture. Of course it would be a very complicated thing if the mixture was varied during the heat.

Mr. Hollis: I should think Mr. Wheeler meant other things being equal. There is no question but that the loss in silicon is largely dependent upon the working of the cupola.

Mr. Moore: What, in your judgment, would be the conditions that would produce the greatest loss in silicon?

Mr. Hollis: With what kind of mixture? Running average mixture with the 2 per cent. silicon I think cold working, other things being the same.

Mr. Moore: The cupola running cold?

Mr. Hollis: I would answer that question in another way. The hotter the iron the greater the tendency to absorb and keep the silicon.

Mr. Moore: What is the possibility of the iron taking up some silicon in the cupola?

Mr. Hollis: I cannot conceive of such a case. I can conceive of the cupola running hot enough to develop the same. The hotter the furnace the higher the silicon.

Mr. Sargent: I would suggest that it would be a good plan for the members who are getting analyses to make an attempt to determine the loss of silicon. It is the one basis on which proper results can be obtained.

The following resolution was then adopted:

Resolved, That the association offers a vote of thanks to Mr. Wheeler for the excellent paper he has presented.

The meeting then adjourned until the third Wednesday in January.

Notes of a Southern Trip.

Among the Alabama furnaces there are in blast: Three DeBardeleben, at Bessemer, two Ensley, two Sloss, two Pioneer, one Woodward and Etowah, and out of blast two DeBardeleben at Bessemer, two DeBardeleben at Oxmoor, two Ensley, two Sloss, one Woodward, two Alice, Mary Pratt, Williamson, Vanderbilt, Trussville and two Woodstock, at Anniston. The furnace practice in the Birmingham district has been greatly improved of late. The product is much greater and percentage of foundry grades is much larger.

Mr. DeBardeleben is giving his entire attention to making iron at Bessemer and Ensley and wonderful changes have been made during the past two months. A laboratory has been fitted up at Ensley under the charge of Dr. Philips and daily analyses are made. Iron is now graded by analysis as well as by fracture, and the latest scientific method has been introduced. If the determination for silicon of a cast of iron shows that the fracture does not indicate its proper grade, it is graded according to its analyses.

The increase in production is remarkable. One Ensley furnace has made 212 tons in 24 hours, and the two in operation are now making about 375 tons daily, nearly all foundry iron. One of the furnaces at Bessemer is making over 190 tons daily, and all three are doing better than ever before. They have not had enough No. 3 foundry and gray forge, and have been trying to make those grades at one of the furnaces, but the output continues largely Nos. 1 and 2 foundry. The iron is graded very high, is strong and soft and should be capable of use in almost any mixture where strength and softness are required.

The Sloss Company have one furnace blowing at Birmingham and one at North Birmingham. They have sold 17 000 tons gray forge in the last two and one-half months. Recently they sold 5000 tons to be put on leased land and held for investments. They say that they will have to take iron from warrant yard for this purpose. If two deals now pending for 5000 tons are made it will sell their gray forge and F F. for two or three months ahead. None of the furnacemen are sanguine about an early improvement and are disposed to sell current output at current prices. They recognize, however, that a decided increase in demand would create a scarcity and they wish deliveries restricted within reasonable limits.

Many American manufacturers are preparing their exhibits for the international exposition that is to open in Antwerp, Belgium, next May.

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The Kansas City Implement Trade.

An interesting meeting of the Kansas City Implement and Vehicle Association was held in that city on the 18th inst. W. P. Yancy read a paper on "How to Prevent an Accumulation of Old Stock." He advised that the buyer should study crop conditions and market values in the various sections of the territory covered, and that the salesman give special attention to any line of goods that shows a tendency to accumulate. He advised that the jobber never overload a regular customer, and that cutting of prices never be resorted to in order to get rid of goods. He closed by commending to the attention of the club the old adage that "goods well bought are half sold."

M. H. Lohsee read a paper on "Express Rates." He showed the great discrepancy between railroad and express rates and cited the following rates by rail and express respectively between this city and other cities: To New York, railroad $1.35, express $4.50; Pittsburgh, $1.08 and $3.50; Chicago, 75 cents and $2; Omaha, 40 cents and $1.50: Minneapolis, 80 cents and $2.75; New Orleans, $1.25 and $4.50, the average proportion of freight and express rates being 3 to 1 against express rates. Mr. Lohsee said that the State legislatures had not paid much attention to express companies, which had gone unnoticed in comparison with the great railroads. The express companies, though owning no tangible assets, yet declare fancy dividends on fancy stocks. He declared it was time some effort was made to readjust the exorbitant express rates charged.

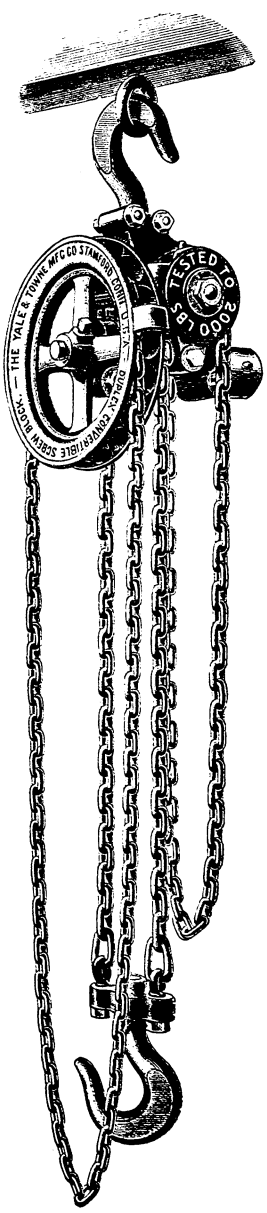
O. V. Dodge read a paper on the Interstate Commerce law in its relation to the implement trade. He declared that the law was a practical failure and that the railroads, from whom it was intended to protect the people, were the real beneficiaries, being enabled to maintain high rates because the law prohibited any deviation from published tariffs. He declared that railroads preferred national supervision to interference by State legislatures, and that the railroads were always the victors in suits brought for violations of the law. He closed by advocating an effort to secure 5000-mile tickets good over any road at 2 cents per mile.

H. C. Taylor of Lyons, Kan., read a paper showing the effect of the recent ruling of the Kansas Board of Railroad Commissioners reducing the carload rate on implements from this city to Wichita and from Wichita to all points in Kansas from 32½ cents to 23½ cents. The through rate from Chicago to Wichita is 2½ cents less than the sum of the locals. The carload rate on cultivators from Mississippi River points to Wichita makes a difference of $1.60 against the Kansas City jobber on every binder sold; $1.34 on every buggy, or $64 and $53 on each carload respectively. He gave many other figures showing that Wichita is given an immense advantage over Kansas city and is taking away the trade that naturally belongs to the latter.

Mr. Taylor fully explained the Kansas law, which provides that any city can secure reductions in freight rates on the application of the Mayor and council to the commissioners on petition of 25 citizens. If the Mayor and council refuse to make the application on petition of the citizens, the commissioners may take the matter up on petition of the citizens, but cannot do so of their own motion. After considerable discussion the matter was referred to the Legislation Committee. At the conclusion of the programme President Stowe admonished the members to prepare for a discussion of the new tariff bill in its relations to the implement trade with Canada at the next meeting. The present tariff is 35 per cent., which is taken off in the new bill, enabling the Canadians to duplicate implements of his company at greatly decreased prices, owing to the cheap labor employed.

Duplex Convertible Screw Block.

The accompanying illustration shows the latest addition to the line of chain blocks made by the Yale & Towne



Duplex Convertible Screw Block.

Mfg. Company of Stamford, Conn. As indicated by its name, the leverage by which the hoisting capacity is obtained is that of a screw motion or, more properly, a worm and worm wheel motion. The construction is such as to permit a much higher efficiency to be obtained than is practicable with an ordinary worm wheel motion, and the device by which the load is sustained, and which acts in conjunction with the worm, is capable of conversion at the will of the operator so that a dispatch lowering action may be obtained when so desired.

As shown in the engraving, the new block is neat in appearance, the worm wheel being placed between the two chain sheaves and all the parts symmetrically disposed. The worm and worm wheel motion, as well as the device for sustaining the load, are all inclosed in an oil tight casing, thus insuring thorough and continuous lubrication of the working parts, and preventing the entrance of dust and grit. The two hoisting chains are attached at their lower ends to a yoke to which the hook is secured, each chain having a swivel connection so that kinking or entanglement of chains is impossible. The block is light in weight, convenient in operation, and possesses a high degree of efficiency, standing both in cost and efficiency midway between the differential and triplex blocks. The sustaining feature is obtained by means of a friction plug which receives the end thrust of the worm shaft. The friction of the end of the shaft upon this plug furnishes sufficient resistance to prevent the running down of the load and hence lowering must be effected by pulling on the hand chain.

The most notable point of the block is the convertible feature by means of which the change from safety to dispatch lowering may be made. The convertible feature is arranged as follows: The load hanging upon the hook causes an end thrust upon the worm shaft, and this thrust is received by a plug screwed into the casing of the block and pinned through to prevent rotation. By backing out the pin the cap may be removed and the plug taken out and reversed. The end of the plug which is in contact with the worm shaft is formed so that the bearing is upon an annular or ring surface at the circumference of the end of the plug, and hence the distance from the center at which the friction acts to retard the rotation of the shaft is great enough to keep the load from running down. Under these conditions the load will only continue to descend so long as the hand chain is operated, this constituting the safety lowering arrangement. If, however, the user desires dispatch lowering, he unscrews and reverses the plug so that the end thrust is taken by the reduced end. With this arrangement the load will continue to descend after it has once started, and in this manner the block can be converted from safety to dispatch lowering. This construction enables the user to decide which form he desires, and the block can at once be set for either function, after which no change need be made until the block is transferred to some other line of work for which a reconversion may be desired. The dispatch lowering is especially convenient for bridge works and for many situations in which it is desirable for the operator to stand clear of the load.

The fact having been noised abroad that the municipality of Pittsburgh are giving work to the indigent of that city, an influx of the unemployed from all parts of Western Pennsylvania into Pittsburgh is taking place. As it is all the city can do to take care of its own, the line of relief has had to be drawn very closely.

Consequent on the opening of the Manchester Ship Canal, the city of Manchester, having become a seaport of the United Kingdom, has received a warrant making it a port for customs purposes from January 1. The Admiralty have also assumed Jurisdiction of the port.

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The Chicago Horse Shoe Company.

The Chicago Horse Shoe Company are now running their plant regularly, turning out standard horse and mule shoes. The works, which are located at East Chicago, just outside of the city limits, were founded some four years since, but owing to a combination of adverse circumstances the company have but recently begun to supply the trade with their products. During the interval the management of the company has changed completely, and the control has passed into the hands of practical business men, thoroughly acquainted with the peculiarities of the horseshoe business and expert in manufacturing details.

The plant as it now stands is entirely new, all the machinery having been perfected and installed by the present managers. It has been satisfactorily tested in making up a large amount of shoes for stock, which are pronounced by experts to be of a character to meet the exacting requirements of critical consumers. The location of the works on the line of the Pittsburgh, Fort Wayne & Chicago, the Belt Line and the Chicago and the Calumet Terminal railroads affords all the facilities that could be desired for prompt shipment in any direction, as the two last named roads connect with every line running into Chicago. The ground occupied comprises 8 acres, which gives the company ample space for future extension. The principal building is a large structure in the form of an L, the main part of which is 165 by 90 feet, and the wing 90 by 64 feet. Detached from the main building is the boiler house, a brick building with a metal roof, containing a battery of four 16-foot tubular boilers. The machinery consists of a complete outfit of Goodenough horseshoe machines, six machines for making flat shoes, two trains of rolls for rolling horseshoe bar, power shears, forges, large and small heating furnaces, and a complete machine shop with lathes, drill presses, planers, &c. The motive power is supplied by eight engines of 1000 horse-power in the aggregate. All the special machinery has been built on the ground, in the company's own shops, and embodies numerous special devices which have been suggested by the combined experience of the managers of the company. No expense has been spared in securing the best appliances to accomplish the most perfect results. The equipment of the machine shop is superior to that usually found in establishments not making a specialty of machinery. Among the peculiar features of the processes employed may be mentioned the creasing of the bars in their last passage through the rolls, which is thus done with unfailing accuracy, and the imparting of a perfectly smooth surface to the finished shoe, which is done by the last machine through which the shoes pass.

The managers of the company lay particular stress on the fact that they are engaged in producing nothing but shoes. Dealing exclusively with one product, they can concentrate their energy on its peculiarities and anticipate improvements which the progress of the times may cause consumers to demand.

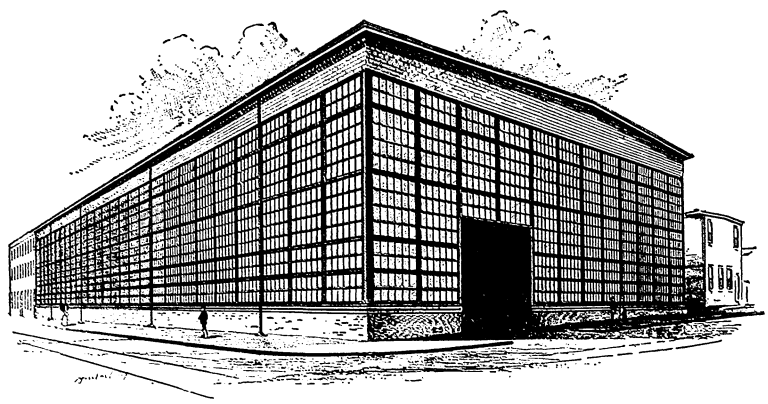
They further have the distinction of being the first exclusively horseshoe manufacturers to get into regular operation in the West. They are not only located at the gate of the most desirable market in the country, reaching all the great Western jobbing centers at low rates of freight, but gain peculiar advantages in the low cost of scrap and the cheapness of fuel. Oil is at present exclusively used for fuel in raising steam and operating the heating furnaces and forges, at very much lower cost than coal. The oil is piped from the Standard Oil Company's main line into a storage tank. It flows thence into a smaller tank underground, from which it is pumped through a stand pipe to the points of consumption to secure a uniform pressure. A complete gas producing plant has, however, been erected, which is ready for use at any time if oil should become too expensive. A natural gas pipe line runs in the immediate vicinity and the coal fields of Indiana are within easy reach. The fuel question is, therefore, pretty completely covered.

The capacity of the works is from 500 to 600 kegs of horse and mule shoes per working day. Plans have been prepared for additional buildings and the duplication of the machinery now in use, which will be put in execution during the coming year. The company manufacture steel as well as iron shoes, so as to meet the demand for steel shoes which is rapidly becoming a feature of the horseshoe trade.

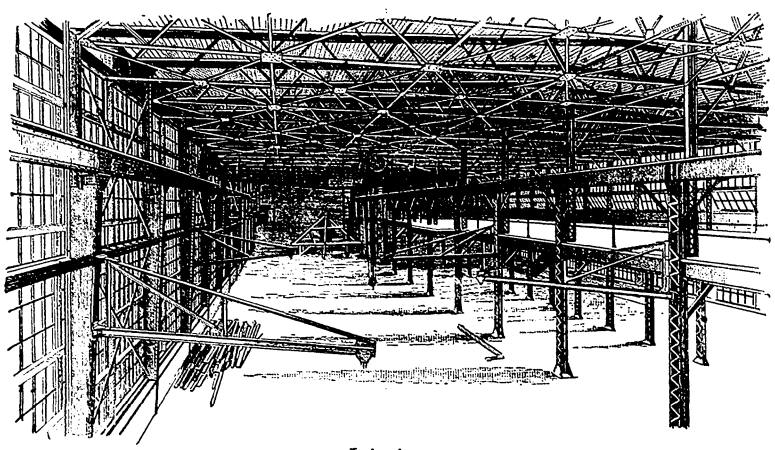
The main office of the company is in the Ashland Block, room 908, corner of Clark and Randolph streets, Chicago. The president of the company is G. N. Caleb; vice-president, William Poillon; treasurer, Walter S. Caleb; secretary, E. A. Schwarzenberg. These officers together with Hon. William A. Vincent compose the Board of Directors.

Shops of the Fuller Iron Works.

The new machine shop for the Fuller Iron Works, at Providence, R. I., is now completed. The building is 90 feet in width, and in order to secure good light for the interior it was found necessary to either use skylights in the roof or to adopt some other construction besides brick in the sides of the building, as the brick walls obstruct the light to such an extent that the center of the building would be very badly lighted on a dark and cloudy day. To obviate this trouble the patented construction of the Berlin Iron Bridge Company of East Berlin, Conn., was adopted. The sides of the building are almost entirely of glass, with steel posts only obstructing the light. These glass sash are so arranged as to swing, thus allowing complete ventilation in all kinds of weather. The plan commends itself for cotton mills, woolen mills, and that class or construtión, where the width is excessive and the hight between joints is limited. It is almost impossible to light any building of over 60 feet in width unless skylights are used in the roof, and the objection to them is that they leak, either in the skylight itself or in the connection between the skylight and the roof. The main shop of the above building is 50 feet in width and 200 feet in length. A traveling crane controls the entire length of this portion of the building, and it is made of sufficient hight so that machinery of all kinds can be set up under it. The floor spaces in the immediate vicinity of all machines are also con-



Exterior.



Interior.

SHOPS OF THE FULLER IRON WORKS.

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trolled by jib cranes operated by two hands, thus bringing the floor space in the immediate vicinity of the machine under the full control of the operator. The lean-to or wing is 40 feet in width and 142 feet in length. This is made two stories in hight, the upper story being used for light work, the lower floor being controlled by jib cranes secured to the columns so that heavy work can be moved in and out from the central portion of the building.

NEW PUBLICATIONS.

SUBJECT MATTER INDEX OF TECHNICAL AND SCIENTIFIC PERIODICALS. Compiled by Dr. Rieth, for 1892. Published by C. Heymann, Berlin; B. Westerman & Co., New York.

Under orders of the German Patent Office Dr. Rieth compiles annually an index of the articles printed in the leading technical and scientific journals of the principal countries. The titles are given in the language in which the article was printed. Throughout the typography is clear and the editing exceedingly careful. In its way it is probably the best yet published and will prove exceedingly useful to those who are familiar with the German language.

SMOKE ABATEMENT IN ST. LOUIS.

The Smoke Commission of the City of St. Louis, which has done such admirable work in the past, has printed two brief reports in pamphlet form, of which the first is a report made concerning a canvass of the manufacturing establishments of St. Louis, with special reference to their compliance with the city ordinance. They have studied the boiler plants in the city, and insist that with certain exceptions means could be employed to avoid the smoke nuisance. Among the exceptions are the boiler plants of iron and steel manufacturing establishments. The same report embodies a draft for a general standard for testing smoke abatement devices.

Under the instructions of the ordinance, tests must be made of the different devices submitted for the prevention of smoke. A special report, issued in October, deals with the Boileau device submitted for test by the Improved Zigzag Grate Bar & Smoke Preventing Company. The commission summarizes its conclusions by stating that up to 25 pounds of coal consumed per hour per square foot of grate area the Boileau device is capable of reducing the average smoke emission 90 per cent., or to an average smoke emission within a limit of 10 per cent. of smoke, if proper care and attention by given it. They state that an increase in boiler capacity up to 15 per cent. above rating can be obtained without endangering the smoke record, but except in those cases where such an increase in capacity results in a money saving there will be no direct return on the investment, which must be charged to improvements required by the smoke suppression ordinance.

GEOLOGICAL SURVEY OF NEW JERSEY. Annual Report of the State Geologist for the year 1892. Trenton, N. J.

The character and scope of Professor Smock's annual report have become sufficently familiar to those interested in geological work to allow us to state that he has added another volume of great interest to the series. Practically the report for 1892 deals with a number of different branches, the first part taking up surface geology, with special reference to the influences of the glacial period. Part II is a thorough review of the marl deposits in which New Jersey is so rich, and which constitute so important a resource. The third part continues former work on the collection of data for a general report upon the water supply and water power of the State, while the fourth part is a collection of the data accumulated during 1892 on the artesian wells of Southern New Jersey.

The first fruits of Professor Smock's visit to Europe to study the Dutch system of sea dikes are laid down in the fifth part of the report. The usual statistics are submitted, which show that in 1891 the production of iron ore was 551,258 tons, while the production of zinc ore was 76,032 tons.

EIGHTEENTH ANNUAL REPORT OF THE CHIEF INSPECTOR OF MINES OF OHIO. Columbus, 1893.

Robert M. Haseltine has made his usual report as Chief Inspector of Mines to the Governor of Ohio, his figures showing that in the year 1892 the production of coal was 14,591,908 tons, of which 2,239,080 tons were produced by mining machines. In all there were 21,002 miners employed, of whom 333 were engaged in operating mining machines. There were 5970 day hands, of whom 2301 were employed in following up the mining machines, blasting down and loading the coal after it had been undermined. There were produced in 1892, 1,253,110 tons of fire clay, which was a heavy increase over previous years. The production of iron ore has gained a little, but still remains insignificant. The production was 8680 tons of blackband, and 81,042 tons of hematite. The usual elaborate statistics follow. The bulk of the volume, however, is taken by the detailed reports for every individual mine made by the inspectors of the different districts.

FIFTEENTH ANNUAL REPORT OF THE BUREAU OF STATISTICS OF LABOR AND INDUSTRIES OF NEW JERSEY.

The Chief of the Bureau of Statistics of Labor and Industries of New Jersey has continued during 1892 his investigations into the co-operative building associations of that State, where they have developed into so important a factor. At the close of the year 1892 there were in active existence in that State 291 associations, with 1775 series running, 571,665 shares outstanding, of which 153,813 were pledged. There were 87,762 shareholders and 21,752 borrowers, the net assets of the associations figuring up to $29,989,767. Newark, with nearly $6,000,000, and Jersey City, with a little over $5,000,000, are the two principal towns in which these associations flourish. Very interesting details are given concerning the management of the different bodies, which is followed by official statements of a number of the associations on the part of their secretaries. The detailed report of each of these associations is tabulated for ready reference.

The second part embodies a continuations of the line of investigation begun a number of years ago, whose object it was to ascertain the number of years workmen are able to follow a given employment. During 1892 the bureau devoted its attention to cigarmakers, bakers and railroad trainmen, the latter including engineers, firemen, brakemen, conductors, switchmen and wipers. The individual returns aggregate 4853. The reports give the age at which work was begun and the age at which loss of activity was first experienced and its causes. The Chief of Bureau presents details of this investigation which afford at least approximate data.

POOR'S DIRECTORY OF RAILROAD OFFICIALS AND MANUAL OF AMERICAN STREET RAILWAYS; 1893. H. V. & H. W. Poor, 70 Wall street, New York.

Poor's compilations are too thoroughly well known in the many trades which seek patronage from railroads to need lengthy reference by us. The Directory of Railroad Officials gives lists of all the officials of the operating railroads in the United States and Canada, and of the chief railroads in Mexico, and presents also official lists of master mechanics, purchasing agents, chief engineers, master car builders, master car painters, general managers and general superintendents. The same volume deals with private logging and mining roads and with city and suburban tramways.

The semi-annual meeting of the Western Pennsylvania Central Mining Institute was held in Pittsburgh last week, the sessions lasting two days. In his opening address to the delegates, President T. K. Adams said he believed the institute had been one of the most powerful auxilaries in disseminating technical knowledge among the miners of Western Pennsylvania. During the session a number of papers were read, one of which, entitled "Electrial Machines and Electricity as Applied to Mining as a Power," was presented by George Gould of Cannelton, Pa., and attracted considerable attention. In his paper Mr. Gould advocated the use of a simple machine which could be adjusted to suit any depth of vein in preference to that which causes the mixing of coal, slate and dirt, destroying the commercial value of the product. T. J. Evans of Johnstown, Pa., discussed the question of "Which gives the most useful effect in mine ventilation, blowing exhaustion, fans or furnaces." The next session of this institute will be held in Pittsburgh in June next.

It is reported that the coming week will be opened with more labor disturbances in the Mahoning and Shenango Valleys. Puddlers expect a reduction which will bring their wages to a level with the price paid in non-union mills—viz., $4 per ton. Pittsburgh manufacturers whose puddle mills are operated on a union basis declare that they do not intend to make such a demand for the reason that the small quantity of muck bar being produced cuts but a slight figure in their total output. In other districts where but little steel is used operators find it necessary to get a lower rate for puddling so as to compete successfully with the non-union mills, which are the largest producers of muck bar and merchant bar iron, consequently a general reduction is talked of and considered certain. So far consideration of the matter has been confined to Pittsburgh and Eastern Ohio.

The ordering of several more United States war ships to Rio indicates the determination of the Government to protect commerce and American interests in that troubled seaport.

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The Iron Age

New York, Thursday, December 28, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Passing of 1893.

Within a few days the books for 1893 will be closed. The balance then struck will be satisfactory to very few business men. But it can hardly be said that they will be disappointed, as the year opened with rather gloomy prospects and a general apprehension of troublesome times. There were some to be found in almost every branch of the iron trade who refused to take counsel from their fears and persistently looked for better times, but they were without influence, and as the months rolled by their belief in an improvement also grew weaker. It may safely be said that the experience of 1893, in its percentage of shrinkage in the volume of business from that of the preceding year, has broken the record. Never before was there such a rapid reduction in the demand for iron and steel. From the crude material to the most highly finished products the curtailment of business was without precedent. The natural concomitant of such a condition of affairs was a thorough demoralization of prices. Values have tumbled lower than in any previous period of depression, and for some time the question of profits seems to have been eliminated from transactions.

From the beginning of the year until now there has been a constant succession of failures among manufacturers and iron and steel merchants. Great establishments, supposed to have almost unlimited resources, have been swept from their rock-rooted foundations by the rising tide of disaster, together with an almost uncountable number of small concerns whose capital was sufficient for ordinary conditions, but could not withstand the terrible strain of so severe a financial panic as that of 1893. Honored names, that have been respected for many years as synonyms for stability and sagacity, are frequent on the rolls of the bankrupt for this year. Assets that were not capable of immediate conversion into cash have been no better than worthless paper in meeting the demands of creditors, and many sound business men have for the first time realized how suddenly riches can take wings. Prosperous communities, that have thriven wonderfully in the bright sunlight of the prosperity with which this land had been blessed for so many years, have been prostrated by the blight which has overtaken their manufacturers. They have been transformed from wealth-producing hives of industry into settlements of paupers, appealing for relief to the citizens of other localities who are themselves struggling with the problem of caring for the unemployed thronging about their own doors. The public soup-house, which has only been known at rare intervals in American history, has become an institution in every city and in most of the large towns. Starvation threatens many a man of brawn and brain who is willing and anxious to work but is unable to find employment. This is the picture which 1893 leaves on the canvas that records the procession of the years and the birth of epochs.

But, leaving this dismal subject, what of the future? Will 1894 bring better times? Common sense argues in the affirmative. There is, of course, no magic in mere numerals, and the writing of 1894 will not in itself bring a change in business. But we have faith that the worst is over, and that the experience of 1893 will neither be repeated nor even rivaled for years to come. The revival of prosperity may be impeded by unwise legislation, but it cannot be completely checked. The business interests of the country are on the way to recovery, and they will eventually completely recover. As spring approaches the ranks of the unemployed will be drawn upon by establishments that are even now endeavoring to get matters into shape so that a start can be made as soon as prospects are favorable for business. Men of enterprise, through whose ambition or unrest other men find employment, will undertake new ventures, as before, and timid capital will come out of its hiding place at their seductive call. Although 1893 may expire with leaden skies and frozen streams and a pall of snow covering all vegetation, the sun will again shine in 1894, the water will run, the grass will grow, and men will imbibe fresh courage and attempt greater achievements than the past can boast.

Steel for Railroad Ties.

One of the fallacies which seem to possess a very tenacious life is that cheapness of any staple article must necessarily be reflected in a rapid increase in consumption. Too many business men and manufacturers expect the effect of low prices to tell almost immediately. As a matter of fact, it takes a very considerable time until a new material or a new article overcomes prejudice and finds a widening use. Probably one of the best illustrations of this was furnished by the history of nickel. When powerful interests took hold of the deposits of Noumea they greatly increased the production, hoping to stimulate consumption by a marked lowering in the price. They simply found, in the first few years, that they were accumulating an unprecedented stock. In recent years the opening up of the Sudbury deposits led to further reductions in price, and yet the consumption has not developed in proportion. Had it not been for the electrical developments copper would have gone through very much the same experience.

We admit, of course, that ultimately consumption is very largely increased as the effect of low prices, but we contend that its development is far from being as rapid as many expect. We are led to call attention to this experience since the hope is being expressed, as a modest compensation for the sufferings which the iron trade is going through, that steel will rapidly capture new fields and that we shall experience a growing *per capita* consumption. There can be no doubt that that is sure to come, but it is well not to be too sanguine.

Among the uses in which cheap steel seems destined to open new channels is conspicuously that for railroad ties. The American iron trade has been pretty indifferent to this subject thus far, for very good reasons. It was all very well for the advocates of steel ties to figure out that there was economy in their use, considering their longer life and their ultimate value as scrap. The fatal objection thus far has been their excessive first cost, which few American railroads had the financial ability to meet. That objection, however, is now gradually disappearing with the unexpectedly great decline in the price of soft steel. Probably steel sleepers could be produced to-day in certain sections of the country at, say, 1.5 cents per pound, finished. The production of this class of material has been a source of a very large tonnage to European steel mills, and might become valuable to some of our large plants which are suffering from lack of work, present or prospective. The users of steel ties could avail themselves of the long experience of railroads abroad, so that they would not be hampered by a protracted period of experimenting. We believe that the time is approaching when steel makers and railroad managers alike should carefully look into this important subject.

The phenomenally low panic prices at which iron and steel, crude and manufactured, have sold during the last month have made it possible to do some export business. We have covered the bulk of the requirements of such countries with which we are on favorable terms through our reciprocity arrangement. This is notably the case with Cuba. But in other lines, too, we have captured a little trade. In cast iron pipe our merchants have been able to figure on such contracts as 8000 tons for Mexico and 15,000 tons for Japan, with a very good chance of taking the business. Our modern pipe foundries have excellent methods of handling material and product, and now, with an exceedingly low cost of pig iron, notably in the South, they are in a position to make very attractive prices. They are being aided in some instances by the transportation interests, who are doing their

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share to bring work into this country. While it would be a gratifying thing under present circumstances to capture a few foreign contracts, it will not do to regard them as the harbingers of regular business. On the contrary, it is devoutly to be hoped that our home markets will again soon get into a sufficiently remunerative shape to enable us to abandon efforts in foreign countries whose business we can only secure by submitting to panic prices for manufacturers and starvation wages for labor.

CORRESPONDENCE.

The Kihlafors Iron Works.

To the Editor: In E. C. Potter's flattering and favorable article in your valued journal about Swedish iron, and especially the Swedish iron and steel exhibits at the World's Fair, for which I and the Swedish iron and steel manufacturers feel most grateful, occur some statements about the Kihlafors Iron Works which surely have been given to Mr. Potter at the fair by some person not well posted on Kihlafors manufacture. As those statements may be somewhat disadvantageous for Kihlafors Iron Works I herewith humbly venture to make the following corrections:

Kihlafors Iron Works products consist of pig iron, gray, mottled and white, with the trade-mark R-W-n, and of this pig iron is wrought iron with the trade-mark (·R·) W-n manufactured.

Their products have been exported principally to England, but also to Germany and other countries. The pig iron has been used for making Bessemer and open hearth steel, and the wrought iron for manufacturing the finest crucible and cement steel, for which it is considered very suitable on account of its purity, homogeneousness, density and toughness. The percentage of sulphur in the pig iron varies between 0.01 and 0.015, and phosphorus between 0.026 and 0.028. The percentage of sulphur in the wrought iron varies between 0.005 and 0.007, and the phosphorus between 0.023 and 0.024. The price of the pig iron is £5 and the wrought iron £12 per ton, free on board ship at the port of Söderhaum, Sweden. Kihlafors Iron Works' products have been awarded the highest prizes at the exhibitions at Paris, 1855 and 1867, at London, 1862, at Stockholm, 1866, at Philadelphia (Jernkontorets Collective Exhibit), 1876, and at Chicago (Jernkontorets Collective Exhibit).

ERIK G. SON ODELSTJERNA.
FILIPSTAD, SWEDEN, November 30, 1893.

The following rate of wages is now being paid at the works of the Martin Coke Company, at Fairchance, Pa., in the Connellsville region: Mining heading coal, 85 cents per 100 bushels; mining room coal, 75 cents per 100 bushels; haulers, $1.60 per day; trackmen, $1.60 per day; day labor, $1 per day; drawing coke, 40 cents per 100 bushels; leveling, 7½ cents per oven, and all other work in proportion. It is estimated that these rates are about 35 per cent. below those paid under the scale of the H. C. Frick Coke Company, which expires on January 31, 1894.

Washington News.

(*From our Special Correspondent.*)

WASHINGTON, D. C., December 26, 1893.

The majority members of the Ways and Means Committee who have remained here during the Christmas holidays do not seem to feel any apprehension as to the result of their parliamentary contest in defense of their bill in the House.

They propose to begin the debate next week and bring it to an early finish. Both sides will have a fair chance for discussion. After the record has been made in general debate and the amendatory stages under the five-minute rule are carried to a reasonable extent the vote will be taken.

The effort to organize an opposition within the ranks of the majority under Bourke Cockran is not without considerable strength, but whether it can be brought up to a point where success might be possible will not be definitely known until the House reassembles.

There has been some expectation that the Northern Representatives of the majority during their visits among their constituents might learn some facts of the situation which might stiffen their views sufficiently to co-operate in a movement to materially amend the bill in Committee of the Whole, but from present indications there will be no changes in the House except with the approval of the majority of the committee in charge, and these are not likely to be important. The objection which most of the majority raise against the bill is not as to the rates, but the abnormal conditions upon which it is framed. They do not favor a bill which cuts off about $60,000,000 of revenue from customs which has to be made up from direct taxation from internal sources.

They claim the platform upon which the majority are operating demands a Tariff for revenue, which is not the character of the bill which has been reported from the Committee on Ways and Means. It is not probable, however, that this will make much difference at this stage of the contest.

The discussion in the House from present indications will be purely on partisan lines, the local interests of constituencies controlling the views of individual Representatives. Whether these views can be crystallized into an organized opposition when the vote is taken is not probable from present appearances. There is a general feeling, however, among the majority in the House that when the bill reaches the Senate it will be taken up with less reference to politics, and will there be so amended and modified as to make it what party promises demand—a revenue tariff.

If the Senators who have expressed themselves as favorable to a very radical change in the bill, as reported from the Committee on Ways and Means, carry out their plans, coal will be restored to the dutiable list at about 45 instead of 75 cents a ton. Iron ore will also be restored at a low rate. The question of free ore, however, does not seem to be such a serious one to the Senators as free coal. It is claimed that American ores are so superior to the foreign that the latter will not come into competition more than at present for mixing purposes.

This question, however, will be settled to the full satisfaction of the Senate Committee before any action is taken.

The free lumber and salt will doubtless be allowed to remain, unless the States interested can form a combination with coal, iron ore and wool.

The item which shares with coal and iron ore the greatest strength in both Houses of Congress is wool. The advocates of free wool have not been so vigorous in their demands since they have found woolens subjected to a rigid cut with the rest of the dutiable items under the Ways and Means bill.

A careful canvass of the House reveals the fact that if the interests of iron ore, coal and wool can make common cause in the ranks of the majority, with the incidental aid of lumber and salt they would be able to control the situation and restore these items to the dutiable list, if not at the full rates of the existing duty, at all events at a compromise figure which would tide over the present crisis until the people can have an opportunity to take a dispassionate view of things and render their verdict accordingly. Whatever shall be done by the present Congress in the way of Tariff legislation will remain in force until another national election comes around three years hence. There are some who claim that the industries of the country by that time will have adjusted themselves to the new conditions and that the tariff as an issue will be eliminated from national politics. That remains to be seen if the opponents of the bill fail to defeat or modify it. The opponents of the tariff bill among the majority in the House are counting upon the New York, Alabama, Louisiana and Maryland Senators, with one each from New Jersey, Ohio and West Virginia, to put the measure in a less objectionable shape. But this at present is an uncertain quantity.

Senator Voorhees, who is chairman of the Committee on Finance, is disposed to be very conservative. He says we want a tariff bill which will yield revenue, not reduce it, and American industries, if not protected beyond the point of raising revenue, must at least be protected up to that point.

The committee, as they now talk, are disposed to be very fair in the matter of giving the manufacturers a chance to be heard in their own behalf. They are already in receipt of a mass of petitions and letters from every class of the people pointing out the inevitable derangement of business and industry if the bill before the House should pass.

The attitude of Senators Hill and Murphy is very pronounced against the bill in its present form. As they are not likely to be controlled except by the interests of the great State at their back, their opposition in the Senate is likely to produce results if possible.

The statistical documents which are being prepared under the auspices of the Ways and Means Committee do not strengthen their measure in the opinion of many of those who will have it to defend.

A table of comparisons showing an estimated loss of revenue of $65,407,000 condemns it in the opinion of many even of the majority, who insist that they promised the country a revenue tariff, which this is not. The duties under the metal schedules, it is shown, have been reduced from $20,526,000 to $12,631,000, and under other schedules in the same proportion.

The contest in the House will be short. The managers of the bill are still counting upon getting it in the Senate by February 1. It is generally conceded that the quicker it gets there the better, as the real tariff battle will be fought in that body.

The majority and minority reports of

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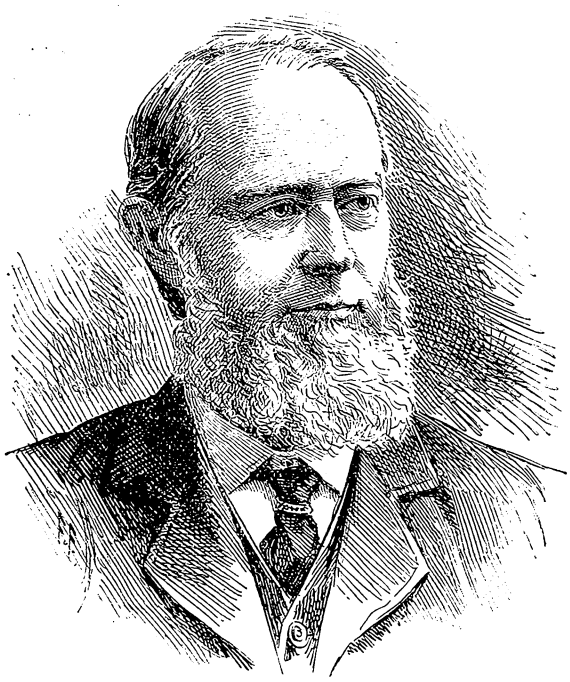
the Committee on Ways and Means on the bill as a rule find their champions on partisan lines. Outside of this there is little said on the subject. The reports are regarded as setting forth the position of the two great parties and the general line of support and opposition. The antagonism within the ranks of the majority will not be conducted on the lines of party or the reports, but from the standpoint of local interests.

OBITUARY.

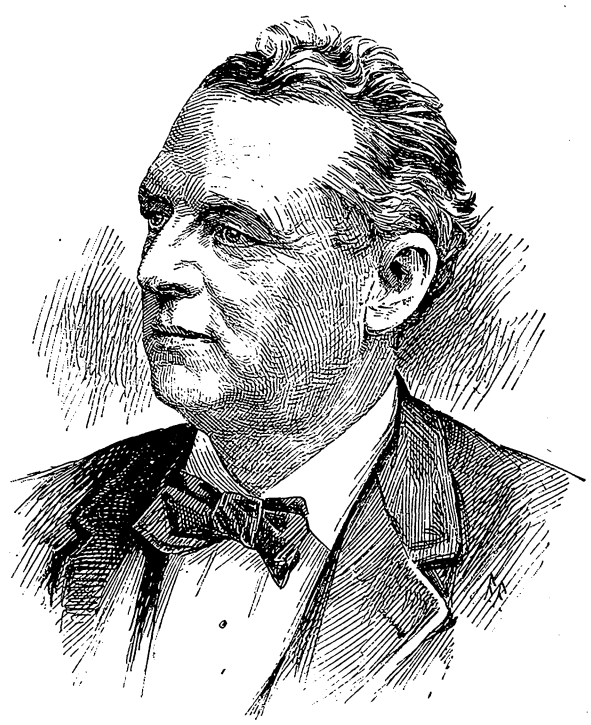
GEORGE H. BABCOCK.

STEPHEN WILCOX.

The death of George H. Babcock on December 16 and of Stephen Wilcox on November 27, happening so nearly at the same time, is a rather singular coincidence. They were intimate as boys, but as young men they were in different enterprises; when they reached full manhood they became associated in business, and by their ability, energy and perseverance revolutionized an important industry and succeeded in establishing the largest boiler manufacturing concern in the world.



GEORGE H. BABCOCK.



STEPHEN WILCOX.

Mr. Wilcox was born in Westerly, R. I., to which town Mr. Babcock removed when a boy from New York, and there they grew up together and formed that close friendship which continued through life. While a young man Mr. Wilcox became identified with the development of the steam engine, and his invention of a practical caloric engine really antedated that of Ericsson, both submitting their engines to the Light House Board, by whom they were to be used in operating a fog horn, about the same time. For several years Mr. Wilcox studied energetically the caloric, gas, and oil engines, probably spending more time and money on his experiments than had been spent before or since. As a result he became convinced that these methods of generating power were not practicable or economical except for small units, and that neither could hope to compete with the steam engine on even terms.

Mr. Babcock's early experience in business was in connection with woolen mills; he next started a newspaper at Westerly, which is now published, though under a different name. He was one of the first to practice photography, and through life manifested the liveliest interest in the work of the camera. He was the first inventor of the polychromatic press for printing several colors at one impression, and upon this press as a foundation all the present machines for printing in colors are built up. The first printers' bronzing machine was also a result of his ingenuity. He next entered the office of Thomas D. Stetson of New York, who had a large practice as a patent lawyer. Afterward he was connected with the Mystic Iron Company and the Hope Iron Works of Providence as draftsman. It was while at the latter place that he invented the system of cut off engine afterward known as the Babcock & Wilcox engine, the two men joining in business relations then for the first time. This engine was successful as long as the Corliss patents were in force, but as soon as they became public property competition reduced the price of engines, and as the Babcock & Wilcox engine was expensive to build the business was dropped. This was in the year 1866 or 1867.

Previous to this, in 1856, Mr. Wilcox invented the original of all the inclined water tube style of boilers, having a set of inclined water tubes connected with water spaces at their ends and to an overhead steam and water reservoir, through which there was a continuous circulation of water and in which a cross flow of the gases was established by means of diaphragms. This invention was perfected by both, and later by them and other engineers in their employ, and was the base upon which the business of the Babcock & Wilcox Company was built. In 1868 they came to New York to push their engine business, and arrangements were made by which they were built by the Hope Iron Works of Providence; by Morton, Poole & Co., Wilmington, Del.; Poole & Hunt, Baltimore, Md., and the C. & G. Cooper Company of Mount Vernon, Ohio. As above mentioned, this business fell through on account of the competition due to the free building of Corliss engines, and they started the New York Safety Steam Power Company, building small engines with the safety boilers. This was continued for a number of years, during which the manufacture of the boiler based on Mr. Wilcox's invention was begun, and it gradually assumed such proportions that in 1878 both withdrew from the active management of the Safety Steam Power Company to give all their time to the development of their boiler busines. This was continued as a firm up to 1881, when it was formed into a stock company. At that time Mr. Wilcox dropped out of active business life but continued making experiments on compound, triple and quadruple expansion engines at high pressure in connection with marine boilers, while Mr. Babcock remained at the head of the business and was active for a number of years.

Mr. Babcock was of a quick, decisive disposition, able to bring to bear on any subject all the knowledge he possessed in relation to that subject. He could readily and rapidly take up a new subject, and master it thoroughly in all its details. When he was 58 years old he took up the study of French and acquired the language sufficiently for all practical purposes for reading, writing and conversing, showing that his mental ability was strong at that time. He was like a mechanic with a modern set of tools, every one sharp and ready at hand for use.

Mr. Wilcox, on the other hand, was of a retiring disposition, well grounded and thoroughly equipped for reasoning out all mechanical problems, with a well balanced mind, singularly adapted

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to all kinds of mechanical experimenting and able to size up the results and reduce them to practice; though much slower in argument until he had thought a problem out, when he had once mastered it his arguments were clear, to the point and very convincing.

Mr. Babcock was a past president of the American Society of Mechanical Engineers, and they were both among the earliest members of the society, of which both were life members. Mr. Babcock was of a literary turn of mind, and possessed a forcible and clear way of presenting facts. He lectured a number of times at Cornell University on scientific subjects.

Mr. Babcock was a prominent citizen of Plainfield, N. J., to which place he went to live in 1873, and he had been president of the Board of Education since 1885.

Mr. Wilcox was a valued citizen of Westerly, R. I. The people of that place wanted to erect a soldiers' monument, but Mr. Wilcox suggested that a library be erected instead, his argument being that the latter would be of practical benefit to the people. He got the citizens interested in his scheme, and they donated a small sum toward the project, when Mr. Wilcox stepped forward, bought a lot and contributed a sum sufficient to insure the erection of a substantial and creditable structure. The building, which is now in process of erection, will contain, besides the library, lodge rooms for two G. A. R. posts, and the basement a gymnasium for the boys of the town.

The Babcock & Wilcox boiler was brought to its present development by the persistency and courage, at the outset, of the two men who have just passed away in embodying their own ideas in it and in using the thoughts of others where they could be adopted with profit. They lived to enjoy the fruits of their labors to a greater degree than is given to most men and have passed away in the prime of life, regretted by those whom they have left.

C. M. HOPKINS.

C. M. Hopkins died at his residence in this city, suddenly, December 26, of acute rheumatism. He was ill but a few days, having been at his place of business, 64 Reade street, New York, as late as December 22. He was best known to the hardware trade South, where he represented six or seven manufacturing concerns as selling agent in that territory, among which were the Mallory Wheeler Company and Hermann Boker & Co. He was very popular with his associates and customers, and is referred to by merchants as having been thoroughly informed in his business, of excellent character, and loyal in friendships. He was born in Charleston, S. C., about 48 years ago, and after the Rebellion, where he served as an officer in the Confederate army, he was employed by Moritz & Keidel, Baltimore, Md., afterward with S. A. Haines Company, New York. His remains will be taken to Baltimore, December 28. where the services will be held.

As we go to press the death of Sidney Shepard of Sidney Shepard & Co., Buffalo, N. Y., is reported. We defer until a later issue reference to his business career, and the prominent position he has long occupied in the lines with which he has been actively identified.

Preparations for the Midwinter Fair at San Francisco have so far advanced that an admission fee is now charged to the fair grounds.

THE WEEK.

The general dearth of employment throughout the country is causing an extraordinary outflow of foreign laborers by the eastbound Atlantic vessels. The immigration authorities at Ellis Island, N. Y., report that their office is besieged daily by destitute aliens who, unable to obtain the means of livelihood in the United States, are urgent to be returned to Europe at the Government's expense. These applicants are mainly Italians and Hungarians, some of whom have tramped hither on foot all the way from Chicago and other distant points.

Chauncey M. Depew, who has just returned from a flying trip abroad, describes the commercial and industrial depression on the other side of the water as being equally acute with that of the United States. He says that "the universal complaint all over Europe is bad business. Nothing like it has been ever experienced. They all feel and look poor, and the number of unemployed is unprecedentedly large."

Buffalo's annual statistics of commerce, recently published, show that the present year has broken all previous records in the volume of the lake grain traffic as well as in the low cost of transportation. The grain receipts of the port amounted to 187,235,160 bushels, or 6,000,000 bushels more than those of 1892, and nearly thrice the total annual receipts of ten years ago. The freight rates for 1893 averaged 1.7 cents per bushel, the lowest in the history of lake commerce.

Governor Fishback of Arkansas has written to the President urgently complaining that the Indian Territory is a hotbed of criminals and outlaws, especially of train robbers, who there lay their nefarious plans and there seek refuge when those plans are consummated. He asserts that the Territory is a constant menace to the neighboring States, and the existing judicial conditions favor the continuance of these evils. The Governor wants the United States to assume complete jurisdiction over the Territory as the only remedy.

Statistics published by the *Railway Age* show very forcibly how disastrously the panic of the past year has operated in the railroad industry. The presentation shows that 71 roads, with a mileage of nearly 23,000 and an aggregate capital of about $1,300,000,000, have gone into the hands of receivers, three-quarters of them having assigned in the last half of the year.

A joint committee of three United States Senators and six Representatives will visit Nicaragua shortly to inquire into and report to Congress upon the material and political aspects of the canal enterprise.

The Walter A. Wood Mowing & Reaping Machine Company, a corporation organized under the laws of New York, but owning and operating a large establishment at St. Louis, have filed a mortgage to the United States Trust Company of New York, to secure $2,000,000 6 per cent. 12-year gold bonds, dated December 1, 1893, and maturing December 1, 1905. The mortgage given to secure the payment of these bonds covers all the buildings, machinery, fixtures, railroads, rolling stock and industrial plants owned by the company in all parts of the country.

MANUFACTURING.

Iron and Steel.

The Massillon Rolling Mill of Jos. Corns & Son, Massilon, Ohio, was closed down last week for an indefinite period on account of lack of orders. One hundred and seventy-five men are thrown out of employment by the suspension.

We are advised that the report that Philadelphia capitalists were about to purchase the plant of the Dunbar Furnace Company, Dunbar, Pa., is untrue. No. 2 stack of this concern is now being prepared for blast, and will be put in operation as soon as possible by the present owners.

Mabel Furnace of Perkins & Co., Limited, at Sharpsville, Pa., after an idleness of four months, has again resumed operations.

Some excellent records for production have recently been made in the Bessemer steel plant of the Bellaire Nail Works, Bellaire, Ohio. In one day recently over 500 tons of steel was turned out, and this amount was very little above the average for the entire week during which it was made.

When in full operation the plants of the Cambria Iron Company and the Johnson Company, both of Johnstown, Pa., give employment to about 7000 men. At the present time both these establishments are employing about 6000 men, showing that less than 1000 men are idle. Official notice has been given that Series A of the Johnson Company bonds will be redeemed at par on January 10, by the Citizens' National Bank, Johnstown, Pa.

About January 1 the Amalgamated Association of Iron, Steel and Tin Workers, at Pittsburgh, will be notified by the iron manufacturers of the Mahoning Valley that they will demand a reduction to $3.75 per ton for boiling, which is $1 less than the rate agreed upon in the scale adopted about November 1. This proposed reduction is justified on the grounds that non-union mills in Pittsburgh and at other places are paying less than $4 per ton for boiling. If the proposition to reduce the price of boiling in the Mahoning Valley mills is carried out, it will probably not go into effect before April 1, 1894, as under the terms of the scale agreed upon three months' notice must be given by either side before a change in the rates of the scale can be made.

A meeting of the stockholders of the Columbia Iron & Steel Company of Pittsburgh, with works at Uniontown, Pa., will be held at Uniontown on December 28 for the purpose of electing a new board of directors. A short time after this election occurs there will be a meeting of the newly elected directors to elect a president, secretary, treasurer and other officers.

The Muncie Muck Bar Company recently organized at Muncie, Ind., and now operating the plant of the Muncie Nail Company at that place, are now turning out a daily average of 25 tons of muck bars.

Jeremiah A. Long of Akron, Ohio, recently appointed Receiver of the Akron Iron Company, has taken charge of the branch offices of that concern located in New York, Boston and Philadelphia. At the Philadelphia branch it was found that the assets amounted to between $50,000 and $60,000, while the liabilities were less than $200. It is stated that the other branch offices also made excellent showings.

Last week notices were posted in various places at the Homestead Steel Works, Homestead, Pa., stating that the readjusted scale would be ready for signature on December 26, at 10 a.m. The new scales were left with the superintendents of the various departments. The notices state that all the tonnage employees desiring work under this scale must sign the same before Saturday, December 30, 1893, otherwise their positions will be filled by others. It is claimed that the revised scale affects only the wages of the tonnage men, and these have been expecting a reduction when the new scale was presented. The general impression, based by the men upon the aggregate tonnage earnings, is that in some positions the reductions will be equivalent to 40 per cent.

Furnace No. 2 of the Sloss Iron & Steel Company of Birmingham, Ala., whose rated capacity is 100 tons a day, made an

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excellent record in the first week of December. The output was as follows: December 1, 170 tons; December 2, 162; December 3, 162; December 4, 171; December 5, 186; December 6, 172, and December 7, 181, a total of 1204 tons. Of this, all was foundry except 61 tons. The average daily output was 171 tons. The previous past week's record averaged 140 tons per day. The Sloss Iron & Steel Company are preparing to put their No. 1 Furnace in blast.

David B. Dewey of Chicago, the recently appointed receiver of the Minnesota & Wisconsin Railway and the Wisconsin Iron & Lumber Company, says that any statement that, even by implication, included the Eagle Furnace Company of Spring Valley, Wis., in the receivership was entirely wrong. The Eagle Furnace Company is a corporation independent of the corporations included in the receivership. It is in no way affected by the appointment of a receiver, except to be materially benefited, as the receiver will be able to carry out contracts in existence between the furnace company and the corporations under his control, by which the furnace company will be supplied with ore, charcoal and shipping facilities that will make it a prosperous operating industry. The furnace company is under highly skilled management, and the iron made from this ore is of a superior quality. The receivership of the railway and Wisconsin Iron Company is the result of a mutual understanding between Senator Sabin, the principal owner of the corporations, and the creditors, through which capital to develop and conduct the business has been arranged for, the ultimate object being the reorganization of the companies upon a substantial footing. The bondholders and creditors generally believe in the value of the properties, which through the lack of capital have not been developed.

Another tin plate works is projected at Elwood, Ind. The promoters are I. L. Morris of Chicago, Edwin Stevens of Cincinnati, and E. Levy of Elwood. Mr. Morris was formerly superintendent of the sheet mills of the Corning Steel Company. They have organized a company with a capital stock of $300,000, and propose to erect a rolling mill to roll black plates and to manufacture 2500 boxes per week. They announce that work on the buildings will begin at once.

We can now state upon good authority that the Irondale Steel & Iron Company, whose works were recently burned down at Anderson, Ind., will build a new plant at Middletown, notwithstanding contrary reports. Machinery not too badly damaged during the fire will be removed to the new location a few miles distant, and used in connection with such new parts as may be necessary. The plant will not be as large as originally intended, but it will be constructed in a manner that will admit of extension whenever the state of trade warrants such a course of action. The product of the new works will be iron and steel sheets of the lighter gauges.

William F. Bonnell, formerly manager of the Hubbard Iron Company, Hubbard, Ohio, and a number of old employees of that company are endeavoring to form a corporation on the co-operative plan to operate the rolling mills at that place, which have been idle for some time. To increase the working capital workmen have agreed to leave part of the earnings in the treasury of the new company. The merchants of Hubbard have agreed to accept pay orders. The plant is in good condition and ready to commence operations as soon as organization is perfected.

The part of the Ætna Standard Iron & Steel Company's plant at Bridgeport, Ohio, known as the Standard Mills, was operated to its full extent on Wednesday of last week. This was the first time such a state of affairs had existed since the June shut down this year. Operations were resumed again Tuesday of this week. In the Ætna department about one-half the plant has been operated.

The American Sheet Iron Works and the Phillipsburg Stove Works, both at Phillipsburg, N. J., closed down on December 23 to be idle ten days.

The Dover Iron Company, Dover, N. J., have suspended operations for an indefinite period. The works started about three weeks ago.

The Sargent Company, manufacturers of iron and steel castings, have opened a city office in room 519 Western Union Building, Chicago. Their steel castings department suffers from lack of trade at present but the iron department is doing a comparatively good business. They are deeply interested in the tests of brake shoes now about to be undertaken by the Master Car Builders' Association. The tests will be made on eight different railroads as well as in a number of shops. The company welcome these tests in the confident belief that the brake shoes which they manufacture will come out with flying colors.

The puddling department of the Elmira, N. Y., Rolling Mills have been shut down for the holidays. The plate and merchant mills are, however, still in operation.

At the nail works of the Ellis & Lessig Steel & Iron Company, Limited, Pottstown, Pa., the nailers will be subjected to a 15 per cent. reduction, and the other employees in the nail department will be reduced 10 per cent., to take effect January 1.

The Mahoning Rolling Mill Company, at Danville, Pa., have gone into the hands of a receiver, in the person of A. S. Patterson, its president. The liabilities are said to be $324,000, and the assets, $332,000.

The plant of the Clinton Iron & Steel Company, at Pittsburgh, manufacturers of iron and steel plates, has been in operation to nearly full capacity since the middle of September last. If possible to do so it is the intention of this firm to operate continuously through the winter months, with the idea of offering employment to as many men as they can.

The Ellwood Shafting & Tube Company, Ellwood City, Pa., have recently secured a contract for a large quantity of seamless steel tubing to be used in torpedo boats now being built by the Government.

Machinery.

The Lidgerwood Mfg. Company, 96 Liberty street, New York City, have received word from Smyth & Munford, Point Pleasant, W. Va., of the completion and satisfactory test of the largest Locke-Miller cableway in existence. The span, which is 1505 feet 6 inches long, is erected over the Kanawha River, and so high that steamers pass underneath it at even the highest tides. The main cable is 2½ inches in diameter, and the load carried is 4 tons. The cableway spans the lock and dam which Smith & Munford are to build in the river, and the quarry from which they receive their stone.

There is a strong probability that the works of the defunct Northwestern Car & Machine Company, at Oshkosh, Wis., will pass into the possession of the Chicago & Northwestern Railway Company.

The Sparta Iron Works, at Sparta, Wis., are now under the management of a stock organization entitled the Sparta Iron Works Company. L. M. Newbury and his son Carl Newbury, together with J. U. Durant, constitute the new firm. They will have increased facilities for doing work in their line, which includes not only foundry work but well drilling machinery and all apparatus connected therewith.

The Marinette Iron Works Company of Marinette, Wis., and Duluth, Minn., by a unanimous vote of the stockholders has gone into voluntary dissolution, affecting both the works at Marinette and West Duluth. The business will go on uninterruptedly as before. The directors will act as trustees and legal administrators.

E. Munroe & Son, boiler manufacturers of Pittsburgh, have a contract for furnishing two 150 horse-power water tube boilers for the new pumping station now being erected by the Monongahela Water Company, at McKees Rocks, Pa.

At the plant of the Hubbard Foundry & Machine Company, Hubbard, Ohio, the only department in operation is the foundry department, which is running on a large order for sinks.

The works of the Cleveland Twist Drill Company, Cleveland, Ohio, will be closed down during the holiday season. This is the usual custom of this firm, and during the shut down an inventory is taken and the usual necessary repairs are made. These works have been running full time, but with a reduced number of hands. The concern have a large stock of goods on hand, and will fill all orders promptly during the time their plant is closed.

A scheme is on foot to establish a $30,000 machine shop and foundry at Boyertown, Pa.

The Berry & Orton Company, manufacturers of wood working machinery at Philadelphia, Pa., have made an assignment for the benefit of creditors. It is believed that the liabilities will not exceed $50,000, and that the assets will show a good surplus. The concern started business in 1869 and have never been known to suffer from financial difficulties before.

After January 1, 1894, J. W. Parker & Co., 41 North Seventh street, Philadelphia, who have represented the Ball Engine Company of Erie, Pa., in that city for some years will also act as their representatives in New York City for the sale of Ball engines.

The Helping Hand Engine Company, New Brighton, Pa., have been granted a charter of incorporation. The directors are as follows: Erastus E. Pierce, Walker De Crouch, Frank L. Smith, S. Merrick and J. Frank Mines, all of New Brighton, Pa.

The Westinghouse Electric & Mfg. Company of Pittsburgh have declared the usual semi-annual dividend of 3½ per cent. on the preferred stock, payable January 10, next.

The Fulton Truck & Foundry Company, recently organized at Mansfield, Ohio, have elected directors as follows: C. J. Langdon, W. E. Haycock, Reid Carpenter, R. G. Hancock, M. B. Bushnell, S. N. Ford and W. S. Cappeller.

It is reported that the New Albany Steam Forge & Rolling Mill Company at New Albany, Ind., will resume operations next month after a shut down of over three years.

The Smith & Anthony Iron Foundry at Wakefield, Mass., employing about 200 hands, has closed down indefinitely.

The Lake Shore Iron Works of Marquette, Mich., successfully cast a 60,000 pound fly wheel on the 16th inst., one of the largest castings ever made in the history of that foundry. The wheel is for the pumping engine of the Salisbury mine.

The men employed in the foundry of S. L. Moore & Sons Company, at Elizabethport, N. J., went on strike because some of them were asked to work overtime without extra compensation. The foundry was shut up and the firm posted a notice that work would be resumed with a reduced force and at reduced wages.

The Warren Foundry & Machine Company of Phillipsburg, N. J., closed down December 23 to remain idle until after January 1. A reduction in wages has been announced.

The Cleveland Machine Screw Company of Cleveland, Ohio, announce that the fire which visited their finishing department December 17 is not so serious as reported. They will have no difficulty in repairing the damage at once and expect to be in full operation in the course of a week or ten days.

R. D. Wood & Co.'s pipe and hydrant works at Burlington, N. J., have closed down indefinitely. About 450 men were employed. A member of the firm is stated to have said that Southern iron works have underbid them on several large contracts, so that the plant was forced to close down on account of lack of business. The company's works at Camden and Millville are still running.

The boiler works of the National Water Tube Boiler Company, at New Brunswick, N. J., employing about 100 hands, have made a reduction of 10 per cent. in wages.

Hardware.

The Eagle Mill of the American Screw Company, Providence, R. I., closed down December 19 for an indefinite period. The falling off in the demand for the company's goods has compelled them to reduce their production. Their force of employees has been materially decreased, while the number of working hours has also been reduced. The company had been expecting to resume their usual schedule January 1, but the proposed Wilson tariff bill makes this unadvisable.

At a meeting of the employees of the J. R. Torrey Razor Company, Worcester, Mass., on December 18, Thomas Scales and Joseph Booth were chosen to go to Washington and protest on behalf of the men against the adoption of so much of the Wilson tariff measure as relates to the duty on razors.

The Howe Scale Company, Rutland, Vt., shut down on December 23 for two weeks, during which inventory will be taken.

The proprietors of the Universal Plow Works, Wooster, Ohio, have given notice that their works will be started on January 1 after a three months' shut down. Notice of a reduction of 25 per cent. in

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wages has also been given. The molders employed by the firm, at a meeting held to consider the matter, decided to refuse to work at the scale offered.

The New Britain Hardware Mfg. Company, New Britain, Conn., have commenced to run six days a week.

The rise in the river has had a very satisfactory effect on the Wheeling nail trade, allowing the mills to clean up their warehouses for the first time in many months. The Laughlin Nail Company are running again after an idleness of six weeks. The La Belle Iron Works are also running full. The two mills give employment to about 1500 hands.

The Howe Scale Company, Rutland, Vt., as assignees of Samuel T. Brady of the same place, inventor, have been granted two patents, one for a platform scale and one for a scale beam.

The Woodbury Whip Company have been incorporated, and have acquired and will continue the whip manufacturing business of Woodbury & Co., Rochester, N. Y. The capital of the company is $150,000. The directors of the company are as follows: John C. Woodbury, J. Wesley Kingston and Charles E. Crouch, all of Rochester.

The True Mfg. Company have been organized at Portland, Maine, for the purpose of manufacturing hose nozzles, couplings, axles, files, wrenches, &c. The capital stock of the company has been fixed at $50,000. Oscar D. Thomas of Brockton, Mass., is president of the company, and Geo. W. Jeffrey, also of Brockton, treasurer.

The plant of the Putnam Nail Company, at Neponset, Mass., was slightly damaged by fire on the morning of the 20th inst. The damage is estimated at $5000. The origin of the fire is unknown.

Bateman & Meany's shear factory in Brookfield, Conn., was robbed of $200 worth of shears on the 17th inst.

The plant of the Cleveland Machine Screw Company, Cleveland, Ohio, was badly damaged by fire on the afternoon of the 18th inst. The factory is a three-story brick building. The blaze was first discovered in the third story of the north wing, and some time elapsed before an alarm was sent in. When the fire apparatus arrived the whole of the upper story was in flames. A second fire alarm was sounded and additional engines responded. By the splendid work of the firemen the flames were confined to the upper floor of the factory. The loss is estimated at $10,000. Repairs will commence at once, and the works will be started up again as soon as possible. The fire was the means of throwing about 100 men out of employment.

The new factory of the McKay Metallic Fastener Company, at Winchester, Mass., is nearly ready. The new shop is built of brick, stone and iron. The main building is 100 x 70 feet and four stories high. An addition will contain the blacksmith shop and other departments. A 200 horse-power engine has just been placed in position and will furnish the power requisite for the operation of the plant. The new shop will supersede the shop now operated at Lawrence, Mass., and many of the machinists who live in that place will remove to Winchester, where houses are being erected to accommodate them. The factory is located on a 15-acre site about 1 mile from the center of the town and on the main line of the southern division of the Boston & Maine Railroad. A station will be erected near the works and the schedule will be so arranged as to permit certain trains to stop there.

As noted in our last issue Wueth Hardware & Mfg. Company, St. Joseph, Mo., will by January 1 be settled in their new six-story premises, 609 to 621 North Second street. At this new location the company will have exceptional facilities in the way of railroad side tracks and switches. Tracks extend into their building, which will enable them to load three cars at one time. They can also unload three or four cars at rear of the building and as many more on the track at the north side of the building. The first floor and basement of the building, which is 130 x 140 feet, will be used for the storage of staple and package goods, such as nails, barb wire, tin plate, &c. On the second floor will be counting and general shipping rooms. The floors above will be used for general storage. The building will be fitted with electric light, electric call bells, speaking tubes and other modern labor saving devices. The company will operate their own electric light and steam plants. By this move the manufacturing interests of the company have been concentrated at 302 and 308 North Second street, while a part of their old premises on Third street will be retained for storage of goods out of season. Notwithstanding the general depression in all lines the past few months the company advise us that they have made preparations for a vigorous campaign the coming year, and will start out January 1 with 35 traveling representatives—22 in hardware, 3 in cutlery and 10 in saddlery goods.

The Bath Harness Company, Bath, N. Y., have purchased the plant and good will of the Fred Moris Company, including their stock of harness, horse collars, &c., and will continue the business, making the same line of goods with the exception of a few changes in the harness, which will enhance the quality and style.

The Ludlow-Saylor Wire Company, St. Louis, are closing the year with a full order book in their art metal department. They are making a number of directory frames for the new 14-story Union Trust Building, St. Louis, and also a number for the Realty Building; also a lot of artistic stair rails for the residence of Fred T. Lock, Birmingham, Ala., and a stair and floor rail for the Eddy office building, Bloomington, Ill.

The H. P. Nail Company, Cleveland, Ohio, advise us that while they have shut down their works they are still doing business as heretofore. They state that they have a good stock of nails on hand, so that they are in a position to take care of such orders as are received from the trade.

Miscellaneous.

On the 13th inst. Judson A. Wann was appointed receiver of the Sun Vapor Light Company of Canton, Ohio. The assets of the concern are said to conist of lighting contracts in various cities, which are regarded as valuable if completed, but on which little would probably be realized if sold at forced sale. The real estate, machinery, &c., of the concern are estimated to be worth $50,000, and the bills receivable and amounts due on contracts at $100,000. The company have a plant at Canton, where lamps are manufactured, and have 72 branches in 15 States in cities where lighting contracts are carried. It is intended, if possible, to make arrangements to continue the business, as it is realized that a shutdown at this time would cause large shrinkage in the principal items of assets. The leading stockholders of the company are members of the firm of C. Aultman & Co., who have also gone into the hands of receivers. The petition for receiver asks for a sale of the plant.

The Manufacturers' Natural Gas Company of Pittsburgh have declared the regular quarterly dividend of one-half of 1 per cent.

About 60 employees of the Sewall Steel Shipbuilding Company, at Bath, Maine, went on a strike because non-union men were employed. The company maintain their right to employ whomsoever they may desire.

The Gilbert Hunt Mfg. Company, with a capital stock of $60,000, have been incorporated at Walla Walla, Ore., to engage in the manufacture of threshing machines and other farm implements.

The Bignall Mfg. Company, one of the largest iron works in the western part of New York State and favorably known throughout the country, closed their doors the night of December 15 for an indefinite period. W. B. Robbins, treasurer of the company, says that owing to the present hard times it is impossible for the concern to continue business, but that up to the time of closing the works had been running on full time and employing the usual number of men.

The Cox Brass Mfg. Company of Albany, N. Y., have elected the following directors for the ensuing year: P. Wendell Parke, John Cox, A. B. Brown and P. F. Gaynor.

The Fort Plain, N. Y., Axle Works have resumed operations after a long shutdown.

The Norwegian Plow Company of Dubuque, Iowa, are erecting an important addition to their buildings. The new structure will be used for a warehouse and offices. A railroad track will run into the building, so that shipping can be done under cover.

Negotiations are pending between Kansas City capitalists and John Wilson of Rock Island, Ill., for the erection at Kansas City of a large plant for the manufacture of agricultural implements.

A factory for the manufacture of metal wheels is to be built at Moline, Ill. It is announced that Deere & Co. and the Deere & Mansur Company, manufacturers of agricultural implements, have arranged for a factory for the manufacture of metal wheels, of which each of the two companies uses a large number annually. They expect to put up a building early in the spring.

Among recently authorized corporations in Illinois are the following: Crystal Machine Company, Chicago; capital stock, $100,000; incorporators, Peter Douglas, Zenas F. Ringer and Harry A. Riddle. The American Gravity Company, Chicago; to make clocks, motors, &c.; capital stock, $1,000,000; incorporators, Henry J. Olney, Samuel L. Smith and Joel L. Squier. Ruble Pressure Blower Company, at Chicago: capital, $1,000,000; incorporators, Peter Hartford, J. L. Hughes and Edgar M. McGauley. The Ruble Blower Company, at Chicago; capital stock, $1,000,000; incorporators, D. J. McMahon, William P. Blue and C. B. Ware. Western Metal Company, Chicago; capital stock, $10,000; incorporators, W. C. Carpenter, Peter Carpenter and J. M. Heath. The National Cutlery Company, with a capital stock of $75,000, were organized at Rockford, Ill., last week. The new company will employ 200 men at the start, and will, it is said, make cutlery by an improved labor saving machine.

Articles of incorporation have been filed by the Williams General Mfg. Company of St. Paul, Minn., with a capital stock of $10,000,000. The business includes the manufacture of electric motors, aluminum wares and the Dent telegraph typewriter. The incorporators are D. H. Kent of St. Paul Park, president, and A. A. Price, vice-president; F. M. Johnson, secretary; P. L. Utley, treasurer, and C. J. Backus, all of St. Paul.

The Wheeler Rail Joint Company have been incorporated at Albany, with a capital of $50,000, to manufacture rail joints in New York City.

It is stated that the Lobdell Car Wheel Company of Wilmington, Del., contemplate establishing a branch works at Raleigh, N. C.

It is claimed that a recent invention of R. R. Turner of Columbus, Ohio, bids fair to solve the smoke abatement problem. A recent test proved its merit as a smoke preventive, and also demonstrated that its use resulted in a considerable saving in fuel.

The Ten Mile Coal & Coke Company, with a capital of $1,000,000, were granted a charter of incorporation under the laws of West Virginia last week. The company have purchased 2800 acres of coal lands near Clarksburg, W. Va., and propose to develop the same in the spring.

The Cambridge Roofing Company are adding new machinery and making improvements, notwithstanding hard times. They have recently placed an order with Geo. C. Keene & Co., Cincinnati, for a stand of corrugating rolls. A corrugating and forming press made by the same company has just been placed in position in the works of the Cambridge company.

The project of utilizing the Cox shoe factory at Fairport, N. Y., as a manufactory for metallic window screens, is being agitated and there is to be a meeting of business men to consider the proposition.

The St. Paul Implement Company of St. Paul, Minn., have filed corporate articles. The business to be carried on is that of dealing on commission in agricultural implements, pumps, &c., and in constructing windmills, pumps and tanks, and in doing a storage and transfer business. The incorporators are Philip S. Hand, William Dawson, Jr., and Edward M. Allen. The capital stock is $50,000.

The Rogers Locomotive Works of Paterson, N. J., continue to reduce their number of employees.

The Iron Car Company, a new organization which supplants the Iron Car Equipment Company, at Huntingdon, Pa., have announced that their works will resume operations at an early date.

The plant of Randolph & Clowes, brass manufacturers, at Waterbury, Conn., closed down on the 23d for one week for the purpose of taking inventory and making minor repairs. The works will reopen January 2 with a prospect for steady work.

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TRADE REPORT

There have only been surface indications concerning the probable course of events in the near future, and they have fortunately not been of an altogether discouraging character. It is true that work is wanted everywhere, and in the majority of branches it is wanted desperately. But it is a fact also that in some lines business is coming up quite well. Thus it is estimated that contracts for 50,000 to 60,000 tons of Cast Iron Pipe will be closed during the next 30 days, which is a good indication that municipalities are able to raise money. Besides this American shops are figuring on two orders for 23,000 tons in the aggregate for export. All this work will be taken at unprecedentedly low prices, since the leading shops throughout the country are cutting down to the bone.

The tonnage, however, is sure to be welcomed by Pig Iron producers, and is likely to impart tone to at least the Gray Forge end of the market. In Foundry grades a weaker feeling is developing, some of the Southern furnaces being again among the leaders of the anxious.

The latest developments in the Chicago market in Soft Steel Billets are causing uneasiness and indicate that the makers of the Pittsburgh and adjacent districts have succeeded in securing the backing of the railroads, through special rates, in their invasion of that territory.

In Structural Steel there has been relatively little movement. An opportunity has been afforded lately to test in a thorough manner the relative prices in this country and abroad. Specifications for some viaduct work for Japan were submitted some time since. The result of the figuring shows that Continental firms can put the work on board shipping port at as low a figure as it can be made in this country f.o.b. mill of the concern going lowest, down to cost. The freights are so enormously in favor of the foreign mills that the business is out of the question.

Our low prices of Old Material and to some extent of finished goods appear to be growing quite attractive to buyers in Canada. Inquiries from that quarter are becoming quite numerous, and considerable business has already been done in Old Steel Rails. That market deserves some attention. If any slaughtering is to be done let foreign markets get the worst of it.

Something in this direction seems to have been accomplished in Ferromanganese. To judge from shipments made via New York and Baltimore, about 2000 tons of Ferro have gone to England and the Continent since October. The English producers were closed down by the coal strikes. This gave an opportunity to work off a surplus. As a result thereof the English combination for the home market have precipitously dropped their price, which is now near the figure at which they have been willing to sell to this country all along. As a bit of retaliation the little episode is gratifying.

The summary of the new Homestead wages which has been forwarded to us by telegraph is interesting chiefly because it confers further advantages, which may be utilized to hammer the market even more vigorously in the future than in the past.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, December 26, 1893.

Last week was probably the quietest of the year in the Iron and Steel trades and the outlook is that the last week of the year will beat the record in this respect. Very few orders are being received, and these are for small lots and hardly create a ripple on the quiet surface. A good many concerns shut down last week for stock taking and repairs and will remain closed until after the first of the year. It is safe to assume that a number of concerns will find the balance on the wrong side of the ledger when the result of the year's business has been figured out. Prices show no material change, being purely nominal and depending altogether upon the size of the order and the terms of payment. In this connection it is worthy of mention that credit lines are being drawn tighter than ever before, and 30-day settlements seem now to be the rule, instead of the exception, as was formerly the case.

Pig Iron.—The market is absolutely featureless. Buyers are putting off making purchases just as long as they can and when they do go in the market buy only enough to run them a short time. In addition, shipments on old contracts are being deferred to a very great degree by buyers who cannot use the Iron as fast as they expected and do not want to pile it up. Another feature of the situation and an important one is that only a limited number of furnaces have made contracts for Coke, and until more of these have been placed the uncertainty of the future as regards prices will continue. We are not advised of any transactions beyond a few sales of 100 and 200 ton lots, and repeat our quotations of last week as follows:

Neutral Gray Forge	$10.00 @	cash.
All-Ore Mill	10.00 @ $10.25	"
No. 1 Foundry	11.75 @ 12.00	"
No. 2 Foundry	11.25 @ 11.50	"
Bessemer	10.75 @ 11.00	"

Billets.—The past week has been extremely quiet. No large orders have been placed for some time, and, with the exception of an inquiry for 4000 tons for January and February, none are in sight. We note a sale of 400 tons at a price equal to $16 70 at maker's mill. We quote the market at $16.50 @ $16.75 at maker's mill.

Ferromanganese.—We make nominal quotations of $51.50 @ $52, delivered, for 80 % domestic.

Plates and Sheets.—Nothing of interest came up during the week. Three or four of the larger concerns here are fairly busy on small orders. It is expected that after the turn of the year some orders calling for considerable tonnage that have been held back for certain reasons will be placed. Prices are without material change and we quote as follows: Tank Steel, 1.35¢ @ 1.37½¢; Shell, 1.55¢ @ 1.60¢; Flange, 1.65¢ @ 1.75¢; Marine, 1.75¢ @ 1.85¢; Ordinary Fire Box, 1.85¢ @ 1.95¢, and Railroad Fire Box, 2¢ @ 2.15¢. The Sheet trade continues very quiet, but an improved demand is expected early in the new year. We make nominal quotations as follows: No. 24 Soft Steel Sheets, 2.40¢; No. 26, 2.50¢, and No. 27, 2.60¢.

Structural Material.—It is understood that the order for the Beams and Channels for the new building of the Westinghouse Electric & Mfg. Company, at Brinton, which involves considerable tonnage, has been placed. It is hardly necessary to add that Pittsburgh has taken it. A large amount of Iron and Steel products will be used in the construction of these buildings, all of which will doubtless be taken by Pittsburgh makers. While we repeat quotations of last week, it should be noted that these continue to be shaded, according to desirability of order. We quote Beams and Channels up to 15 inches, 1.45¢ @ 1.60¢, according to size of order; Angles and Universal Plates, 1.45¢ @ 1.50¢; Tees, 1.70¢ @ 1.75¢. A large buyer claims to have placed an order for Universal Plates recently at 1.25¢ at mill.

Muck Bars.—We continue to quote $20.50 @ $21, delivered at buyer's mill, for standard grades. Off grades of Muck Bars are offered here at prices considerably lower than the above.

Rails.—It is claimed that some business is in sight and will be placed early in the year. Prices are on the basis of $24 at mill for standard sections.

Bars.—The condition of the Bar Iron trade is extremely unsatisfactory and the outlook for any improvement to come soon is far from encouraging. The demand is very light, and with the mills all anxious to get orders, prices have been forced to a point that certainly precludes any profit to the maker. While it is true that both labor and fuel are materially lower, it is more than probable that this saving has been more than offset by the reduced prices at which business has recently been placed. It is intimated that the Valley mills will ask for a further reduction in boiling sufficient to put them on an equal basis with non-union mills in the Pittsburgh district. We quote Soft Steel Bars at 1.30¢, with Bar Iron extras. Iron Bars may be quoted at 1.25¢ @ 1.30¢, at Valley mills, half extras.

Wire Rods.—We quote at $24 @ $24.50 at maker's mill. The falling off in the demand for Wire Nails has similarly affected the demand for Rods to some extent.

Merchant Steel.—While the demand is restricted, makers expect an improvement in this direction early in the year, when consumers have completed repairs and stock taking. Prices continue low and are ruling as follows: Bessemer Machinery at 1.50¢; Open Hearth Machinery, 1.75¢; Machine Straightened Tire, 1.65¢; Sleigh Shoe, 1.80¢ @ 1.90; Toe Calk, 1.95¢ @ 2.05; Open Hearth Spring, 1.85¢ @ 1.90¢; Tool Steel, 5½¢ and upward, according to quality.

Skelp Iron and Steel.—The demand continues very light, with prices ruling about as follows: Grooved Steel Skelp at 1.10¢ @ 1.15¢; Sheared, 1.20¢ @ 1.25¢; Grooved Iron Skelp, 1.30¢ @ 1.35¢; Sheared, 1.45¢ @ 1.50¢.

Wire Nails.—The demand continues light, although the recent declines in prices have stimulated buying to some extent. It is believed that after the first of the year there will be a material improvement in demand, as it is known that some large buyers are holding off placing orders until next month. We quote Wire Nails at $1.10 @ $1.15 in carload lots, according to order. For less quantities $1.25 @ $1.30 is obtained. Cut Nails may be quoted at 95¢ at mill for carload lots with the usual averages.

Barb Wire.—This trade is feeling the effects of some very low prices made

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by certain mills, but which other mills more favorably situated have declined to meet. The demand is light, but has been strengthened somewhat by the recent low prices referred to above. We quote Four-Point Galvanized at $2.15 in carload lots. It is claimed that this price has been materially shaded in some recent transactions. Painted may be quoted at $1.75 in carload lots and Plain at $1.40 in same quantities.

Connellsville Coke.—This week we reduce our quotation on Furnace Coke to $1.05 ℔ ton of 2000 lb, f.o.b. cars in Connellsville region. This price is being openly named by the producers and it is claimed has been shaded a few cents on some contracts recently made for Furnace Coke for delivery during the first half of 1894. The established prices on Foundry Coke of $1.30 to dealers and $1.45 to consumers are not being observed, but are being freely shaded. For the week ending December 16 there were 8430 ovens in the Connellsville region active and 9083 idle, with a total estimated production for the week of 80,385 tons.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, December 27, 1893.

Pig Iron.—Local Coke is in comparatively good demand. The usual carload trade is moving and a few contracts have been made for delivery the early months of next year, while the prospects are favorable for much more business of the same character. The Sidney Furnace is now in blast, having started on the 11th. Southern Iron is quiet and Lake Superior Charcoal seems neglected. Quotations are now as follows for cash:

Lake Superior Charcoal.....	$15.50 @ $16.00
Local Coke Foundry, No. 1...	13.00 @ 13.50
Local Coke Foundry, No. 2...	12.50 @ 12.75
Local Coke Foundry, No. 3...	12.00 @ 12.50
Local Scotch.....	13.50 @ 14.00
Ohio Strong Softeners No. 1..	15.50 @ 16.00
Southern Silvery, No. 1.	@ 13.75
Southern Silvery, No. 2	@ 13.25
Southern Coke, No. 2..... ...	12.15 @ 12.40
Southern Coke, No. 3	11.65 @ 11.90
Southern, No. 1, Soft.....	12.40 @ 12.65
Southern, No. 2, Soft.....	11.65 @ 11.90
Tennessee Charcoal, No. 1...	16.00 @ 16.50
Southern Gray Forge.....	10.60 @ 10.85
Alabama Car Wheel.....	18.25 @ 18.50
Jackson County Silvery.....	16.00 @ 16.50
Other Ohio Silvery.....	15.00 @ 15.50

Bars —Within the past few days a better inquiry is perceptible for both Iron and Steel Bars, but the inclination of buyers seems to be still more strongly in favor of Steel. The very low prices now prevailing for Steel Billets are enabling the ordinary Bar mills to turn their attention more and more to Steel, and they prefer to roll it. Current quotations from near by mills are from 1.30¢ to 1.35¢, Chicago, for either Iron or Soft Steel, but these prices are shaded on good specifications. Some lots from stock are selling at 1.55¢ @ 1.65¢, according to quantity.

Structural Material. — The announcement was premature that the contract for the Milwaukee Viaduct had been awarded. Action remains to be taken by the City Council to make the matter official. The week has been quiet in Building and Bridge Material, although a considerable amount of business is in sight. Quotations are as follows, Chicago delivery: Beams, 1.65¢ @ 1.75¢; Tees, 1.90¢ @ 2¢; Angles and Universal Plates, 1.60¢ @ 1.65¢. Small lots are sold from stock at an advance of 10¢ @ 15¢ ℔ 100 above these prices.

Plates.—A moderate business has been done in small lots from mill and from stock. Mill shipments, Chicago delivery, are quotable as follows: Tank Steel, 1.55¢ @ 1.65¢; Shell Steel, 1.75¢ @ 1.85¢; Flange Steel, 1 95¢ @ 2.05¢; Fire Box, 2.75¢ @ 5¢. Store prices now prevail as follows: Iron or Steel Sheets, Nos. 10 to 14, 2¢ @ 2.10¢; Tank Steel, 1.90¢ @ 2¢; Shell Steel, 2 20¢ @ 2.40¢; Flange Steel, 2.50¢ @ 2.65¢; Boiler Tubes, 70 and 5 % off.

Sheets.—Black Sheets are dull, with prices unchanged at 2.65¢ @ 2.70¢, Chicago, for mill shipments of No. 27 Common Iron, with the price of Steel Sheets approaching more closely to that of Iron. Small lots from stock are selling at 2.90¢ @ 3¢ for Iron. Large inquiries are in the market for Galvanized Iron, while prices are a little weaker. Mill shipments of Juniata are quoted at 75 and 5 % off, while small lots from stock sell at about 70 and 10 % Sheet Copper is fairly firm at 25% @ 30 % off, according to quantity.

Merchant Steel.—Nothing new has transpired in this line, and quotations are unchanged.

Billets. —Freights from Eastern points of shipment have evidently been cut recently, as very low prices have been made by Western Pennsylvania and Ohio works for delivery at Indiana mills and other consuming points in this territory. Nominal prices are unchanged at $19.25 @ $19.50, Joliet, but actual rates depend on the competition which has recently developed.

Rails.—Considerable tonnage of Steel Rails has been entered for next year, but the quantity is not as large as for previous years at this time. Individual roads, however, are placing contracts for about the same tonnage as before. Prices are firm at $25 @ $27, according to quantity. Splice Bars are unchanged at 1.55¢ @ 1 60¢; Track Bolts with Hexagon Nuts, 2 55¢ @ 2.60¢ and Spikes, 1.90¢ @ 1.95¢.

Old Rails and Car Wheels.—No new business has transpired under this head.

Scrap.—Business is extremely dull and quotations are unchanged: No. 1 Forge, $11; No. 1 Mill, $8.25 @ $8.50; Sheet Iron, $4.50; Pipes and Flues, $8; Axles, $16; Horseshoes, $11; Fish Plates, $12; Spikes and Bolts, $10; Cast Borings, $4.50; Wrought Turnings, $6.50; Axle Turnings, $8; Heavy Cast, $9 50; Stove Plate, $7.75; Malleable Cast, $8; Mixed Steel, $7, gross ton; Leaf Steel, $14 50.

Metals.—Lake Copper is quoted at 11¢ for carloads, and Casting Copper at 10¢, but the demand is very light. Spelter is weak, and offers have been made by sellers down to 3.40¢ without inducing business. Lead is firmer and is now quoted at 3.10¢, but very little business is doing.

Rogers, Brown & Merwin, dealers in Pig Iron, Steel and Coke, Monadnock Block, Chicago, have issued a very pretty wall calender for 1894. In connection with it they have distributed an interesting circular entitled "Forecast of 1894 in the Light of Past Records," in which they predict a substantial increase in the consumption of Pig Iron.

Andrew Hawthorne has been appointed Chicago representative of Matthew Addy & Co. of Cincinnati, succeeding W. C. Hayward. The office of the firm has been retained in The Rookery.

Charles H. Hawkins, 205 Western Union Building, Chicago, agent for the Brown, Bonnell Iron Company, has distributed among his patrons a daily memorandum calender for 1894, which forms a very convenient article for desk use.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., December 26, 1893.

Pig Iron.—So far as new business is concerned there is practically none, everything being closed for the year or as near to it as possible. What the coming year will bring with it is an unsolved problem, and as regards the Iron trade there appears to be no data upon which to attempt its solution. All that is positively known is that prices are at the lowest on record, while the demand is relatively smaller than ever before. On general principles it is supposed that there must be a change soon, but how or when it is to come no one appears to know, and in the sense that there is no inclination to break away from the monotony, it may be said that no one seems to care. Usually when prices are known to be down to cost, or below it, there is a good deal of investment buying and things get a start in that way, but with the exception of a few lots of Pig Iron, variously stated at 25,000 to 60,000 tons, nothing of that kind has been developed. Assuming that 60,000 tons has been so taken the total cost would still be less than $500,000, which cannot be considered a very extensive operation. Apart from this consumers have shown very little interest in the market. Some have bought to cover the first three months' requirements, but the majority are taking hand to mouth lots, which, in fact, corresponds with their orders; that is to say, they have no orders of any account except such as are sent in from day to day. On the other hand, sellers are not particularly anxious to fill their order books at such prices as the market would afford, so that there is a tacit understanding on both sides to let the market take its course. The collapse of the Crane Iron Company is no surprise to any one and is not likely to have any very serious results. The total stock on hand is less than 8000 tons of all grades, largely Bessemer and misfit Iron, and as there is no probability of its being forced on the market, there is no danger in that direction, and in any case the quantity is too small to do much harm. As regards to-day's prices, it cannot be said that there is any change from last week, but the market is so narrow that it is impossible to form any very definite opinion, although the chances are that on the right kind of offers good buyers could obtain concessions. It will take a week or two to test the position, but the feeling is anything but confident or hopeful.

Steel Billets —No demand at all. Bills of $19, delivered to near by mills, have been asked for, but as there is no immediate use for the article consumers make no response.

Finished Material.—Prices are no better, but as there is no business to make it worth while to quote lower figures, the market may be called unchanged. At the same time manufacturers are pretty well convinced that if they wish to secure such business as there is they must keep very close to bottom figures, and if the inquiry is for anything fairly attractive they must

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do even better than that. Competition is closer than ever, and as there seems to be no immediate prospect of improved demand it is not unlikely that 1894 will start in at lower figures than any that were accepted in 1893. The great want is more business; buyers' wishes could be met in regard to prices. All the mills are hungry for work, but there is very little prospect of its being forthcoming for a while at all events.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, December 27, 1893.

There has been practically no business in the Iron market during the week, there being no inquiry for large lots for either present or forward delivery, and even the jobbing foundries have taken very few single carload lots either in this district or in the East. The tone of the market is weak, and especially for foundry grades of Coke Iron; and while there is little urgency to sell, there are indications cropping out now and then which indicate a desire on the part of some furnaces to secure orders, but Gray Forge is in a firmer position, for it is more generally well sold in advance of production. The shipments of the furnaces on old orders have been less liberal this week, and the melting of Iron appears to be much reduced, so many consumers have already contracted for Iron enough to last them much longer than they anticipated and will not be in the market for many weeks. The price of No. 1 Foundry Coke is $9; No. 2 do., $8; No. 3 do., $7.50; and Gray Forge, $7 ℔ ton, f.o.b. Birmingham. Charcoal Irons are merely nominal. Quotations are as follows:

Foundry.

Southern Coke, No. 1	$11.75 @ $12.00
Southern Coke, No. 2	10.75 @ 11.00
Southern Coke, No. 3	10.25 @ 10.50
Ohio Soft Stone Coal, No. 1	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2	14.50 @ 14.75
Lake Superior Coke, No. 1	15.00 @ 15.25
Lake Superior Coke, No. 2	14.00 @ 14.25
Hanging Rock Charcoal, No. 1	18.50 @ 19.00
Hanging Rock Charcoal, No. 2	17.50 @ 18.00
Tennessee Charcoal, No. 1	14.00 @ 14.25
Tennessee Charcoal, No. 2	13.00 @ 13.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @ 18.00
Lake Superior Car Wheel and Malleable	17.00 @ 17.25

Forge.

Gray Forge	9.75 @ 10.00
Mottled Coke	9.50 @ 9.75

St. Louis.

(By Telegraph.)

Office of *The Iron Age*, Bank of Commerce Building, ST. LOUIS, December 27, 1893.

Pig Iron. — The demand during the past week has been remarkably light, and prices are weaker in consequence. There is no buying of any consequence for forward delivery, consumers having evidently concluded that prices will go even lower than at present quoted. The outlook is not encouraging, and a lower range of prices will soon be in order. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	$13.25 @ $13.50
Southern Coke, No. 2 Foundry	11.50 @ 11.75
Southern Coke, No. 3 Foundry	10.75 @ 11.00
Southern Gray Forge	10.25 @ 11.50
Southern Car Wheel	17.25 @ 18.25
Lake Superior Car Wheel	16.50 @ 17.00
Ohio Softeners	16.00 @ 16.50

Bar Iron.—There is very little business doing in Bar Iron, and prices continue weak and unsettled. Mills quote 1.35¢, half extras, f.o.b. St. Louis, which prices would be shaded for large quantities. Jobbers continue to quote 1.70¢ @ 1.80¢, according to quantity.

Barb Wire.—The sales of Barb Wire have dwindled down to almost nothing, and prices are weaker and quoted lower. Mills quote Painted at $1.90, Galvanized at $2.30, and carload lots 5¢ ℔ hundredweight less.

Wire Nails.—According to the reports, Nails are being given away almost at $1.30. Some sales have been made, but buyers' views do not get much beyond $1.20.

Rails and Track Supplies.—There is no improvement to note in this department and prices are unchanged, as follows: Splice Bars, 1.65¢ @ 1.70¢; Spikes, 1.95¢ @ 2¢; Bolts, Square Nuts, 2.40¢; with Hexagon Nuts, 2.50¢; Links and Pins, 1.85¢ @ 1 90¢. Old Iron Rails are unchanged at $13.50. Steel Rails are inactive at $26.50 @ $27.

Pig Lead. —It seems impossible to sell this metal even at to-day's low prices. Consumers refuse to buy, and state that even at lower prices they are not in the market at this time. A few carloads have changed hands at 3¢ @ 3.05¢.

Spelter.—At 3.40¢ there is little or no business doing and with the exception of an occasional carload order there is practically nothing doing.

Financial.

The end of the year 1893 is of a piece with its past unfortunate record. Its closing weeks have witnessed further disasters in the financial world, of sufficient magnitude to stamp any ordinary period as particularly calamitous. Within the past few days the failure of the St. Nicholas Bank of New York City, the declared bankruptcy of the Atchison, Topeka & Santa Fé Railroad and the hourly anticipation of a similar eventuality in the New England road, together with the increasing unfavorable returns of railroad earnings for the present month, have all contributed to give a rude shake to confidence and to depress the spirits of the business community. Usually at this season the disposition is shown in Wall street to contract operations in order to adjust accounts, and this causes a lull in business during the holiday period. But at the present time these features are more strongly marked than ever before. Except in a few stocks, and in cotton, speculation is absolutely stagnant, while general trade is far below the average.

The financial world and the business community generally await with great interest and considerable nervousness the developments likely to occur on and after the dreaded 1st of January. The inability to obtain funds to meet obligations then due has been the main cause of the recent large failures, and this may operate to bring down further concerns similarly placed; for, notwithstanding the plethora of money in the banks, bankers, in view of the expected strain of the January settlements on the commercial community, are using considerably more discrimination in the matter of collateral for loans, while they show great conservatism in the purchase of commercial paper. In a word, the year closes gloomily. Trade and industrial reports indicate extremely dull business, nor can any improvement be looked for until after the turn of the year. Many concerns close for the holidays under ordinary conditions, but the number of them so suspending operations this season is larger than usual, and with many of them it seems to be a question whether they will reopen after the new year begins or remain indefinitely idle.

Railroad earnings reported for the second week of December show an increasing ratio of loss over those of the last few years, in spite of rigid economies in working expenses. According to the *Financial Chronicle* the earnings of 69 roads for the first and 57 for the second week of December show a loss of 12.2 %. *Dun's Review* for about the same number of roads exhibits a loss of 13 % in trunk lines, 24.5 % on Western "granger" roads, 14 % on other Western, and somewhat less on Southern and Pacific roads. The failures of the week number 344 in the United States, as against 285 last year, and include several of importance, the total liabilities exceeding $6,220,000 in amount. The returns of the bank clearing houses give little or no evidence of any improvement in business activity. The figures of seven of the leading cities show an average decrease, compared with last year, of 32.6 %.

The weekly statement of the Associated Banks, issued on Saturday, shows a further accumulation of currency at this center. The amount of surplus reserve increased $1,768,950, the total now standing at $78,000,000. Loans expanded only $865,100, an unfavorable sign, which indicates a check to reviving enterprise. It is pointed out that the loans now stand $82,500,000 below the deposits, "which shows still an extraordinary disparity between the wants of borrowers and the abilities of the banks to lend." Money on call continues extremely easy on a 1 % @ 1½ % basis, with more noticeable activity in the demand. Renewals generally rule at the same rate. Time loans on good stock collateral are in abundant supply at 2 % @ 2½ % for short loans and 3 % @ 3½ % for longer terms.

Mercantile paper is dull, in consequence of the scarcity of first-class offerings. Such lines of good grade as come into the market are readily absorbed. The current rates are 3½ % @ 4 % for indorsed bills receivable, 3¾ % @ 4¼ % for choice single names, and 5 % @ 5½ % for names not so well known.

Preparation for the Christmas holidays and the general torpidity of speculation marked the close of last week as particularly dull and heavy in the Stock Exchange. The failure of the St Nicholas Bank, although having little immediate effect on an already depressed market, gave an added element of discouragement, the uneasiness being intensified by disquieting rumors regarding the Atchison and New England railroads, the stocks of which broke heavily on Friday and Saturday. Other railroad issues fell in sympathy, the market closing feverish on Saturday, with evidence of considerable selling on the part of frightened stockholders. Monday's holiday was succeded by a somewhat larger volume of trade on Tuesday, notwithstanding the absence of London business. The interest centered mostly in Atchison and New England securities, announcement having been made of the collapse of the former railroad, and indications pointing to the certainty of a similar result for the latter. Heavy liquidation oc-

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curred in both cases, New England, especially, falling to panic prices; and other railroad and industrial stocks being more or less affected. The market closed weak and feverish, with a downward tendency in prices. The following list shows the extreme fluctuations of the more active stocks during the week, with closing prices on December 27:

	Highest.	Lowest.	Closing, Dec. 27.
Am. Sugar Ref.	83⅜	79⅜	81⅛
Atchison, T. & S. Fé.	17⅛	13	13¾
Balt. & Ohio	71	68	68½
Chicago Gas	64	60	61⅞
Chic., B. & Q.	76¾	73¼	74¾
Chic., Mil. & St. Paul	60	56⅞	58
Chic., Rock Isl. & Pac.	67	63	63⅛
Del. & Hudson	130¼	127½	129½
Del., Lack & Western	161½	157¾	162½
Gen. Electric	37¾	31¼	33
Lake Shore	123½	121⅝	123
Louisville & Nashville	49	43¼	43⅞
Manhattan	126¾	122	122½
Missouri Pacific	22¾	21	21¼
National Lead, Common	23¼	21⅝	22½
New Jersey Central	115½	112	112
New York Central	100	97¾	98¼
N. Y., L. E. & Western	14⅞	14⅛	14⅛
N. Y. & New England	22½	12	13¼
Northern Pacific, Pfd.	20¼	18⅝	19
Philadelphia & Reading	19	17	17⅜
Richmond & West Pt., Terml	2⅝	2½	2⅝
St. Paul & Omaha	37	34½	34½
Union Pacific	19⅝	17¾	18
Western Union	85	81	82¼

Government bonds have been dull and steady, with small sales on Tuesday of the 4s at 114 for the coupon and 113 for the registered bonds. The latest quotations were as follows:

	Bid.	Asked.
2s, 1891, registered	95	.....
4s, registered	112¾	113¾
4s, coupon	114	114¾

A considerable decline has occurred in the demand for railroad and miscellaneous bonds for investment. The market has been weaker, and in most issues prices have declined. Atchisons depreciated materially in value on the notice of the receivership, and general business has been light.

Sterling exchange has been dull and somewhat weak. An accumulation of commercial bills on Tuesday was fairly met by the demand for remittances, but the London Exchange being closed little foreign business was done. Rates are slightly lower than those ruling last week. Actual business was done at the close yesterday at 4.83½ @ 4 84½ for 60 days, 4.85⅓ for demand, 4.86 for cables and 4.82½ @ 4.82⅝ for commercial.

Domestic exchange on New York is quoted as follows: New Orleans, commercial 125 discount, bank par; Charleston, buying $\frac{1}{16}$ discount, selling $\frac{1}{16}$ premium; San Francisco, sight 10, telegraph 15 premium; Savannah, buying ⅛ discount, selling par @ ⅛ premium; St. Louis, 50 premium; Chicago, 80 premium.

Bar silver closed in London on Wednesday at 32⅛ pence, and in New York at 69½¢ per ounce, a fall of $\frac{3}{16}$ penny and 1 cent, respectively, from the prices reported last week.

A part of the famous collective exhibit of the Swedish iron and steel works at the World's Fair is now being exhibited by N. Lilienberg of 150 Broadway, New York, at the Grand Central Palace. It embraces the articles shown by the Söderfors and Osterby works. The former make pig, Walloon and Lancashire bars and particularly open hearth steel and castings. The Osterby Works produce the famous Dannemora Double Bullet bars, blister and shear steel, and make the line of Dannemora and Dora crucible steels, the latter including tungsten steel. Mr. Lilienberg also shows the Wanner flexible steel wheel.

Metal Market.

Copper.—Business has been of distinctly routine character and the demand at present is extremely tame. The offering is also reserved, and, except on Metal Exchange contracts, prices below those named by the leading producers or their agents are extremely few and far between. There is, however, enough of what is commonly termed "outside" offering to keep values in more than usually uncertain form. Fair quotations appear to be about 10⅜¢ @ 10½¢ for Lake Superior Ingot, 9¾¢ @ 10¢ for Electrolytic and 9½¢ @ 9¾¢ for ordinary casting stock, according to brand and delivery.

Pig Tin.—Prices have remained almost stationary and the market is still bare of distinctly new feature, since speculation is virtually at a standstill, while consumers' purchases, to all accounts, are barely up to the average for the season. Steady inroads are being made upon jobbers' stocks, however, and free or unbonded stocks are in such shape that it is difficult to buy lots of 10 tons or more at 20.55¢ @ 20.60¢ for delivery this month or next.

Pig Lead.—Prices have been moved a little higher, but the leading brokers note no sales of importance and profess to be ignorant of any conditions that should bring about an increase in the value of the metal. In other quarters it is intimated that the advance is purely speculative, and that the speculative backing to the market is of very doubtful endurance. For the present 3 25¢ upward is quoted for ordinary Western brands in carload or larger lots.

Spelter.—Dealings have been on a very moderate scale. The demand has continued moderate also. While not particularly large, the offering has proven sufficient to keep prices rather soft at about 3.70¢ @ 3.75¢ for common, 3.80¢ for prime and 3.85¢ @ 3 90¢ for choice brands in carload or larger lots.

Antimony.—Except of small parcels there are few sales making and prices are easy, with 9½¢ @ 9¾¢ quoted for Hallet's, and 10¢ @ 10¼¢ for Cookson's, as to size of lot.

Tin Plate.—There has been hardly any buying of late and the demand at present is extremely tame. Prices are somewhat soft on both prompt and future deliveries, but show no radical changes. Spot quotation are as follows: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., $5.30; Bessemer full weight, $5.30; light weights, $4.85 @ $4.90 for 100 lb, $4.80 for 95 lb, $4.62½ for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60; Siemens Steel, IC basis, $5.65; IX basis, $6.75 @ $6.80. Charcoals—Melyn grade, IC, $6.35; Crosses, $7.87½; Allaway grade, IC, $5.60; Crosses, $6.75; Grange grade, IC, $5.75; Crosses, $6.85. Charcoal Ternes—Worcester, 14 x 20, scarce; do., 20 x 28, $11.35; M. F., 14 x 20, $7.35 @ $7.37½; do., 20 x 28, $14.75; Dean grade, 14 x 20, $5.35; do., 20 x 28, $10.50 @ $10.60; D. R. D. grade, 14 x 20, $5.15; do., 20 x 28, $10.10; Alyn, 14 x 20, $5.35; do., 20 x 28, $10.50; Wasters—S. T. P. grade, 14 x 20, $4.75; do., 20 x 28, $9; Abercarne grade, 14 x 20, $4.60; do., 20 x 28, $8.87½.

New York.

Office of *The Iron Age*, 96-102 Reade street, New York, December 27, 1893.

Pig Iron.—Current business is very light, nor is any movement expected in the near future. Considerable work is coming up for the Pipe foundries in New England and locally. Contracts at Providence recently taken were at very low prices. We quote: Northern brands, $13.75 @ $14.50 for No. 1; $13 @ $14.25 for No. 2; $12 @ $12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, $13 @ $14 for No. 1; $12 @ $13 for No. 2; $11.50 @ $12.25 for No. 3; $11.75 @ $12.25 for No. 2 Soft, and $12.25 @ $12.50 for No. 1 Soft. Gray Forge is $11.25 @ $12.

Ferromanganese.—It appears that since October shipments from New York and Baltimore have been made to English, Scotch and Continental ports to the aggregate amount of about 2000 tons, the seller being a Pittsburgh concern. It is supposed that the sales were made to clear up a surplus and were made possible through the fact that the English furnaces were idle on account of the coal strike, and then the European market was held up through a combination. It is estimated that $46 is what they netted to the American producers. The English furnaces, which are now about to start again, have put down their home prices (which have been considerably above their export price) to exclude further American imports. It is quite clear that, under the circumstances, American producers have full control of this market, and that foreign Ferromanganese has little chance for the present unless foreign manufacturers make very favorable contracts. We quote: Spiegeleisen, 10 % @ 12 %, $21.50 @ $22, and 20 %, $25.50 @ $26, on cars, Jersey City.

Billets and Rods.—This market is exceedingly dull. We quote nominally: Domestic Billets, $19.25 @ $22, and foreign Billets, $28 @ $28.50, tidewater; domestic Wire Rods, $26 75 @ $28, and foreign Rods, $39 @ $39.50, tidewater.

Steel Rails.—No new business of any consequence has been taken in this territory, which is pretty well cleared of all important orders from the larger lines. We continue to quote $24.80 at tidewater.

Track Material.—We quote as follows for small lots: Spikes, 1.70¢ @ 1.90¢; Fish Plates, 1.25¢ @ 1.40¢; Track Bolts, Square Nuts, 2.10¢ @ 2.40¢, and Hexagon Nuts, 2.30¢ @ 2.50¢, delivered. Concessions would be made for round lots.

Manufactured Iron and Steel.—The week has been exceedingly dull and no transactions of any consequence have taken place. For the immediate future little new work is offering. Manufacturers complain that specifications are coming in tardily. Thus the Brooklyn Bridge terminals have not yet been given out. Foreign Beams are offered at figures even lower than any recorded thus far. We quote nominally: Beams up to 15 inch, 1.65¢ @ 1.80¢, 20-inch, 1.80¢ @ 2¢, 24-inch, 2¢ @ 2.25¢, for round lots; Angles, 1.55¢ @ 1.75¢; Universal Mill Plates, 1.50¢ @ 1.65¢; Tees, 1.75¢ @ 2¢; Channels, 1.65¢ @ 2¢, on dock. Steel Plates are 1.45¢ @ 1.60¢ for Tank; 1.60¢ @ 1.90¢ for Shell; 1.90¢ @ 2.15¢ for Flange, and 2.25¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.45¢ @ 1.9¢, on dock, and Common 1.35¢ @ 1.50¢; Soft Steel Bars are 1.45¢ @ 1.70¢; Scrap Axles are quot-

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able at 1.65¢ @ 2¢, delivered; Steel Axles, 1.65¢ @ 1.90¢, and Links and Pins, 1.65¢ @ 1.80¢; Steel Hoops, 1.70¢ @ 1.90¢, delivered; Cotton Ties, 70¢ @ 72½¢ ℔ 45-lb bundle, at mill; Machinery Steel, 1 45¢ @ 1.50¢; Toe Calk, 1.90¢ @ 2¢ and Sleigh Shoe, 1.65¢ @ 1.75¢, delivered.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, December 27, 1893.

Pig Tin prices have varied in a very slight degree only, and business in the metal has been on a very small scale, chiefly in forward deliveries. That the undertone is rather weak has, however, been evidenced in the fact that prices softened upon the least sign of pressure, and there seems also to be a fear that heavy supplies in the immediate future will have some adverse influence. In any event, buyers are holding off and awaiting developments. The market at the close was £74. 15/, with Straits quoted at £75. 12/6 for prompts, and £76. 15/ @ £77 for three months futures.

Copper prices have varied in a very moderate degree only, or between £43 and £43. 2/6 for Merchant Bars, for prompt delivery, and business has continued on a very moderate scale, with hardly any outside speculative interest manifested. Latest dealings were at £43 for Merchant Bar prompts, £43. 10/ for futures and £46. 10/ @ £46. 15/ for Best Selected English.

Tin Plate has met with slow sale and the negotiation is at present of strictly holiday season character. Prices are still rather weak but not absolutely lower. Liverpool quotations are as follows:

IC Charcoal, Alloway grade.....12/3 @ 12/9
IC Bessemer Steel, Coke finish. ...11/3 @ 11/6
IC Siemens " " " .....11/6 @ 11/9
IC Coke, B. V. grade, 14 x 20.....11/3 @ 11/6
Charcoal Terne, Dean grade.....10/9 @ 11/

Pig Lead has undergone hardly any change in price and the market is still rather uncertain in tone, with £9. 10/ generally quoted for soft Spanish, prompt delivery.

Spelter has fluctuated in price to a moderate extent only, and the market remains bare of distinctly new feature. Present quotations are on the basis of £16. 12/6 for ordinary Silesian.

In the market for Iron and Steel there is nothing to note except that business has been on a very moderate scale and that movements in prices have continued narrow. Last transactions in warrants were at 43/5 for Scotch, 35/6 for Cleveland, and 45/6 for Hematite.

The London *Iron and Coal Trades Review* states that C. B. Holland is now in this country inquiring into the affairs of the Otis Steel Company of Cleveland, with a view to reorganization.

The many friends of John Fritz of Bethlehem, Pa., will learn with some solicitude that he has been seriously ill. The latest news is of a more favorable character.

The Homestead Wages.

(*By Telegraph.*)

The new wage scale of the Homestead Steel Works, which goes into effect January 1, contains even greater reductions than at first supposed. They range from 10 to 65 per cent., and considerable dissatisfaction has already been expressed by the men who suffer most, but no strike is expected. The heaviest reductions are in the 119-inch plate mill, and the new and old prices are as follows. The prices given are for 100 tons: Roller, new rate, $6, old rate, $12.75; screw down, new, $3.70, old, $9.75; tableman, new, $3.20, old, $6.95; hookers, new, $2.75, old, $6.08; sweeper, new, $2.27, old, $3.45; heaters, new, $5.25, old, $9.75. On the following jobs the new rate is as follows: First shearman, $4.09; second shearman, $3.41; first leader, $2 95; second leader, $2.56; lever pullers, $2.36; helpers, $2.27. By way of partial equalization for these cuts a readjustment of positions has been made which will make it possible for the men to make better wages than they would otherwise, but by much harder work. Instead of three eight-hour turns, as previously, there will be two turns of 12 hours each and some men will be dispensed with and others allowed to make their tonnage. Instead of two heaters on a turn having three furnaces each, with one helper, there will be only one heater, who will have all the six furnaces and two helpers. This releases four out of six heaters from their positions and the two who are left will probably make as much as formerly, even at a reduction of nearly 50 per cent. The capacity of the 119-inch mill has been put at 100 tons to a turn of 8 hours, but it is said that it only averages about 80. With a 12-hour turn it is expected to exceed 100 tons.

In the 32-inch mill, which is the armor plate mill, the reduction is said to average 40 per cent. on all the high priced men and to be very slight on all who get low wages. The following figures were obtained: Roller, new wages, $2 per 100 tons, which is about $4 a day, old wages, $150 a month; heater, per 100 tons, new rate, $2 50, old, $3.47; first helper, new, $1.60, old, $2.66; second helper, new, $1.10; bottom maker, new, $1.50, old, $1.60; chainman, $1 15, no change; broom off, new, $1, old, $1.08; tongsman, new, $0.95, old, $1.08; roll tablemen, new, $1.30; old, $1.39; regulators, new, $0.70, old, $0.77, and shear tablemen, new, $1.20, old, $1.28. The armor plate mill operates on 12-hour turns, as do all the other mills except the 119-inch mill. Its average capacity is about 200 tons a turn, and it has made as high as 350 tons.

The principal other departments in the Homestead Steel Works are the 10, 23, 28, 33, 35 and 40 inch mills, which are all operated principally upon structural steel, the two open hearth steel departments and the converting departments. On all the structural mills the cuts are said to range from 10 to 40 per cent. None of the rollers got off with less than a 25 per cent. reduction. The blowers in the converting mill have been changed from a salary of $125 a month and put on tonnage at $1 per 100 tons. They can make about $3 a day at this rate. The change in the wages of melters in the open hearth departments is about the same. Lower paid men of both classes are not cut so heavily. The wages of all foremen, blacksmiths, machinists, pipe fitters and all other classes of skilled day labor are cut on an average of 10 to 12 per cent Common labor in the mills is reduced from 14 cents to 11 cents an hour. No reduction has been announced in the wages of pick and shovel laborers, who now get $1.20 a day. The scale is not based on any product of the plant and is consequently an individual agreement. Wages will not be affected by declines or advances in the selling prices of any of the various products of the Homestead plant. With this new scale in force the concern will be in position to compete more successfully than ever before, and will probably have a material advantage over many of their competitors in cost sheets.

Trade Publications.

THE ZUCKER & LEVETT CHEMICAL COMPANY of 8 Grand street, New York, have issued a circular describing their improved American Giant dynamo for electroplating and electrotyping. These dynamos are of the inverted horseshoe type. The smaller sizes have a laminated field, and the large sizes a special cast iron field. The armatures are of the modified Siemens type, thoroughly laminated to prevent all possible heating due to "Foucault" or eddy currents. The commutators are made of pure drop forged copper, insulated throughout, and with proper care should last a number of years. The dynamo is shunt wound, and so proportioned that it cannot reverse. It is noiseless, and is provided with self oiling bearings.

An evidence of the depression that has marked the shipping industry during the past year is given in the returns of shipbuilding in Baltimore, where only 35 vessels have been built in 1893, as against 61 last year. The registered tonnage of the vessels shows a still larger proportion of decline, being 5589 tons for 1893, compared with 17,277 tons in 1892, and this notwithstanding that the Baltimore builders have greatly improved their facilities and methods.

The Addyston Pipe & Steel Company of Cincinnati sold 3000 tons of cast iron pipe to the city of Milwaukee last week at $19 85 per ton. The other bidders were the Radford Pipe & Foundry Company of Radford, Va.; the Howard Harrison Iron Company of Bessemer, Ala., and Dennis Long & Co. of Louisville, Ky. The city will use principally 12-inch pipe next year, but the contract covers six sizes.

Measures for the relief of the unemployed this winter are being nearly as urgently pressed for on the other side of the Atlantic as they are in this country. The scarcity of work in English towns was never more marked than at the present time, and distress among workpeople is reported from all parts of the country.

Governor Waite of Colorado, who gained considerable notoriety by his sanguinary speeches in defense of silver some months ago, has been again delivering himself of very warlike sentiments on the same subject. This grotesque Executive is reported as expressing himself at a recent meeting in Denver as being in favor of "fighting for the free coinage of silver at 16 to 1, not all summer, but till hell freezes over." Like Don Quixote, Governor Waite would go any length for his inamorata.

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The Minority Report.

The report of the minority of the Ways and Means Committee analyzes in detail the provisions of the Wilson bill so far as it refers to the metal schedule. We quote from it as follows:

The metal schedule presents some features that illustrate in a significant way the illogical character of the bill. Among these may be mentioned the substitution in almost all cases of ad valorem for specific duties; the making free a number of articles called "raw materials;" the disregard of the relations that exist between more and less finished products, and the totally inadequate duties named upon certain leading articles.

Some idea seems to have prevailed in the minds of the majority to the effect that duties should be adjusted in proportion to the advance of the article in manufacture. The idea does not seem, however, to have been very successfully worked out. For example, iron ore is made free, and, reckoning 60 per cent. of metallic iron to a ton of ore, the manufacturer of pig iron is given an advantage as to duties of $1.35 on a ton on his product. But, on the other hand, the amount of protection thereon is reduced about $4.50. The ingots, which are the raw material of steel blooms, are made to bear a duty of 25 per cent. ad valorem; the blooms, which are the raw material of steel rails, bear the same duty, and the steel rails, the last finished product, bear the same also. Such incongruities run all through the schedule, and are apparent to any one familiar with the processes and products of iron and steel manufacture.

Free Iron Ore.

That which lies at the base of our iron and steel industry is iron ore. The existing duty thereon is 75 cents per ton. The revenues from its importation aggregated in the last fiscal year over half a million of dollars ($507,976.19). It is proposed under a tariff bill for revenue only to throw away absolutely every cent of this large revenue by putting iron ore on the free list.

That, however, may be said to be a comparatively small matter in comparison with the effect that the proposed measure will have upon our home industry by the substitution for native of foreign ores, the product of cheap foreign labor.

Our ore industry, from whatever point viewed, is among the most important. According to the census figures of 1890 the production of iron ore for the year ending December 31, 1889, was in excess of fourteen and a half million tons (14,518,041). Its value was more than thirty-three and a third millions of dollars ($33,351,978). Twenty-six States and two Territories, North, South, East and West, contributed to it. In the amount and value of production Michigan stands first, and whether Pennsylvania, a Middle State, or Alabama, a Southern State, stands second is a question of doubt. The amount of capital invested is nearly a hundred and ten millions of dollars ($109,766,199) and the number of men directly employed over thirty-eight thousand (38,227). The average annual earning capacity for each person so employed at current wages is $409.95.

Of course in taking account of the value of this industry to American labor there must be added all the various labor processes, including the transportation, necessary to get the ore from the hill into the furnace stack. The theorist who talks about "raw material" never permits himself to realize that, as has been well said, "nature rarely dispenses with transportation. She never separates, assorts, cleanses and feeds into the hopper or the stack."

The bill proposes to put into competition with American ores foreign ores, some of which are produced at a labor cost one-tenth and none of them at a labor cost greater than one-fourth of ours. It proposes to bring our laborers who get from $1 60 to $2 per day, and who work from 55 to 60 hours a week, into competition with laborers who work 72 hours a week and get 36 to 60 cents per day; our miners who get from $2.25 to $2.75 per day into competition with those who get from 60 to 75 cents per day.

Pig Iron.

Having sacrificed over $500,000 per annum of revenue to the vagary of free trade, the "tariff bill for revenue only" proposes to affect another large source of revenue by serious reduction of the duties on pig iron. That duty now is $6.72 per ton. The duty proposed is 22½ per cent. ad valorem, or about from $1.60 to $1.90 per ton, a lower tariff than was ever before proposed on this article. That suggested by the Mills bill was $6 per ton; under the tariff of 1846 the duty was 30 per cent. ad valorem.

The revenue from pig iron during the last fiscal year amounted to over one-third of a million dollars. While decreased duties will add to importations, it is to be noticed that the difference between present and proposed duties is in the neighborhood of $5 per ton, and that a large loss of product and a large loss of revenue are both inevitable.

Pig iron, so far as both capital and labor are concerned, is one of our leading industries, and is followed in 23 States of the Union.

In the year 1892 our product was 9,157,000 tons, of a value of $131,161,039, and the prices at which it was sold to the consumer were the lowest that it ever commanded. The proposed duty will close all New England furnaces and all east of the Alleghanies, as well as those of the South. The market for Southern pig iron is necessarily found in the North, owing to the lack of demand at the place of production. The consequence is that the competition of Southern pig iron, which of all pig irons is made at the cheapest cost in this country, fixes the price in Northern markets. That price is controlled to a large extent by freight rates. Interior freight rates are very heavy as compared with ocean rates. In many cases pig iron comes from England and Belgium as ballast, subject to no freight charges at all. In other cases it bears a burden not to exceed 5 shillings per ton. At this figure it can be carried to the Atlantic and Gulf ports, and even to those of the Pacific. Assuming that our pig iron, made at the least cost, is made as cheaply as that made abroad, which is not true, it amounts to a demonstration that all of our blast furnaces, save those in the interior, must succumb to foreign competition. Even the latter, if able to exist at all, must do so without margin of profit.

The new cruiser "Powerful," which the British Government purposes building, will be 14,000 tons displacement, with engines of not less than 30,000 horse-power and 48 tubular boilers, with four very large stacks. This will be the first instance of the use of tubular boilers in the British navy in connection with so large a vessel.

The first rice elevator in the world has just been completed at New Orleans for the National Rice Mfg. Company of that city.

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HARDWARE.

Condition of Trade.

THE last week of December is devoted more to preparations for closing the year's business than to active attention to trade, which, except in a few holiday and seasonable specialties, is decidedly light. The matter of making the annual inventory is now in hand with a view to closing the books and estimating the financial results of the year. It is expected that inventories will in most cases show a diminished stock, owing to the conservative policy which has been pursued for the last half of the year, and if the balancing of the books does not show diminished profits there will be reason for exceptional congratulation. Most merchants and manufacturers will, however, probably be confronted by the fact that business during the year was considerably less remunerative than usual, but if their losses were not especially heavy, and they are still in condition for the active prosecution of business in the more prosperous days which it is hoped are before the trade, they have good reason for contentment. The year which is ending will long be remembered as in many respects the most trying one in the experience of the present generation of business men. It, however, draws to a close with the promise of better things in the year to come, and as soon as tariff uncertainties are removed it is hoped that there will be a gradual if not a prompt resumption of normal business activity and profit. The reaction from the curtailment of industry must sooner or later come, and the economies which have been enforced during the hard times will be an excellent preparation for a more healthful and permanent prosperity in which we doubt not the Hardware trade will have full share. We close these weekly reviews of the business situation hoping that it will be our pleasant task to record a more satisfactory and profitable business in 1894, and wishing all our readers a Happy and Prosperous New Year.

Chicago.

(*By Telegraph.*)

Jobbing houses are now passing through their usual dull holiday season. Salesmen are either at home or on their way home, and mails are light. Most of the houses here are taking stock and are not specially anxious to be troubled with business at this time. Quite a number of salesmen for Eastern Hardware concerns are traveling through this section soliciting orders for the coming year, but they are not meeting with much encouragement. Jobbers will continue their policy of buying from hand to mouth, except when they are actually offered bargains, until they see some indications of prices hardening.

St. Louis.

(*By Telegraph.*)

There is, practically speaking, no trade. Traveling men are in off the road, making the necessary arrangements for 1894. Stocks are also being arranged for inventory, so that so far as actual sales are concerned the present week will rank among the lightest of the year. Looking back through the year, there is nothing to enthuse over, and it is to be hoped that the turn in trade will come with the turn of the year. Collections are fair.

Notes on Prices.

Wire Nails.—During the past week the volume of business has been light, though it is understood that the low prices ruling have induced the placing of some good orders. The general demand is, however, moderate, the trade not being confident that the lowest prices have yet been touched and deferring their purchases until the opening of the new year. There have been no further developments in the matter of prices, the market being represented as a week ago by the quotation of $1.10 for carload lots at mill, it being, however, understood that this figure is shaded on especially large and desirable assortments. Some of the mills are understood to be fairly well supplied with orders, but others have a good stock on hand and are stopping or curtailing production. In the present condition of the market large buyers will do well to watch it closely, as there is no doubt that for desirable quantities and assortments and for deliveries more or less prompt they can secure more advantageous prices and terms than a few months ago were deemed possible.

Chicago, by Telegraph.—The Wire Nail trade is reported quiet by the manufacturers, and there are few large inquiries from buyers, who are holding off until they are convinced that prices are as low as they are likely to go at this time. Some factories are reported so well sold up that they will go into the new year with a smaller stock than ever before. Nevertheless prices are lower and factory lots are now selling at $1.18½ to $1.25, Chicago. Small lots from stock are sold at $1.30 to city trade and $1.35 to the country.

Cut Nails.—The Cut Nail market is inactive, and purchases are limited by the necessities of buyers. The market in the matter of price is in the same condition as for several weeks, being represented by the quotation of 90 cents for carload lots at mill, a figure which is slightly shaded in the presence of attractive specifications. It is not unlikely that orders especially desirable in the matter of assortment and terms of payment could be placed with some manufacturers at a somewhat lower figure. Small lots from store in New York are quoted at $1.20 to $1.25.

Chicago, by Telegraph. — Cut Steel Nails are quiet, with prices nominally unchanged at $1.15 to $1.20, according to the character of the order. Small lots from stock are quoted at $1.25.

Barb Wire.—Barb Wire continues in substantially the same condition as at our last review, being represented by the quotation of $2.10 for Galvanized and $1.70 for Painted, with 5 cents off in carload lots. The demand is light.

Chicago, by Telegraph. — The Barb Wire market here has weakened and quotations of Galvanized are now made by manufacturers at $2.15, Chicago. The break comes from the East and local manufacturers refuse to meet the cut, as they are selling most of their product direct to the retail trade in small lots, for which they are receiving from $2.30 to $2.35. Jobbers quote small lots from stock at $2.50.

Cordage.—In sympathy with reduced prices for raw material and in the presence of continued active competition among the manufacturers and a very light demand, there has been a decline of about ¼ cent per pound in the prices of Manila and Sisal Rope, Manila being obtainable in large lots at 7¼ cents, and Sisal at 5 cents, terms f.o.b. factory or New York, subject to a discount of 1½ per cent. for cash. New Zealand remains unchanged at 5 cents.

Storm Window Fasteners.—Moore's Storm Window Fasteners, manufact-

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ured by True & Blanchard, Newport, Vt., and illustrated in *The Iron Age* December 14, 1893, are packed with screws and sold at $2.40 per dozen sets, less a discount of 20 per cent.

Door Spring and Check.—Bardsley's Liquid Door Spring and Check, illustrated in *The Iron Age* December 21, 1893, and manufactured by J. Bardsley, 149–151 Baxter street, New York, is sold at a discount of 15 per cent. from the following list:

Size.	Doors.	Each.	Brackets. Extra, each.
A.	2 ft. 9 in.....	$3.00	$0.25
B.	2 ft. 6 in. to 3 ft.	4 00	.30
C.	3 ft. to 3 ft. 6 in.	5.00	.35
D.	3 ft 6 in. to 4 ft.	6 00	.40
E.	4 ft. to 4 ft. 6 in.	7.00	.45

Glass.—There appears to be no encouragement in the way of improved prices or demand for factories to go into blast, or for factories already making Glass to continue in operation. This includes both the Sheet Window Glass and Plate Glass industries. Factories are not likely to be continued in operation unless they have orders to work on, as they see nothing to be gained in piling up stock. It is difficult to obtain reliable quotations, but taking the quotations given in our last issue as a basis, there are no indications of any advance, but if anything the market is weaker.

The Hardware Club.

A MEETING of the Hardware Club of New York was held on the 22d inst., in the parlors of the Cosmopolitan Hotel. The attendance was a large and representative one and the gathering was characterized by much interest and enthusiasm. William H. Williams, the president of the Club, occupied the chair, and after calling the meeting to order made the following address:

The object of this meeting was pretty thoroughly stated in the call. It seemed to your Board of Governors that you would naturally be desirous of knowing what are the prospects of getting into the new club rooms, of which you have occasionally heard, and what was to be the character of the home which has been provided for the use of the club. It will be remembered that at the last meeting of the club a resolution was passed directing the Board of Governors to engage rooms for the use of the club in the new building of the Postal Telegraph Company on the corner of Broadway and Murray street. Pursuant to these instructions the top floor of that building was secured for the use of the club. The building has a frontage of 62 feet on Broadway and 148 feet on Murray street, with an L at the western end running back about 90 feet from Murray street. This room was secured at an annual rental commencing at $9000 for the first year and running up to $15,000 per year in five years. It was intended at first that the kitchen should be in the L at the western end of the building. We found, however, that this would not permit the most desirable arrangements for the club rooms, and, at the request of the board, the owners of the building decided to put a kitchen on the roof, with a mezzanine floor between it and the club rooms, at an additional rental of $900 per year.

Consultation with the architects of the building and other gentlemen familiar with such matters has convinced us that the rooms as arranged in the plan, copies of which are here for the inspection of members, will, in point of convenience, desirability and general adaptability to our needs, be equal, if not superior, to those of any similar organization in the country.

By request of the board, a House Committee was appointed several months ago, consisting of Messrs. Peter McCartee, chairman; E. C. Van Glahn, Eugene Bissell, J. L. Varick and the president, *ex officio*.

This committee has devoted much time to the consideration as to the needs of the club, and is prepared to report to you to-day upon its requirements. I need hardly call your attention to the fact that the amount of detail necessary to suitably furnish a club such as we propose to have is very considerable. The amount required in the various departments, such as tables, chairs, carpets, silverware, glassware, crockery, cutlery, ranges, refrigerators, kitchen utensils, &c., is much more than we at first thought would be necessary.

I may say at this point that after giving the subject careful consideration, your Board of Governors long ago concluded that it would be useless to carry on a club that should not be first class in all of its appointments, and we believed that if we could secure proper rooms, well and centrally located, and fit them up not luxuriously, but comfortably and conveniently, that the club would be supported by the Hardware and kindred trades and such other gentlemen as we desired to associate with us, and that, conducted along such lines, it would soon be in a prosperous financial condition. From this position your Governors do not recede in any degree. Our membership, as will appear from the secretary's report, is upward of 300, and this in face of the fact that we have had no permanent meeting place, and nothing except the future prospects of the club to offer gentlemen as an inducement for them to join with us. We have the assurance of many gentlemen who have been approached upon the subject that they will join the club as soon as it is ready to occupy its permanent rooms. We believe that there are many gentlemen in this vicinity who have not yet been invited to join the club who will be very glad to do so as soon as we are able to give them the lunching facilities which the club intends to provide. Your board has canvassed this subject pretty thoroughly, and has become convinced that we have excellent reason for believing that within six months after the opening of the rooms our membership will not be less than 400, and that it may reach 500 before the end of the year 1894.

In order that the Board of Governors should not be individually held liable for the rent of the club rooms, an arrangement has been effected with the Postal Telegraph Company, by which, upon the occupancy of the rooms by the club, we shall deposit $5000, or the equivalent thereof, to be held by our landlords as security for rent. From the initiation fees of our present membership about $15,000 will be realized. Deducting from this amount the $5000 to be deposited as security for rent, $10,000 only will be available from this fund for the purposes of furnishings and fittings, as it is the design of your Governors to reserve the annual dues intact for the necessary running expenses of the club.

In connection with this I would like to say that during the past year the board has given a great deal of time and attention to the investigation and consideration of matters pertaining to clubs such as the one it is proposed to have under the name of the Hardware Club. There are several in this city, as you are well aware, and we have been permitted to confer freely with the officers and managers of most of them in regard to many details which would be of interest to our own organization, and I believe I can say that, without exception, all of those organizations which are conducted on a strictly first-class basis are financially prosperous and are regarded as almost indispensable by their members. It is the ambition of your Board of Governors to make the Hardware Club of New York second to none in point of financial prosperity and general usefulness to its members.

The proprietors of the Postal Telegraph Building have taken a great interest in our club and assure us that so far as it is possible for them to co-operate with us in providing us with elegant accommodations no effort will be spared.

I need not detain you by any argument as to the need of such an organization as ours for our trade and those who are associated with us in the club. The general interest manifested by our membership convinces me that you appreciate those advantages quite as fully as your officers and your Board of Governors do, and I have pleasure in believing that you will loyally sustain those officers and governors in all proper efforts to provide for you a suitable place of meeting, and to place this club upon an enduring basis of prosperity.

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To this somewhat general report, I will only add that a committee has recently been appointed to make arrangements for the annual dinner of the club, the date of which will soon be announced.

I now ask your attention to the reports of the various officers and committees to which I have referred.

The secretary read a letter from Mayor Gilroy, in which the latter regretted his enforced absence from the meeting. Mr. Varick then presented his report as secretary. It showed that there were at present in the club 248 resident members and 59 non-resident members, making a total of 307 members, against 228 resident members and 61 non-resident members, a total of 289, for last year. The treasurer's report was then presented by Mr. Keating, who was followed by Mr. McCartee with a report as chairman of the House Committee. Mr. McCartee furnished a detailed estimate of the probable expense of furnishing the club's quarters, and stated that his estimates were based on a daily attendance of 225, although the club rooms were amply sufficient to accommodate from 350 to 400 members at one time.

Mr. Hayden as chairman then submitted the report of the Finance Committee, after the reading of which David Williams offered a resolution in which the action of the Finance Committee was approved and pledging the support and co-operation of the members of the club in the efforts of the Board of Directors looking to the future. Messrs. Newhall, Hamilton, Weaver, Marshall, Leonard, Keating and Bissell spoke in support of the resolution, which was unanimously adopted. Mr. Mitchell then moved a vote of thanks to Mr. Wildey, the proprietor of the hotel, for the use of his parlors, after which the gathering adjourned.

Preparations are already making for the annual dinner of the club, which will be held in the latter part of February, 1894. It was expected that this dinner might be held in the new club rooms, but it is now feared that this will not be possible, as the quarters will hardly be ready in time. A Dinner Committee has been appointed by the president of the club, comprising the following gentlemen: Peter McCartee, E. C. Van Glahn, Eugene Bissell, A. D. Clinch and J. L. Varick. A Sub-committee on Speakers and Toasts has also been selected, consisting of Richard R. Williams, James H. Kennedy and Webster R. Walkley.

The Hardware Merchants and Manufacturers' Association.

AT A REGULAR MEETING of the Philadelphia Hardware Merchants and Manufacturers' Association, held on December 19, the following preamble and resolutions were adopted:

Whereas, The proposed tariff bill prepared by the Ways and Means Committee, so far as it relates to the change from specific to ad valorem duties, on which the cost of goods is not to be estimated at American valuation, but upon inventory prices in foreign countries; and

Whereas, We believe this change will open the doors to great and possible frauds through disguised, ficticious and under valuation upon invoices, and will largely discriminate against the honest American importer; and

Whereas, Many changes in the present duties are proposed, which examination shows most seriously, disastrously and injuriously affect, if not cause bankruptcy to, many of our manufacturing industries, and is a direct attack upon the American workingmen, coming at a time when they are suffering from enforced idleness; and

Whereas, We believe these changes must result in diminished trade, reduced wages, add to the unemployed, and thus fall heavily upon the wage earner, and bring distress to a vast number of people;

Therefore, be it resolved, That the Hardware Merchants and Manufacturers' Association of Philadelphia record this emphatic protest against the passage of the Wilson bill as legislation that will retard our industrial progress, jeopardize invested capital, and compel a reduction in the wages of our workingmen, which will necessitate a change in their mode of living.

Resolved, That we request the members of Congress, without respect to party, to resist, by every available and lawful means, the passage of this proposed tariff bill.

Return Postage.

MANY MEN who are punctilious in conforming to business usages often in writing letters to which they expect answers fail to inclose stamps to prepay postage on the reply. It would be better still to inclose an addressed stamped envelope with a written address. An inquiry will receive earlier attention and perhaps more careful attention if it involves but little trouble and no expense to the person addressed than if the latter is expected to do considerable work and foot the bill besides. This may seem a small matter—only 2 cents involved—but the principle of the transaction is apt to govern the person who is expected to reply. He is very apt to say to himself, "Well, if this man expects an answer he should at least have inclosed a stamp." There is very little danger of any one taking offense at such an inclosure. The inquirer who hesitates to inclose a stamp to a concern transacting a million dollars' worth of business a year because it is such a trifle may find upon reflection that the existence of that house depends upon an aggregation of two-penny profits.

There are salesmen who at this time of the year are endeavoring to secure positions with other houses, and yet omit the inclosure of return postage on the reply which they unhesitatingly look for to their letter of application. If they receive answers to such unbusinesslike letters they are in luck, and they may be sure that something else has recommended them than their correct observance of business civilities. The amount involved is of no consequence. Even if letter postage should be reduced to a penny, a stamp should still be inclosed to insure a reply.

Bicycles for 1894.

THIRD ARTICLE.

Prices.—Many of the manufacturers are still reticent in the matter of prices, deferring a public announcement until the opening of the new year. It is, however, evident that there will be a wide range of prices, and while some of the machines will be held at the figures which ruled during the past season, many others will be offered at lower prices. Pope Mfg. Company have, however, announced their line of machines and their prices. The standard price of Columbias is reduced to $125, though some of the lighter machines are listed higher. The line of wheels presented for the coming season, with weights and prices, as more fully referred to below, are as follows:

Columbia Model 34, 30, or 29 pounds without brake	$125
Columbia Model 35, 37 pounds, ladies' wheel	125
Columbia Model 36, 37 pounds	125
" " 37, 21½ "	150
" " 38, 31 "	125
" " 39, 35 "	140
" " 33, 19½ "	160

Manufacturers' Announcements.—We give below further advices in regard to the lines of wheels which will be put on the market during the coming season, and in future issues shall refer to the product of other manufacturers and the changes in their line for 1894:

THE POPE MFG. COMPANY, 221 Columbus avenue, Boston, have issued their 1894 catalogue, describing and illustrating the Columbia Bicycles. It is comprehensive and artistic, showing not only wheels, but many pleasing views of Bicycle riders, together with illustrations of Bicycle parts and methods of construction. The company offer no wheels made in previous years, but all the wheels are new, and the line is large and varied. Two special machines for tall riders and a light, well equipped wheel for ladies are also shown. Among their specialties are a new light pedal, the new Hartford double tube tire, and the adoption of wood rims on some of the lighter wheels. The company remark that careful provision has been made for filling every reasonable requirement as to style, construction, size, lightness, strength and equipment, so that purchasers of high grade machines may select from their stock Bicycles to suit their particular cases. The Columbia Model 34 weighs 30 pounds, or 29 pounds without brake, and is designed for expert and intelligent riders who take care of their mounts even while putting them through hard road

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work. This machine lists $125. The Columbia 35, a ladies' wheel, presents only such minor changes as have appeared desirable to bring it fully up to date. It weighs 37 pounds, but can be stripped to 30 pounds, and lists $125. Columbia Model 36 is designed as a safe machine for fast and hard work under all riders, and is fitted with loop seat rod, rubber pedals, complete wheel guards and rear wheel brake, thus weighing under 37 pounds, stripped 32 pounds, and lists $125. Columbia Model 37 is a semi-racer particularly built for track work and for road racing under reasonable conditions. It is fitted with wood rims, weighs 21½ pounds and lists $150. Model 38 is practically identical in its details with their Model 34, with extra high frame substituted for the regular size, affording a minimum reach of about 37 inches as against 32 inches in Model 34. This can be readily increased to meet the requirements of taller riders by moving up the L-rod or by substituting the loop seat rod. The machine with brake weighs 31 pounds, or 1 pound less without brake, and lists $125. Model 39 is another machine particularly designed for very tall riders, having an extra high frame, with 34-inch wheels, affording a minimum reach with the use of the L-rod of about the same as Model 38, and while its weight is a few pounds greater it carries the rider somewhat higher from the ground. It weighs 35 pounds, listing $140. Model 33 is a racer constructed with the company's double diamond frame, combining rigidity and lightness. It is fitted with wooden rims, weighs 19½ pounds, and lists $160.

GENDRON IRON WEEEL COMPANY, Toledo, Ohio, present for the coming season three Gendrons: Roadster, ladies' and scorcher. The roadster, or No. 15, weighs 36 pounds, and is listed at $130. It has Nos. 16 and 18 gauge tubing in the frame and No. 18 gauge fork blades. No forgings are used in the fork crown, head or crank shaft sleeve. The ladies', or No. 14, wheel has the same gauge tubing in the frame, and has the upper bar reinforced at its lower curve by a telescope 18 inches long. The wheel weighs 36 pounds and lists at $135. The scorcher, No. 17, has no tubing in the frame lighter than No. 18 gauge, with No. 18 gauge fork blades. There are no forgings in the crown, head or crank sleeve. The machines are all fitted with the Buckeye pneumatic tire, which has an endless air tube completely encircled by the outer cover, and has a bridge across the seam at the base of the outer cover. The outer cover is split at its base and laced all around, but in eight sections, so that when punctured only one section need be unlaced. The manufacturers guarantee the machines to be free from all imperfections in material and workmanship, and will replace any time during the year 1894 all parts which show such imperfection. The guarantee applies to the Buckeye pneumatic tire.

THE AMERICAN ORMONDE CYCLE COMPANY, 135 West 125th street, New York, will offer for 1894 the Ormonde Model G, light roadster, with wood rims, weighing complete 27 pounds; the ladies' Ormonde, the same weight as the gentlemen's wheel, the tubing being of larger diameter than usual, but of lighter gauge. Also a line of Ferris Bicycles, all of which will list at $100. The gentlemen's wheel will have Humber shaped frame, tangent spokes and steel rims, fitted with Morgan & Wright, Bidwell or New York Belting & Packing Company's tires. Wood rims will be fitted for $5 extra. The nickeling and enameling will be, it is stated, as fine as on the best machines. The Ferris scorcher will also list $100. The ladies' Ferris will be built on the lines of the ladies' Ormonde, and will be fitted in detail the same as the gentlemen's Ferris. The company, it is stated, recognize that the popular price will be $100 next year, and exerted themselves to produce as fine a wheel for the price as it is possible. Among the cycling sundry novelties, of which they make a specialty, are very light racing pedals and adjustable lamp brackets, a pocket repair outfit, featherweight bells and miniature lamps.

TWO SPEED BICYCLE COMPANY, St. Charles, Ill., will market a 30 inch gentlemen's wheel with gears 68 and 51, weighing 35 pounds; a 28-inch gentlemen's wheel with gears 63 and 48, weighing 34 pounds; and a 26-inch ladies' wheel with gears 58 and 44, weighing 34 pounds. The machines are shifted from one gear to another without taking the feet from the pedals by turning a small switch lever. The larger sprocket is used when riding on good roads, and the smaller one for hill climbing. The sprocket not in use runs idle, and for coasting the cranks stand still if desired. It is remarked that there is no jerk when the gear is changed.

SURBRIDGE MFG. COMPANY, Hagerstown, Md., will have a line of Cycles for 1894, including the following: America, 28-inch, list $135; Century America, 28-inch, list $100; America Girl, 26-inch, ladies', $100; Young America, 26 inch, boys', $70, and Kid America, 24-inch, boys', $50. Their leaders are the $100 wheels, which are referred to as being high grade in every respect, differing only from the higher priced by being a couple of pounds heavier. Their boys' wheels are built of high grade material and will weigh about 26 and 29 pounds respectively.

The line of Liberty Cycles put on the market for 1894 by WILSON, MYERS & Co., 55 Liberty street, New York, with factory at Rockaway, N. J., consists of seven distinct patterns. The Liberty Bogie Man track racer weighs 19 pounds and lists at $140; 1894 model Liberty scorcher weighs 28½ pounds and lists at $125; 1894 model Liberty roadster weighs all on 35 pounds, listed at $125; 1894 model ladies' Liberty weighs 33 and 37 pounds, listed at $125; 1893 model Liberty road scorcher weighs 31 pounds and lists at $110; the Hummer scorcher weighs 32 pounds and lists at $100, and the Hummer roadster weighs 38 pounds and is listed at $90. By stripping of mud guards and brake, the machines listed all on can be reduced 3 pounds in weight. The prices given are a total change from any prices the firm had in former years. In this connection they state that they have responded to the call from all over the country for a reduction in price, and that in addition to this they have introduced the two models of Hummer safeties, which are medium grades, and are listed at a price which the makers believe will be taken advantage of by parties of limited means. For 1894 is presented the Liberty detachable pneumatic tire in its improved form. It is claimed that it does not depend upon air pressure to hold it to the rim, and that it is impossible for the tire to creep. A new combination pedal is also introduced for next season, and all Liberty machines will be fitted with a pedal of the rubber character, which can be converted into the rat trap pattern in a minute's time, which practically gives two pairs of pedals with each cycle. They will continue to use the Liberty patented hub, which is referred to as having given excellent satisfaction in past years. Two hights of frame are built, better adapting the machines to riders both short and tall. Two styles of handle bars will be furnished, one suited for the so called scorcher, who likes the stooping position; the other allowing the rider to sit up in a perfectly erect position. The latter is designed more especially for wheelmen of advanced years.

BUFFALO WHEEL COMPANY, Buffalo, N. Y., wi l sell the following wheels for the season of 1894: Century Niagara, 32 pounds, a high grade Bicycle, listing $100; Maid of the Mist, 30 pounds, a high grade ladies' wheel, listing $100; special racing wheel, 15 pounds, built to order, listing $165; stock Niagara racer, 21 pounds, for track or road racing, listing $150; semi-racer, 26 pounds, same design as the stock racer, listing $125; full roadster, weight stripped 34 pounds, 30-inch front and 28-inch rear wheels, for heavy weights, listing $125, mud guards and brake included; also a Tandem convertible weighing 54 pounds and listed at $250. In addition the company show a special Bicycle hub and a novelty in sulky wheels, the latter having four sets of spokes.

THE PROVIDENCE TIRE COMPANY, Providence, R. I., are putting a new Tire on the market for 1894. It is known as the Providence Double Tube Tire, and provides for the use of two inner tubes, one drawn through the other. Each tube has an independent valve, and in use the outer one is first inflated, forming an ordinary inner tube Tire. Should this become punctured or the valve get out of order, all that is required is to inflate the reserve inner one, which, when uninflated, lies in the hollow of the rim, fully 1½ inches from the outer surface. Should the second tube become damaged, it can be inflated again by displacing it so the puncture in the two tubes will not be opposite each other; the outer inner tube thus forming a patch for the puncture of the inner inner one. It is stated that the double inner tubes are as easily detached and mended as the single inner ones, and that they do not weigh more than the average single tubes and are much more elastic and lively.

Trade Topics.

Extra 2½ Per Cent.—Mr. B., who represents, among other houses, the manufacturers of Ames' Shovels, was chatting about business with me, writes a Western correspondent, when we touched upon firmness in prices, and he said:

"I always knew that Mr. Ames was pretty stiff in his prices, but I never knew just how firm he was until one time a man who was handling a few goods said to me: 'B., I am ready to give you a $5000 order for Ames' goods, and I will agree to send another order of equal amount within six months if you will give me a slight concession. I want an extra 2½ per cent.'

"Now, I thought he wasn't asking very much, and I was going to the fac-

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tory very soon, so I told him I'd lay the matter before Mr. Ames, and I was pretty sure it would go through.

"Well, sir, do you suppose it did? No, sir.

"Said Mr. Ames: 'It will not do. It would be a mistake. Why, Mr. B., if we allow him an extra 2½ per cent., in less than six months he will be convinced that some other house is getting an extra 5 per cent. and he will be a good deal more dissatisfied than he now is.'

"And," added B., "I am firmly convinced that he was right.

"Mr. ——— and I had been representing the Ames concern several years on the road," continued B., "and had really done but little for the house. Then duller times came and we rather expected that they would have no further use for us, but we went to see them at the proper time, to have it over with.

"'Well, boys,' said Mr. Ames, 'the time has now come when we need your services; as trade has been it did not matter much whether any one mentioned our name on the road or not, but now we want your help.'

"Wasn't that pretty solid sense? We appreciated it and determined we would give him our very best licks that year."

Travelers' Methods. — A Western jobber writes us:

Some traveling men have a way of lingering about the showcase near the door, as if they were looking for something they wanted to buy, thus enticing a man forward to meet them, and then pushing out their card to him. It always makes me mad when I am trapped this way, and the man must have something I am in very great need of to get me to order from him.

I suppose part of the reason is that he gets a man away from his desk, or away from others who may be near him, and secures his undivided attention. But it is a poor way to commend one's-self to the man who has dropped an important letter, perhaps, and hurried forward to wait upon a supposed customer.

The other day I was busy at my desk, which is quite a distance from our front door. A man came in whom, at first glance, I took to be a traveling man, and I kept on at work till he should reach my desk, desiring to save every minute that I could.

But instead of walking along toward me he stopped at the first showcase and began examining its contents as if in search of something, while he whistled and used a toothpick as if having no cares in this world. I began to wonder if I was right about him. Perhaps he was in search of something, and if so must look upon me as a very independent merchant not to go forward and wait upon him.

Finally, I could not see my duty clear to sit there longer, so I walked forward. He did not advance toward me, but, on the contrary, began working back to the further end of the showcase, as if he had seen the article he wanted.

As I reached him he lifted his face from the glass to me for the first time, smiled in the universal way, and informed me that he represented the ——— Mfg. Company, and then gave me his card.

I was in no pleasant frame of mind, for there was nothing in our showcase in his line, over which he might have been interested, and no reason why he should not have walked back to my desk when he entered the store, instead of drawing me out to the front to meet him.

I bought no goods of him, nor would I have done so if I were wanting them ever so badly.

Back Orders.—One of the most provoking things, writes a correspondent, in having orders filled in part is that the one thing you want the most is sure to be the item placed on the back order.

I don't know how many times, but they are legion, I have discovered I was out of a certain article, and in making out an order added other goods that I was not then needing, but simply ordered to make up a package and divide freight charges. And then I have had these other goods sent along promptly, while the one item I really needed was not sent at all. I don't know how to remedy this, but it is terribly annoying.

Another thing about orders that annoys one, but which could easily be remedied: If I send an order to a jobber I get some goods at once and am given some advice about the goods placed on the back order book. But a great many factories have a very unsatisfactory way of acknowledging the receipt of one's orders, but never adding a word as to when the order will be filled.

This is a very great annoyance to a man who may be out of the goods and would like to know what he might promise to his own trade. At the office of the factory it is known about when the goods can be shipped, and a line to that effect upon the acknowledgment of the order would appear to be an easy thing to add and the natural thing, too.

Spot Cash.—"Men interpret things in various ways," writes a jobber. "I sold a bill of goods to a man for spot cash, giving him my best cash prices. The invoice read: 'Terms, Spot Cash.' The bill ran 60 days. I sent a statement, adding 60 days' interest, which he refused to pay, because in the printed heading of our bill was this line: 'Subject to draft at sight if not paid when due.' My customer said that he supposed I would draw for the amount of the bill and as I did not I was not entitled to interest!"

A Peculiar Decision.—"Speaking of printed terms reminds me," continues the correspondent, "of a peculiar decision made by an Ohio judge a few years ago. The circumstances were these: A, in Cincinnati, sold B, in Toledo, a bill of goods. A printed line in the bill head read 'This bill is payable in Cincinnati or New York par funds.' B remitted for the invoice by a draft on New York, but before the draft was presented the Toledo bank issuing it had failed, and payment in New York was refused. A sued B for the amount of the invoice. It was admitted that due diligence had been observed in forwarding the draft and that B had nowhere been guilty of negligence, but it was claimed that the draft on New York was sent in compliance with the line in the bill head, that this draft was good when sent from Toledo and when received in Cincinnati and consequently that B had paid the bill, and the Toledo judge so decided. The case was never appealed.

Trade Items.

POPE MFG. COMPANY, 221 Columbus avenue, Boston, have issued their 1894 Columbia Calendar. It is composed of a block of calendar leaves, one for each day, fastened in a metal back. In addition to the date and blank space for memoranda on each sheet are remarks regarding the attractions and advantage of Bicycle riding.

THE ENTERPRISE MFG. COMPANY OF PENNSYLVANIA, Philadelphia, advise us that their stock of parts for Great American Meat Cutters is rapidly becoming exhausted, and that in future they can only supply such parts as they may have on hand at time of order, having decided not to continue the manufacture of the Great American Meat Cutters or the parts thereof.

THE BOSTON FILTER COMPANY, 21 Broadway, Chelsea, Mass., manufacturers of the Boston Water Purifier, sell their small Filters, but large ones, such as are used by hotels and restaurants, are put in at no original expense to the user, the company charging a nominal rent for the work of the Filter, and taking complete care of the apparatus. Although Boston has been noted as a great consumer of spring waters, the company advise us that they are successfully furnishing 90 per cent of the large hotels and restaurants in the city with their Filters.

AMERICAN ORMONDE CYCLE COMPANY have decided to consolidate their wholesale and retail trade at one address, and will move their retail business to 10 Barclay street, a few doors from Broadway, New York, on January 1.

A DECISION has just been rendered by Judge Putnam in the suit of Edmund Converse against Ambrose T. Matthews, both of Worcester, Mass., for the infringement of a patent relating to Stove Knobs having a base made from a blank with wings or leaves instead of from a circular piece of sheet metal, as Knob bases have heretofore been made. The decision of Judge Putnam sustains the patent, which is owned by the Worcester Ferrule & Mfg. Company, Worcester, Mass. We are advised that under this patent the cost of manufacturing Stove Knobs has been largely reduced.

OUR READERS will observe the advertisement among the Special Notices in this issue signed "Selling Agent," in which the advertiser announces his desire to represent manufacturers of leading goods to the wholesale trade of

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the West and Northwest. The advertiser is a gentleman of long experience and wide acquaintance with the trade, and is in a position to render efficient service to those who may desire to make such an arrangement with him.

GRAHAM, HINKLEY & Co., exporters, 9 South William street, New York, are greeting their friends and patrons with an engraved card on heavy beveled board, extending the compliments of the season and wishing happiness and prosperity during the coming year. This well known house do an extensive trade with the West Indies and other South American countries.

F. W. WURSTER of F. W. Wurster & Co., who has accepted a place in Mayor-elect Schieren's cabinet as Fire Commissioner for Brooklyn, is well known there as the head of a large rolling mill plant at Kent avenue and South Sixth street. This is said to be the only mill of this character of any consequence in New York or Brooklyn rolling Merchant and Bar Iron. They also manufacture Axles largely. Mr. Wurster is president of the Hanover Club, a prominent social organization in the Eastern District.

THE HARDWARE AND STOVE STORE of Gates & Hillier, Cooperstown, Pa., was destroyed by fire on December 14. The loss is estimated at $12,000. The firm will resume business as soon as possible, and advise us that they will be pleased to receive from manufacturers catalogues and price-lists relating to their goods.

JOHN G. ROLLINS, 15–25 Whitehall street, New York, issues a circular letser in which he calls attention to the fact that he has had 27 years' experience as a buyer from American manufacturers for export. He is a buyer from American manufacturers for shipment to Great Britain, Continental Europe, Australasia, India, China, Japan and South Africa. He lays emphasis on the fact that he can buy and ship on very favorable terms. Purchases are made exclusively for cash, thus enabling him to obtain advantages from producers. He adds that, employing no travelers, he can afford to work for small commissions, which he alludes to as a consideration in these days of acute competition. On application quotations will be made for anything manufactured in the United States, either delivered on ship or at nearest port of entry abroad.

THE ILLINOIS PURE ALUMINUM COMPANY, Lemont, Ill., are manufacturing an Aluminum Sanitary Pail. This article weighs 2½ pounds and is designed for use in hospitals, asylums and public institutions of any description. It is recommended for these uses because of its lightness, perfect cleanliness and freedom from odor, and because it is proof against corrosion.

Newhall Ship Chandlery Company.

NEWHALL SHIP CHANDLERY COMPANY, Henry B. Newhall Company, general agents, 105 Chambers street, New York, have adopted an original and novel method of calling the attention of their correspondents to prominent goods in their line. This is accomplished by illustrations of a different article on each letter head, under which is the catalogue page upon which the goods are found, together with a blank space for a quotation. A series of the letter heads illustrate Row Locks, Packing, Cleats, Galvanized Blocks, Thimbles for manila and wire rope and repair links. The line of goods is thus prominently brought before their customers and particular emphasis called to the different lines by means of the quotation. A circular letter is being sent to the trade, in which the company refer especially to their Galvanized Malleable Iron Tackle Blocks, upon which a discount of 70 per cent. is quoted, delivered in New York, with 2 per cent. off for cash in ten days. A convenient catalogue devoted entirely to Awning Hardware, with blank pages for memorandum, has been issued by the company, which is particularly interesting because of its seasonableness.

Price-Lists, Circulars, &c.

M. A. WOODBURY, Bradford, Pa.: Woodbury's Automatic Dry Chain Lubricator. The part resting on the chain is a small sack 1 x 5¼ inches in size, which is doubled over where it is held by a spring clamp, the long upper end of the clamp keeping the loose ends of the sack in place. The sack is filled with fine dry lubricant; the jar of the machine sifts the lubricant on to and into the chain, while the sack dusts the wearing parts of the chain.

THE ALASKA REFRIGERATOR COMPANY, Muskegon, Mich.: Alaska Refrigerators. The 1894 catalogue of the company is well printed on a fine quality of paper, and handsomely illustrated. At the front of the book is a full page view of their works, showing buildings of large extent, in connection with which are their lumber yards. The buildings, which are of brick and stone, include a main factory, three stories high, 340 feet long by 60 feet wide; main warehouse, two stories high, 400 x 60 feet, and another warehouse 100 x 200 feet, besides several smaller buildings. Illustrations are given of soft and hard wood Refrigerators, Apartment House Refrigerators, Sideboards, Butchers', Grocers' and Florists' Refrigerators, Double Coolers, &c.

ONEIDA COMMUNITY, Niagara Falls, N. Y., and 59 Murray street, New York: Fine Silver Plated Ware. An illustrated catalogue shows Table Flat Ware in Christine, Viola and Windsor patterns, including Spoons, Forks, Sugar Spoons, Butter Knives, Sugar and Bon-bon Tongs, Fish Knives and Forks, Salt and Mustard Spoons, Ladles, Nut or Berry Spoons, Child's Sets, &c. The manufacturers refer to the quality and finish of their A1 goods, stamped with their name. They also make a complete line of medium grade Silver Plated Ware and solid unplated A1 Silver Metal goods, in both plain and figured patterns. A line of goods stamped N. F. Nickel Silver Company are warranted by the company to be made of 10 per cent. nickel silver, well plated and finished.

EASTERN FORGE COMPANY, 70 Kilby street, Boston, Mass., with works at Portland, Maine: Forgings of all descriptions; Machine, Blank and Tap Bolts; Hanger, Coach and Cap Screws; Boiler and Bridge Rivets, Special Bolts and Nuts, Railroad Track Bolts; Plain Cold Punched, Chamfered, Trimmed and Drilled, Hot Pressed and Hot Pressed Reamed Square and Hexagon Nuts. A well arranged and clearly printed catalogue gives list prices and tabulated information about the foregoing goods in convenient form. Tables are also given of the weight per 100 of Machine Bolts, Blank Bolts and Coach Screws; number of Railroad Spikes to 100 pounds and the weight per lineal foot of round, square and flat Iron.

BROCKTON MALLET & MACHINE COMPANY, Brockton, Mass.: Mallets, Mauls, Hammers, Handles, &c. The Mallets are made of imported rawhide disks, secured between two collars on a solid steel hub, with a leather handle made of selected leather disks compressed on a solid steel rod, then turned down to fit the hand, thereby producing, it is claimed, a handle that will not bend, break, work loose or blister the hand, as it is porous and absorbs the moisture. It is stated that the Mallets are subjected to a pressure of 30 to 50 tons.

It Is Reported—

That Geo. W. Redman's Hardware and Furniture store at Green's Landing, Maine, was considerably damaged by fire on the 9th inst. The damage to the building was $300 and to the goods $500. The former was insured, but there is no insurance on the latter.

That the Stewart & Sox Hardware Company, Albany, Ore., have been incorporated. The capital stock is $35,000, divided into 350 shares. About January 1 the company will move into their new quarters. The members of the company are E. F. Sox, C. H. Stewart and E. Redeker.

That the Tompkins Hardware Company and the Cary Hardware Company of Leadville, Col., have consolidated their interests, and will hereafter conduct business as one establishment. The capital stock of the new company has been placed at $100.000. The officers are as follows: H. H. Tompkins, president; John Harvey, vice-president; D. La Salle, treasurer; I. J. Cary, manager. The directors are H. H. Tompkins, John Harvey, L. H. Tompkins, D. La Salle and I. J. Cary.

That W. C. Grier has sold his Hardware store at Blunt, S. D., to N. E. Westover. Mr. Grier has removed to Plymouth, Wis., where he has purchased a Hardware stock and will continue the business.

That A. F. Anderson has purchased the Hardware business of H. L. Rich at Red Wing, Minn.

That M. A. Simpson has bought the stock of Hardware of H. Fishman, Mt. Ayr, Ill.

That J. H. Barlow and Chas. Turk of Woodward, Iowa, have bought the Hardware stock of E. M. Jones. They will hereafter conduct the business under the style of Barlow & Turk.

That Chas. B. Payne of Knox County has purchased the stock of Hardware of W. B. Keller, Brashear, Mo.

That the second and third stories of the building of the Fones Hardware Company, Little Rock, Ark., were burned out on the 20th inst. The loss, which was heavy, is fully covered by insurance.

That Harrington & Knight, Hardware dealers, who were burned out in the great fire at Fargo, N. D., some months since, have taken possession of their new quarters.

That a new Hardware and Tinware store will soon be opened at Wayne, Mich., by Drew & Doolittle.

That Mitchell's Hardware store at Packwood, Iowa, was destroyed by fire on the 21st inst.

That E. N. Falke, formerly of Massillon, Ohio, has opened up a Hardware store at 811 Monroe street, Toledo.

That J. W. Smith and P. J. Alexander have bought the Hardware store of J. S. Smith & Son, Farber, Mo.

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That Emerson & Fehlman, Steele City, Neb., have bought out the Hardware stock of F. Maw.

That J. P. Siner's Hardware store, at Shelburn, Ind., was destroyed by fire on the 19th inst.

That C. H. Cure, Pipestone, Minn., has sold his stock of Hardware to H. A. Marsh of Mason City, Iowa. Mr. Cure will continue with Mr. Marsh for the present.

That the Hardware store of Sires & Tulley, Trenton, Mo., was robbed on the 18th inst.

That W. S. Cox and R. A. Brownlee of Havelock, Iowa, will open a new stock of Hardware at Mallard in the near future.

That W. M. Rogers, late of Kittleton, Col., has opened a Hardware store at Florence, Col. He will also conduct a plumbing and tin shop.

That the stock of Hardware of E. P. Messer & Co., Sheldon, Iowa, was destroyed by fire on the 11th inst.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Nothing has occurred to relieve the uncertainty that has existed for some time past in the general market for Paints and Colors. The outlook for the leading pigment, White Lead, is quite as puzzling as it has been at any time during the past 60 days. While superficially firm, the market for Linseed Oil is a very uncertain one. This tends to restrict trade, and there is just enough uncertainty about the future of other base materials, along with general trade inaction, to keep business down to smaller volume than usual at this season of the year. There is nothing suggestive of speculative tendency in any direction. Most accounts go to show that retailers are buying in an extremely conservative way and that manufacturers are governing their operations accordingly.

White Lead.—Except for small quantities there is no demand at present. Jobbers talk and act as though they were perfectly satisfied to follow conservative policy of the most pronounced type until some of the uncertainties as to action by the leading producers are at least partially cleared up. Meanwhile the "outside" manufacturers continue a vigorous competition and list prices for trust brands are nominal in a great degree. Quick process and mixed Leads are selling at prices quite as low as any that have ruled previously this year, and small lots of "combine" Lead are still being dealt out by jobbers at less than the official list rates.

Red Lead and Litharge.—Fair orders have been placed for foreign brands, chiefly low grade, for future delivery. Otherwise dealings continue to be small and the demand generally is spiritless. Prices are rather weak, but show no radical change.

Orange Mineral.—While no radical change in prices of foreign brands is quoted, the fact is admitted that the market continues to be rather weak and the probabilities are that buyers of round lots can secure concessions of about ¼¢ @ ½¢ from popular quotations. American is very quiet also, but quoted at old prices.

Zincs.—There has been no change in the market for American Oxide. The general report is that orders have averaged small, but that the business effected was chiefly at prices in line with quotations that have been general for some time past. The surface indications are that the market is in rather weak condition, due chiefly to slowness of orders. The list prices for foreign brands remain unchanged, but these are shaded more or less by some jobbers.

Colors, &c.—Somewhat more liberal orders have been placed for bulk stock used by grinders, at, as far as could be learned, very low prices; apart from this nothing but routine winter season business appears to have been effected in either Dry or Oil Colors and the general report was that the demand continues slow. Ready mixed Paints are being ordered for future delivery to a fair extent, but spot business continues slow.

Oils and Turpentine.

The past week has been as bare as the preceding one was in point of distinctively new feature. Hardly anything outside of routine business has been effected and nothing has occurred that would tend to stimulate purchases for either home trade or foreign account. Prices, with a very few exceptions, have remained almost stationary, and it is only in remote instances that the dullness in general trade, or the extreme caution that usually prevails at this season of the year, has been broken. There is nothing in the present situation of affairs indicative of any radical change in the immediate future.

Linseed Oil.—No further changes in prices have been made by either local or outside crushers. The basis price of 47¢ for raw Oil prevails and competition is conspicuous in its tameness. To some extent this may be attributed to the condition of the market for raw material, but there are some signs that late conflicting interests are working quite harmoniously for the time being.

Cotton Seed Oil.—Prices have undergone hardly any change, and the gen eral situation of the market remains about the same as it was last week. Home trade buying has been commonplace and export business tame, while the former line of prices has ruled for both crude and refined products.

Lard Oil.—Prices have ruled somewhat lower and the market is at present in rather uncertain form, but showing signs of weakness. On prime stock 70¢ has been a common price and business was done at as low as 69¢, but, in view of the condition of the market for raw material, pressers are very slow to take further orders at those figures. Low grades have been sold to a moderate extent at about 1¢ @ 2¢ under the popular quotations.

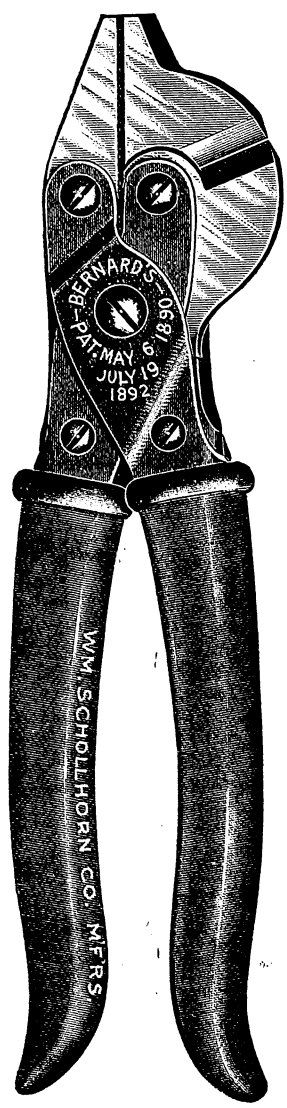
Fish Oils.—Comparatively little business has been effected in crude Sperm, Whale or Menhaden Oils, but the deals put through were chiefly at old prices and nothing has transpired that would point to probable radical changes in the immediate future. The movement in pressed and bleached Oils has been strictly routine and at practically former prices.

Miscellaneous.—Olive Oil has moved out in moderate quantities at former prices. The same may be said of Cocoanut. Red Oils have just about held their own in price, although rather dull. Mineral Oils are without radical change in price and find rather slow sale.

Spirits Turpentine.—Prices have been remarkably steady, varying in a fractional way only from 29¢ to 29½¢. Business has continued spiritless, but enough stock goes out to prevent any great accumulation here. Shipments from primary points are only fair, and most advices note a favorable position.

Lineman's Plier.

William Schollhorn Company, New Haven Conn., Julius Berbecker & Co., agents, 65 Duane street, New York have incorporated the Bernard principle in cutting pliers in a tool designed for linemen, as here illustrated. It is intended for cutting high tension electric wires with no risk to the operator. It is 8 inches long, of crucible steel, polished and nickeled. The interchangeable parts are held together with screws and hexagon nuts, so that, if necessary, any portion of it can be renewed at will. Directly under the center pinion, opposite the cutter, is a set screw, to compensate for any wear on the cutter. The cutting jaws have a maximum opening of ½ inch, diminishing to ⅜ inch at the base. Single copper wires of a diameter of ¼ inch, together with the usual covering, are easily cut. The handles are covered with pure, soft, black rubber to protect the user from shock, while the coverings can be removed or replaced at any time. Later a smaller size, 5 inches long, will be brought out for the same purpose.



Insulated Lineman's Plier.

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The Breck Sap Spout and Cover.

Joseph Breck & Sons, Boston, Mass., are placing on the market the sap spout and cover herewith shown. The spout, Fig. 1, is of galvanized malleable iron, to make it indestructible, and is inserted in the ½-inch hole V, as in Fig. 2, bored 1 inch into the tree. The point of the blade D is driven slightly into the body of the tree at the back of the hole V. The reduced portion M, of the spout body enters that portion of the hole V surrounded by the bark Z of the tree and forms a bearing for the spout. It is explained that by this means the grain of the wood is in no manner compressed by the spout when inserted in the spout hole, as the only bearing of the spout in the tree is the point at the back of the hole and the reduced body portion in the bark. The manufacturers remark that the sap lies within an inch of the bark, and that upon this principle the spout is made.

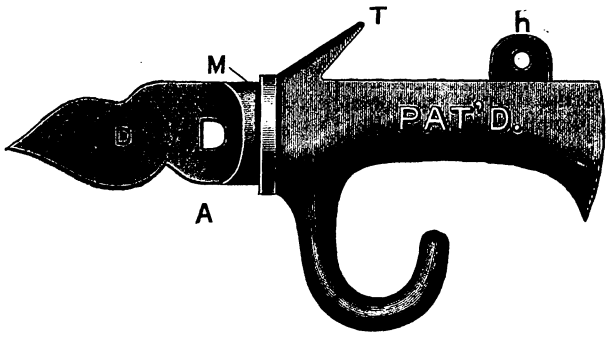


Fig. 1.—The Breck Sap Spout.

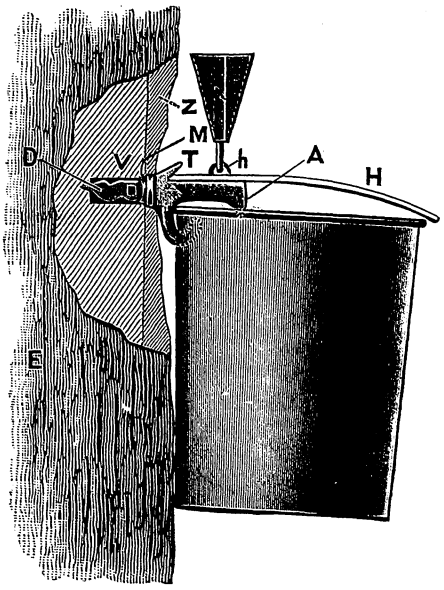


Fig. 2.—Sap Spout, Indicator, Bucket and Cover.

In Fig. 3 the cover is represented by H, and consists of a thin metallic sheet, provided with holes for receiving the spout eyes *h*. The edge of the cover is inserted under the undercut shoulder T on the spout, the eyes *h* projecting through the opening in the cover. The cover is designed to prevent rain, snow, sun and falling particles from entering the bucket and discoloring the sap collected. As the cover is attached directly to the spout, it interferes in no way with removing the bucket. It is stated that all sap spouts will freeze during a cold snap, but that the reflection of the sun on the tin cover will produce heat enough to thaw the spout from one to two hours earlier than others. In connection with the cover, in Fig. 3, is the pin No. 15 for attaching the cover to the spout, and carrying an indicator, X; this is designed to show, as far as it can be seen, that the bucket has been emptied, or *vice versa*. As each bucket is emptied and replaced on the hook, the indicator is to be turned up to show that the tree has been visited. At the next gathering the indicators are turned down. The point is made that often the same tree is visited two or three times unnecessarily after the sap has been gathered, and that the indicators prevent this loss of time; also that all the trees must be attended to, as any omission will be shown by the position of the indicator. The spouts and covers can be obtained separately if desired, also special bits by which all holes will be bored the exact depth. The manufacturers call attention to the fact that their spouts will not break in driving, and that the buckets will not twist the hooks off under the strain of high winds.

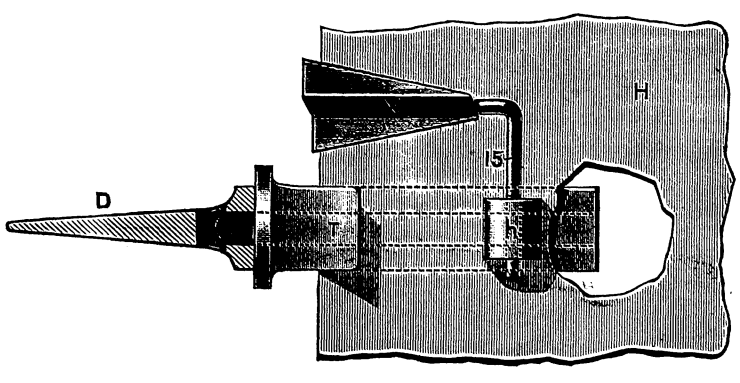
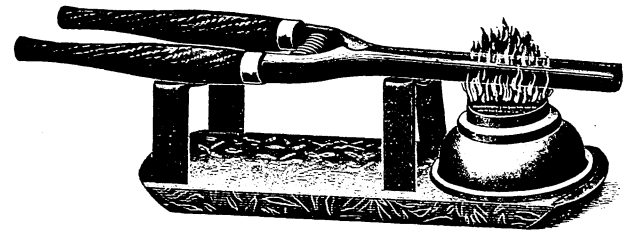


Fig. 3.—Cover and Indicator.

Princess Curling Iron Heater.

Thos. W. Houchin, 67–69 Park place, New York, has just brought out the Princess No. 1212 alcohol curling iron heater as here shown. It is similar in principle to one already marketed by him. The Princess is offered at much less cost, although affording practically the same results. The base is of decorated tin 5⅞ x 2¼ inches in size. At one end is a brass lamp with removable cap. The lamp is packed with asbestos and covered with wire gauze. It requires no trimming and is always ready for use when saturated with alcohol.

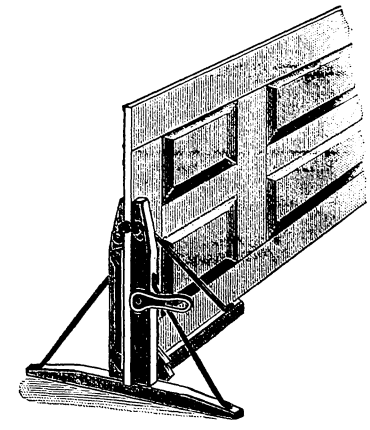


Non-Explosive Curling Iron Heater.

Occupying but little space, it is especially convenient in traveling. The heaters are neatly packed one each in a pasteboard box open at the ends.

Immel Door Clamp or Vise.

The Buckeye Mfg. Company, Union City, Ind., are offering the clamp or vise illustrated herewith. The device is



Immel Door Clamp or Vise.

arranged to hold the door when planing the top or bottom as well as the sides. The clamp is designed to be carried from doorway to doorway, and may also be used for holding window sash when fitting them. It is explained that the instant the clamp is dropped on the floor it is ready for use, being held in place by its weight, resting on three sharp points protruding from it into

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the floor. It may be folded up so as to take but little space in a tool box. Samples will be furnished by the company to any responsible dealer to be sold on three days' trial, and if not satisfactory it may be returned, and money will be refunded.

The Hallenbeck Hammerless Gun.

Syracuse Arms Company, Syracuse, N. Y., are introducing the hammerless gun, illustrations of which are herewith given. The lock, as shown in Fig. 1 is simple, being composed of but four pieces without any screws, and yet so firmly fitted, it is remarked, that one in constant use for the past year shows no signs of looseness. As shown in Fig. 2, the cocking arm, hammer and firing pin are all one piece, and the cocking arm or hammer has a bearing directly on the lug, with no intermediate pieces, making, it is stated, a remarkably easy cocking device. The cocking and firing mechanism is all contained in the metal frame, thus avoiding the cutting away and consequent weakening of the stock, and allows a large wood surface bearing on the frame. It is pointed out that the safety mechanism is simple and positive and that it is impossible to insert a shell in the gun until the hammers are at full cock. Another feature is the positive action of the cocking device, the lug hooking directly on the hammer without any intermediate or auxiliary pieces. It is explained that the main spring forces a connection between the hammer and the lug through the agency of a slot in the hammer, which device, it is claimed, is peculiar to only this gun. The barrels can be hooked on or taken off with the hammers in any position by removing the fore-end and the fore-end fastener holds it to the barrels whether the barrels are on or off of the frame. The whole gun can be taken apart and assembled without the use of other tools than a screw driver. The manufacturers state that their cheapest gun will have as close workmanship as the highest price guns, and that they will aim to do the finest of work both in fitting and finishing.

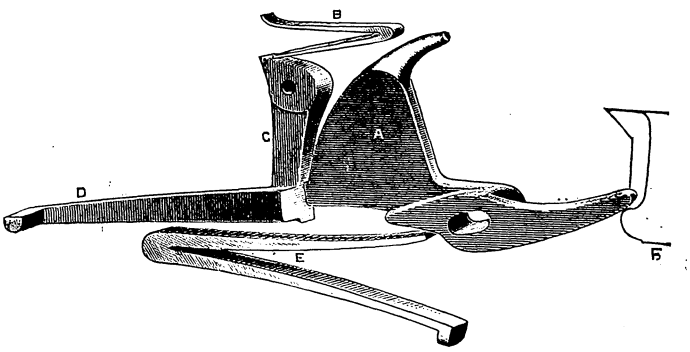
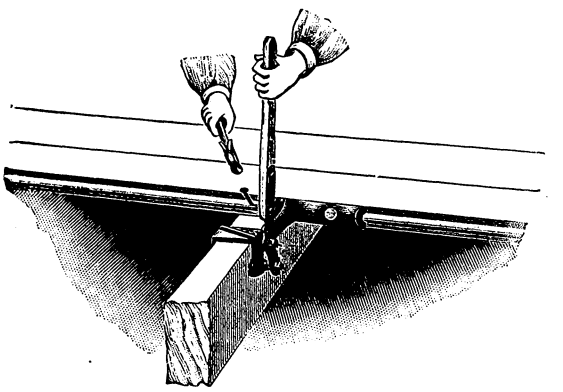


Fig. 1.—All Parts of Lock and Locking Device.

Cloyd's Flooring Clamp.

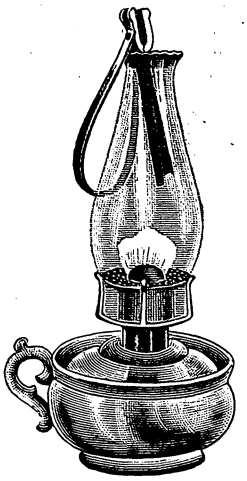
The accompanying illustration represents a flooring clamp offered by the Buckeye Mfg. Company, Union City, Ind. The clamp, it is stated, can be worked with one hand while using the hammer with the other. The point is made that the clamp will be found particularly useful when laying crooked and warped flooring, or in putting on crooked siding, and that with its use no chisel need be used or time wasted in getting siding or flooring in place for nailing.



Cloyd's Flooring Clamp.

Columbian Folding Curling Iron.

The cut herewith given illustrates both the form of the new Columbian folding curling iron and the manner in which it can be placed for heating over the flame of a kerosene lamp. There are no wood handles to get loose or burn off. As it folds into small space it is easy to carry. It is manufactured by the American Curling Iron Works, 72 to 74 Market street, Chicago.



Columbian Folding Curling Iron.

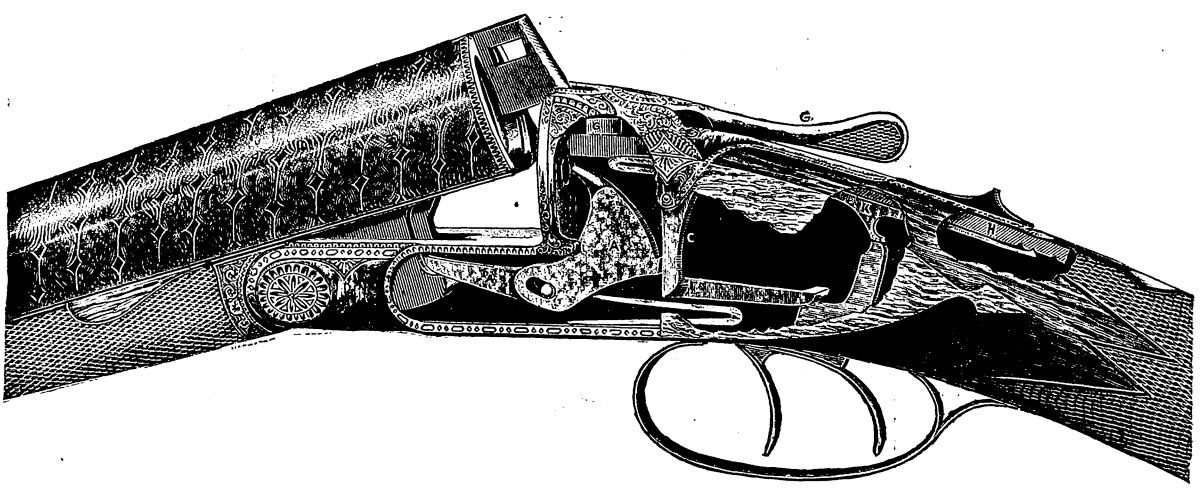
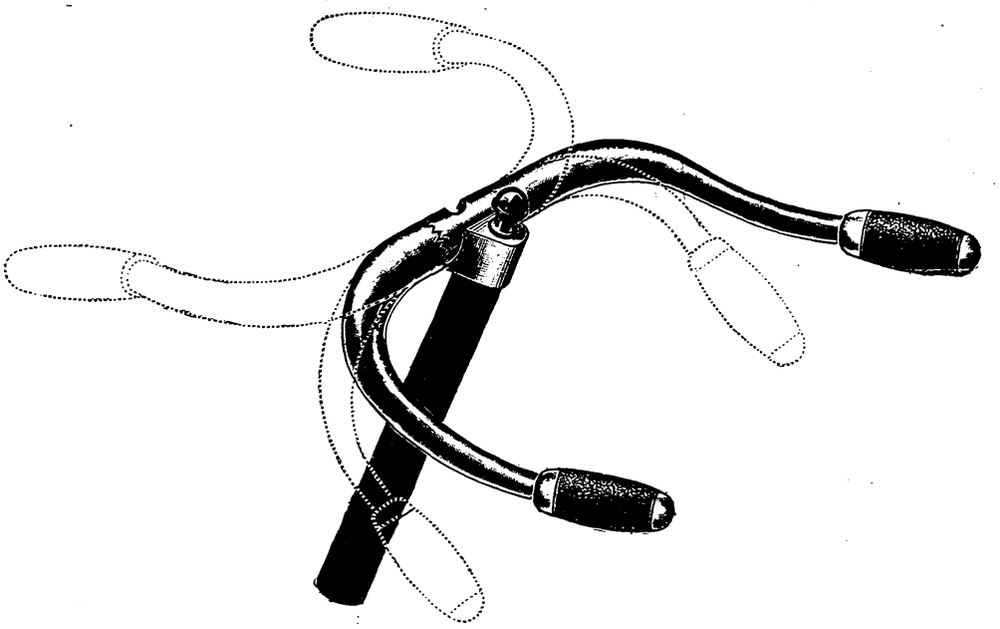


Fig. 2.—Lock and Cocking Device in Position.

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Cable Adjustable Handle Bar.

The accompanying illustration is of the cable adjustable handle bar, controlled by the Yost Mfg. Company, Yost's Station, Toledo, Ohio. It is stated that the construction of the bar is such that its strength is fully equal to the solid bar, and that either end of the bar can be thrown up or down to any angle desired by the rider without the aid of a wrench. The dotted lines in the cut give a clear idea of the changes that can be made in the position of the grips, which may be given either an upward or a downward turn. The bar can be swung around in the fork upright and thus has a 2-inch adjustment to or from the saddle. When this is done and the proper distance of the grips from the saddle is secured, the ends of the bar can be exchanged or reversed, so as to get either the up turned or down turned grip, as may be wanted. The design of the bar is to solve the problem of how to secure any style of handle bar a rider may fancy without the annoyance of an objectionable increase in weight or the necessity of having a special bar made for him. The company expect to fit the adjustable handle bar for any make of machine.



Cable Adjustable Handle Bar.

The Darling Filters.

Darling Filter Company, 26½ South Water street, Cleveland, Ohio, are offering the filters represented in the accompanying cuts. The Self Cleaning filter, shown in Fig. 1, has a glass casing, which is used where the water pressure is not over 75 pounds to the square inch; where more than that a nickel casing is used. The manufacturers state that the filter never has to be taken apart to be cleaned and that a feature peculiar to this filter is the forcing of the cleaner against the porous tube, so that by revolving the goose neck at the top of the filter a few times the tube is cleaned. One of the valves at the bottom of the filter is for carrying off the accumulated dirt and the other valve is for supplying the water to be filtered. The point is made that through the glass casing the dirt can be seen accumulating on the porous tube and also disappear in cleaning. The filter has been tested in Cleveland, St. Louis, Kansas City and at other points. The report of an analytical chemist at Kansas City states that a chemical analysis and microscopical examination showed that all suspended matter, as well as a portion of the organic matter, had been removed and that the water was free from microbes existing in the unfiltered water. The manufacturers claim that the filter is absolutely germ proof, that it will filter from 10 to 15 gallons of water per hour, and that it is cleaned in three minutes, without shutting off the water or taking out the tubes. Fig. 2 shows the Little Darling filter, which is taken apart for cleaning. This is done by simply unscrewing the screw at the top of the filter, lifting the nickel casing out and brushing off the porous tube. The Little Darling is shown in Fig. 3 attached to a water cooler. The cooler

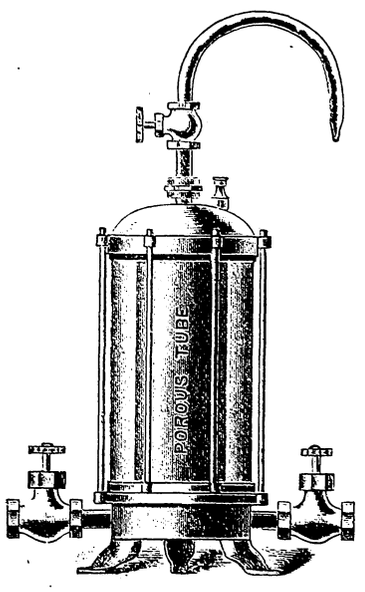


Fig. 1.—Darling Self Cleaning Filter.

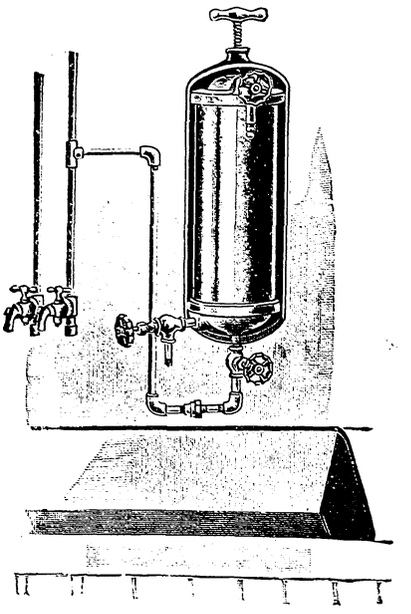


Fig. 2.—Little Darling Filter.

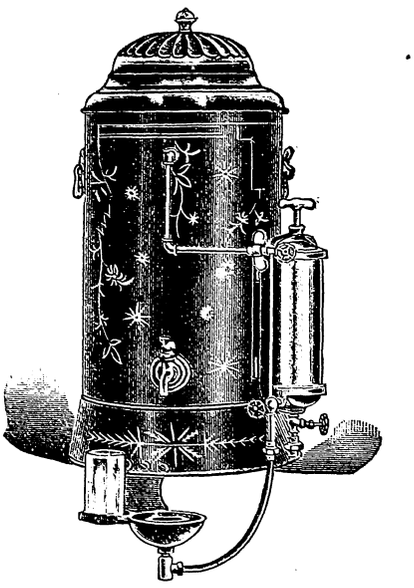


Fig. 3.—Little Darling Filter and Water Cooler.

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is provided with two reservoirs, one for ice and the other to hold 3 gallons of filtered water. It also has an automatic valve for closing the filter when the reservoir is full. This arrangement is designed for use where a large quantity of filtered water is required.

Hayes' Safety Kettle Bottom.

The safety kettle bottom shown herewith is offered by the Diamond Hardware Company, 620 Atlantic avenue, Boston, Mass. It is made of steel, so as to give it requisite strength, and is principally designed to be placed inside a kettle, to prevent meat, vegetables and other articles of food sticking or burning on the kettle bottom while being boiled. It is explained that the bottom may be put to many other uses, as



Hayes' Safety Kettle Bottom.

follows: Turning it bottom side up in the kettle, it makes a good and convenient steamer; it may be used bottom side up on the top of the stove to keep hot tea, coffee or anything that it is not desirable to place on the bare stove; it may be placed in the same position on the table for a sad iron holder; if pies are not sufficiently baked on the bottom the baking may be completed by putting them in the kettle bottom on the top of the stove; it may be used for broiling meat or toasting bread by removing a stove lid and setting the bottom in the kettle hole, and in the same position a tea or coffee pot may be set in it to boil quickly.

The Yost Tire.

The tires and rims which the Yost Mfg. Company, Yost's Station, Toledo, Ohio, will fit on their gentlemen's wheel are illustrated in the cuts herewith given. The tire is of the inner tube pattern, and the outer cover, as shown in Fig. 1, has beaded edges to hold the wires which fasten it to the rim, one on each side. One of the wires is shown in Fig. 2. It is explained that the rim is so designed that it forms a grip for the outer cover, partially supporting it and relieving the wires of much of the strain. The wires are so arranged that they can be locked at any point on the tire, and the lever by which each wire is drawn up to the proper tension and locked has three points of adjustment, as in Fig. 3. It is stated that in case of a puncture the wire can be removed from either side and the inner tube taken out, patched and replaced very quickly and the rim adjusted to place almost instantly. The merits claimed for the tire are its simplicity, ease of repair and resiliency. It is stated that it is very sensitive on the road and will not roll, as the rims and wires bind the cover into place at the extreme outer edges of the rim, thus preventing its pulling away from the rim or rolling. The company will fit these tires and rims to any make of wheel desired.

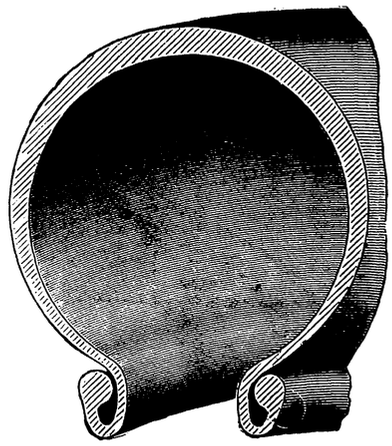


Fig. 1.—The Yost Tire.

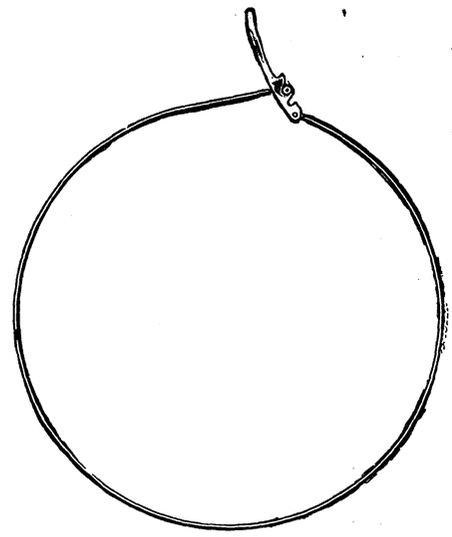


Fig. 2.—The Fastening Wire.

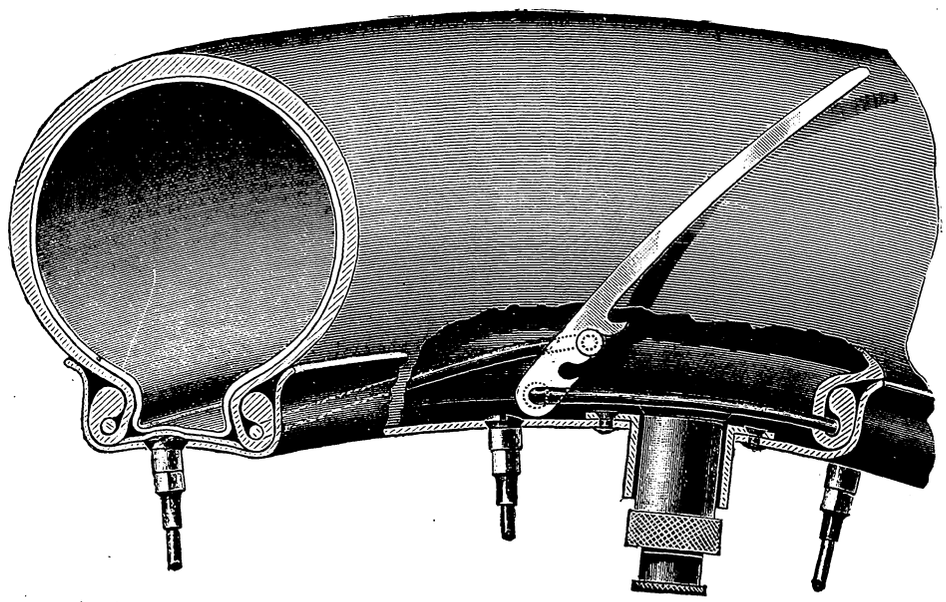


Fig. 3.—The Yost Tire and Rim.

The Mason Regulator Company of Boston have made three additions to their engineering series. No. 4, "Electricity for Engineers," contains such facts about electrical machinery as every engineer who has it under his charge needs to know; also all the rules of the Underwriters' Union for the installation of electric plants; 50 cents, post paid. No. 7, the "Engineers' Log Book," for keeping an accurate and systematic record of the engine room; 50 cents. No. 8, the "Chief Engineers' Record Book," for keeping the record of the mechanical plants of large factories; 75 cents.

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Current Hardware Prices.

DECEMBER 27, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓&33⅓&10%
Excelsior....₩ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

American—

Eagle Anvils, ₩ ℔ 9¢. ...15@15&5%
Horse shoe brand, Wrought.....11@11½¢
Moore & Barnes Mfg. Co.....33⅓%

Imported—

Armitage Mouse Hole.....10½@11¢
S. & H., machine finished..10½¢@11½¢
Trenton .....10@10½¢
Wilkinson's.....10½@11¢
Peter Wright's.....11@11½%

Anvil Vise and Drill—

Allen Anvil and Vise $3.00.....40&10%
Cheney Anvil and Vise.....25%
Millers Falls Co., $18.00.....20%
Star .....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—

Boring Machine Augers.....70@70&10%
Car Bits, 12-in. twist.....50%
Common Augers and Bits.....70@70&10%
Cincinnati Bell-Hangers' Bits.....30&10
Forstner Pat. Auger Bits.....15%
Jennings' Pattern Car Bits.....40%
Jennings' Pattern Auger Bits.....60%
C. E. Jennings & Co., No. 10, extension lip 40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits. ₩ set 32½ quarters, No. 5, $5; No. 30, $3.50.25%
Russell Jennings' Augers and Bits.25&10%
Lewis' Patent Single twist.....45%
L'Hommedieu Car Bits.....15&10%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
Snell's Bits.....60&5%

Bit Stock Drills—

Cleveland.....50&10&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%
Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Steer's, No. 1, $26; No. 2, $18.....35@40%
Stearn's No. 2, $48.....20%
Swan's.....40%

Gimlet Bits—

Bee.....25@25&5%
Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.25....40&10%
Double Cut:
Shepardson's.....45@45&10%
Ct. Valley Mfg. Co.....30&10%
Hartwell's.....₩ gro., $10.00..40&10%
Douglass'.....40&10%
Ives.....60@60&10%

Hollow Augers—

Bonney's Adjustable, ₩ doz $48.....50%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%
Douglass'.....33⅓@33⅓&10%
French, Swift & Co. (Beecher).....33⅓@33⅓&10%
Ives'.....33⅓@33⅓&10%
Ives' Expansive, each $4.50.....50&5%
Stearns'.....20&10%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Snell's.....25@25&10%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%
Watrous'.....25@25&10%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@ 1.40
Awls, Handled Brad....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands.	$7.00	$7.50
First qual., other brands	6.50 / 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1 .....3¼¢@4¢; 4½¢@5¢ } 3% cash
Nos. 7 to 14.....7%
Nos. 15 to 28.....47½%
Nos. 19 to 22 .....70%
Concord Axles, loose collar.. 4½¢@5¢
Concord Axles, solid collar.. 5¢@6¢

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

No.	2000	20	30
Chatillon, ₩ doz.	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances.....50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-in., $1.80; 12-inch, $2.00; 13½-inch, $2.50; 15-inch, $3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Dover.....₩ doz $1.00@$1.20
Dover (Standard Co.).....₩ doz $1.00
Duplex (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)... ₩ doz. $3.50
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Improved Acme (H. & R. Mfg. Co.)..... ₩ gro. $9.00
Silver & Co.....₩ doz $5.50
Spiral.....₩ gro $4.25 @ $4.50
Triple (H. & R. Mfg. Co.).....₩ gro $16.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2.....20%

Bells—

Cow—

Common Wrought.....60&10%
Dodge, Genuine Kentucky....70@70&10%
Kentucky Durham.....70&10%
Kentucky, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Texas Star .....50&10@50&10&5%
Western, Sargent's list.....70&10%

Door—

Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Gong, Abbe's.....33⅓&10%
Gong, Barton's .....40&10@50%
Gong, Yankee.....45&10%
Lever, R. & E. Mfg. Co.'s.. .....50&10&2%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Pull, Brook's.....50&10&2%

Electric—

Bigelow & Dowse.....20%
Wollensak's.....20%

Hand—

Extra Heavy Brass.....70%
Light Brass.....70&10@70&10&5%
Silver Chime.....33⅓&10%
White.....70%
Globe Cone's Patent).....25&10@35%

Miscellaneous—

Call.....45@50%
Farm Bells.....₩ ℔ 3¢&3¼¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Hand Bellows.....40&10@50%
Molders'.....40&10@50%

Belting, Rubber—

Common Standard.....75@75&10%
Extra.....60&10@60&10&10%
Standard.....70&5@70&10%
N.Y.B.&P. Co., Carbon.....60@60&5%
N.Y.B.&P.Co., Diamond..... 50@50&5%
N.Y.B.&P.Co., Para.....40@40&5%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%
Stoddard's Lightning Tire Upsetters..15%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron..60@60&10%
Moore's Novelty, Mal. Iron.....50%
Sure Grip Steel Tackle Blocks.....25%
See also *Machines. Hoisting*

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84..... 80&10%
Genuine Eagle, Norway, list Oct. '84..... 80&5@80&10%
Eagle, Norway, list Oct. '84..80&10@80&15
Phila. pattern, list Oct. 7, '84..... 80%
R.B.&W., old list.....70%
Bolt Ends, list Jan. 1, 1890..80&10@80&20%
Machine, list Jan. 1, 1890. .80&10@80&20%

Door and Shutter—

Cast Iron Barrel; Square, &c.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Cast Iron Shutter Bolts.....70&10%
Ives' Patent Door Bolts..60&10@80&10&5%
Wrought Barrel.....70&10@75%
Wr't B. K.Flush, Common.....55&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....60&10%
Wr't Shutter, all Iron, Stanley's..... 60&10@60&10&10%
Wrought Square.....70&10@75%
Wr't Sunk Flush, Sargent's list....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%

Stove and Plow—

Plow.....60&10&5@60&10&10%
Stove.....60&10@60&10&10%
R. B. & W., Plow.....55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
American Screw Company
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16 '84.....80%
Philadel., list Oct. 16, '84 .....80%
Bay State, list Feb. 28, '83.....65%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
R. B. & W., Philadel., list Oct. 16, '84...80%

Borers, Tap—

Common and Ring.....20&10%
Clark's.....33⅓@35%
Enterprise Mfg. Co.....20%
Ives' Tap Borers.....33⅓&5%

Borax—

Per ℔.....9½@10½¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Boxes, Miter.

Spliker's Excelsior, 3 in. $7.50, 4 in $8.50, 5 in. $13.00, 6 in. $15.00.....20%

Braces—

American Bit Brace and Tool Co.,
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37.....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber s.....50&10%
Bartholomew's,
Nos. 25, 27 and 30..... 50&10@60&5%
Nos. 117, 118, 119..... 70@70&5%
Common Ball, American.....$1.00@$1.10
Davis Patent..... 50&10%
Fray's Genuine Spofford's...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%
Rose & Johnson.....50%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15

Brackets—

Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting. } Inch..... 9 10 9x11
Per doz...$4.50 5.50 6.50
Morgan Odorless.....₩ doz. $12, 50%
New Haven.....50%
Queen City..... 33⅓%
Wire Goods Co.....65&10%

Buckets, Well—

Galvanized—

Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00
Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers.*

Butts—

Brass—

Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%
Cast Brass, Tiebout's..... .. 50%
Wrought Brass.....80@80&10%

Cast Iron—

Fast Joint, Broad.....50&10@60%
Fast Joint, Narrow.....50&10&5@60%
Loose Joint.....
Loose Joint, Japanned.....
Loose Joint, Jap. with Acorns..
Loose Pin, Acorns..... 75&5@
Loose Pin, Acorns, Japanned... 75&10
Loose Pin, Acorns, Japanned, Plated Tips..... &5
Mayer's Hinges.....
Parliament Butts.....

Wrought Steel—

Fast Joint, Broad.....
Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Inside Blind, Light..... List Jan. 2, 1893, 40@40&10%
Inside Blind, Regular.....
Loose Joint, Broad.....
Loose Pin.....
Table Butts, Back Flaps, &c....
Bronzed Wrought Butts.....50@50&10%

Cages, Bird—

Hendryx, Brass or Enameled..... 50&10%
Hendryx, Wood.....40&10%

Calipers—See *Compasses*

Calks Toe—

Burke's, One Prong, Blunt.....5½@6¢
Burke's, One Prong, Sharp... .... 6½@7¢
Burke's, Two Prong, Blunt..... 7½@8¢
Gautier, One Prong, Blunt..... 5½@6¢

Can Openers—See *Openers, Can.*

Cans, Milk—

S S. & Co.: 5-gal., $3.00; 8-gal., $4 40; 10-gal., $4.75 each.....40&10

Cans, Oil—

Galvanized Blue Band, 1 gal., ₩ doz. $2.25
Galvanized Blue Band, 5 gal., Tip-Top, ₩ doz, $12.00
Galvanized Blue Band, 5 gal., Faucet, ₩ doz., $8.00
Glass Oil, Friend.....₩ doz. $2.75

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co. ₩ 1000
Eley's E. B.....56@58¢
Eley's D Waterproof, Central Fire $1.60
E. B. Grnd. Edge, Cent. Fire, 1-10's..... 47@50¢
E. B. Trimmed Edge, 1-10's.....47@50¢
F. L. Waterproof, 1-10's.....35@37¢
G. D.....27@30¢
Musket. Waterproof, 1-10's..... 50@53¢
S. B. Genuine Imported..... .....45¢

Primers—

Berdan Primers, $1.00..... 2%
B. L. Caps (Sturtevant Shells) $1 00... 2%
All other Primers, $1.20..... 2%

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.. ..... 25%

Carpet Stretchers—

See *Stretchers, Carpet.*

Cartridges—

B. B. Caps, Con. Ball, Swgd., $2.00.....2%
B. B. Caps, Round Ball, $1.75.....2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Cent. Fire, Military and Sporting 15&5&2%
Cent. Fire, Pistol and Rifle..... 25&5&2%
Primed Shells and Bullets.....15&5&2%
Rim Fire Cartridges .....15&5&2%
Rim Fire Military.....15&2%

Carpet Sweepers—

See *Sweepers, Carpet.*

Casters—

Bed..... } Brass.....55@55&10%
Plate..... } Others....60@60&10%
Shallow Socket...
Deep Socket.....40&10%
Giant Truck Casters..... 35%
Gwinner's Common Sense..... .45%
Gwinner's Hercules..... ..45%
Martin's Patent (Phœnix).45&10@50&10%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Socket Truck Casters.....50@50&10%
Stationary Truck Casters.....50&10%
Tucker's Patent, low list.....45%
Yale Casters, low list.....45%
Yale, Gem.....70%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised May, 1893..... .60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.50	3.40	3.25

Less than cask lots, add ¼¢@½¢ ₩ ℔
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12, 1892. 60@60&10%
Barnes' Reinforced Sash ..... 60&10%
Barnes' Victor Sash..... 65%
Covert Halter..... 60&2%
Covert Heel Chain..... 50&2%
Covert Traces..... 35&2%
Galvanized Pump Chain.
5 ton lots.....₩ 100 ℔ $5.50
1-ton lots.....₩ 100 ℔ $5.75
500-℔ lots.....₩ 100 ℔ $6.75
Less than 500 ℔ .. ₩ 100 ℔ $7.00
Jack Chain, Iron and Brass, list July 10, 1893..... .....60@10%
Oneida Halter Chain.....60@60&5%

Chalk—

See also Crayons.
Blue, case lots...₩ gr 75¢; mall lots 80¢
Red, case lots...₩ gr 67¢; small lots, 72¢
White, case lots.₩ gr 50¢; small lots, 52¢

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Chalk Lines—See *Lines.*

Checks, Door—
Unity 50%

Chisels—
Socket Framing and Firmer
Mix, New Haven, Ohio Tool Co., P. S. & W., Witherby ..... 75&10@75&10&10%
Buck Bros 30%
Douglass ..... 75@75&5%
Merrill ..... 60&10@60&10&5%
L. & I. J. White ..... 30@30&5%

Tanged and Miscellaneous.
Buck Bros 30%
Butchers' ..... $4.75@$5.00 to £
Cold Chisels, fair quality, ℔ ..... 14@16¢
Spear & Jacksons' ..... $5 to £
Tanged Firmers ..... 50@50&10%

Chucks—
Beach Pat ..... each, $8.00 ..... 20%
Danbury ..... each, $6.00, 30@30&5%
Graham Patent 33⅓%
Morse's Adjustable, each, $7.00, 20@20&5%
Syracuse, Balz Pat 25%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Drill Chucks 15%
Independent Lathe Chucks 40%
Universal Lathe Chucks 40%
Union Mfg. Co.
Combination 40%
Independent 40%
Universal 40%
Victor $8.50, 25%

Churns—
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.

Clamps—
Adjustable, Cincinnati ..... 15&10%
Adjustable, Hammers ..... 15@15&5%
Adjustable, Stearn's ..... 30@30&10%
Barnes' Machinists' Clamps 33⅓%
Cabinet, Sargent's ..... 70&10%
Carpenter's, Cincinnati ..... 25&10%
Carriage Makers', P., S. & W Co.. 40&10%
Carriage Makers', Sargent's... 75@75&5%
Eberhard Mfg. Co ..... 40&5@40&10%
R. I. Tool Co.'s Wrought Iron 25%
Saw Clamps, see Vises, Saw Filers'.
Stearn's Adjustable Cabinet and Corner ..... 30@30&10%
Warner's ..... 40&10@40&10&5%

Cleavers, Butchers'—
Beatty's ..... 40@40&5%
Bradley's ..... 25@30%
Foster Bros 30%
New Haven Edge Tool Co.'s 40%
P., S. & W ..... 33⅓&5@33⅓&10%
Schulte, Lohoff & Co ..... 40@40&5%
L. & I. J. White ..... 20&5%

Clips—
Baker Axle Clips 25%
Norway, Axle, ¼ & 5-16 ..... 55&5&5%
Norway Spring Bar Clips, 5-16...60&5&5%
2d grade Norway Axle, ¼ & 5-16...65&5%
Steel Felloe Clips ..... ℔, 5¢
Superior Axle Clips ..... 66⅔&5@70%
Wrought Iron Felloe Clips ..... ℔, 5½¢

Cloth and Netting, Wire
—See *Wire, &c.*

Cockeyes 50%

Cocks Brass—
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.) ..... 60&2@60&10

Coffee Mills—See *Mills, Coffee.*

Collars Dog—
Brass, Pope & Steven's list 40%
Chapman Mfg. Company, new list 40%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list 40%
Medford Fancy Goods Co ..... 40&10@50%

Combs Curry—
American Curry Comb Co. ..... 33⅓@40%
Fitch's ..... 50&10@50&10&10%
Kohler's Humane ..... ℔ doz., $1.75
Kohler's Magic Oscillating... ℔ doz., $2.00
Rubber, per doz., $10.00 ..... 25%

Compasses, Dividers &c.
Compasses, Calipers, Dividers. 70&10@75%
Bemis & Call Co.'s
Dividers 65%
Calipers, Call's Patent Inside 55%
Calipers, Double 65%
Calipers, Inside or Outside 65%
Calipers, Wing 60%
Compasses ..... 50&5%
Excelsior 50%
Starrett's
Combination Dividers 25%
Lock Calipers and Dividers 25%
Spring Calipers and Dividers....25&10%
Stevens & Co.'s ..... 25&10%

Coolers, Water—
S. S. & Co.: 2-gal., $2.00; 3-gal., $2.50; 4-gal., $2.75; 6-gal., $3.40 each....33⅓%

Coopers' Tools—
See *Tools, Coopers'.*

Cord— Sash—
Braided, Crown Drab and Fancy, ℔, 55¢ 80%
Braided, Crown White, ℔, 50¢...50%
Cable Laid Italian Sash ..... ℔, 19@20¢
Common ..... ℔, 8½@9¢
Common Russia Sash ..... ℔, 12½@13¢
Egyptian, India Hemp, Braided ..... 26¢
India Cable Laid Sash ..... ℔, 11½@12¢
Massachusetts, White ..... 25¢
Ossawan Mills—
Braided, Giant, Drab and Fancy, ℔ 35¢ 10%
Braided, Giant, White, ℔ 30¢ 20%
Patent, good quality ..... ℔, 10@11¢
Patent Russia Sash ..... ℔, 13½@ 14¢
Samson—
Braided, Drab Cotton ..... ℔, 42¢
Braided, Italian Hemp ..... ℔, 40¢
Braided, Linen ..... ℔, 56¢
Braided, White Cotton ..... ℔, 37¢
Semper Idem, Braided, White ..... 26¢
Silver Lake—
A quality, Drab, 55¢ 25%
A quality, White, 60¢ 25%
B quality, Drab, 35¢ 10%
B quality, White, 30¢ 10%
Sylvan Spring, Extra Braided, Drab..39¢
Sylvan Spring, Extra Braided, White.34¢
Tate's Solid Braided—
Economy, Drab ..... ℔, 27¢
Economy, White ..... ℔, 22¢
Hercules, Drab ..... ℔, 30¢
Hercules, White ..... ℔, 25¢
White Cotton Braided, fair... ℔, 23@24¢

Wire Picture—
Braided or Twisted ..... 80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters
—See *Knives, Corn.*

Crackers, Nut—
Acme.
Japanned, ℔ gro., $30 ..... 50%
Nickel Plated, ℔ gro. $30 ..... 10%
Blake's Pattern, ℔ doz., $2.00 ..... 10%
Table (H. & B. Mfg. Co) 40%
Turner & Seymour Mfg. Co 50%

Cradles—
Grain ..... 50&2@50&5&2%

Crayons—
White Crayons, ℔ gross ..... 7@8¢
D. M. Steward Mfg. Co.:
Metal Workers', ℔ gross, $2.50 ..... 25%
Railroad, ℔ gross, 2.00 ..... 25%
Rolling Mill, ℔ gross, 2.50 ..... 25%
Soapstone Pencils, ℔ gross, 1.50 ..... 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—
See *Combs, Curry.*

Curtain Pins—
See *Pins, Curtain.*

Cutters—
Meat—

American 30%						
Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60
Enterprise 25%						
Nos.	10	12	22	32	42	
Each	$3	$2.50	$4	$6	$15	
Dixon's, ℔ doz. ..... 40@40&5%						
Nos.	1	2	3	4		
	$14.00	$17.00	$19.00	$30.00		

Draw Cut, each:

Nos.	5	6	8
	$50	$75	$80	$225 ..... 20@25%

Hale's, ℔ doz. 70%

Nos.	11	12	13
	$27.00	$33.00	$45.00

Home No. 1, ℔ doz., $26.00 ..... 55&10%
Little Giant, ℔ doz. ..... 40&10@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

Miles' Challenge, ℔ doz. ..... 45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Triumph No. 505, ℔ doz., $21.00...25@30%
Woodruff's, ℔ doz. ..... 40@40&5%

Nos.	100	150
	$15.00	$18.00

Beef Shavers (Enterprise) 20%
Chadborn's Smoked Beef Cutter, ℔ doz., $66.00

Slaw and Kraut—
Tucker & Dorsey Mfg. Co.:
Kraut Cutters 40%
Slaw Cutters, 1 Knife, ℔ gross...$21.00
Slaw Cutters, 2 Knife, ℔ gross... 30.00

Tobacco
Acme ..... ℔ doz., $20.00. 40%
All Iron ..... ℔ doz., $4.25
Champion ..... 20&10@30%
Nashua Lock Co.'s.. ℔ doz., $18.00, 50@55%
Sargent's ..... ℔ doz., $24.00, 55&10
Wilson's 55%

Washer—
Appleton's ..... ℔ doz., $16.00, 60&10%
Bonney's ..... 30&10%
Cincinnati ..... 25&10%
Johnson's ..... ℔ doz., $11.00, 33⅓%
Penny's.. ℔ doz.,, Pol. $14; Jap'd, $16, 55%
Smith's Pat.... ℔ doz., $12.00, 20&10&10%

Diggers, Post Hole, &c.—
Cronk's Post Bars, ℔ doz., $60.00, 50&5@50&10%
Eureka Diggers..... ℔ doz. $12.00@$13.00
Fletcher Post Hole Augers, ℔ doz., $36.00, 20@20&10%
Gem, Improved ℔ doz.,. $9.00@$10.00 net
Gibbs' Columbia ..... ℔ doz., $13.00
Gibbs' Imperial ..... ℔ doz., $7.50
Gibbs' National ..... ℔ doz., $12.00
Gibb's Post Hole Digger..... ℔ doz., $15.00
Kohler's Hercules ..... ℔ doz., $14.00
Kohler's Invincible ..... ℔ doz., $12.00
Kohler's Little Giant ..... ℔ doz., $18.00
Kohler's New Champion.... ℔ doz., $8.00
Samson, ℔ doz., $34.00 ..... 25@25&10%
Scheidler ..... ℔ doz., $18.00
Shimer's Hollow Handle.. ℔ doz., $24.00, 50%
Vaughan's Post Hole Auger, ℔ doz., $8.50@$9.50

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Checks—
See *Checks, Door.*

Door Springs—
See *Springs, Door.*

Drawers.
Money, ℔ doz ..... $18@$20
Waddel's Improved, No. 1. ℔ doz. $15.00
Waddel's Improved No 2. ℔ doz. $18.00
Waddel's Desk and Drawer..each. $7.50
Waddel's Desk and Show case. each $7.50

Drawing Knives—
See *Knives, Drawing.*

Drills and Drill Stocks—
Blacksmiths' ..... each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Automatic Boring Tools ..... $1.75@$1.85
Breast, Bartholomew's.... each $2.50 25&10@40%
Breast, Millers Falls ..... each $3.00, 25%
Breast, P. S. & W ..... 40&10%
Breast, Wilson's ..... 30&5%
Chicopee Automatic Drill ..... 20&10%
Goodell Automatic Drills ..... 40&5%
Ratchet, Curtis & Curtis 30%
Ratchet, Ingersoll's 25%
Ratchet, Merrill's ..... 20@20&5%
Ratchet, Moore's Triple Action....25@30%
Ratchet, Parker's ..... 20@20&5%
Ratchet, Weston's ..... 20@25%
Ratchet, Whitney's ..... 20&10%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00 ..... 20&10%

Twist Drills—
Cleveland ..... 50&10&10%
Diamond, W. & B ..... 50&10&10%
Graham's Pat. Groove Shank. 50&10&10%
Morse ..... 50&10&10%
New Process ..... 60&10&10%
Standard ..... 60&10&10%
Syracuse (Metal list) ..... 50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—
See *Pans, Dripping.*

Drivers, Screw—
Allard's Spiral, new list 25%
Brace Screw Drivers ..... 25&10%
Buck Bros 30%
Buck Bros.' Screw Driver Bits...27½&5%
Clark's Pat ..... 30@33⅓%
Cincinnati ..... 25&10%
Champion ..... 25&10%
Disston's 50%
Douglass Mfg. Co ..... 20@20&10%
Ellrich's Socket and Ratchet..25@25&10%
Fray's Pat. Hdle Sets...No. 3, $12.00, 45%
Gay & Parsons 35%
Goodell's Automatic 50%
Knapp & Cowles
No. 1 ..... 60&20@70%
No. 2 ..... 60&10&10@70&5%
No. 3 ..... 60&5@60&10%
Nos. 4 and 00, Acme and Ideal...50&5@50&10&5%
Kolb's Common Sense.. ℔ doz., $6.00, 25&10%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
P. S. & W 70%
Sargent & Co.'s
No. 1, Forged Blade ..... 60&10&10%
Nos. 20, 40 and 60 ..... 66⅔&10&10%
Screw Driver Bits, Parr's.. ℔ gross, $6.25
Screw Driver Bits ..... ℔ doz., 50@75¢
Stanley R. & L. Co.'s
No. 64, Varnished Handles ..... 65&10%
No. 86 ..... 70&10%
Stearns' ..... 25&10&5%
Syracuse Screw-Driver Bits.....30&30&5%
C. T. Williamson Wire Novelty Co.....50%

Egg Beaters—See *Beaters, Egg.*

Egg Poachers—
See *Poachers, Egg.*

Electric Bell Sets—
See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F.FF.
10-℔ cans, 10 in case	6 ¢	6½¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢
Kegs, ℔	4½¢	5 ¢	2½¢
½ kegs, ℔	4¾¢	5½¢	2¾¢
¼ kegs, ℔	5 ¢	5½¢	3 ¢

Enameled and Tinned Ware—See *Ware, Hollow*

Escutcheon Pins—
See *Pins, Escutcheon.*

Escutcheons—
Brass Thread ..... 60@60&10%
Door Lock....Same dis. as Door Locks.
Wood 25%

Expanded Metal—
List No. 5.
Door Mats, Galvanized 25%
Fencing, Painted Sheets 20%
Lathing 10%
Netting. Painted Sheets 20%
Tree Guards, Paneled 15%
Window Guards, Paneled 15%

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Austin & Eddy No. 2008 ..... ℔ gr., $9.00
Mackrell's, ℔ doz., $1.00 ..... 20@20&10%
Security Gravity ..... ℔ gr., $9.00
Van Sand's Old Pat., $15 ℔ gr..... 55&10%
Van Sand's Screw Pat, $15 ℔ gr.. 60&10%
Zimmerman's ..... 50&10%

Faucets—
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots....50&10%
Cork Lined ..... 70&5@70&10%
Fenn's 20%
Fenn's Cork Stops 33⅓%
Frary's Pat. Petroleum 50%
Metallic Key, Leather Lined... 60&10@ 60&10&10%
John Sommers'
Peerless Best Block Tin Key 40%
IXL, 1st quality, Cork Lined 50%
Diamond Lock 40%
Perfection, Fla. Red Cedar (in boxes) 40%
Boss Metallic Key 50%
Reliable Cork Lined 80%
O. K. Western Pattern Cork Lined..50%
No Brand, Red Cedar (in bbls.)..50&10%
Western Pattern Metal Key 40%
No Brand Metal Key 60%
Self Measuring
Enterprise, ℔ doz., $36.00 ..... 20%
Lane's ℔ doz., $36.00 ..... 25&10%
Star 60%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list....60%

Felloe Plates—
See *Plates, Felloe.*

Fibre Ware—See *Ware, Fibre.*

Fifth Wheels—
Derby and Cincinnati ..... 45&5%
Brewster ..... 50&5%

Files—
Domestic—
American ..... 66⅔&10@66⅔&10&5%
Arcade ..... 60&10&5@60&10&10%
Eagle ..... 60&10&10@70%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Nicholson Files, Rasps, &c. 60&10@60& 60&10&10%
Nicholson (X.F.) Files 25%
Nicholson's Royal Files (Seconds)....75%
(extra prices on certain sizes.)
Other makers, best brands..60&10&5@70%
Fair brands ..... 70&10@70&10&10%
Second quality ..... 80@80&5%
Arcade Horse Rasps.. 60&10@60&10&5%
Chelsea Horse Rasps, Hand Cut...50&10%
Heller's Horse Rasps ..... 50&10@60%
McCaffrey's Horse Rasps ..... 60&10%
Trojan Horse Rasps ..... 60&10&5%

Imported—
Butcher... ..... Butcher's list, 20%
Stubbs... ..... Stubb's' list 25@30%

Fixtures Grindstone—
Moore's 55%
P., S. & W. Co ..... 50&10%
Reading Hardware Co ..... 30&10%
Sargent's Patent ..... 70&10%

Fluting Machines—
See *Machines, Fluting.*

Fluting Scissors—
See *Scissors, Fluting.*

Fodder Squeezers—
See *Squeezers, Fodder.*

Forks—
Hay, Manure, &c. Asso. List, 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—
Saw—
Red, Polished and Varnished... ℔ doz., $1.50, 25%
White Vermont..... ℔ gro.. $9.00@$10.00

Screen, Window and Door—
Bonanza Window Screens..50&5&50&10%
Cortland ..... 40@40&5%
Empire Fancy Screen Doors, ℔ doz ..$12
Phillips' Window Screen Frames.... 50@50&5%
Porter's Pat. Window and Door Frame, 33⅓&10%
Stearns' Frames and Corners. 25@25&10%
Warner's Screen Corner Irons..33⅓&10%

Freezers, Ice Cream—
American 60%
Arctic ..... 70@70&5%
Blizzard 70%
Boss and Pet ..... 60&10&10&10%
Buffalo Champion ..... 65@65&5%
Confectioners' Machine 50%
Crown 60%
Double Action Crown 60%
Gem 65%
Giant 60%
Good Luck ..... 65@65&5%
Granite State ..... 65@65&5%
Keystone, P., D. & Co., each, $1.50.. 20%
Model ..... 60@60&5%
Peerless ..... 60&10%
Shepard's Lightning ..... 65@65&5%
Standard ..... 60@60&5%
Standard Double Action ..... 60@60&5%
Star 60%
White Mountain ..... 60@60&5%
Zero 70%

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fruit Pickers—
See *Pickers, Fruit.*

Fry Pans—See *Pans, Fry.*

Funnels—
Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro. 30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz. 25%

Furnaces, Soldering—
Burgess No. 3 Gem, Copper reservoir.$8.50
Burgess No. 3 Gem tin reservoir....$7.00
Clayton & Lambert No. 1 Fire-Pot, complete $6.00

Fuse—Dls. 10@2½ cash. ℔ in 1000 ft.
Common Cotton Fuse, for dry gr'nd...$3.00
Common Hemp Fuse, for dry ground. 2.80
Double Taped Fuse, for very wet gr.. 5.60
Single Taped Fuse, for wet ground.. 4.75
Triple Taped Fuse, for very wet gr. 6.40
Large Gutta Percha Fuse, for water.15.00
Small Gutta Percha Fuse, for water.10 00

Gates Molasses—
Boss, ℔ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 ..... 60&10&10%
Lincoln's Pattern ..... 70@70&10%
Stebbin's Genuine ..... 60&10&10%
Stebbin's Pattern ..... 80&10@80&10&5%
Stebbin's Tinned Ends ..... 40&10%
Weed's ..... 20&10%

Gauges—
Barrett's Comb. Roller Gauge.. ℔ doz $8.00@$8.50
Hoague & Peck's Champion Gauge—
With Scale ..... ℔ doz.. $5.00
Without Scale ..... ℔ doz.. $4.00
Marking, Mortise, &c ..... 60&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 20&10%
Starrett's Surface, Center and Scratch, 25&10%
Wire, Brown & Sharpe's ..... 10@20%
Wire, Morse's 25%
Wire, P., S. & W. Co ..... 10&10%
Wire, Wheeler, Madden & Co..... 10%

Gimlets—
Nail and Spike ..... 50&10&5%
Diamond Gimlets ..... ℔ gr $5.00
Eureka Gimlets ..... 60&10%
Double Cut, Douglass' ..... 40&10%
Doub e Cut, Ives' ..... 60@60&5%
Double Cut, Shepardson's ..... 45@45&5%

Glue—
Dodd's Liquid Glue ..... 25@25&5%
Improved Process ..... 25@25&5%
Le Page's Liquid ..... 25@25&5%
Upton's Liquid 35%

Glue Pots—See *Pots, Glue.*

Grease, Axle—
Axleine, tin boxes.. ℔ gross $12.00
Dixon's Everlasting...10-℔ pails, ea. 85¢
Dixon's Everlasting, in bxs. ℔ doz 1 ℔ $1.20; 2 ℔ $2.00
English Coach, 5-℔ tin pails. ℔ doz, $3.50
English Coach, wooden boxes ..... ℔ gross $8.50
Fraser's..... Keg ℔ 4¢, Pail ℔ 5¢
Fraser's, in boxes ..... ℔ gr $9.50
Lower grades, special brands. ℔ gr $5.50@$7.00
Tiger, 5-℔ tin pails ..... ℔ doz $2.85
Tiger, wooden boxes ..... ℔ gross $7.00

Grindstones—
Family, regular list 60%
Family, Cleveland Stone Co 20%

Grindstone Fixtures—
See *Fixtures, Grindstone.*

Gun Powder See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—
Sewing, Brass Fer. ℔ gr..... $1.75
Pat. Sewing, Long ..... ℔ doz $1.20
Pat. Sewing, Short, ℔ doz..... 45@50%
Pat. Peg, Leather Top, ℔ doz ..... 45@50%
Pat. Peg, Plain Top ℔ doz ..... 40@45%

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Halters—
Covert's Adj. Rope Halters.....40&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ½-in., Hemp.....50&2%
Covert's Rope, Jute.....60&10&10&2%
Covert's Saddlery Works Halters..33⅓&%
Covert's Saddlery Works Handy Web Halters.....33⅓&%
Covert's Saddlery Works Horse and Cattle Ties.....33⅓&%

Hammers—
Handled Hammers—
Atha Tool Co.
Buffalo Hammer Co.
Humason & Beckley.
Verree.
} ....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
C. Hammond & Son.....40&10&—%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Maydole's, list Dec. 1, '85.....25&10&35%
Peck, Stow & Wilcox.....35&40%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Horseshoe Turning Hammers.....50%
Regular Y. & P., A. E. Nail.....50%
Other Hammers.....50&10%
Nelson Tool Works.....40&10%
Sargent's.....40&40&10%
Warner & Nobles, new list.....25&10

Heavy Hammers and Sledges—
3 ℔ and under...₩ ℔ 4¢ } 75&10@75&10&5%
3 to 5 ℔.....₩ ℔ 3¢
Over 5 ℔.....₩ ℔ 3¢
Wilkinson's Smiths.....10½¢@11¢₩ ℔

Handcuffs and Leg Irons
—See *Police Goods.*

Handles—
Cross-Cut Saw Handles—
Atkins', new list.....40%
Champion.....15%
Ely's Perfection.....₩ doz., $3.00
Sensible.....40%

Iron, Wrought or Cast-
Barn Door, ₩ doz $1.40.....10&10%
Bronze Iron Drop Latches..₩ doz 70¢ net
Chest and Lifting.....70@70&10%
Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.08	1.35	1.50

60&10&10%
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Roggin's Latches.....₩ doz 30¢@35¢

Wood—
Auger, assorted.....₩ gr 5.00
Auger, large.....₩ gr 7.00 } 50%
File, assorted.....₩ gr 2.75
Brad Awl.....₩ gr $2.00
Apple Firmer Chisel, ass'd...₩ gr 5.00
Apple Firmer Chisel, large...₩ gr 6.00
Hickory Firmer Chisel, ass'd.₩ gr 4.50
Hickory Firmer Chisel, large.₩ gr 5.00
Socket Firmer Chisel, ass'd..₩ gr 3.00
Socket Framing Chisel, ass'd.₩ gr 5.00 } 40&10@50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Hoe, Rake, Shovel, &c.....60@60&5%
Pat. Auger, Douglass.....₩ set $1.25
Pat. Auger, Ives'.....30&10%
Pat. Auger, Swan's.....₩ set $1.00
Saw and Plane.....40&10@50%
J. B. Smith & Co.'s Pat. File.....50%

Hangers—
Barn Door, New England.....70@70&5%
Barn Door, old patterns.....70@70&5%
Barry.....50%
Best Anti-Friction.....60&10@60&10&5%
Boss.....60&10@60&10&5%
Carrier Steel Anti-Friction.....50&10%
Champion.....60&10%
Chicago Anti-Friction.....30&10%
Climax Anti-Friction.....55%
Cincinnati Nos. 1, $2.25; 3, $2.50; 4, $2.50.
Crescent.....60@60&10%
Cronk's Patent, Steel Covered.....50&10%
Duplex (Wood Track).....60&10&5%
Economy, $6.00.....60&10%
Hamilton Wrought Steel Track.....55%
Interstate.....50&10@60%
Kidder's.....50@50&10%
Lane's New Standard.....50@50&5%
Lane's Parlor.....40%
Lane's Standard.....60&5@50&10%
Lundy, Steel Parlor.....40%
Magic.....45&10%
Matchless.....50&10%
Moody.....45%
Moore's Baggage Car Door.....33⅓%
Moore's Elevator.....33⅓%
Moore's Railroad.....55%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15. 40&10@60%
Orleans Steel.....55%
Paragon Nos. 5, 5½, 7 and 8.....20&10%
Pendulum, Payson's.....40@40&10%
Perfection.....50&10@50&10&5%
Richards'.....30@30&10%
Samson Steel Anti-Friction.....55%
Star.....40&10@40&10&5%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Sterling.....50&10@60%
Terry's Ideal.....50&10@50&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Shield.....50&10@60%
Terry's Solid.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Warner's Pat.....20&10&10%
Wild West.....45&10%
Zenith for Wood Track.....55%

Harness Snaps—See *Snaps.*

Hatchets—
American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's.....
Mann's.....
Peck's.....
Underhill's.....
C. Hammond & Son.....
Fayette R. Plumb.....
Collins.....
} 40 & 10 @ 40 & 10 &5%
Buffalo Hammer Co.....
Kelly's.....
P. S. & W. Co.....
Sargent's & Co.....
Schulte, Lohoff & Co.....
Ten Eyck Edge Tool Co.....
} 50 @ 50 &10%

Hay and Straw Knives
See *Knives.*

Hinges—
Blind Hinges—
Clark's
Nos. 1, 3, 5, 1868, Old Pattern..... 75&10&5%
Nos. 1 and 3, Tip Pattern. 75&10&5%
No. 50, Buffalo Noiseless, 40, 60 and 65.....75%
Buffalo Reversible, Nos. 3, 2, 1½, 1 and 0.....70&5%
No. 1, Cottage, for wood only...80&10%
No. 1, Diamond, for wood only...80&5%
Dixie L. & P., Nos. 3, 2½, 2, 1½, 1, 0, 00, 4 and 5.....75&5%
No. 25, Empire Reversible....75&10%
Lull & Porter, Nos. 3, 2½, 2, 1½, 1, 0 00, 4 and 5.....75&10&2½%
Mortise Gravity, Nos. 2, 4, 4½, 6, 8, 9 and 10.....50%
Huffer.....50@50&10%
Parker.....75&10%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Reading's Gravity.....75&10@75&10&5%
Sargent's, Nos. 1, 3, 5, 11, 12, 13..... 75&10@75&10&5%

Gate Hinges—
Automatic.....₩ doz $12.50, 50%
Clark's, Nos. 1 2, 3.....60&10@60&10&5%
N. E.....₩ doz $7.80, 60@60&10%
N. E. Reversible..₩ doz $5.60, 6'@60&10%
N. Y. State.....₩ doz $4.90, 60@60&10%
Western.....₩ doz $4.20, 60@60&10%

Spring Hinges—
Acme.....30%
American, Gem and Star.....20%
Bardsley's Patent Checking.....15%
Barker's Double Acting.....25%
Bommer's Japanned..... 35%
Bommer's All other Kinds.....30%
Buckman's.....15@20%
Champion.....60%
Chicago.....30%
Devore, No. 1.....₩ gro., $13.00
Empire and Crown.....20%
Freeport.....₩ gro., $12.00
Geer's Spring and Blank Butts....40%
Hero and Monarch.....55%
Ideal No. 3.....₩ gross $10 00
J. G. C. Covered, ₩ gro.. $30.....60&5%
New Idea Nos.1 and 10, ₩ gross $13.00
New Idea Dbl. Acting.....45%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
Oxford.....20%
Reliable.....60%
Rex.....₩ gro., $13.00
Royal.....66⅔%
Samson.....60@60&7½%
Stearns' Noiseless Floor Hinge, ₩ set, $5.00.....20&10@30%
Union Mfg. Co.....25%
Union Spring Hinge Co.'s list, March, 1886.....20%
U. S.....25&10%
Wiles', No. 1, ₩ gro., $16; No. 2....$13
Extra 5@10% given on many of these Hinges.

Wrought Iron Hinges—
List February 14, 1891.
Corrugated Strap and T.....50&10&5%
Strap and T.....50&10@50&10&10%
Plate Hinges { 8, 10 & 12 in., ₩ ℔.....5¢ / "Providence" } over 12 in. ₩ ℔.....4¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 252 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10¢
Screw Hook and Eye... { ⅝ in., ₩ ℔ 7¾¢ / ⅝ in., ₩ ℔ 5½¢ / ½ in., ₩ ℔ 4½¢
Screw Hook and Strap... { 6 to 12 in., ₩ ℔.. 4¢ / 14 to 20 in., ₩ ℔..3½¢ / 22 to 36 in., ₩ ℔.. 3¢

Hoes—
Eye—
Am. Axe and Tool Co., S. & O. Pat. } 60&5
Sandusky Tool Co., S. & O. Pat } @60&10%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
D. & H. Scovil.....20%
Grub.....60&10%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%

Handled—
Garden, Mortar, &c.....70@70&5&2%
Magic.....₩ doz $4.00
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%

Hog Rings and Ringers—
See *Rings and Ringers—*

Hoisting Apparatus—
See *Machines, Hoisting.*

Hollow-Ware—
See *Ware, Hollow.*

Holders—
Bag—
Sprengle's Pat.....₩ doz $18....60%

Bit—
Angular.....₩ doz $24.00, 40&5%
Diagonal.....₩ doz $24.00, 40%
Extension.
Barber's, ₩ doz $15.00.....40@40&10%
Ives, ₩ doz $20.00.....60&5@60&10%

File and Tool—
Bals Pat.....₩ doz $4.00, 25%
Nicholson File Holders.....20%

Sash—
Motley's Adj. Sash, Medium Size..... ₩ doz $1.20, 40%

Hooks—
Cast Iron—
Bird Cage, Reading.....
Bird Cage, Sargent's List.....
Clothes Line, Sargent's List.
} 60&10&10%
Ceiling, Sargent's list..... 55&10&10%
Clothes Line, Moore's.....70%
Clothes Line, Reading list 60&10@60&10&10%
Coat and Hat, Moore's.....70%
Coat and Hat, Reading. 50&10@50&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Harness, Reading list..55&10@55&10&10%

Wire—
Atlas, Coat and Hat.....65%
Belt.....80&15@80&20%
Handy Hat and Coat.....50&10@60%
Indestructible Coat and Hat...45@45&5%
Steady Ceiling Hooks.....50&10@60%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Wire Coat and Hat, Standard.60@60&10%
Bright Wire Goods—See Wire.

Wrought Iron—
Cotton.....₩ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle Wks.....30%
Tassel and Picture, T. & S. Mfg. Co....50%
Wrought Staples Hooks, &c. See Wrought Goods

Miscellaneous—
Bush.....55@60%
Fish Hooks, American.....50%
Grass, No. 2, $2.00; No. 3, $2.10; No. 4, $2.25
Hooks and Eyes—Brass.....60&10&10%
Hooks and Eyes—Malleable Iron. 70@70&10%
Nolin's Grass.....₩ doz $2.25
Whiffletree—Patent.....55%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—
See *Shoes, Horse.*

Hose, Rubber—
Competition, Fair quality....75@75&10%
Competition, Low Grade.....80@80&10
Cotton Garden, ¾ in., coupled:
Fair Quality, ₩ ℔.....8¼¢
Good Quality, ₩ ℔.....7¢
Extra.....60&10@60&10&10%
N. Y. B. & P. Co., Dundee.....60@60&5%
N. Y. B. & P. Co., Extra.....40&5@50%
N. Y. B. & P. Co., Para.....25&5%
Standard.....70&10@70&10&5%

Huskers—
Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper.....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber Ware—
See *Ware, Indurated Fiber.*

Irons.
Curling—
Nicol's Patent Curling Iron Heater, ₩ doz.....$1.00
Silver Tipped Grace Darling Curling Iron, ₩ doz.:
No. 65.....$1.75
No. 66.....1.50
No. 67, Mustache.....1.25

Sad—
From 4 to 10, at factory....₩ 100 ℔, $2.30@$2.40
B. B. Sad Irons, ₩ ℔.....3@3¼¢
Chinese Laundry, (N.E. Butt Co.).8½¢, 15%
Crown Improved.....60&10%
Ideal Irons, new list...50&10@50&10&10%
Mahony's Troy Pol. Irons.....25%
Mrs. Potts' Sad Irons, per set:

No.	50	55	60	65
Small lots	.90	.85	1.05	.95

National Self-Heating.....80%
New England.....5¢. 20@20&5%
Salamander Irons.....25%
Self-Heating.....₩ doz $8.00
Self-Heating Tailors'.....₩ doz $18.00
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%

Soldering—
Soldering Coppers.....₩ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886, 35&2%
Tinker's Dread..₩ doz $1.75; ₩ gro. $18

Pinking—
Pinking Irons, ₩ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—
Daisy.....33⅓%
Lockport.....40%
Victor.....33⅓%

Kettles—
Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M. list Jan. 1, '91..20%
Stamped Brass Kettles.....₩ ℔ 21¢
Enameled and Tea—See *Ware, Hollow.*

Keys—
Lock, Ass'n list Dec. 30, 1886..65&10@70%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Wollensak Tinned.....50&10%

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.
Ames' Bread Knives, ₩ doz $1.50, 15@20%
Ames' Butcher Knives.....25%
Ames' Shoe Knives.....25@30%
Foster Bros.' Butcher, &c.....40%
Jordan's AA A1 Butchers', list.....net
Moran's Shoe and Bread.....20@20&10%
Nichols' Butcher Knives.....40&10%
Wilson's Butcher Knives, List Dec 8, 1890.....25%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—
Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—
Mix.....
New Haven.....
P., S. & W.....
Witherby.....
} ...75@75&10&5%
Adjustable Handle.....25@33⅓%
Bradley's.....35%
Douglass.....75@75&5%
Merrill.....60&10@60&10&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Wilkinson's Folding.....25@25&5%

Hay and Straw—
Carter's Needle...₩ doz. $11.00@$11.50
Heath's.....₩ doz. $13.00@$13.50
Lightning, from jobbers...$6.50@$7.50
Nolin's Hay.....₩ doz. $7.00@$8.00
Wadsworth's.....40&7½@40&10%

Mincing—
Am. (2d quality), ₩ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18..... net
Buffalo Adjustable....₩ doz. $3.00, 33⅓%
Knapp & Cowles.....50&10@60%
Lothrop's.....20&10%
Smith's, ₩ doz., Single, $2; Double $3 45@50%

Knobs—
Bardsley's Wood Door, Shutter, &c...15%
Base, Rubber Tip.....70&10&5%
Carriage, Jap.....₩ gro 80¢, 60&10%
Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nickel.....$2.00@$2.25
Drawer, Porcelain....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Picture, Hemacite.....35&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Shutter, Porcelain.....65&10%
Yale & Towne Wood, list Dec., 1885..40%

Ladders.
Davies Extension and Single.....20&5%

Ladies—
Melting, P., S. & W.....35&10@40%
Melting, Reading.....35&10%
Melting, Sargents'.....60@60&5%
Melting, Warner's.....30%

Lanterns—
Tubular—
Anti-Friction, with Guard....₩ doz $4.50
Brass Plated, Sq. Lift, Guard.₩ doz $5.50
Cop. Plated. Sq. Lift, Guard..₩ doz $5.50
O. K. with Guard.....₩ doz $3.75
Regular, with Guard.....₩ doz $3.50
Side Lift, with Guard.....₩ doz $4.00
Square Lift, with Guard.....₩ doz $4.25

Bull's Eye Police—
2¾-inch flash light.....₩ doz $4.00
3-inch flash light.....₩ doz $4.50
2¾-inch regular.....₩ doz $3.60
3-inch regular.....₩ doz $3.90

Lawn Mowers—
See *Mowers, Lawn.*

Leaders, Cattle—
Hotchkiss.....30%
Humason, Beckley & Co.'s.....70%
Peck, Stow & W. Co.....60&10%
Sargent's.....70&10@70&10&10%

Lemon Squeezers—
See *Squeezers, Lemon.*

Lifters, Transom—
Beardsley & Mouat, Sure Grip.....50%
Excelsior.....50&10&2%
Payson's:
Imperial.....50&10%
Solid Grip.....60&10@60&10&10%
Universal.....60%
Reiher's, list Feb. 20, 1891
Brass, Real Bronze or Nickel Plate..30%
Bronzed Iron Rods.....60@60&10%
Shaw's.....50&10%
Wollensak's:
Class 3 and 4, Brass.....50%
Class 3 and 4, Bronzed Iron.....60%
Class 3 and 4, Bronze Metal.....50%
Skylight Lifters.....25%

Lines—
Chalk.....60¢
Cotton and Linen Fish.....50%
Cotton Chalk.....55%
Mason's Colored Cotton.....45%
Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Mason's Linen, No. 3½, $1.50; No 4, $2.00; No 4½, $2.50.
Ossawan Mills:
Braided Chalk.....50%
Cotton Clothes Lines.....₩ ℔ 16¢
Solid Braided Ventilator and Masons' Lines.....25%
Twisted Chalk.....60%
Samson Cotton, No. 4, $2; No. 4½, $2.50 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....25%
Ventilator Cord, Samson Braided White or Drab Cotton..₩ doz $7.50..20%
Wire Clothes..Nos. 18 19 20
100 ft.....$3.50 $3.00 $2.50

Links, Open—
Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—
Cabinet—
Eagle, Gaylord Parker and Corbin... } List, March '84, rev. Jan. 1, '85.33⅓&2%
Barnes Mfg. Co.....40@40&10%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Champion Night Latches.....40%
Eagle and Corbin Trunk.....25&10%
Champion Cab. and Combin.....33⅓%
Romer's.....25%
Yale.....net prices

Door, Locks, Latches, &c.
Lower net prices often made on Door Locks.
Barnes Mfg. Co.....40@40&10%
Britain, Granam & Mathes, list Jan. 1890.....60&10&10%
Brooklyn Latches.....60&10%

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Deitz Flat Key.....30%
Mallory, Wheeler & Co list July, '88.. 60&10@70%
Plate.....33⅓&2%
Romer's Night Latches.....15%
R. & E. Mfg. Co., list Mar. 20, 1889..... 60&10@70%
Sargent & Co., List Aug. 1, '93..60&10@70
Warner's Burglar Proof, ₩ doz. $8.00, 50%
Yale.....net prices

Elevator—
Moore's.....33⅓%

Padlocks—
List June 10, 1891.....50&2%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Barnes Mfg. Co.....40@40&10%
Champion Padlocks.....40%
A. E. Deitz.....40%
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
E. T. Fraim's Keystone Scandinavian,
1010 line.....90&40%
120 line.....90&25%
109 line.....65%
510 line.....70&10%
225, 610 and 209 lines.....70%
All other numbers.....50&5%
Horseshoe.....₩ doz $9, 50@50&10%
Hotchkiss.....30%
Nock's.....30%
Norwich Lock Mfg. Co., old list....50&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505.....15%
Scandinavian.....90&50%
Slaymaker, Barry & Co.
No. 1010 line.....90&50%
No. 41 line.....60%
No. 61 line.....60%
No. 21 line.....80%
Star.....60%
Yale Lock Mfg. Co.'s.....net prices

Sash, &c.—
Attwell Mfg. Co.....25&33⅓%
Champion Safety list January, 1893. 70&5%
Clark's No. 1, $10; No. 2, $8 ₩ gr.....33⅓%
Common Sense, Jap'd, Cop'd and Br'zed.....₩ gr $4.00
Common Sense, Nickel Plated. ₩ gr $10.00
Corbin's Daisy, list Feb. 15, 1886.....70%
Davis Bronze. Barnes Mfg. Co.....60%
Ferguson's.....33⅓%
Fish (Liesche's pat.), No. 100, ₩ gr., $8; No. 105, ₩ gr., $10.....50%
Giant, list Jan., 1892.....70&5%
Hammond's Window Springs.....40%
Hugunin's New Sash Locks.....25&5&2%
Hugunin's Sash Balances.....25&5&2%
Ives' Patent.....60&10&5@60&10&10%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Monarch.....50%
Payson's Perfect.....60&10&10%
Reading.....66⅔&10@66⅔&10&10%
Security.....70%
Universal.....30%
Victor.....60&10&2%
Walker's.....10%
Wolcott's.....60&10&5%

Lumber Tools—
See *Tools, Lumber.*

Lustro—
Four-ounce bottles.....₩ doz, $1.75; ₩ gross.....$17.00

Machines.

Boring—
	Without Augers.	Upright.	Angular.
Douglas	$5.50	$6.75	50%
Jennings'	5.50	6.75	.50@50&5%
Snell's, Rice's Pat.	5.50	6.75	40&10&10%
Other Machines.	2.25	2.50	

Boss, Carpenters' 3.60
Boss, Ship Bldrs'. 3.85
Phillip's Patent with Auger..... 7.00 7.50.....
Millers Falls..... 7.50.....25%

Fluting—
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Combined Fluter and Sad Iron. ₩ doz $15.00.....30%
Crown, 4¼ in., $3.50; 6 in., $4.00; 8 in., $6 50 each.....35%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00; 4, $8.25.....30%
Crown Jewel, 6 in.....$3.50 each, 35%
Domestic Fluter.....each, $1.50
Eagle, 3½-inch Rolls, $2.15.....35%
Eagle, 6½-inch Rolls, $2.85.....35%
Geneva Hand Fluter, White Metal, ₩ doz $12, 25%
Knox, 4¼-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Shepard Hand Fluter, No. 85, per doz $15.50.....40%
Shepard Hand Fluter No. 95, ₩ doz $3.00.....40%
Shepard Hand Fluter, No. 110, ₩ doz $11.00.....40%

Hoisting—
Moore's Anti-Friction Differential Pulley Block.....20%
Moore's Hand Hoist, with Lock Brake. 20%
Moore's Rope Differential Pulley Block.....60%
Maris & Beekley (Teal Patent).....30%
See also *Blocks.*

Washing—
Fair and Square.....₩ doz $42.00
Anthony Wayne, ₩ doz, No. 1, $42; No. 2, $36; No. 3, $42.
Wayne American.....₩ doz $36.00
Welsell.....₩ doz $64.00
Western Star ₩ doz, No. 2, $36; No. 3 $39

Mallets—
B. & L. Block Co., Hickory & L. V. 30@30&10%
Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%

Mattocks—Regular list. 60&10@60&10&5%

Measures
Standard Fibreware, No. 1, peck ₩ dozen, $3.50; ½-peck, $3.00

Meat Cutters—
See *Cutters, Meat.*

Menders, Harness—
Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—
Box and Side, List Jan. 1, 1888..60@60&5%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%
Waddell's New Box Mills, Ideal Brand, New List.....60%

Mincing Knives—
See *Knives, Mincing.*

Molasses Gates—
See *Gates, Molasses.*

Money Drawers—
See *Drawers, Money.*

Mowers, Lawn—
Out of Season.

Muzzles—
Safety.....₩ doz, $3.00, 25%

Nails.—
Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92.....85&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, Upholsterers', &c. See *Tacks.*

Horse—
Nos.	6	7	8	9	10	
A. C.	25¢	23¢	22¢	21¢	21¢	40&10%
American	9½¢	9½¢	9½¢	9½¢	9½¢	net
Anchor	23¢	21¢	20¢	19¢	18¢	35%
Ausable	28¢	26¢	25¢	24¢	23¢	40&5&2%
Capewell	19¢	18¢	17¢	16¢	16¢	.10&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	40%
Champion	25¢	23¢	22¢	21¢	20¢	10&10&10%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢,	30&5%
Empire Bronzed					13@14	₩ ℔
Essex	28¢	26¢	25¢	24¢	23¢	40&10@50%
Lyra	9½¢	9½¢	9½¢	9½¢	9½¢	net
Maud S.	25¢	23¢	22¢	21¢	21¢	50&10&5%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
Putnam	23¢	21¢	20¢	19¢	18¢.	.15%
Snowden	9½¢	9½¢	9½¢	9½¢	9½¢	net
Standard	23¢	21¢	20¢	19¢	18¢	.35%
Vulcan	23	21¢	20¢	19¢	18¢	.25%
Western	23¢	21¢	20¢	19¢	18¢	.50%

Picture—
Brass Head, Combination list.....50&10%
Brass Head, Sargent's list.....60@60&10%
Porcelain Head, Combination list. 40&10%
Porcelain Head, Sargent's list. 50&10&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—
See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.
	Square.	Hex.
Cold Punched	5.00¢	5.10¢ off list

In packages of 100 ℔, add 1-10¢ ₩ ℔, net; in packages less than 100 ℔, add ½¢ ₩ ℔, net.
Hot Pressed.....5.80¢ 6.50¢ off list

Oakum—
Best or Government.....₩ ℔ 6¼@7¼¢
Navy.....₩ ℔ 5¢@5½¢
U. S. Navy.....₩ ℔ 5¾@6¢

Oil Tanks—See *Tanks, Oil.*

Oilers—
Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Broughton's Brass.....50%
Broughton's Zinc.....60%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Olmstead's Brass and Copper.....50%
Olmstead's Tin and Zinc.....60%
Prior's Pat. or "Paragon" Brass.....50%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Steel, Draper & Williams.....50%
Wilmot & Hobbs Mfg. Co., Steel Anti-Rust.....10%

Openers, Can—
American.....₩ gross $1.75@$2.00
Champion, ₩ doz $2.00.....50%
Domestic, ₩ doz $2.00.....45%
Duplex.....₩ doz 25¢, 15@20%
Eureka.....₩ doz $2.50, 10%
Excelsior, No. 1 $2.50; No. 2, $1.50.....40%
Lyman's.....₩ doz $3.75, 20%
Messenger's Comet.....₩ doz $3.00, 25%
Moore's.....70%
No. 4, French.....₩ doz $2.25, 55@60%
No. 5, Iron Handle.....₩ gr $6.00, 45@50%
Sardine Scissors.....₩ doz $2.75@3.00
Sprague, No. 1, 55¢; 2, 60¢; 3, 65¢; Star.....₩ doz $2.75
Universal, ₩ doz $3.00.....55&5%
World's Best ₩ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%

Packing, Steam—

Rubber—
Standard, fair quality.....70@70&10%
Inferior quality.....75@80%
Extra.....60@60&5%
Jenkins' Standard, ₩ ℔ 80¢....25@25&5%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
N. Y. B. & P. Co., Standard.....50%

Miscellaneous—
American Packing.....10@11¢ ₩ ℔
Cotton Packing.....15@17¢ ₩ ℔
Italian Packing.....13@14¢ ₩ ℔
Jute.....7@8¢ ₩ ℔
Russia Packing.....14¢ ₩ ℔

Pails—

Creamery—
S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 ₩ doz.....5%

Galvanized—
	Quarts	10	12	14	
Central Stamping Co.		2.50	2.75	3.00	
Fire Buckets		2.75	3.25	3.50	
Hill's Heavy Weight, ₩ ds.		3.00	3.25	3.75	
Hill's Light Weight, ₩ doz.		$2.75	3.00	3.25	
Iron Clad		2.50	2.75	3.00	
Sidney Shepard & Co.		2.50	2.75	3.00	

Buckets—See Well Buckets.

Indurated Fiber Ware
Fire Pails, deep.....₩ doz $4.80
Fire Pails, round bottom. ₩ doz $5.40
Milk, 14 qt.....₩ doz $5.40
Stable, 14 qt.....₩ doz $6.00
Star Pails, 12 qt.....₩ doz $4.20
} 25%

Standard Fiber Ware—
	Plain.	Deor'd
Buggy Pails	$3.00	
Chamber Pails, 14 qt.	6.00	$7.00
Dairy Pails, 14 qt., ₩ doz.	3.75	4.25
Fire Pails, No. 1, 12 qt., ₩ doz	3.75	
Fire Pails, No. 2, 14 qt., ₩ doz	4.25	
Horse Pails	4.00	
Slop Jars (bal. trap)	7.50	8.50
Sugar Pails	5.00	5.50
Water Pails, 12 qt., ₩ doz.	3.15	3.75

Pans—

Dripping—
Large sizes.....₩ ℔ 5¢
Small sizes.....₩ ℔ 5½¢
Silver & Co. (Covered).....40%

Fry—
Standard List: No.	0	1	2	3	4
₩ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
₩ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....66⅔&5%

Dust—
Steel Edge, No. 1.....₩ doz $1.75

Roasting and Baking—
Columbian, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each.....60&10%

Paper and Cloth—

Sand and Emery—
List April 19, 1886.... 50&10@50&10&10%
Sibley's Emery and Crocus Cloth.....30%

Parers—

Apple—
Advance	₩ doz	$4.75
Baldwin	₩ doz	5.25
Bonanza	each	5.00
Daisy	₩ doz	4.00
Dandy	each	7.50
Eclipse	₩ doz	4.00
Eureka, 1888	each	16.00
Family Bay State	₩ doz	12.00
Favorite	₩ doz	5.00
Gold Medal	₩ doz	4.00
Ideal	₩ doz	4.00
Improved Bay State	₩ doz	27.00@30.00
Little Star	₩ doz	4.50
Monarch	₩ doz	13.50
New Lightning	₩ doz	5.50
Oriole	₩ doz	4.00
Penn	₩ doz	3.00
Perfection	₩ doz	4.00
Pomona	₩ doz	4.00
Reading 72	₩ doz	4.25
Reading 78	₩ doz	7.00
Rocking Table	₩ doz	6.00
Turn Table	₩ doz	4.50
Victor	₩ doz	13.50
Waverly	₩ doz	4.00
White Mountain	₩ doz	4.00

Potato—
Antrim Combination	₩ doz	$5.50
Hoosier	₩ doz	$13.50
Saratoga	₩ doz	$5.50
White Mountain	₩ doz	$4.50

Pencils, Soapstone—
See *Crayons.*

Pickers, Fruit—
Prize Fruit Pickers.....50%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10&5@60&10&10&5%

Picture Nails—
See *Nails, Picture.*

Pinking Irons—
See *Irons, Pinking.*

Pins—

Bow—
Humason, Beckley & Co.'s.....60&10%
Peck, Stow & W. Co....50&10@50&10&5%
Sargent & Co.'s, $17 and $18.....60&10%

Escutcheon—
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—
List April 13, 1893.
1¼ and under, Plain.....57½&10%
1¼ and under, Galv.....50&10%
1½ and over, Plain.....67½&10%
1½ and over, Galv.....57½&10%
Boiler Tubes, list Oct. 24, 1892....65&10%
Casing, list Nov. 16, 1892.....52½&10%
Cold Drawn Seamless Steel Tubing...50%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%

Planes and Plane Irons—

Wood Planes—
Molding.....40&10%
Bench, First quality.....45&10%
Bench, Second quality.....50&10%
Bailey's (Stanley R. & L. Co.) ..50&10%

Iron Planes
Bailey's (Stanley R. & L. Co.).....50&10%
Birmingham Plane Co.....60@60&5%
Chapin's Iron Planes.....50@50&5%
Davis' Iron Planes.....50@50&5%
Gage Tool Co.'s Self-Setting...20&10&10%
Meriden Mal. Iron Co.'s.....50@50&5%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Sargent's.....60@60&10%
Standard Tool Co.....50@50&5%
Steers' Iron Planes.....50@50&5%

Plane Irons
Auburn Thistle.....30&10@30&10&10%
Buck Bros.....
Butcher's.....$5.00@$5.25 to a

Ohio	.30&10@30&10&10%
Sandusky	
Stanley R. & L. Co.	50&10%
L. & I. J. White	25%

Plates—
Felloe.....₩ ℔ 6¢@6½¢

Pliers and Nippers—
Button's Patent.....60%
Carew's Pat. Wire Cutters.....20%
Cronk's 8 in., $15.00; 10 in.....$20
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%
Eureka Pliers and Nippers.....40%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated. 60&5%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₩ doz.....40%
Humason & Beckley Mfg. Co. 50@50&10%
Lindsay's Giant.....33⅓%
Morrill's Parallel. ₩ doz, $12.00....30&5%
P., S. & W. Cast Steel.....50@50&5%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Russell's Parallel.....25%

Plumbs and Levels—
Regular List.....75&10@75&10&10%
Cook's.....40&10%
Davis Inclinometers.....10&10%
Davis Iron Levels.....30%
Disston's.....50%
Pocket Levels.....70&10@70&10&10%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%

Poachers, Egg—
Buffalo Steam Egg Poachers, ₩ doz. No. 1, $6.00; No. 2, $9.00.....33⅓%
Silver & Co., 6-Ring, ₩ doz, $4.00; 8-Ring.....$2.00

Pokes, Animal—
Bishop's American	₩ doz $3.00
Bishop's I. X. L.	₩ doz $6.00
Bishop's Monarch	₩ doz $4.50
Bishop's Pioneer	₩ doz $4.00
Bolding	₩ doz $6.00
Buckeye, Single Stale	₩ doz $2.75
Eagle, Double Stale	₩ doz $5.75
Eagle, Single Stale	₩ doz $3.75
Metallic Horse Poke	₩ doz $6.00

Police Goods—
Daley's Improved Handcuffs; 2 Hands, Polished, ₩ doz, $48.00; Nickeled, $57.00; 3 hands, Polished, ₩ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%
R. I. Tool Co., Handcuffs, $15.00 ₩ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₩ doz 10%
Tower's.....25%

Polish—

Metal—
Gaston's Silver Compound.....33⅓%
Prestoline.....30%
Prestoline Paste.....33⅓%

Stove—
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Flag.....₩ gro $7.20
Black Flag, 5 and 10 ℔ pails.....₩ ℔ 12¢
Black Flag, liquid, in bottles, ₩ gro $8.00
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Bonnell's Liquid Stove Polish, ₩ gro $9.00
Bonnell's Paste Stove Polish, ₩ gro $6.00
Boynton's Noon Day.....₩ gro, $13.00
Crown Paste.....₩ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ₩ ℔ 12¢
Diamond O. K. Enamel.....₩ gro $19.00
Diamond Rock Nickel Cleaner ₩ gro $10 20
Joseph Dixon's.....₩ gro, $6.00, 10%
Dixon's Plumbago.....₩ ℔ 8¢
Fireside.....₩ gro $2.50
Gem.....₩ gro, $4.50, 10%
Gold Medal.....₩ gro, $6.00, 25%
Japanese.....₩ gro $3.50
Jet Black.....₩ gro $3.50
Lustro.....₩ gro, $4.75
Nickel Plate Paste.....₩ gro $6.00
Parlor Pride Stove Enamel, ₩ gro,
Raven Liquid, 6 oz. bottles.....
₩ gro $8.00
Raven Liquid, 8 oz. bottles..
₩ gro $9.00
Raven Paste in 5 lb. pails (cases of 6 pails), ₩ ℔ 10¢
Raven Water Polish, large boxes.....
₩ gro $7.20
Rising Sun, 5 gro lots.....₩ gro, $5.50
Ruby.....₩ gro, $3.75
Yates' Liquid, 2 3 5 10 gal
₩ gal...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ₩ ℔ 12½¢

Poppers, Corn—
Round or Square,
1 qt.....₩ doz $1.00; ₩ gr $8.00
1½ qt.....₩ doz $1.00; ₩ gr $9 00
2 qt.....₩ doz $1.50; ₩ gr $14.00

Post Hole and Tree Augers and Diggers—
See *Diggers, Post Hole, &c.*

Potato Parers—
See *Parers, Potato.*

Pots—

Glue—
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka.....40%
Family, L. F. C.'s "Handy.....50%
Tinned.....40&10@40&10&5%

Powder—

In Canisters—
Duck, 1 ℔ each.....
Fine Sporting, 1 ℔ each.....
Rifle, ½ ℔ each.....
Rifle, 1 ℔ each.....

In Kegs—
Duck, 6¼ ℔ kegs.....
Duck, 12½-℔ kegs.....
Duck, 25-℔ kegs.....
Rifle, 6¼-℔ kegs.....
Rifle, 12½-℔ kegs.....
Rifle, 25-℔ kegs.....

For revised prices see Trade Report.

Presses—

Fruit and Jelly—
Enterprise Mfg. Co.	25%
Henis	₩ doz $3.50
Shepard's Queen City	40%
Silver & Co.	₩ doz $2.75

Pruning Hooks and Shears—See *Shears.*

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Pullers Nail—
Scranton.....₩ doz., $18.00, 33⅓%
Giant, No. 1.....₩ doz., $18.00, 10%
Giant, No. 2.....₩ doz., $15.00, 10%
Pelican.....₩ doz., $9.00, 25%
Eclipse.....₩ doz., $24.00, 40%
Economy.....₩ doz., $6.00

Pulleys—
Hot House, Awning, &c.....60%@70%
Japanned Screw.....60&10&10%
Brass Screw.....70%
Japanned Side.....60&10&10%
Moore's Side, Anti Friction.....50%
Moore's Ceiling or End, Anti-Friction.40%
Moore's Dumb Waiter, Anti-Friction.50%
Moore's Electric Light.....33⅓%
Japanned Clothes Line.....60&10%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5.70.....50%
Hay Fork, "F" Common and Patent Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating....60%
Hay Fork, Moore's Anti-Friction 5 in. Wheel, ₩ doz., $12.00.....40%
Shade Rack.....45%
Tackle Blocks—See Blocks.
Shepard's Niagara, No. 25..₩ doz 23¢ net
Sash (Auger Mortise).
Common Sense.....60%
Empire.....60%
Ideal, Nos. 2, 4, 10 & 15 } 60% less 1¢ ₩ Acme } doz net.
Star. }
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. ..₩ doz. 22¢ net.

Pumps—
Cistern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddler's or Drive, good..₩ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive.50&5%
Bemis & Call Co.'s Springfield Socket..65%
Spring, good quality..₩ doz., $2.50@$2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Check.....55%
Solid Tinners', P., S. & W. Co., ₩ doz., $1.44.....55%
Tinners' Hollow Punches, P., S. & W. Co.....20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Sawset and Punch—See Sawsets
Niagara Hollow Punches.....20&2%
Niagara Solid Punches.....55%

Rail—
Sliding Door, Wr't Brass....₩ ℔, 35¢, 40%
Sliding Door, Bronzed Wr't Iron..₩ ft., 7¢
Sliding Door, Iron, Painted..₩ ft., 4¢, 40%
Barn Door, Light..In. ½ ⅝ ¾
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet.....$3.15 2.70 3.25 Net
Terry's Steel Rail.....₩ ft., 4½¢
Victor Track Rail, 7¢ ₩ foot.....50&2%
Carrier, double braced, Steel Rail, ₩ foot.....3½@4¢
Lundy Parlor Door, Planed Edge, ₩ ft.7¢
Moore's Steel Rail.....25&10%
Moody Steel Rail ₩ ft., 5¢.....45%

Rakes—
Cast Steel, Association g'ds..70@70&5&2%
Cast Steel, outside g'ds,.....70@70&5&2%
Malleable.....70@70&5%
Gibbs' Lawn Rake.....₩ doz., $4.90
Gibbs' Canton Lawn Rake...₩ doz., $3.75
Gibbs' Acme Lawn Rake....₩ doz., $4.75
Gibbs' Favorite Lawn Rake.₩ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1.....₩ doz., $4.90; No. 2, $5.40
Oneida Lawn Rake.....₩ doz., $6.00
Fort Madison Prize Bow Brace and Peerless.....65%
Fort Madison Steel Tooth Lawn Rake, $6.00.....25%

Razors—
J. R. Torrey Razor Co.....Net prices
Wostenholm and Butcher, $10 to 2....10%
Jordan's AAAI, new list.....Net prices
Jordan's Old Faithful, new list.Net prices
Galvanic.....₩ doz., $15.00
Electric Cutlery Co.....Net prices
Campbell Cutlery Co.....50%

Razor Strops—
See *Strops, Razor.*

Registers —
Moore's Japanned.....75%
Moore's Electroplated.....75%
Moore's Bronze Finishes.....70%
Moore's Solid Bronze.....65%
Moore's Stove Pipe.....33⅓

Rings and Ringers—
Bull Rings—
Union Nut Co.....55%
Sargent's.....75&10%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co.'s..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—
Top of the Hill Ringers.....₩ doz $2.00
Top of the Hill Rings.....₩ doz $1.25
Hill's Improved Ringers.....₩ doz $1.25
Hill's Old Style Ringers.....₩ doz $1.12½
Hill's Tongs.....₩ doz $3.00
Hill's Rings.....₩ doz bxs $1.00
Perfect Rings.....₩ doz bxs $1.50
Perfect Ringers.....₩ doz $2.15@$2.25
Blair's Hog Ringers.....₩ doz $2.00
Blair's Hog Rings.....₩ doz 90¢@$1.00
Champion Ringers.....₩ doz $2.00
Champion Rings, Double.....₩ doz $2.25
Brown's Ringers.....₩ doz $2.00
Brown's Rings.....₩ doz $1.15@$1.25
Electric Hog Rings.....₩ doz boxes $1.50
Electric Hog Ringers.....₩ doz $2.00
Major Rings.....₩ doz $1.25
Major Ringers.....₩ doz $2.00

Rivets and Burrs—
Norway Iron, list Nov. 17, '87....60&10%
Second quality.....70%
Copper.....60@60&10%
Coppere Iron, Betina Brand.....50&5%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—
Stair, Brass.....25@30%
Stair, Black Walnut.....₩ doz 40¢

Rollers—
Barn Door, Sargent's list. ....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.....70%
Moore's Barn Door Stay.....50%
Thompson Mfg. Co.'s Lawn Rollers ..30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ¼¢@½¢ on large lots; terms, 1½% for cash.
Manila, 7-16 in. diam. and larger.....₩ ℔ 7¾@ 8 ¢
Manila.....¾ in. ₩ ℔ 8¼@ 8½¢
Manila....½ and 5-16 in. ₩ ℔ 8¾@ 9 ¢
Manila, Tarred Rope.....₩ ℔ 7¼@ 7½¢
Manila, Hay Rope, Med'm ₩ ℔ 7¾@ 8 ¢
Sisal, 7-16 in. and larger. ₩ ℔ 5½@ 5¾¢
Sisal.....¾ in. ₩ ℔ 7 @ 7¼¢
Sisal.....½ and 5-16 in. ₩ ℔ 6¼@ 6¾¢
Sisal, Hay Rope.....₩ ℔ 5½@ 5¾¢
Sisal, Tarred Rope.....₩ ℔ 5 @ 5¼¢
Sisal, Medium Lath Yarn.₩ ℔ 5¼@ 5½¢
New Zealand....7-16 in. and larger.....₩ ℔ 5½@ 5¾¢
New Zealand.....¾ inch. ₩ ℔ 5¾@ 6 ¢
New Zealand, ½ & 5-16 in. ₩ ℔ 6¼@ 6½¢
New Zealand, Hay Rope. ₩ ℔ 5½@ 5¾¢
New Zealand, Tar'd Rope ₩ ℔ 5 @ 5¼¢
Cotton Rope.....₩ ℔ 13½@16¢
Jute Rope.....₩ ℔ 6½@7¢

Wire—
List February, 1892. All kinds.....45%

Rules—
Boxwood.....50&10&10@80&10&10&10%
Ivory.....50&10%
Starrett's Steel Rules and Straight Edges.....25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—
See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—*See Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—
Note.—Extra 5@10% often given.
Disston's Circular.....45@45&5%
Disston's Cross Cut, list Jan. 1,'93.40&10%
Disston's Hand.....25%
Woodrough & McParlin.
Hand, Panel and Rip.....25&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....30&10%
Cross Cuts, list Jan. 1, 1893.....45&10%
Atkins' Circular.....50&10%
Atkins' Cross Cuts, new list.....40%
Atkins' Mulay, Mill and Drag.....50&10%
Atkins' One-Man Saw.....40%
Atkins' Wood Saws.....40%
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip.....25@25&5%
Peace Cross Cuts, list Jan. 1,'93...45&10%
Richardson's Circular and Mill.45@45&5%
Richardson's X Cuts, list Jan. 1,'93.45&10%
Richardson's Hand, &c.....25@25&5%
C E. Jennings & Co.'s.....25%
Simonds' Circular Saws.....45@45&5%
Simonds' Crescent Ground Cross Cut Saws.....30%
Simonds' Gang, Mill, Mulay and Drag Saws.....45@45&5

Hack Saws—
Griffin's, complete.....40&10@50
Griffin's Hack Saw Blades.....40&10@50
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—
Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab Makers'$15,25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—
Hatch, Counter, No. 171, good quality. ₩ doz $18.00@$19.00
Hatch, Tea, No. 161....₩ doz $6.50@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales.....50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10
Riehle Bros.' Platform.....40%

Scale Beams—
See *Beams, Scale.*

Scissors, Fluting.....45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.00.....30&10%
Box, 1 Handle.....₩ doz $2.00
Box, 2 Handle.....₩ doz $3.00@$4.00
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common.....₩ doz $3.50
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—
See Drivers, Screw

Screws—
Bench and Hand—
Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....35%

Coach, Lag and Hand-Rail—
Lag, Blunt Point, list Jan. 1, 1890.....80&10@80&25%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....80&10@80&20%
Hand Rail, Sargent's.....70&10%
Hand Rail, H. & B. Mfg. Co.....70&10@75%
Hand Rail, Am. Screw Co.....75%

Jack Screws—
Jack Screws, Millers Falls list.50@50&10%
Jack Screws, P., S. & W.....85%
Jack Screws, Sargent.....70%
Jack Screws, Stearns'.....40@40&10%

Cork—
Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Williamson's Forged Worm, Apple-wood Handle, ₩ doz., $5.00; Rose-wood, $5.50.....40%
Detroit Cork Screw Co.....33⅓%

Machine—
Flat Head Iron.....65%
Round Head Iron.....60%

Wood—
List January 1, 1891.
Flat Head Iron.....70% } Extra 10& 10% often given.
Round Head Iron.....65%
Flat Head Brass.....70%
Round Head Brass.....65%
Flat Head Bronze.....70%
Round Head, Bronze: ...65%
Rogers' Drive Screws.....82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—
Grain.....40&5@40&10%
Grass.....40&10&50%

Scythe Snaths—
See *Snaths, Scythe.*

Sets—
Awl and Tool—
Aiken's Sets, Awls and Tools, No. 20, ₩ doz$10.00.....60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....45%
Millers Falls Adj. Tool Hdls., No. 1, $12; No. 4. $12; No. 5. $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets. No. 42, $10.50; No. 43, $12.50...70&10&5%

Nail—
Square.....₩ gr. $4.00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr. $12, 20%

Rivet—
Regular list.....70%

Saw—
Stillman's Genuine....₩ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₩ doz $3.25; Cross Cut, $6.50.....55@55&10%
Common Lever.....₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00.....40&20%
No. 11, $16.00.....40&20%
Nos. 3 and 4, Cross Cut, $23.00..40&20%
No. 6, Mill, $31.00.....40&20%
No. 10, $15.50.....40&20%
Leach's..No. 0, $8.00; No. 1, $15...15@20%
Nash's.....20&10@40%
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat.45%
Bemis & Call Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Co.'s Cross Cut.....30&5%
Aiken's Genuine.....$13.00, 50&10@60%
Aiken's Imitation.....₩ doz $3.00@$3.25
Hart's Pat. Lever.....20%
Disston's Star.....25%
Leopold.....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10@50%
Avery's Saw Set and Punch.....50%
Kohler's Royal.....₩ doz $7.00
Kohler's Giant Royal.....₩ doz $12.00
Crescent.....₩ doz $3.00
Lloyd's Acme.....₩ doz $15, 40&10%
Taintor Positive.....₩ doz $18, 50%

Sharpeners, Knife—
Larkins'.
Applewood Handles...₩ doz. $6.00, 40%
Rosewood or Cocobola. ₩ doz. $9.00 40%

Shaves, Spoke—
Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's ₩ doz. $9.00.....25%

Shears—
American (Cast) Iron..75&10@75&10&5%
Barnard's Lamp Trimmers..₩ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality.....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Hatch Cutlery Co., Solid Steel Forged.60%
Davenport Cutlery Co.....60@60&10%
Clauss brand, Japanned.....70%
Clauss brand, Nickeled, same list.....60%
Galvanic 3½ to 9 in., ₩ doz. $1.00 ₩ inch
Electric Cutlery Co.....Net
Campbell Cutlery Co., Jap'd.....75%
Nickel Plated.....65%

Tinners' Snips—
Wrt. Handles, Steel Blades. ..20@20&10%
Niagara Snips and Shears.....20&10%
Cast Handles, Laid with Steel 40%

Pruning Shears and Hooks
Disston's Combined Pruning Hook and Saw.....₩ doz. $18.00, 20&10%
Disston's Pruning Hook, ₩ doz. $12.00 20&10%
E.S.Lee & Co.'s Pruning Tools.50&10@70%
Pruning Shears, Henry's Pat. ₩ doz. $3.50@$4.00
Henry's Pruning Shears, ₩ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₩ doz $12.00
Dunlap's Saw and Chisel, ₩ doz $8.50,30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.25
P., S. & W. Co.....60%
Levin Pruner No. 1, $15.00 ₩ doz. 40&3%
Levin Pruner No. 2, $21.00 ₩ doz...40&3%

Tinners', &c.—
Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—
Sliding Door—
M. W. Co., list July, 1888....50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%

Sliding Shutter—
R. & E., list Dec. 18, 1885.....60&10&2%
Sargent's list.....70%
Reading list.....60&10&10%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list).....20&10&2%
Prize.....40&2%
Star, Club, Rival and Climax Brands... 33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&2%
Trap brand, 12 and 10 gauge..33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax 65&2%

Shells, Loaded—
Standard List, July 19, 1890.....40&10&10@40&10&10&5% 7% cash, 10 days.

Ship Tools—
L. & I. J. White.....20&5.

Shoes, Horse, Mule, &c
Horse—
Burden's, Perkins', Phœnix, Standard, Diamond State, Bryden's Boss and Crescent, at factory.....$4.00
Bryden's Frog Pressure, at factory.$5.00

Mule—
Add $1 ₩ keg to above prices.

Ox Wrought—
Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot—
Small lots. In ton lots a discount of 6¢ ₩ bag (25 ℔.) is made, and 2½% for cash.
Drop, up to B, 25-℔ bag....$1.40
Drop, up to B, 5-℔ bag.....35
Drop, B and larger, 25-℔ bag.....1.65
Drop, B and larger, 5-℔ bag.....40
Buck and Chilled, 25-℔ bag.....1.65
Buck and Chilled, 5-℔ bag .40
Dust Shot, 25-℔ bag.....2.00
Dust Shot 5-℔ bag.....45

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&5%
Griffith's Solid C. S. R. R. Goods.....20%
St. Loui. Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....60&10%
H. M. Myers Co.....30%
Payne Pettebone & Son.....33⅓&5%
Remington's (Lowman's Pat.)40&10@50%
Rowland's Black Iron..60&10@50&10&5%
Rowland's Steel.....60&5@60&10%
Terra Haute Shovel & 25%

Shovels and Tongs—
Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves and Sifters—
Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co...50&25&20%
Shaker (Barler's Pat.) Flour Sifters ₩ gr $21.00
Electric Light..₩ doz $1.50; ₩ gro $15.00
A. & W. Sifters.....₩ gr $15.00
Hunter's Genuine. ₩ doz $1.75, ₩ gr $16.50
Hunter's Imitation..... ₩ doz $1.75; ₩ gr $15.00

Sieves, Wooden Rim—
	Iron	Plated
Mesh 18, Nested, ₩ doz....	$0.80	$1.00
Mesh 20, Nested, ₩ doz....	.95	1.10
Mesh 24, Nested, ₩ doz..	1.15	1.25

Sinks, Wrought Steel—
Columbus, Painted or Unpainted... 30@30&10%
Columbus, Galvanized and Enameled. 50@50&10%
New Era, Painted.....40&10@50&5%
New Era Galvanized and Enameled. 60&10&10@70&5%

Skeins, Thimble—
Western list.....75&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....75%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—
School, by case.....40@40&10%
Large lots.....40&10&5@50%

Slaw Cutters—See *Cutters.*

Sleds Hand—
Tubular Steel.....₩ doz. $24&50%.00, 40 (Lots of 6 doz. 50%)

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Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.) 65%
Fitch's (Bristol) ..... 50&10%
Hotchkiss 10%
Andrews 50%
Sargent's Patent Guarded ..... 70&10&10%
German, new list ..... 40&10%
Covert ..... 50&10&5&2%
Covert, New Patent ..... 50&10&5&2%
Covert, New R. E. ..... 60&10&5&2%
Covered Spring ..... 60&10&10%
Covert's Saddlery Works' Triumph. 33⅓&%
John Protz Snaps ..... 75@75&5%
Kelley & Woolworth's Steel Harness ..... 50&10@60%

Snaths—

Scythe ..... 50&2@50&5&2%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8½-inch, ₩ doz., No. 5, $8; No. 5X, $9.
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list ..... 70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list ..... 70&10%
Buffalo, S. S. & Co. ..... 33⅓&2%

Silver Plated—

4 months or 5% cash 30 days:
Meriden Brit. Co., Rogers ..... 40&15%
Rogers & Hamilton ..... 40&15%
C. Rogers & Bros ..... 40&15%
Rogers & Bros ..... 40&15%
Reed & Barton ..... 40@40&5%
Wm. Rogers Mfg. Co. ..... 40, 15&5%
Simpson, Hall, Miller & Co. ..... 40, 15&5%
Holmes & Edwards Silver Co. ..... 40, 15&5%
L. Boardman & Son ..... 50&12½%

Miscellaneous—

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver ..... 50&10&5%
No. 30 Silver Metal ..... 50&10&5%
No. 24 German Silver ..... 50&10&5%
No 50 Nickel Silver ..... 50&5%
No 49 Nickel Silver ..... 50&10&5%
Wm. Rogers Mfg. Co.:
Rogers' Silver Metal ..... 50&10&6%
18% Rogers' German Silver ..... 60&6%
22% Rogers' Nickel Silver ..... 50&6%
Rogers & Hamilton:
Steel Goods ..... 40&10%
Cimetar, Flatware ..... 40&15&5%
Cimetar, Steel Goods ..... 40&10%
Crown Hamilton, Flatware and Cutlery 30%
German Silver ..... 60@50&5%
Nickel Silver ..... 50&5@50&10&5% cash
Brittannia ..... 60@60&5%
Boardman's Nickel Silver, list July 1, 1891 ..... 60&7½&5%
Boardman's Brittannia Spoons, case lots ..... 60&5% cash

Springs—

Door—

Torrey's Rod, 39 in. ..... ₩ doz $1.20@1.2
Warner's No. 1, ₩ doz $1.50; No. 2, $3.40 ..... 55&55&10%
Gem (Coil), list April 19, 1886 ..... 20%
Star (Coil), list April 19, 1886 ..... 20&10%
Victor (Coil) ..... 60&10@60&10&5%
Champion (Coil) ..... 60&10@60&10&10%
Cowell's, No. 1, ₩ doz $18.00; No. 2, $15.00 ..... 50@50&10%
Rubber, complete, ₩ doz $4.50 ..... 55&10%
Hercules ..... 50@50&10%
Phœnix ..... 33⅓&%

arriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll ..... 60&10@60&10&10&10 or net prices
Cliff's Bolster Springs 25%

Squares—

Steel and Iron ..... } .80&10&10@80&25%
Nickel-Plated ..... }
Try Square and T Bevels ..... 60&10&10%
Disston's Try Square and T Bevels 50%
Winterbottom's Try and Miter ..... 30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares 40%
Avery's Bevel Protractor 50%

Squeezers—

Fodder—

Blair's ..... ₩ doz $2.00
Blair's "Climax" ..... ₩ doz $1.25

Lemon—

Porcelain Lined, No. 1 .... ₩ doz $6.00 ..... 25&30%
Wood, No. 2 ..... ₩ doz $3.00, 35%
Wood, Common ..... ₩ doz $1.70@1.75
Dunlap's Improved ..... ₩ doz $3.75, 20%
Sammis ..... No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz ..... 25&10%
Jennings' Star ..... ₩ doz $2.50
The Boss ..... ₩ doz $2.50
Dean's ..... No. 1, ₩ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant ..... 50@50&5%
King ..... 40&5%
Hotchkiss Straight Flash ..... ₩ doz $12.00
Silver & Co. Glass ..... ₩ gro. $9.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Barbed Blind, ½ in. and larger. ₩ ℔ 7@7½¢
Barbed Blind, ¾ in. ..... ₩ ℔ 8@8½¢
Fence Staples, Galvanized. } Same price as B'rb Wire
Fence Staples, Plain. } See Trd. Rep
Grand Crossing Tack Co.'s list. 75&10%

Steelyards ..... 40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods 35%
Butterfield's Goods 35%
Lightning Screw Plate ..... 25@30%
Reece's New Screw Plates ..... 25@30%
Reversible Ratchet 30%
Gardner 25%
Green River ..... 25@30%

Steps Bench—

Morrill's, ₩ doz, No. 1, $10.00; No. 2, $11.00 ..... 40&20%
Hotchkiss' ..... ₩ doz, $5, 10@10&10%
Weston's, No. 1, $10, No. 2, $9, 25&10&5%
McGill's, ₩ doz $3 ..... 10%
Cincinnati ..... 25&10%
Terrell's Nos. 1 and 2, ₩ doz., $3; No. 3, $3.60 ..... 30%
Millers Falls 25%
Stearns' ..... 20&10%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892 ..... 33⅓&%
Cleveland Stone Co., list Nov. 1892 .. 33⅓&%

Oil Stones, &c.—

Pike Mfg. Co.:
Hindostan No. 1, ₩ ℔ .... 8¢
Sand Stone ..... 5¢ } 40@40&10%
Turkey Oil Stone, 4 to 8 in ..... 80¢
Turkey Slips $2.00
Lily White Washita ..... 60¢
Rosy Red Washita ..... 60¢
Washita Stone, Extra ..... 50¢
Washita Stone, No. 1 ..... 40¢
Washita Stone, No. 2 ..... 30¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Arkansas Stone, No. 1, 3 to 5½ in., $2.80 } 33⅓@33⅓&10%
Arkansas Stone, No. 1 5½ to 8 in., $3.50
Lake Superior ..... ₩ ℔ 15¢
Lake Superior Slips ..... ₩ ℔ 20¢

Stove Polish—

See *Polish, Stove.*

Stretchers Carpet—

Cast Steel, Polished ..... ₩ doz $2.2
Cast Iron, Steel Points ..... ₩ doz 75@80¢
Socket ..... ₩ doz $1.75
Bullard's ..... 25@25&10%

Strops, Razor—

Genuine Emerson ..... 60@60&5%
Imitation " ..₩ doz $2.00, 20&10&5%
Torrey's ..... Net prices
Badger's Belt and Com ..... ₩ doz $2.00
Lamont Combination ..... ₩ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50%
Electric Cutlery Co ..... Net prices
Campbell Cutlery Co ..... Net prices

Stuffer, Sausage—

Miles' Challenge, ₩ doz $20 ..... 50@50&5%
Perry ..... ₩ doz, No. 1, $15.00; No. 0, $21.00 ..... 50&5@50&10%
Draw Cut No. 4, each $30.00 ..... 20%
Enterprise Mfg. Co., list Jan 17, '93. 25%
Silver's ..... 40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5 ..... ₩ doz $17.00
Bissell No. 8 ..... ₩ doz $20.00
Bissell, Grand ..... ₩ doz $36.00
Standard ..... ₩ doz $24.00
Domestic ..... ₩ doz $21.00
Domestic, No. 2 ..... ₩ doz $22.00
Grand Rapids ..... ₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic ..... ₩ doz $15.00
Improved Parlor Queen, Nickeled ..... ₩ doz $27.00
Japanned ..... ₩ doz $24.00
Excelsior ..... ₩ doz $22.00
Garland ..... ₩ doz $18.00
Parlor Queen ..... ₩ doz $24.00
Housewife's Delight ..... ₩ doz $15.00
Ladies' Friend ..... ₩ doz $15.00
Ladies' Friend No. 2 ..... ₩ doz $16.00
Advance ..... ₩ doz $18.00
Our Leader ..... ₩ doz $19.00
Triumph ..... ₩ doz $20.00
Supreme ..... ₩ doz $22.00
Easy..Jap'd, ₩ doz $22.00; Nickel, $24.00
Gilt Edge ..... ₩ doz $24.00
Acme ..... ₩ doz $26.00
Imperial ..... ₩ doz $26.00
Grand Republic ..... Jap'd, ₩ doz $30.00; Nickel, $33.00
Banner ..... Jap'd, ₩ doz, $22.00; Nickel, $24.60
The Star ..... ₩ doz $21.00
Reliable ..... ₩ doz $22.00
Rapid..Jap'd, ₩ doz, $22.00; Nickel, $24.00
Our Own ..... ₩ doz $27.00
Model ..... ₩ doz $27.00
Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months ..... ₩ doz $1.00
10 dozen in 6 months ..... ₩ doz $2.00
Except on L.F., when 10 dozen price is $13.50, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co. 30%

Swings—

Davies Lawn 25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights, Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued ..... 66⅔&%
American, Tin'd and Cop'd 70%
Steel, Bright and Blued ..... 66⅔&%
Steel, Tinned and Coppered 70%
Swedes Iron, Blued ..... 72½&%
Swedes Iron, Tinned 75%
American Iron Tacks, Domestic. 66⅔&%
Swedes Iron Tacks—
S. S., Blued ..... 66⅔&%
S. S., Tinned 70%
Lanc., Blued 55%
Lanc., Tinned 60%
Gimp and Lace Tacks—
S. S., Blued ..... 62½&%
S. S., Tinned ..... 66⅔&%
Lanc., Blued 55%
Lanc., Tinned 60%
Basket and Trimmers' Tacks—
Lanc ..... 52½&%
S. S 55%
Hungarian Nails 60%
Common and Patent Brads 55%
Leathered Tacks 10%
Brush Tacks, S. S. 60%
Looking Glass Tacks, S. S. 35%
Picture-Frame Points, S. S. 35%
Finishing Nails 60%
Trunk and Clout Nails—
Black 65%
Tinned or Coppered ..... 67½&%
Basket Nails 60%
Chair Nails ..... 52½&%
Cigar Box Nails 45%
Tin Capped Nails 50%

Extra discount 25&2%

Miscellaneous—

Double Point ..... 90&10@90&10&10%
Wire Carpet Nails ..... 50&10%
Claw Handle Carpet ..... ₩ gross $4.00
Bonnie Blue ..... ₩ box $1.50
Bill Nye Brad Box 4 00
Parisian Gilt Nails, cartoon 50
Home Tacks, No. 50 ₩ case (12 cartons), $36.00; No. 100, ₩ case (12 cartons), $72.00. } 50&2%
Home Nails, No. 200, ₩ case (12 cartons), $30.00; No. 400, ₩ case (12 cartons), $60 00.
Upholsterers' Nails ..... 50&10%

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list 50&10%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each ..... 50&10&5%

Tapes, Measuring—

American ..... 40@40&10%
Excelsior, Special list 20%
Spring 40%
Chesterman's, Regular list ..... 25@30%

Thermometers—

Tin Case ..... 80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list ..... 50&10&5%

Tinners' Shears, &c.—

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887 ..... 70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's 20%
Barton's ..... 30@20&5%
L. & I. J. White ..... 20&5%
Albertson Mfg. Co. 25%
Beatty's 30%
Sandusky Tool Co. ..... 30@30&5%
Shaves Cincinnati Tool Co. 20%

Lumber—

Ring Peavies, "Blue Line" ..₩ doz $20.00
Ring Peavies, Common ..... ₩ doz $18.00
Steel Socket Peavies ..... ₩ doz $21.00
Mall, Iron Socket Peavies ..... ₩ doz $19.00
Cant Hooks, "blue Line" .... ₩ doz $16.00
Cant Hooks, Common Finish.. ₩ doz $14.00
Cant Hooks, Mall, Socket Clasp, "Blue Line" Finish $16.00
Cant Hooks, Mall, Socket Clasp, Common Finish ..... ₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish ..... ₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish ..... ₩ doz $12.00
Hand Spikes .... ₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks ..... ₩ doz $18.00

Saw—

Atkins', new list 40%
Simonds' ..... 33⅓&%

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse ..... 40@40&5%
Oneida Pattern ..... 75@75&10%
Game, Blake's Patent ..... 40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₩ doz holes, 9@10¢
Mouse, Round Wire ..... ₩ doz $1.50 10%
Mouse, Cage, Wire ..... ₩ doz $2.50 10%
Mouse, Catch-'em-alive.. ₩ doz $2.50 15%
Mouse, Bonanza ..... ₩ doz 0.90@$1.00
Rat, Decoy ..... ₩ gr $10.00, 10%
Ideal ..... ₩ gr $10.00
Cyclone ..... ₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 75¢; in full cases, ₩ doz. 60@65¢
Hotchkiss Imp. Rat Killer... ₩ gro $18.50
Hotchkiss New Rat Killer... ₩ gro $16.50
Schuyler's Rat Killer ..... ₩ gro $15.00
Dandy ..... ₩ doz., $1.75
Waddel's Go Bang, ₩ gro. $12.50

Fly—

Harper, Champion or Paragon ..... ₩ doz. $1.75, ₩ gro. $16.50
Balloon, Globe or Acme ..... ₩ doz. $1.50, ₩ gro. $13.50

Triers—

Butter and Cheese 25%

Trimmers, Spoke—

Bonney's ..... ₩ doz $10.00, 50%
Stearns' ..... 20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. ..... 55&10%
Douglas' ..... ₩ doz $9.00, 20%
Cincinnati 25%

Trowels—

Lothrop's Brick and Plastering ..... 20&10&5@35%
Reed's Brick and Plastering 15%
Disston's Br'k and Plastering. 25@25&10%
Peace's Plastering ..... 25@25&5%
Clement & Maynard's ..... 20@20&5%
Rose's Brick ..... 15@20%
Brade's Brick 25%
Worrall's Brick and Plastering 20%
Garden 70%
Cleves' Angle Trowel, ₩ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list 40%
Thompson Mfg. Co 40%
Barnes' Barrel Trucks 40%
Daisy Stove Trucks, Improved pattern, ₩ doz. $18.00

Tubes Boiler—

See Pipe.

Twine—

Flax Twine—

	BC.	B.
No. 9, ¼ and ⅜ ℔ Balls	25¢	31¢
No. 12, ¼ and ⅜ ℔ Balls	22¢	30¢
No. 18, ¼ and ⅜ ℔ Balls	20¢	29¢
No. 24, ¼ and ⅜ ℔ Balls	20¢	29¢
No. 36, ¼ and ⅜ ℔ Balls	18¢	28¢

No. 264 Mattrass, ¼ and ⅜ ℔ Balls, 52@54¢
Chalk Line, Cotton, ⅛ ℔ Balls ..... 25¢
Mason Line, Linen, ⅛ ℔ Balls ..... 55¢
2-Ply Hemp, ¼ and ⅜ ℔ Balls (Spring Twine) ..... 15½¢
3-Ply Hemp, 1 ℔ Balls ..... 16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls ..... 15¢@15½¢
Cotton Wrapping, 5 Balls to ℔ .. 15¢@16¢
2, 3, 4 and 5 Ply Jute, ¼ ℔ Balls ..... 10¢
Wool ..... 6½¢@6¾¢
Paper ..... 13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz. 18¢

Vises—

Solid Box ..... 50&10@60%

Parallel—

Fisher & Norris Double Screw ..... 15&10%
Stephens' ..... 25@30%
Parker's ..... 20@25%
Wilson's 55%
Howard's 40%
Bonney's 50%
Millers' Falls ..... 40@40&10%
Trenton ..... 40&5@40&10%
Merrill's ..... 15@20%
Hollands' ..... 35@40%
Sargent's ..... 70&10%
Backus and Union 40%
Double Screw Leg ..... 15&10%
Prentiss ..... 20@25%
Simpson's Adjustable 40%
Moore's 20%
Massey Quick Action ..... 20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00 .... 40&10@50%
Stearn's ..... 33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises ..... 33⅓@35%
Hopkins' ..... ₩ doz $17.50, 10%
Reading ..... 40&10%
Wentworth ..... 20&10%
Economy, ₩ doz., Nos. 110, $10.00; 120, $15.00 ..... 50&10&10&5%

Miscellaneous—

Phœnix Vises ..... 33⅓&%
Phœnix Hand Vises .... ₩ doz $3.60, 33⅓&%
Cowell Hand Vises 20%
Bauer's Pipe Vises 10%
Cincinnati ..... 25&10%
Enterprise Pipe Vises ..... each $3.00, 40%
Massey Combination Pipe Vise 40%

Wads—Price Per M.

U.M.C.&W.R.A.—B. E., 11 up.. 68¢
U.M.C.&W.R.A.—B. E., 9&10.. 82¢
U.M.C.&W.R.A.—B. E., 8 ..... 96¢
U.M.C.&W.R.A.—B. E., 7 ..... $1.10
U.M.C.&W.R.A.—P. E., 11 up. 1.15
U.M.C.&W.R.A.—P. E., 9&10.. 1.50
U.M.C.&W.R.A.—P. E., 8 ..... 1.70
U.M.C.&W.R.A.—P. E., 7 ..... 1.80
Eley's B. E., 11 and larger .... $1.70@$1.75
Eley's P. E., 12 to 20 ..... $3.00@$3.25

Ds. 20&2%

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow

Stove Hollow-Ware—
Ground ..... 60&10@60&10&10%
Unground ..... 65&10@70&5
White Enameled Ware—
Maslin Kettles ..... 70&10@75%
Boilers and Saucepans ..... 60@60&5%
Tinned Boilers and S'pans ..... 60@60&5%
Rustless Hollow Ware ..... 50@50&5%
Gray Enameled Ware—
Stove 50%
Maslin Kettles ..... 60@60&10%
Boilers and Saucepans ..... 40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889 ..... 33⅓&% } Extra 10% on many leading articles.
Ironclad Enameled Ware ..... dis 33⅓&10%

Kettles—

Galvanized Tea-Kettles—

Inch	6	7	8	9
Each	55¢	60¢	65¢	75¢

Standard Fiber

	Per Doz. Plain.	Decorated.
Wash-Basins, 10½ in.	$1.80	$2.00
Wash-Basins, 12 in.	2.00	2.50
Keelers, 11½ in.		3.00
Cuspidors		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure	3.50	
Half-peck Measure	3.00	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₩ doz $6.00
Basins, Ringed, ₩ doz., No. 2 .... 2.80
Washtubs, Nested, Nos. 0, 1, 2, and 3 (4 pieces), ₩ nest. $5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest $2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest $1.50
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), ₩ set. $1.20

25%

See also Pails.

Silver Plated, Hollow

4 mo. or 5% cash in 30 days.
Reed & Barton ..... } 40&5%
Meriden Britannia Co. ..... }
Simpson, Hall, Miller & Co. ..... }
Rogers & Brother ..... }
Hartford Silver Plate Co. ..... } 40&5&5%
William Rogers Mfg. Co. ..... }

Washers—

Size hole ..... 5-16 ⅜ ½ ⅝ to 1¾
Washers 5½ 4½ 3¼ 2¾
In lots less than 200 ℔, ₩ ℔ add ¼¢, 5-℔ boxes 1¢ to list.

Washer Cutters

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water*

Wedges—

Iron ..... ₩ ℔ 3½¢@3½¢
Steel ..... ₩ ℔ 3¾¢

Weights, Sash

Solid Eyes ..... ₩ ton, $18.00@19.00

Well Buckets Galvanized—See *Buckets, Well Galvanized.*

Wheels, Well—

8 in., $9.00; 10 in., $2 50; 12 in. 2.75

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Whips

American Whip Co.: Length.	4½	5	5½	6	6½	7	7½	8 ft.
X. L. Whalebone Driving	$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone.	....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whale bone.	....	....	11.00	12.00	13.00	15.00	....	....
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors	....	....	....	6.00	....	....	....	....
Americus, 93 Pen Whip	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106	....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No. 103	....	....	3.75	4.00	....	....	....	....

A large variety of cheaper grades.....50@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....
Hardware Assortment, 10/American, 75 Whips for $50.00. ₩ gro. $2.50@$12.00

Per dozen.

Wire and Wire Goods—

Iron—

Market,

Br. & Ann., Nos. 0 to 18. 75&10@75&10&5%
Cop'd, Nos. 0 to 18. 75&5%
Galv., Nos. 0 to 18. 70&5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18 ..70@70&10%

Extra 5@10% often given and low net prices often made on large lots.

Stone,
Br. and Ann'd,
Nos. 16 to 18.... ....80%
Nos. 19 to 26... ..80&5%
Nos. 27 to 36....82½&5%
Extra 10% often given.
Tinned Broom Wire, 13 to 21, ₩ ℔....4½¢
Galvanized Fence .....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools..60&5%
Malin's Brass and Cop. on Spools...50&5%
Ossawan Mills, An'l'd and Tinned on Spools.....60&10%
Ossawan Mills, Brass and Copper on Spools.....50&10%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass 50%
Cast Steel Wire 50%
Stubs' Steel Wire.....$6.00 to ₰, 30%
Steel Music Wire, 12 to 30, imported.... 60@70¢ ₩ ℔
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list .....85&10@85&10&10%

Wire Cloth and Netting—

Painted Screen Cloth ₩ 100 ft.....$1.40
Galvanized Wire Netting.....75&10@80%

Wire Barb—

See Trade Report.

Wire Rope—

See *Rope, Wire.*

Wrenches—

American Adjustable 40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine .....50@50&10%
Coes' "Mechanics'".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l..
W. & B. Diamond..... 75&10@80%

Bemis & Call's:
Pat. Combination Bright .....40&5%
Pat. Combination Black.....40&10%
Merrick's Pattern.....45%
Brigg's Pattern.....30&10%
Cylinder or Gas Pipe..... .....45&5%
No. 3 Pipe.....55%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz., $4.00, 40%
Webster's Pat. Combination 25%
Boardman's.....30%
Always Ready..... .....25&5%
Alligator.....50%
Donohue's Engineer..... .....20&10%
Eagle.....50&10%
Acme, Bright..... .....50&2%
Acme, Nickeled..... .....40&2%
Hercules..... 70@70&5%
Walker's..... ....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—

Am. Wringer Co.'s list, July 1, '93..2% cash
Colby Wringer Co., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list July 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list, March 17, 1892 85&10@85&15%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	47
Linseed, City, boiled....	..	@	50
Linseed, Western, raw.....	..	@	47
Lard, City, Extra Winter...	73	@	75
Lard, City Prime.....	72	@	73
Lard, City, Extra No. 1.....	..	@	50
Lard, City, No. 1.....	..	@	45
Lard, Western, prime.....	72	@	73
Cotton-seed, Crude, prime..	27	@	28
Cotton-seed, Crude, off grades.....	25	@	..
Cotton-seed, Summer Yellow, prime.....	33	@	34
Cotton-seed, Summer Yellow, off grades.....	30	@	32
Sperm, Crude.....	65	@	..
Sperm, Natural Spring.....	66	@	68
Sperm, Bleached Spring....	71	@	73
Sperm, Natural Winter.....	71	@	73
Sperm, Bleached Winter....	76	@	78
Whale, Crude.....	..	@	..
Whale, Natural Winter.....	..	@	45
Whale, Bleached Winter....	..	@	48
Whale, Extra Bleached.....	..	@	50
Sea Elephant, Bleached Winter.....	..	@	..
Menhaden, Crude, Sound...	35	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed..	39	@	40
Menhaden, Bleached W'ter.	..	@	43
Menhaden, Extra Bleached.	..	@	46
Tallow, City, prime.....	..	@	55
Tallow, Western, prime....	..	@	50
Cocoanut, Ceylon.....	5½@		5¾
Cocoanut, Cochin.....	6½@		6¾
Cod, Domestic.....	38	@	40
Cod, Foreign.....	42	@	45
Red Elaine.....	44	@	46
Red Saponified..... ₩ ℔	4¼@		4¾
Bank ..... per gal	38	@	..
Straits.....	39	@	..
Olive, Italian, bbls.....	58	@	62
Neatsfoot, prime.....	50	@	65
Palm, prime, Lagos..... ₩ ℔	7¾@		8¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test.....per gal	7	@	7½
Black, 29 gravity, 15 cold test.....	7½@		8
Black, 29 gravity, summer ..	6	@	6½
Cylinder light, filtered.....	14	@	16
Cylinder, dark, filtered.....	10	@	13
Paraffine, 23½@24 gravity..	11	@	12
Paraffine, 25 gravity.....	10	@	11
Paraffine, 28 gravity.....	7½	@	8
Paraffine, red.....	9½@		10½

Paints and Colors—

Barytes, Foreign, ℔ ton..	$22.00	@	24.00
Barytes, Amer. floated....	29.00	@	32.00
Barytes, Amer. No. 1.....	16.00	@	18.00
Barytes, Amer. No. 2.....	13.00	@	15.00
Barytes, Amer. No. 3.....	11.00	@	12.00
Blue, Celestial..... ₩ ℔	6	@	8
Blue, Chinese.....	40	@	50
Blue, Prussian.....	25	@	40
Blue, Ultramarine.....	8	@	25
Brown, Spanish.....	½@		1
Brown, Vandyke, Amer...	3	@	3½
Brown, Vandyke, English.	6	@	8
Carmine, No. 40, in bulk..	2.75	@	..
Carmine, No. 40, in boxes or barrels.....	2.85	@	..
Carmine, No. 40, in ounce bottles.....	3.75	@	..
Chalk, in bulk..... ₩ ton..	1.75	@	2.00
Chalk, in bbls.. ₩ 100 ℔...	33	@	40
China Clay, English..... ₩ ton.	13.00	@	18.00
Cobalt Oxide, prep'd.....	9.00	@	11.00
Cobalt Oxide, black..... lots 100 ℔.	1.90	@	....
Cobalt Oxide, black..... less 100 ℔.	1.96	@	....
Green, Paris, in bulk.....	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs.....	10½@		11
Green, Paris, small pack.	12	@	17
Green, Chrome, ordinary.	6	@	12
Green, Chrome, pure.....	22	@	25
Lead, Eng., B.B. white....	8½@		10
Lead, Amn. White, dry or in oil:			
Kegs, lots less than 500 ℔...	7	@	7¼
Kegs, lots 500 ℔ to 5 tons....	6½@		6¾
Kegs, lots 5 tons to 12 tons..	6¾@		6¾
Kegs, lots 12 tons and over..	6¼@		6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price.....	..	@	½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price.....	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.	..	@	2½
Lead, Red, bbls. and ½ bbls...	6	@	7
Lead, Red, kegs.....	6¼	@	7¼
Litharge, kegs.....	6¼	@	7¼
Litharge, bbls. and ½ bbls.....	6	@	7

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed.....	1½@		2½
Ocher, German Washed....	1¼@		3
Ocher, American.....	½@		1¼
Orange Mineral, English....	8½@		9
Orange Mineral, French.....	10	@	10½
Orange Mineral, German....	8½@		9
Orange Mineral, American.	8¼@		8¾
Paris White, English Cliff-stone.....	1.00	@	1.15
Paris White, American.....	65	@	75
Red, Indian, English.....	5½@		7
Red, Indian, American.....	2	@	6½
Red, Turkey.....	9	@	14
Red, Tuscan.....	9	@	11
Red, Venetian, American... ₩ 100 ℔..	1.00	@	1.10
Red, Venetian, English.....	1.20	@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔.....	4	@	5
Sienna, Ital., Burnt Lumps.	1½@		3½
Sienna, Ital., Raw, Powd...	4½@		5½
Sienna, Ital., Raw, Lumps..	1¾@		3½
Sienna, American, Raw.....	1½@		1¾
Sienna, American, Burnt and Powdered..... ₩ ℔	1½@		1¾
Talc, French.....	..	@	1½
Talc, American.....	1¼@		1⅝
Terra Alba, Fr'ch. ₩ 100 ℔	95	@	1.25
Terra Alba, English.....	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered..... ₩ ℔	3½@		4
Umber, Turkey Bnt. Ln.....	2¾@		3
Umber, Turkey, Raw and Powdered.....	3½@		....
Umber, Turkey, R'w Lumps	2½@		2¾
Umber, Turkey, Bnt. Amer..	1¼@		1½
Umber, Turkey, R'w Amer.	1¼@		1¾
Yellow, Chrome.....	10	@	25
Vermilion, American Lead.	11¼@		12
Vermilion, Quicks'er, bulk..	53	@	..
Vermilion, Quicks'er, bags..	54	@	..
Vermilion, Quicksilver sm'r pkgs.....	62	@	..
Vermilion, English Import.	85	@	90
Vermilion, Imitation, Eng..	8	@	35
Vermilion, Trieste.....	90	@	92½
Vermilion, Chinese.....	92½@		95
Whiting Common, ₩ 100 ℔	37½@		42½
Whiting Gilders'.....	45	@	55
Zinc, American, dry.... ₩ ℔	3½@		4¼
Zinc, French, Red Seal.....	7⅛@		..
Zinc, Frech, Green Seal.....	9	@	..
Zinc, Frech, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal....	7¼@		..
Zinc, Antwerp, Green Seal..	7¾@		..
Zinc, German, L. Z. O.....	6¾@		7¼
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¾@		11½
lots less than one ton....	11	@	11⅝
Zinc, V. M. in Poppy Oil, Red Seal.....	..	@	..
lots of 1 ton and over.....	10	@	10½
lots of less than 1 ton.....	10¼@		10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort.....	25	@	30
Black, Drop, English.....	12	@	15
Black, Drop, Domestic.....	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	13
Black, Ivory.....	8	@	15
Blue, Chinese.....	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramarine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	16	@	18½
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber, Raw.....	7	@	10
Umber, Burnt.....	7	@	10

Putty—

In barrels and ½ bbls.....	.01¾@		.01¾
In tubs.....	.01¾@		.01¾
In tin cans.....	.01½@		.02½
In bladders.....	.01⅞@		.02½

Spirits Turpentine—

In regular bbls.....	29	@	29¼
In machine bbls.....	29½@		29¾

Glue—

Low Grade..... ₩ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	22
English.....	10	@	15
Irish.....	12	@	..

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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CURRENT METAL PRICES.

DECEMBER 27, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron: ¾ to 2 in. round and sq uare.. 1 to 6 in. x ⅜ to 1 in.	₩ lb 1.80 @ 1.90¢
Refined Iron: ¾ to 2 in. round and square. 1 to 4 in. x ⅜ to 1½ in. 4½ to 6 in. x ⅜ to 1 in.	₩ lb 1.90 @ 2.00¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.10 @ 2.20¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.00 @ 2.10¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.20 @ 2.30¢
"Burden Best" Iron, base price	₩ lb .... 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb .... 2.80¢
"Ulster"	₩ lb .... 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store—

	Per lb
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2½¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

Black—

Best Refined Iron.

Nos. 14 to 20	3 @ 3½¢
21 to 24	3¼ @ 3⅜¢
25 to 26	3⅜ @ 3½¢
27	3½ @ 3⅝¢
28	3⅝ @ 3¾¢

Common ¼¢ less than the above.

Open Hearth Steel.

Best Soft Steel, Nos. 14 to 16	2½ @ 2⅝¢
" " " 18 to 20	2⅞ @ 3¢
" " " 21 to 24	3½ @ 3¼¢
" " " 25 to 26	3⅜ @ 3⅝¢
" " " 27 to 28	3⅝ @ 3⅞¢

Best Bloom Sheets, ¼¢ extra over above prices.
Best Bloom, Galvanized, jobbing dis. 70 @ 70&5%
Ordinary Bessemer, ⅛¢ @ ¼¢ lower than above prices.

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ lb 12¢ @ 13¢
Patent Planished	₩ lb A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel	₩ lb, 8½¢

Foreign Steel from Store—

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " Annealed	₩ lb 75 ¢
" " "Titanic"	₩ lb 20 ¢
Eicken's Special No. 8	₩ lb 30 ¢
" Extra	₩ lb 15 ¢

METALS—

Tin—

	Per lb
Banca, Pigs	22¢ @ 22½¢
Straits, Pigs	21½¢ @ 22¢
Straits in Bars	22½¢ @ 23¢

Tin Plates—

Duty: 2.2¢ ₩ lb.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade	IC,	10 x14..	@	$6.50
" " "	IC,	12 x12..	@	6.75
" " "	IC,	14 x20..	@	6.50
" " "	IC,	20 x28..	@	13.00
" " "	IX,	10 x14..	@	8.50
" " "	IX,	12 x12..	@	8.75
" " "	IX,	14 x20..	@	8.50
" " "	IX,	20 x28..	@	17.00
" "	DC,	12½x17..	@	6.00
" "	DX	12½x17..	@	8.00
Allaway Grade	IC,	10 x14..	@	6.00
" "	IC,	12 x12..	@	6.25
" "	IC,	14 x20..	@	6.00
" "	IC,	20 x28..	@	12.00
" "	IX,	10 x14..	@	7.50
" "	IX,	12 x12..	@	7.75
" "	IX,	14 x20..	@	7.50
" "	IX,	20 x28..	@	15.00
" "	DC,	12½x17..	@	5.50
" "	DX,	12½x17..	@	7.00

Coke Plates—Bright—

Steel Coke.—IC,	10 x 14, 14 x 20..	$5.40	@	$5.50
	10 x 20..		@	8.50
	20 x 28..	11.50	@	12.00
IX,	10 x 14, 14 x 20..		@	7.00
BV Grade—IC,	10 x 14, 14 x 20..		@	5.50

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC,	14 x 20	@	$5.65
	20 x 28	@	11.00
IX,	14 x 20	@	6.40
	20 x 28	@	12.80
Abecarne Grade.—IC,	14 x 20	@	5.55
	20 x 28	@	10 75
IX	14 x 20	@	6 40
	20 x 28	@	12.80

Tin Boiler Plates—

IXX,	14x 26...112 sheets	@	$13.35
IXX,	14 x 28...112 sheets	@	14.50
IXX,	14 x 31...112 sheets	@	16.00

American Terne Plates.—Apollo.

IC,	14 x 20	$6.25
IC,	20 x 28	12.50
IX,	14 x 20	7.25
IX	20 x 28	14.50

Copper—

Duty: Pig, Bar and Ingot, 1½¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35% ad valorem.

Ingot—

Lake	@ 11 ¢
Ansonia grade Arizona	@ 10½¢
Ansonia grade Casting	@ 10 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 25 %, according to size of order. Stubs' gauge standard.

Not wider than	Not longer than	And longer than	Weights per sq. foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30		72	22	22	23	23	25	27	31	....
36	96		22	22	23	24	26	30	33	....
36		96	22	22	23	25	27	31	35	....
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅜ inch diameter and over, ₩ lb 22¢
Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ lb advance over prices of Sheet Copper required to cut them from.
Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.
Cold or Hard Rolled Copper lighter than 14 oz ₩ square foot, 2¢ ₩ lb over the foregoing prices.
All Polished Copper over 20 in. wide, 2¢ ₩ lb advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per lb.
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter, 2¢ ₩ lb additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.
15 % @ 25 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned	₩ lb 34¢, 15% @ 25%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz.	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes—

Standard always Stubs' gauge, unless otherwise ordered.

July 6, 1892. Net.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional

Brazed Brass Tubing. (To No. 20 inclusive.)

Brown & Sharpe's gauge standard.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	$1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ lb
Bronze Tubing, 8¢ ₩ lb more than Brass.	
Discount from list	30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2	in. 10	in. 12	in. 14	in. 16	in. 18	in. 20	in. 22	in. 24
To No. 20 inclusive	.21	.23	.23	.25	.27	.29	.31	.33	
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34	
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35	
Nos. 27 and 28	.23	.24	.2	.28	.30	.32	.34	.36	

Common High Brass: Wider than and including	in. 26	in. 28	in. 30	in. 32	in. 34	in. 36	in 36	in. 38
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.66
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 15 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0.30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.62
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2.00
No 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

—% discount.
Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs—

	Per lb.		Per lb.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No. 10	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive	17¢ ₩ lb
Over 3½ to 5 inches inclusive	18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive	18¢ ₩ lb
Over 3½ to 5 inches inclusive	19¢ ₩ lb

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.	
Western Spelter	4½¢
Bertha (pure)	8¢@8¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ lb.	
600 lb casks	5½¢
Per lb	6¢@6½¢

Lead—

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 2½¢ ₩ lb.	
American Pig	4¢@4.10
Bar	4½¢
Pipe, subject to discount 20%	6¼¢
Tin-Lined Pipe, subject to discount 20%	15¢
Block Tin Pipe, subject to discount 20%	37½¢
Sheet, subject to discount 20%	7¢
Old Lead in exchange, 3½¢ ₩ lb.	

Solder—

½ @ ½	13½¢ @ 14½¢
No. 1	11¾¢ @ 12½¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson	₩ lb 11 ¢
Hallett's	10½¢

Aluminum—

Duty: 15¢ ₩ lb.

No. 2 grade metal (guaranteed over 94% pure aluminum) in ton lots	₩ lb .70
No. 1 (guaranteed to be 98 % pure), in ton lots	₩ lb .75
Lots less than 1 ton	10¢ ₩ lb additional

Old Metals—

Prices Paid in New York.

Heavy Copper	₩ lb	7½¢
Light and Tinned Copper	₩ lb	6½¢
Heavy Brass	₩ lb	5½¢
Light Brass	₩ lb	4½¢
Lead	₩ lb	3 ¢
Tea Lead	₩ lb	2 ¢
Zinc	₩ lb	2¾¢
No. 1 Pewter	₩ lb	14 ¢
No. 2 Pewter	₩ lb	7 ¢
Wrought Scrap Iron	₩ gross ton	$9.00
Heavy Cast Scrap	₩ gross ton	7.00
Stove Plate Scrap	₩ gross ton	4.50
Burnt Iron	₩ gross ton	3.00

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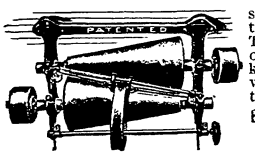
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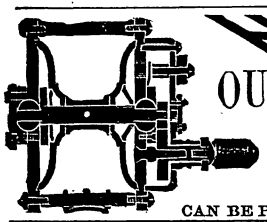
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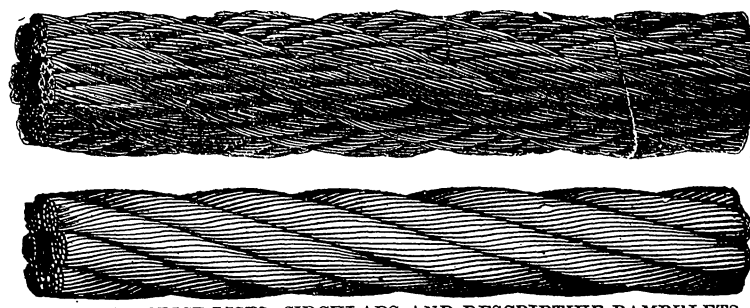
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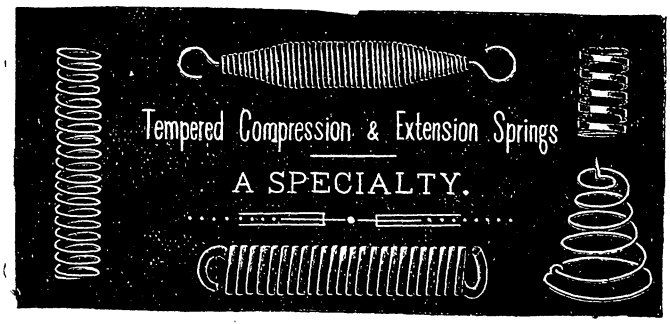
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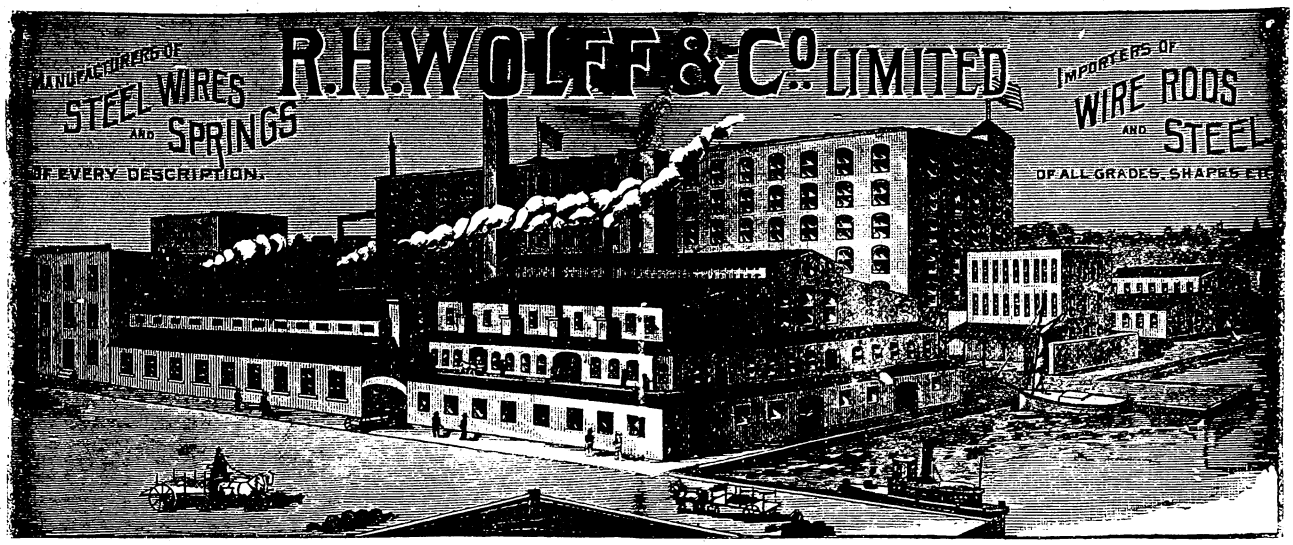
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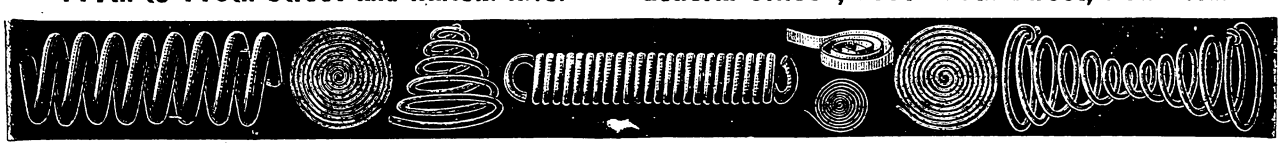
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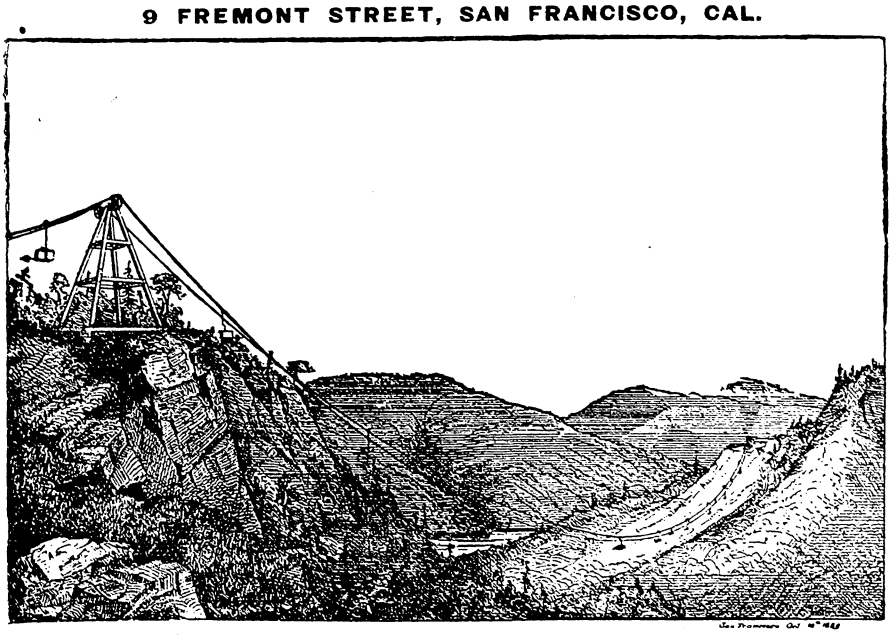
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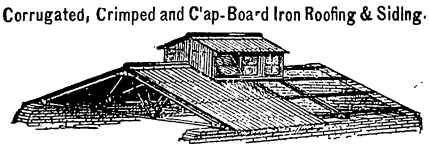
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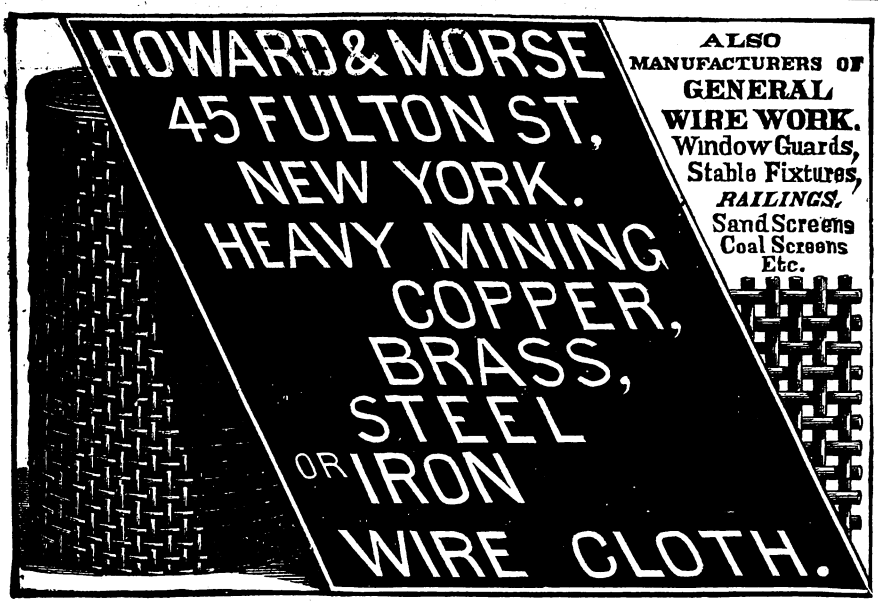
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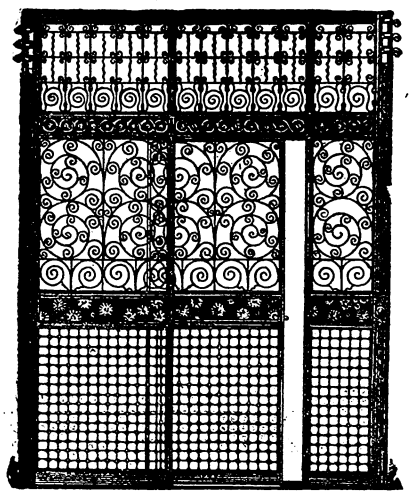
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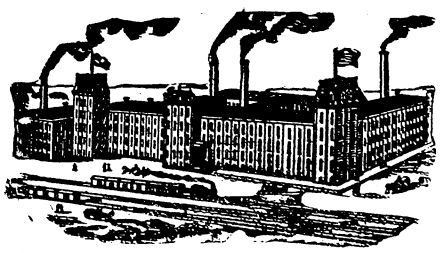
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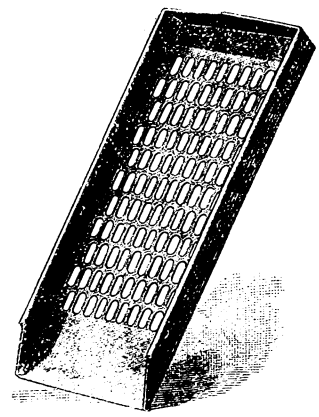
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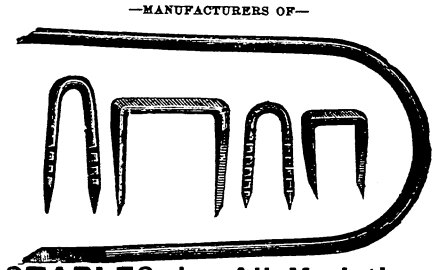
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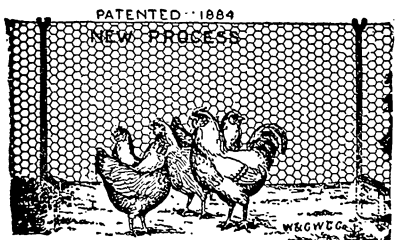
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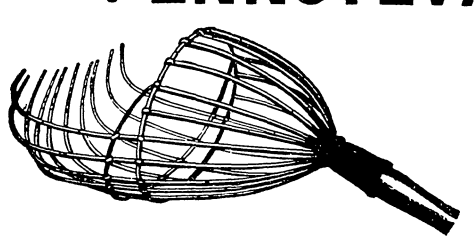


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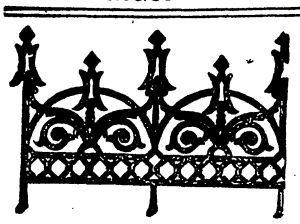
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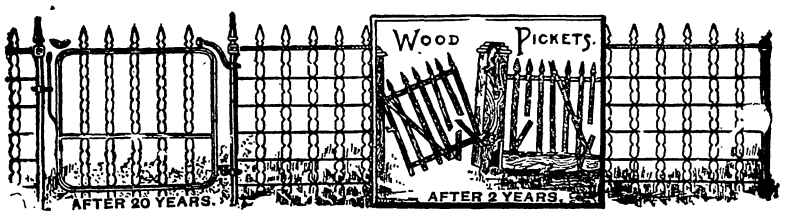
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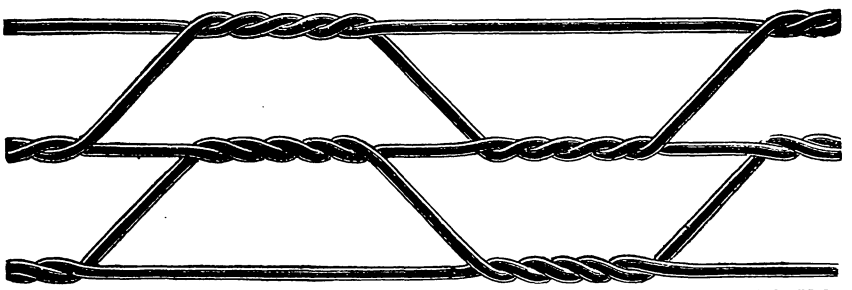
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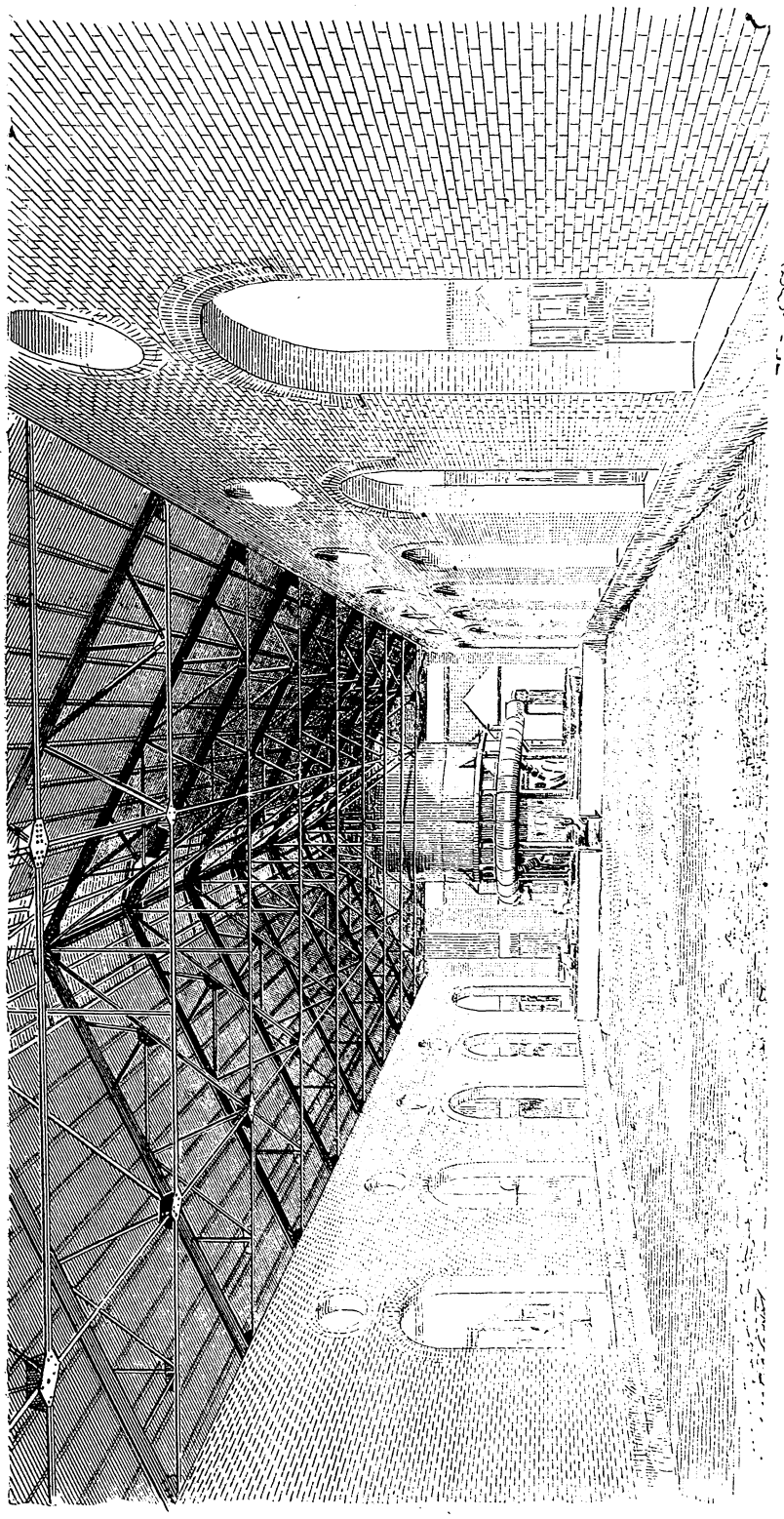
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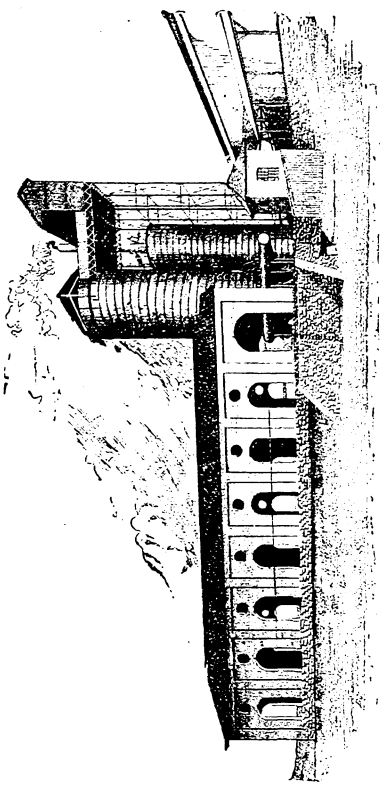
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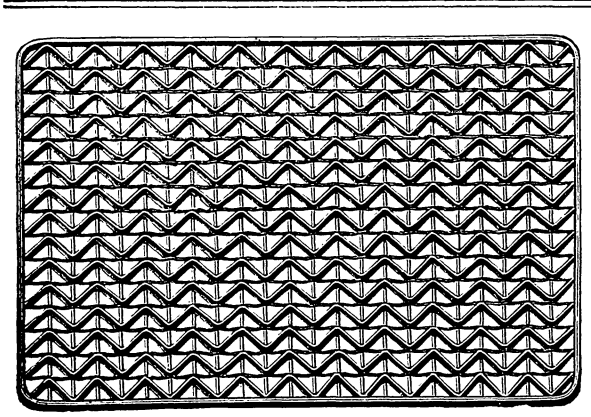
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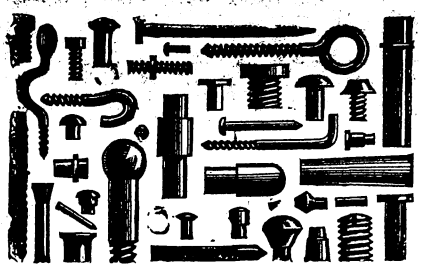
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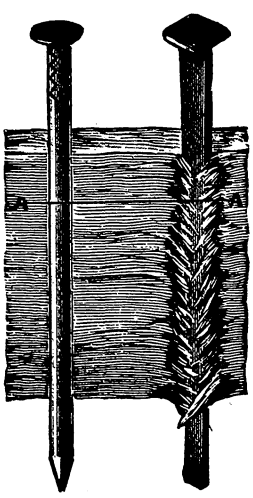
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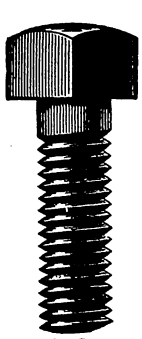
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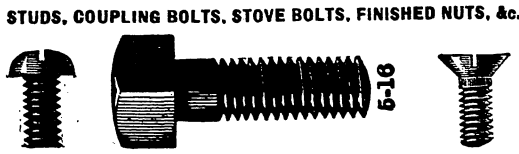
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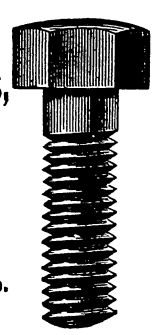
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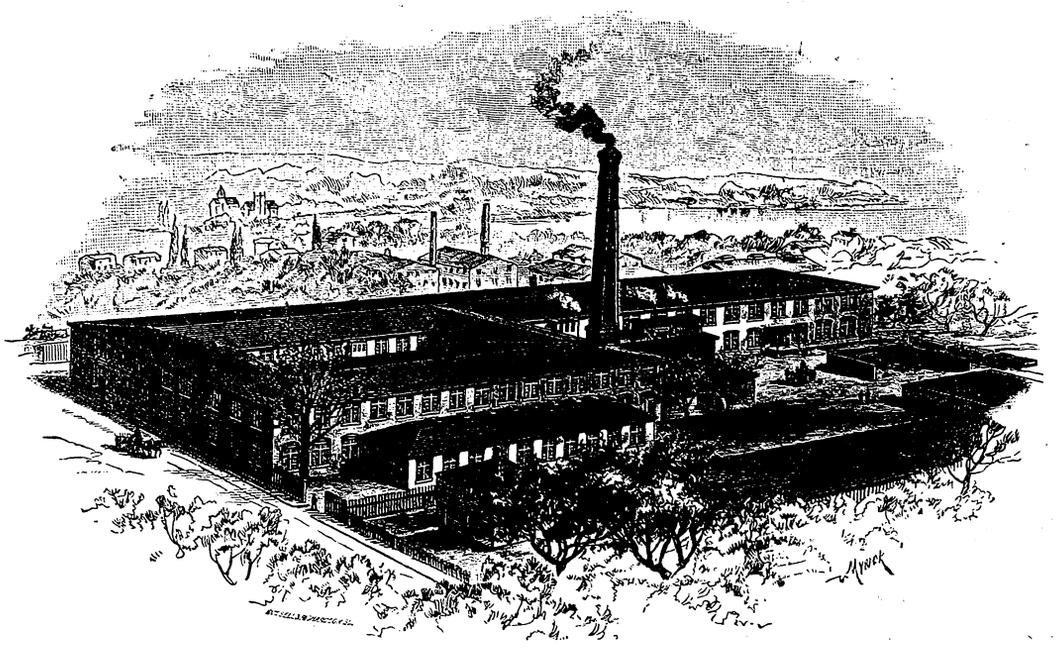
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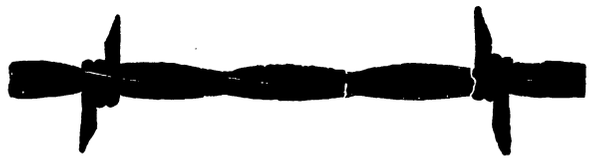
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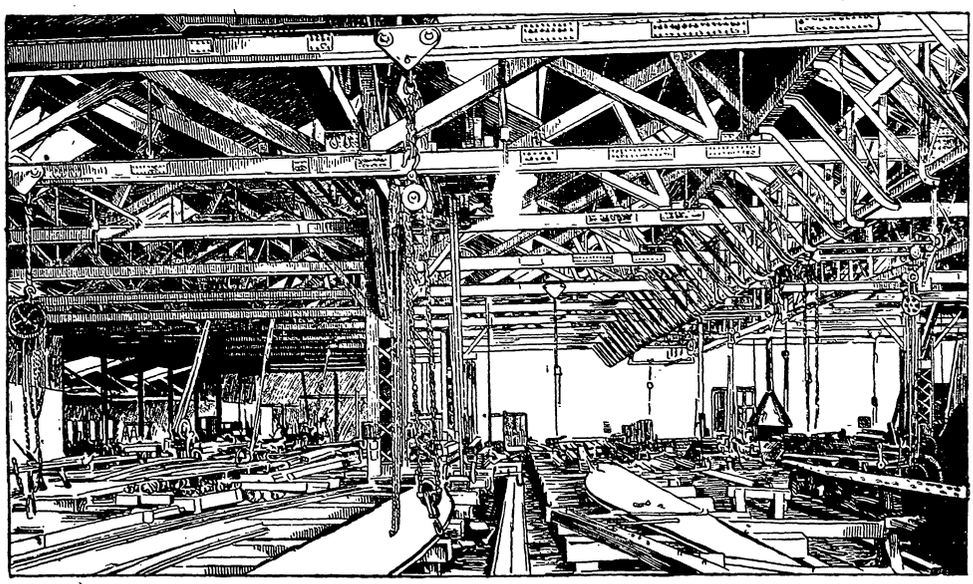
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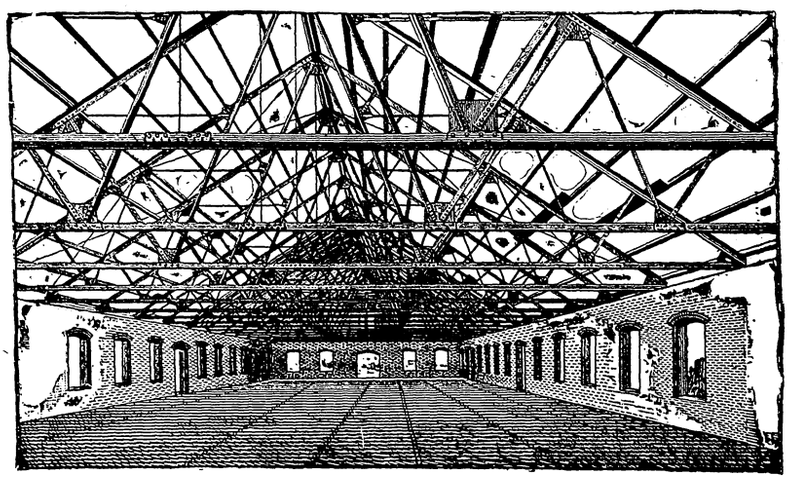
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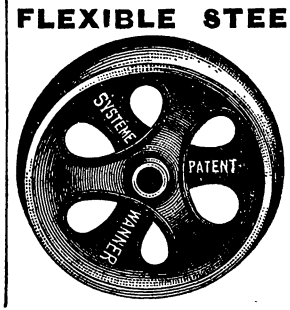
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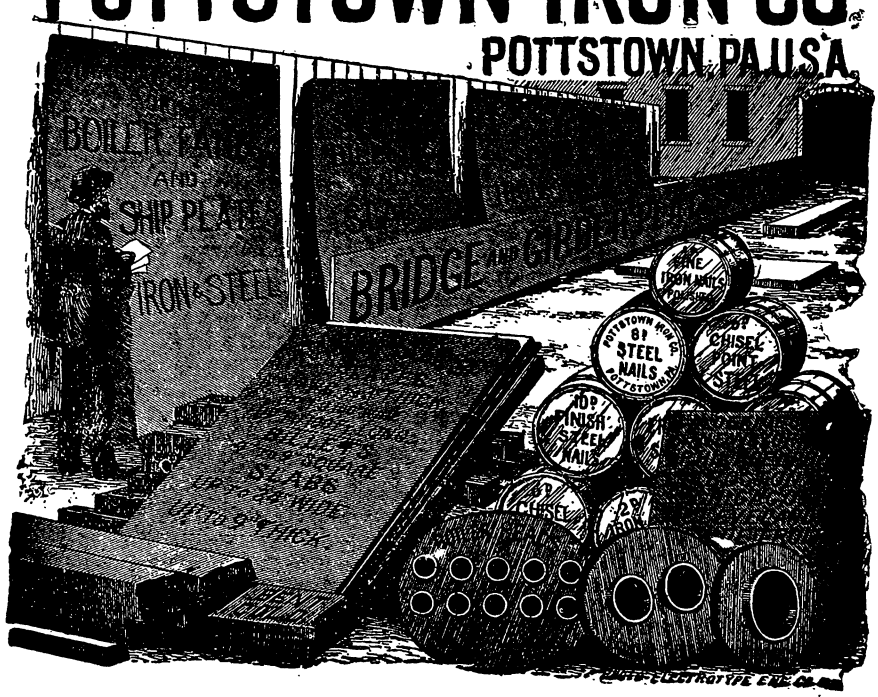
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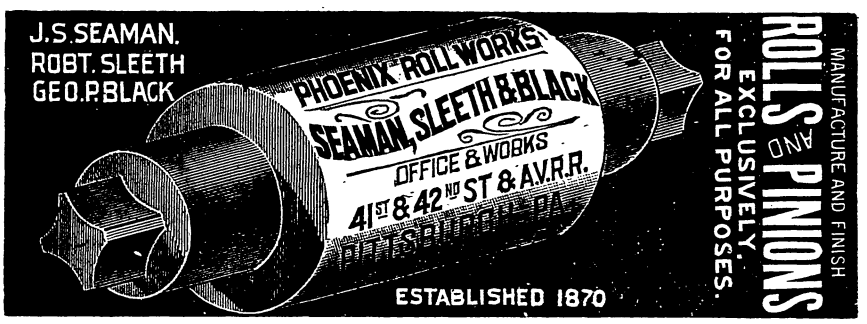
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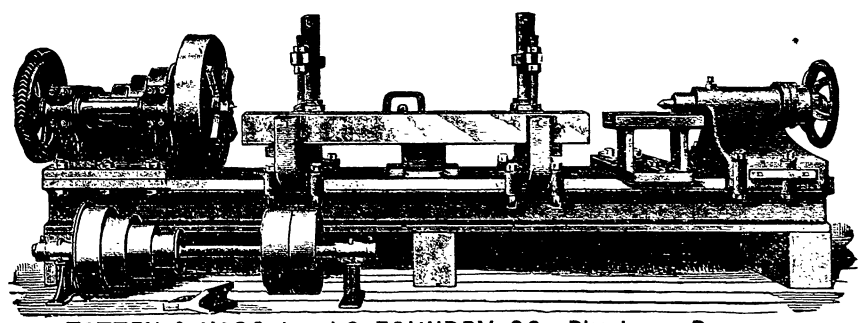
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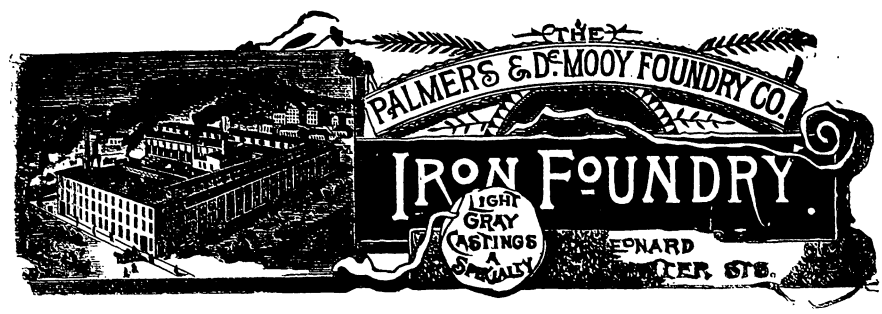
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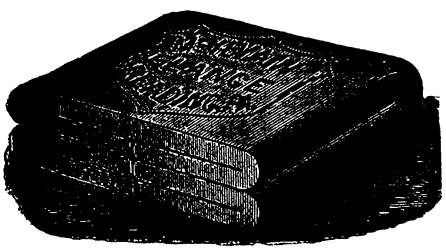


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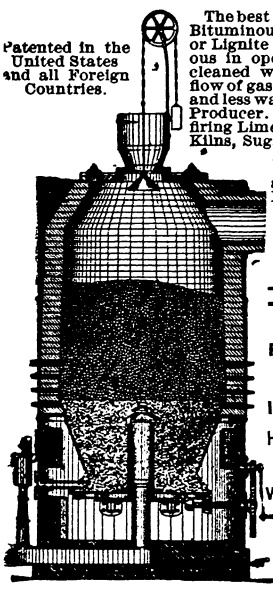
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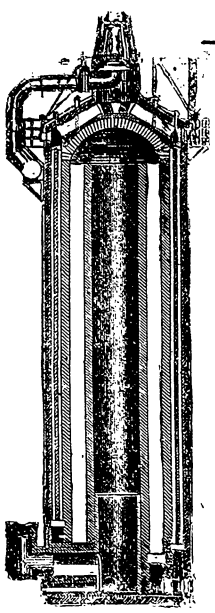
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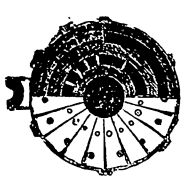
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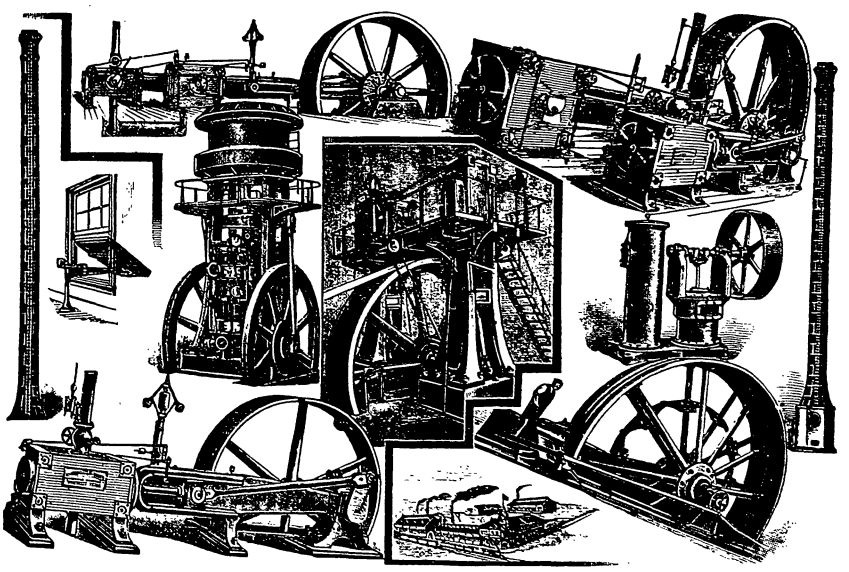
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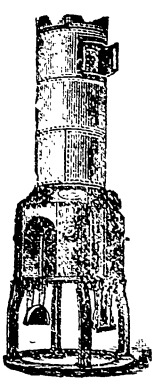
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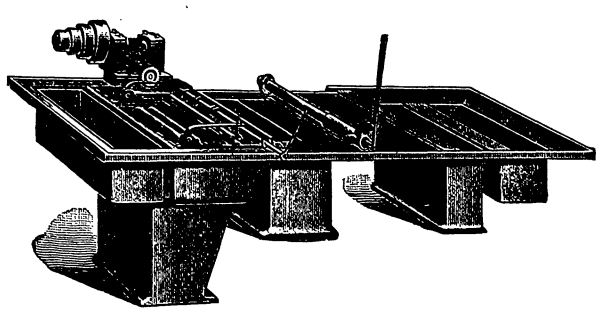
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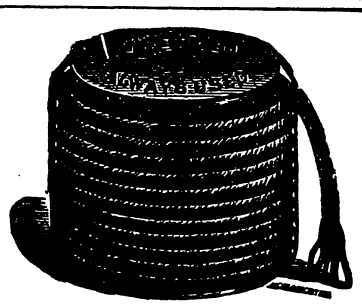
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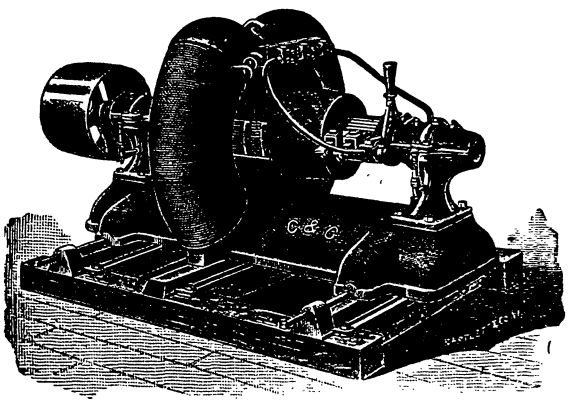
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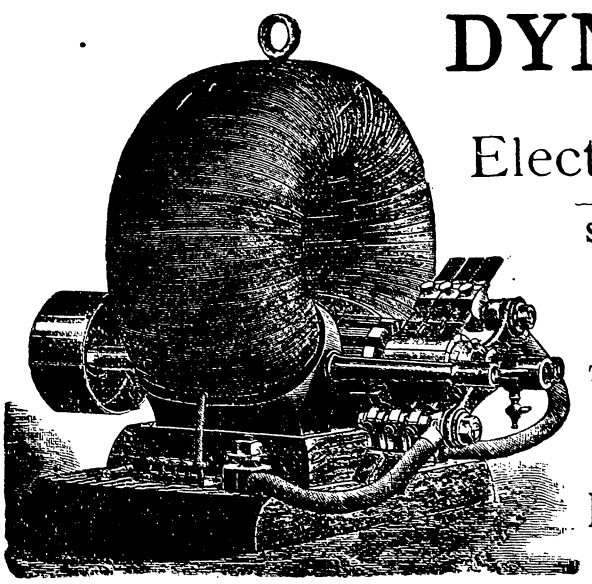
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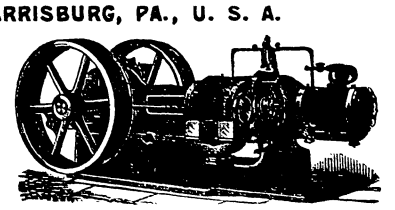
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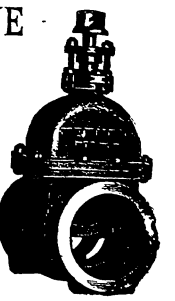
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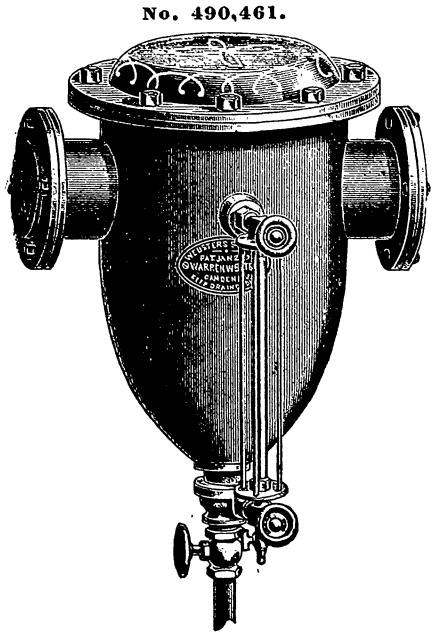
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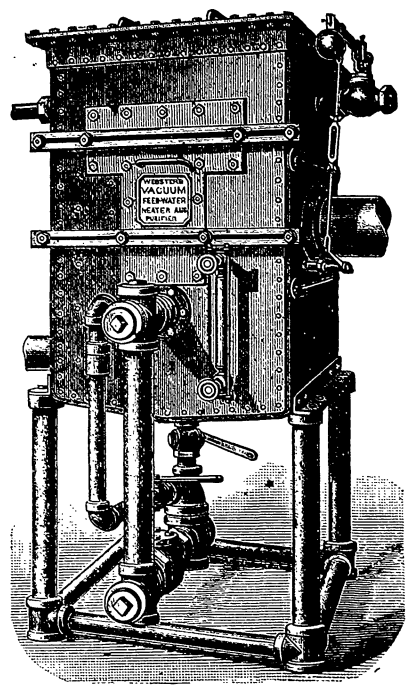
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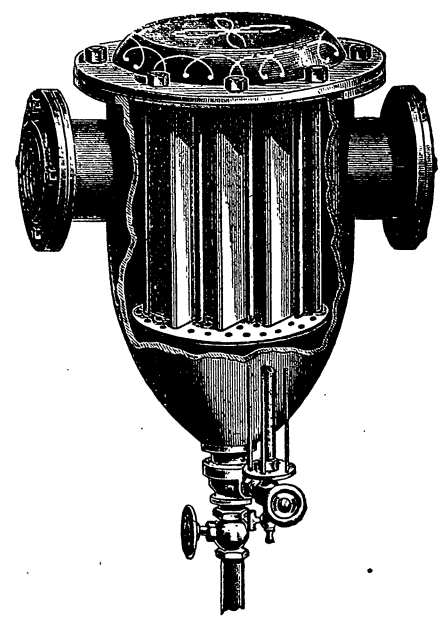
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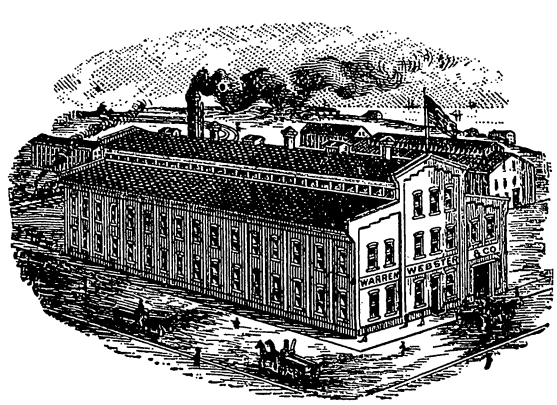
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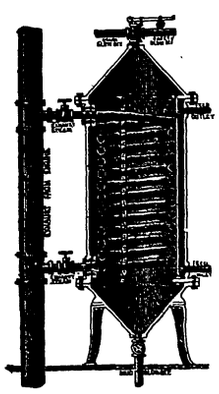
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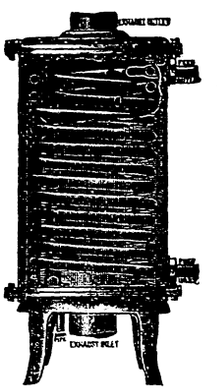
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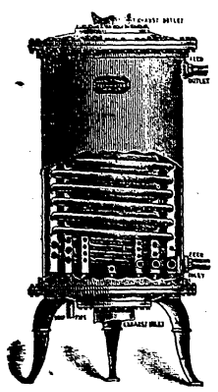
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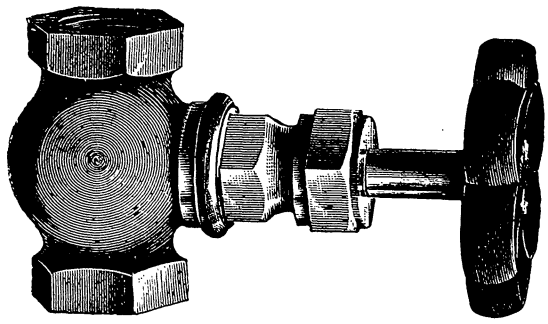
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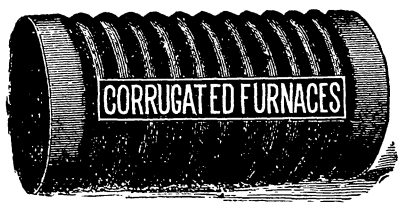
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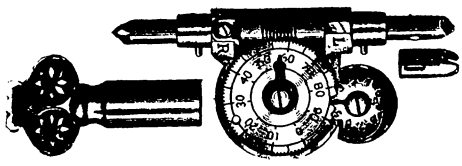


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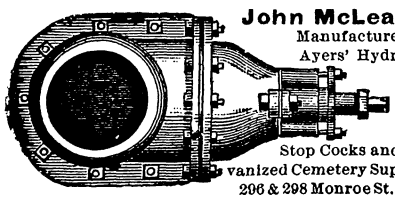
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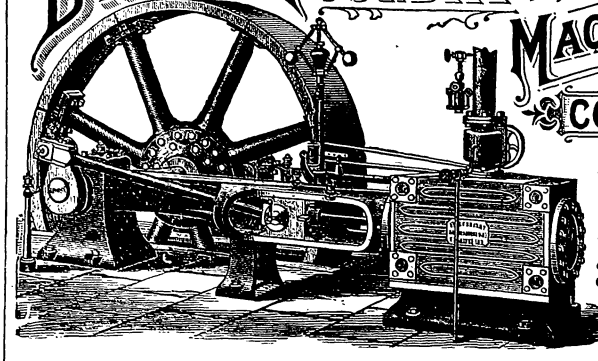
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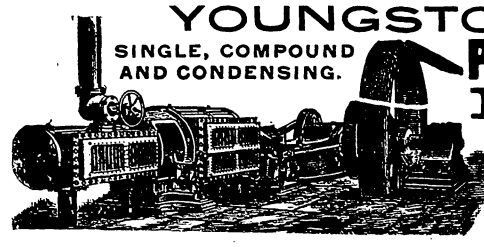
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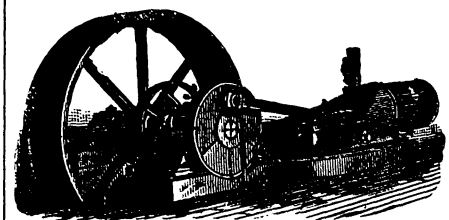
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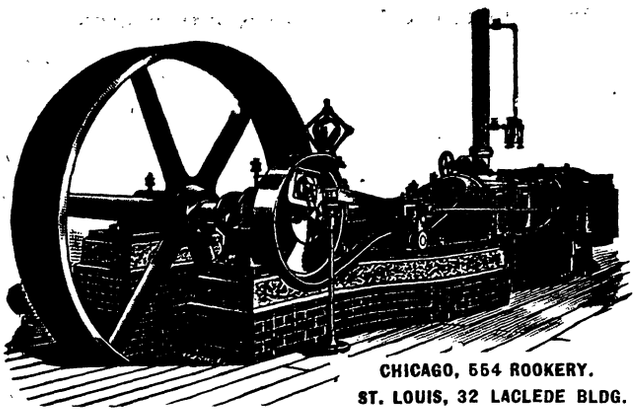
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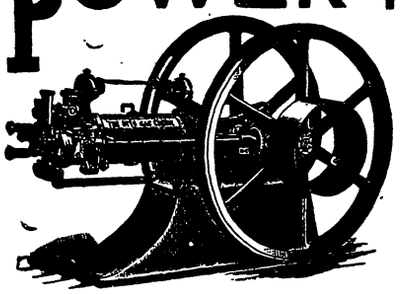
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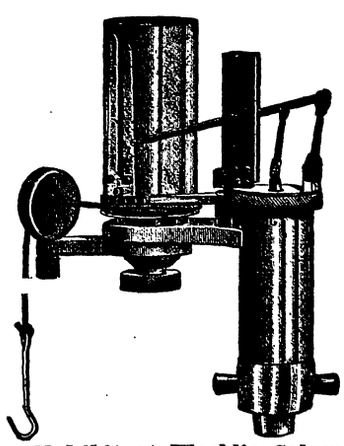
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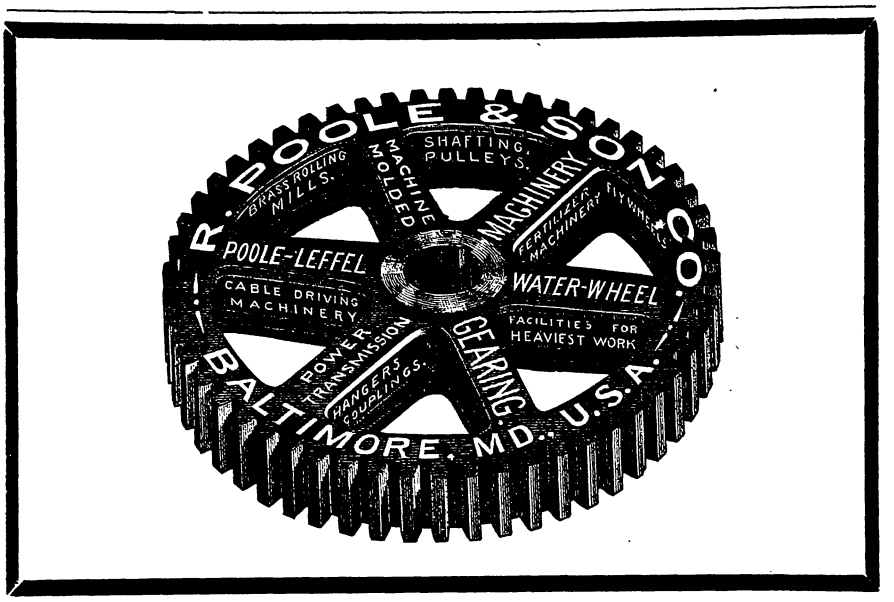
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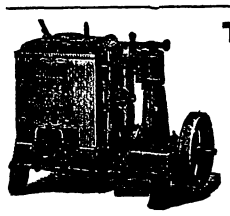
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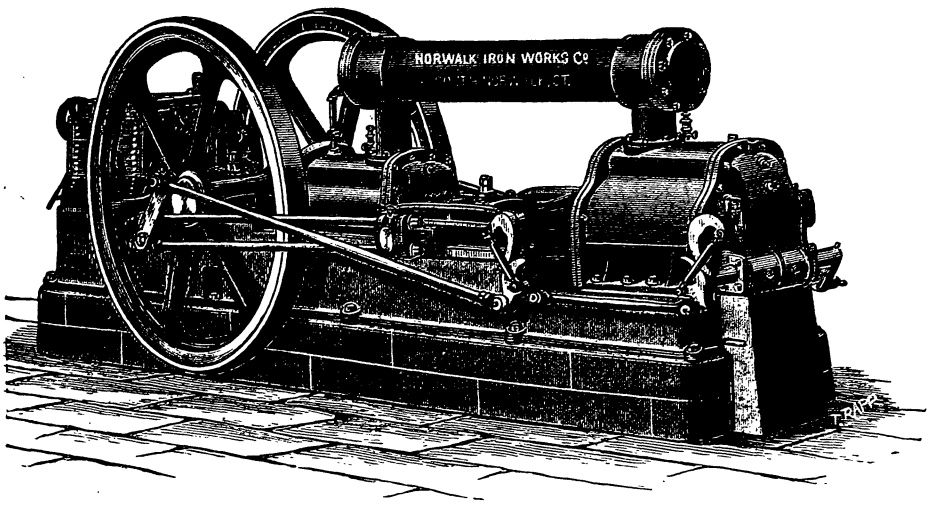
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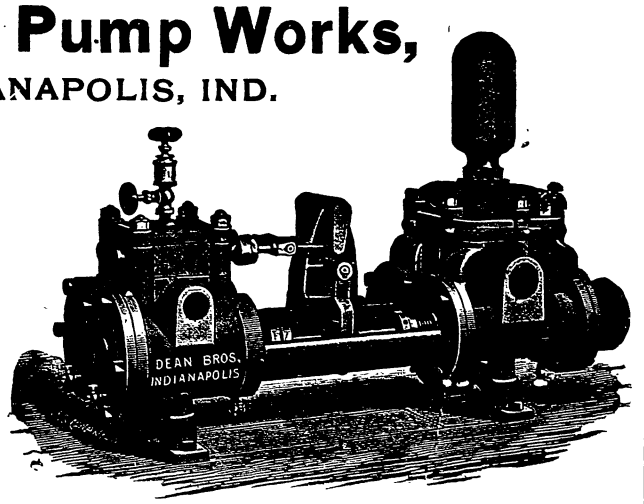
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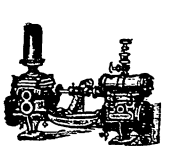
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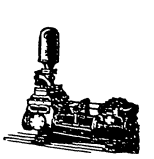
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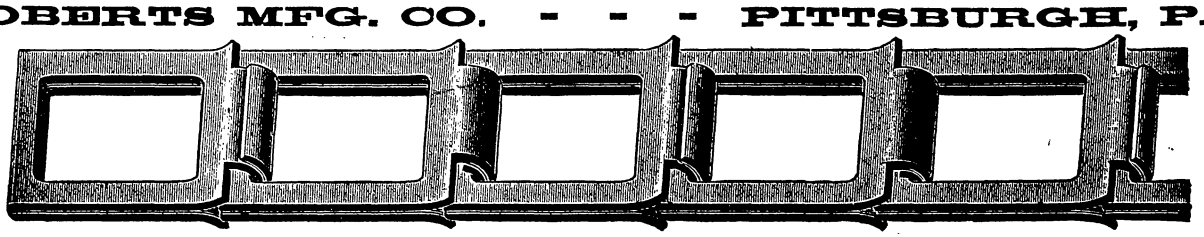
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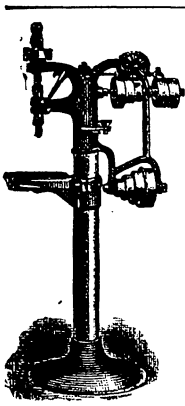
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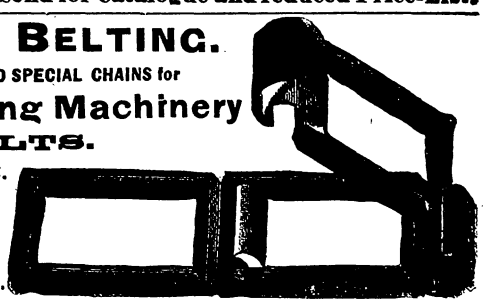
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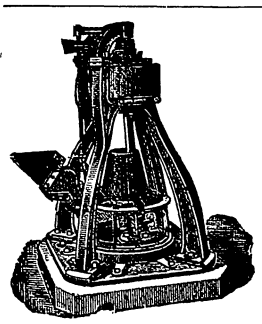


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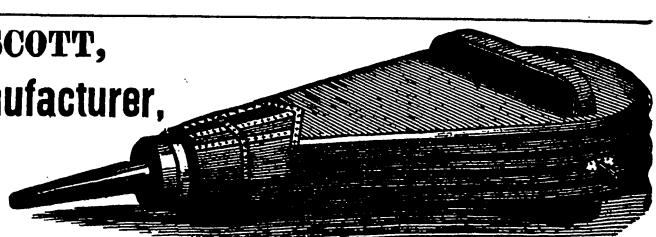
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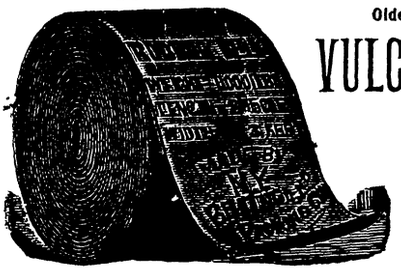
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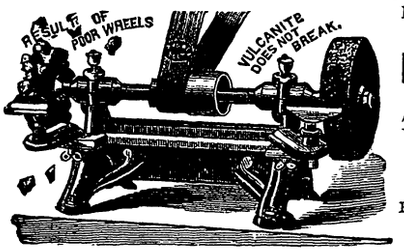
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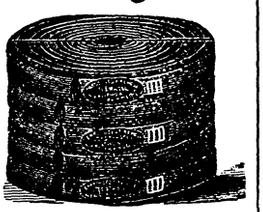
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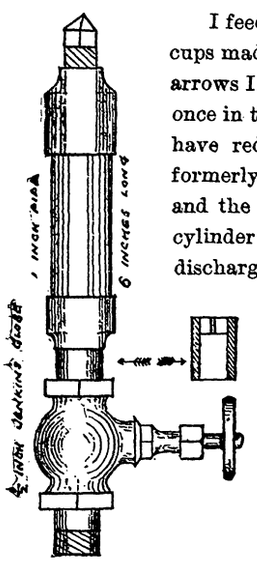
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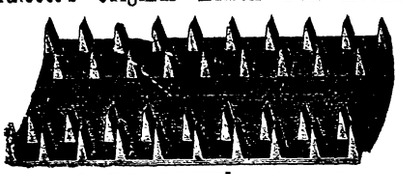
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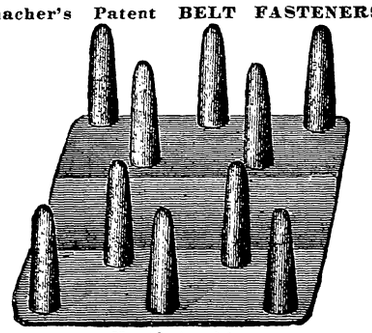
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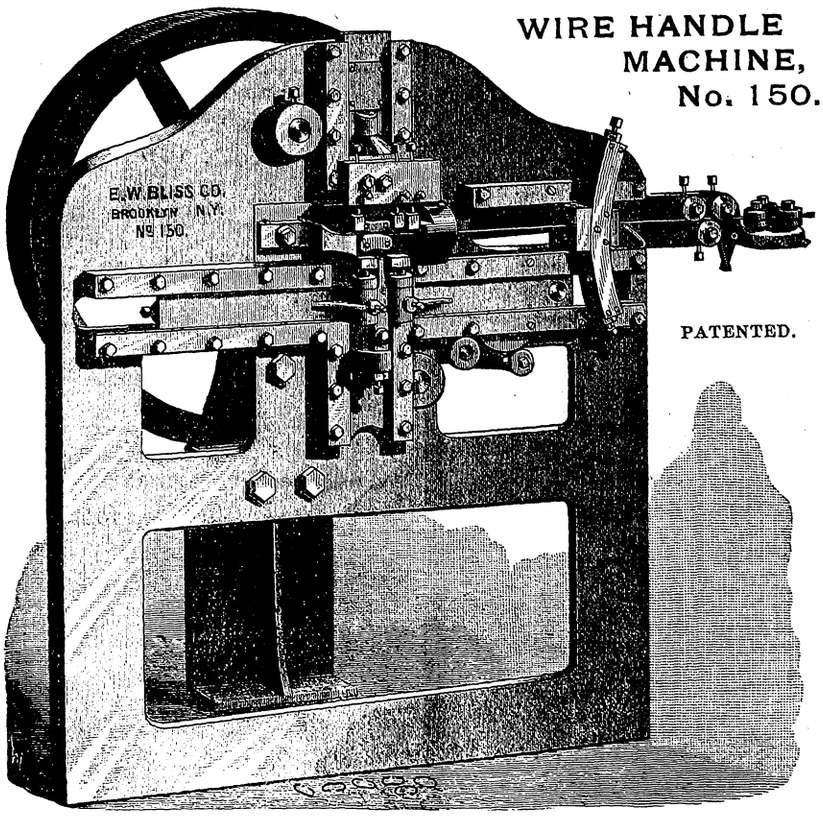
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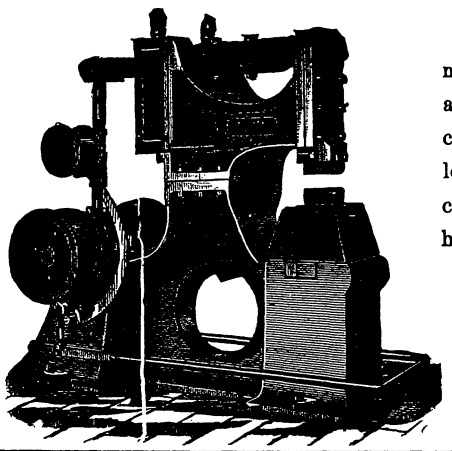
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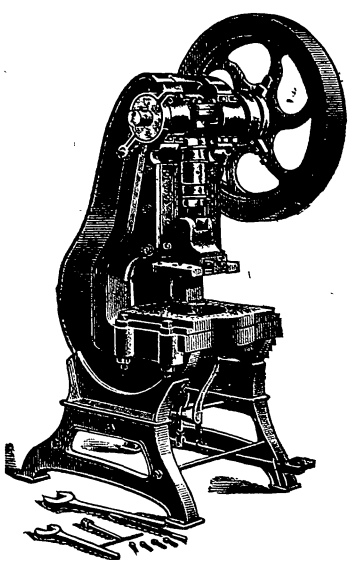
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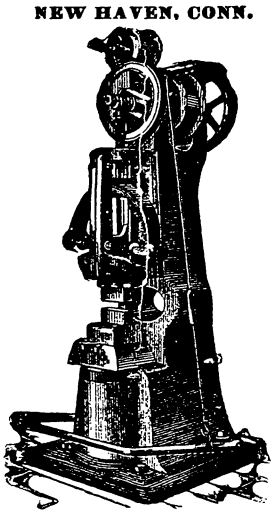
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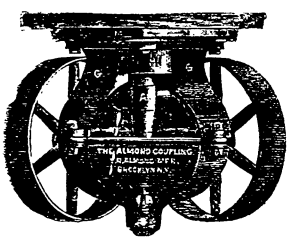
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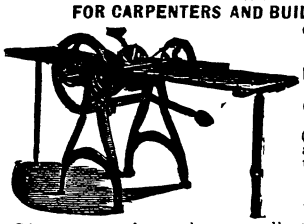
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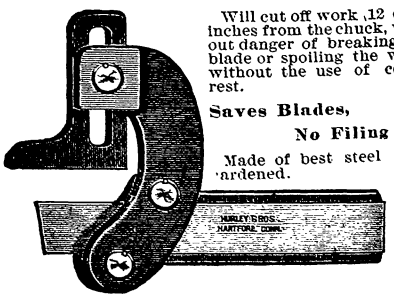
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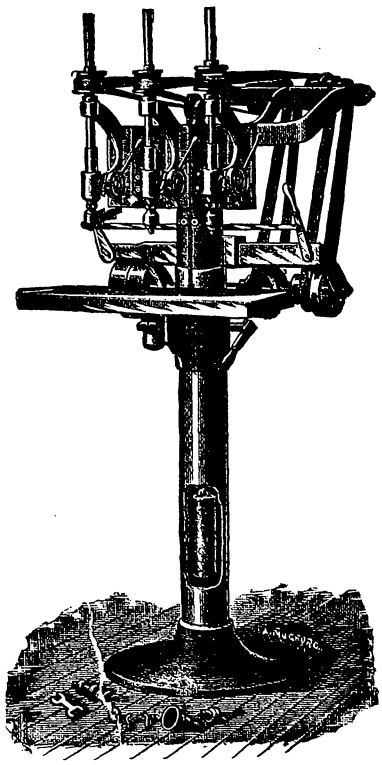
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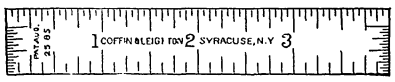
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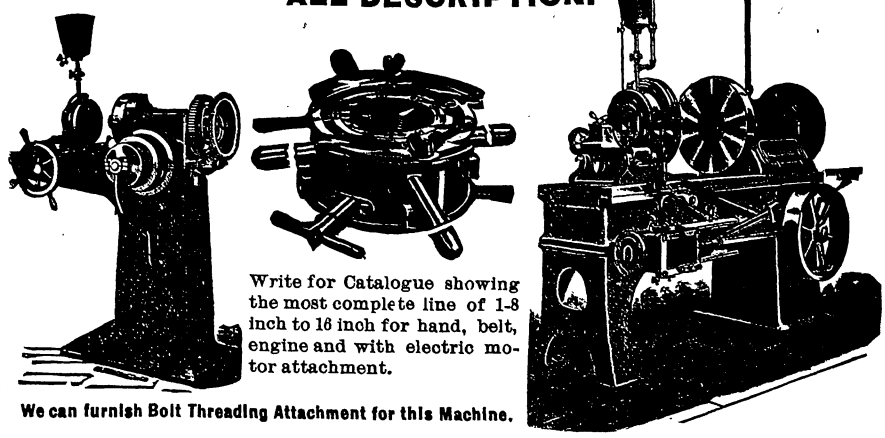
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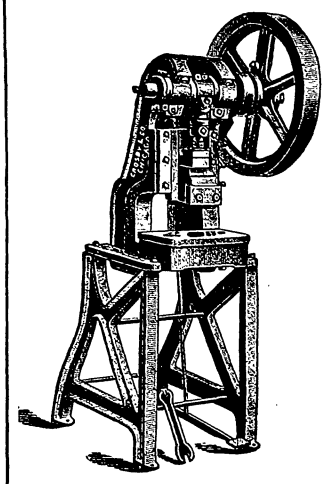
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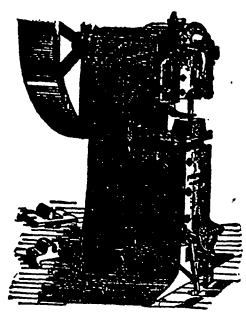
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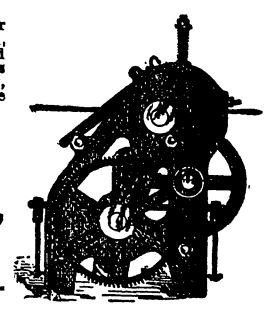
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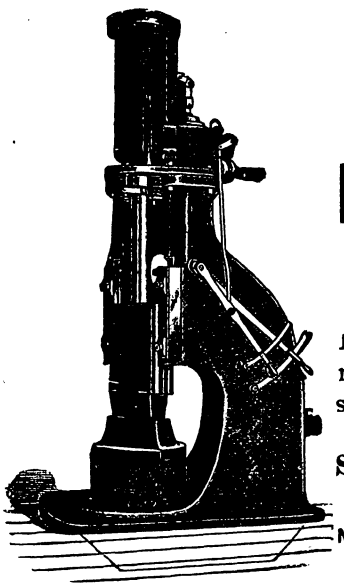




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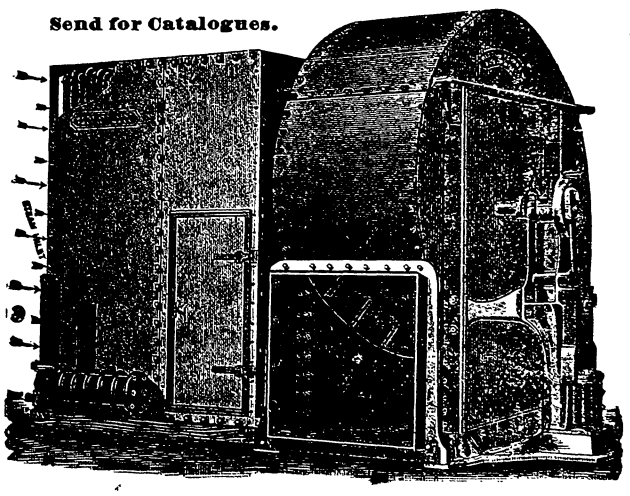
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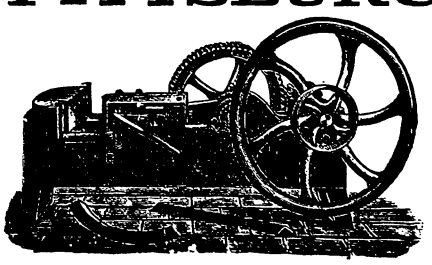
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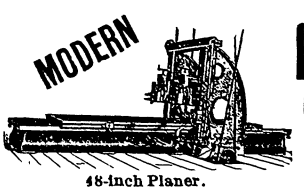
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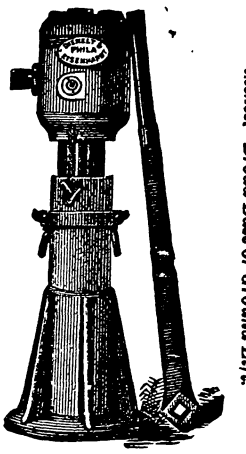
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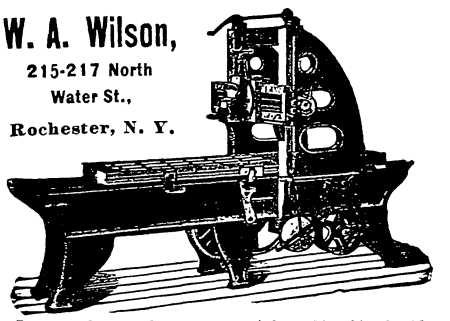
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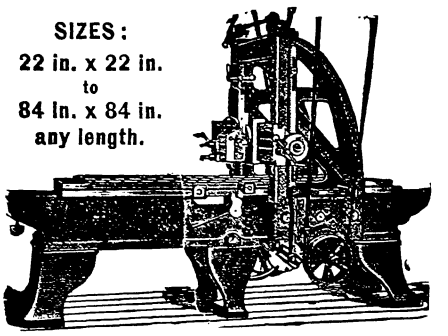
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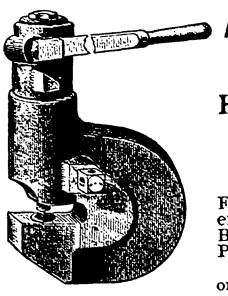
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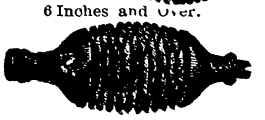
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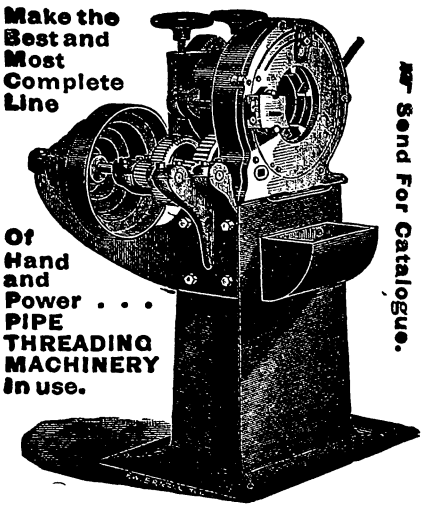
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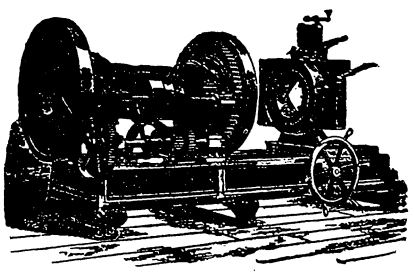
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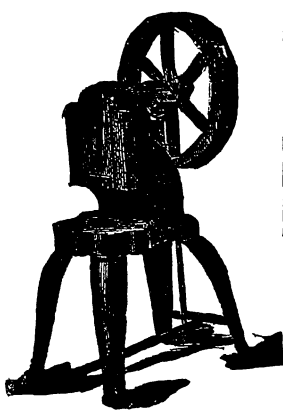


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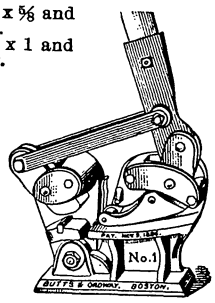
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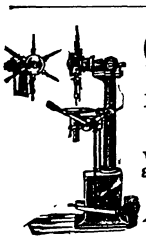
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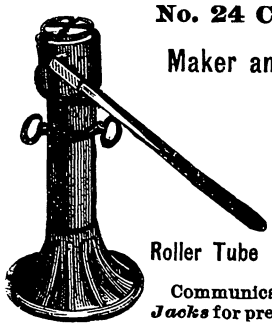
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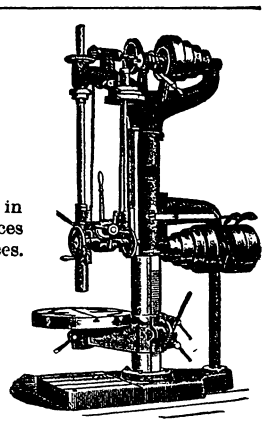
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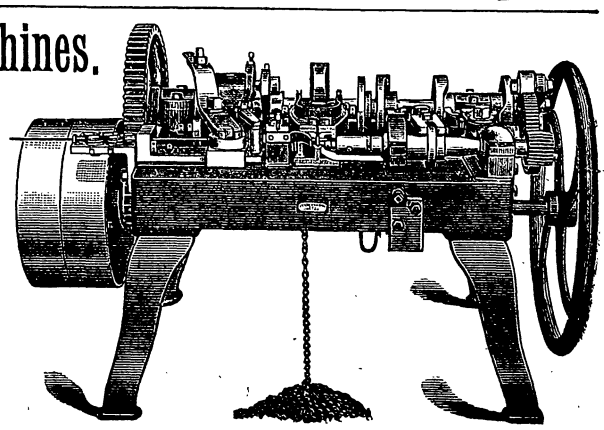
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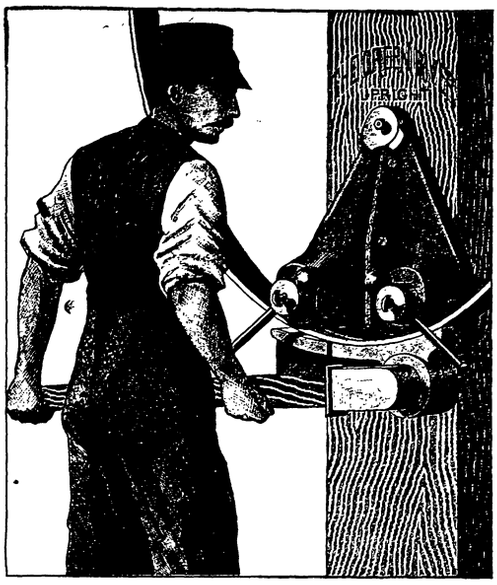
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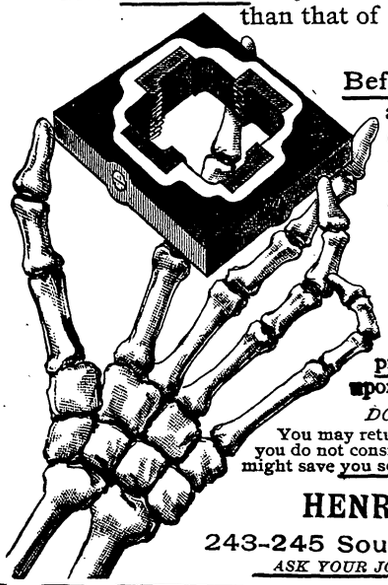


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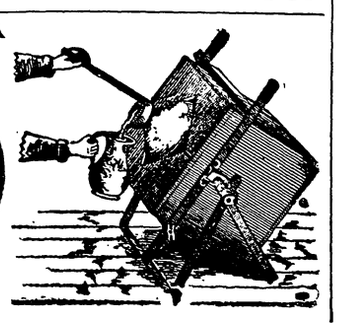
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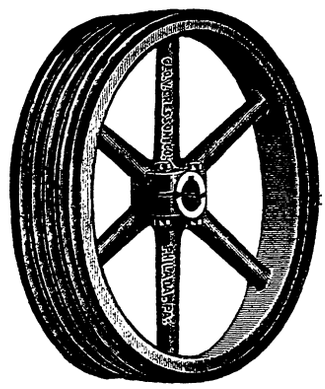




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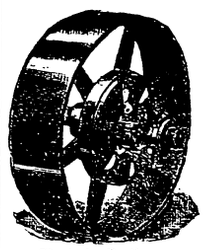
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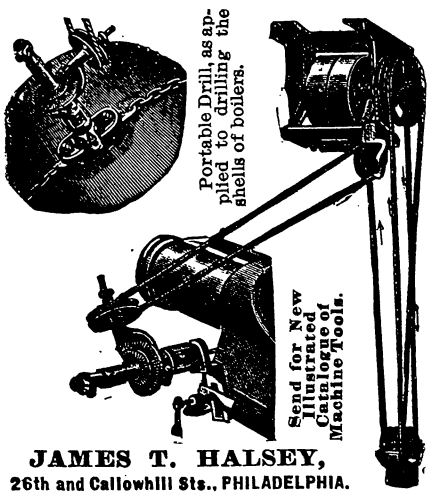
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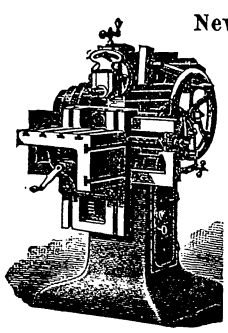
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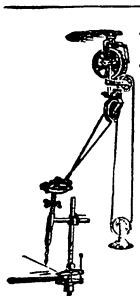
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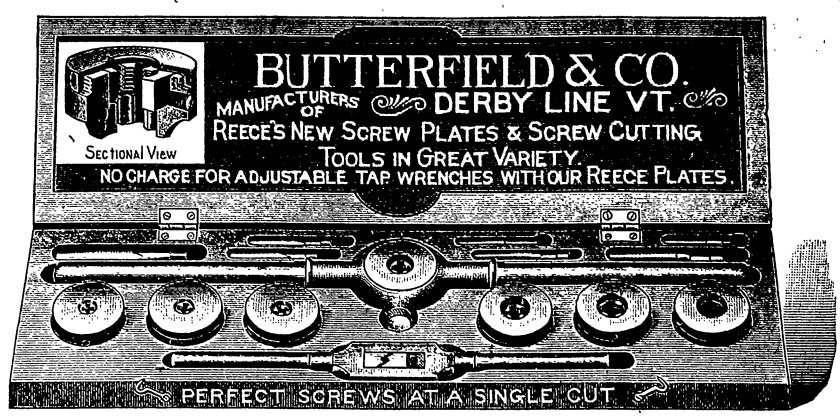
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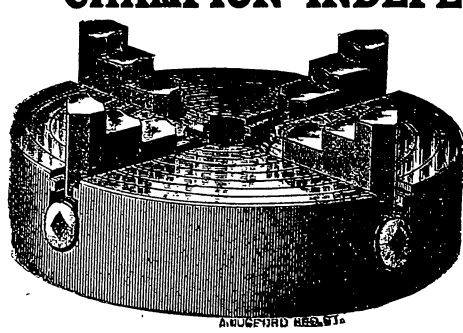
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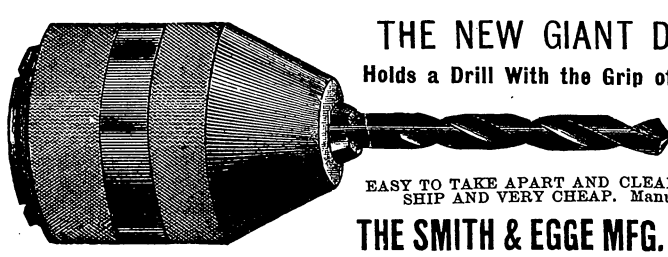
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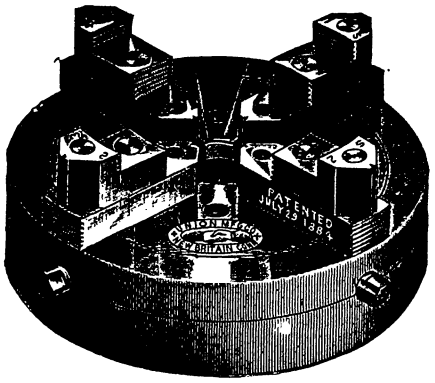
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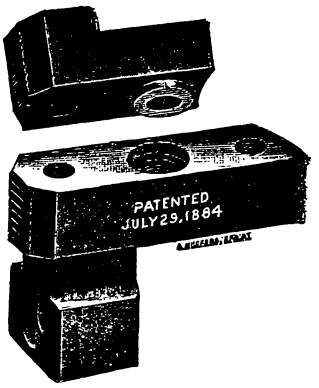


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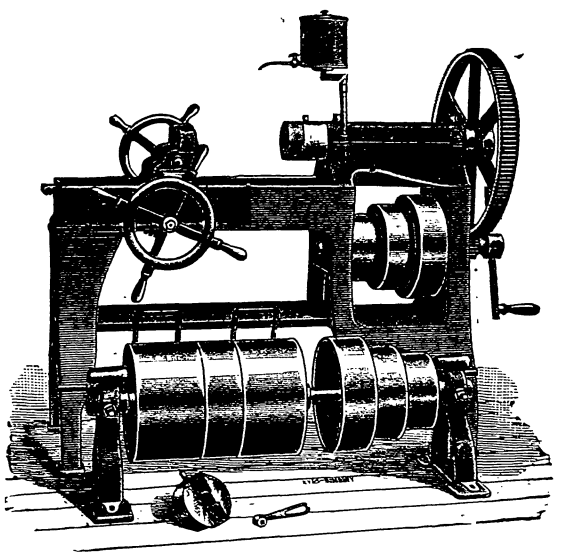
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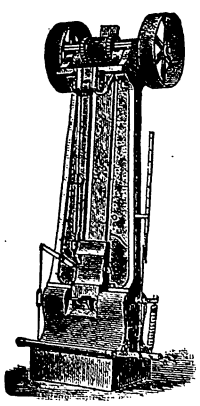
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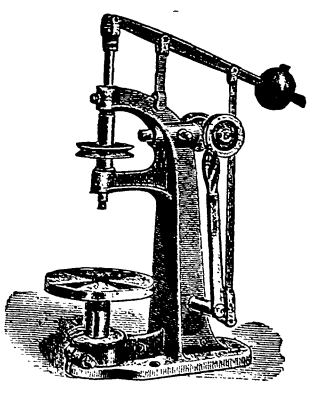
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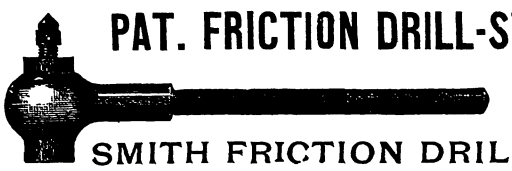
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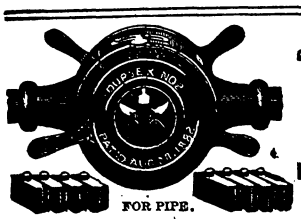


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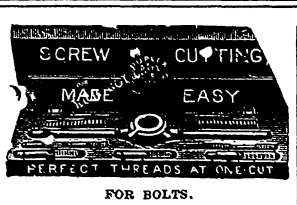
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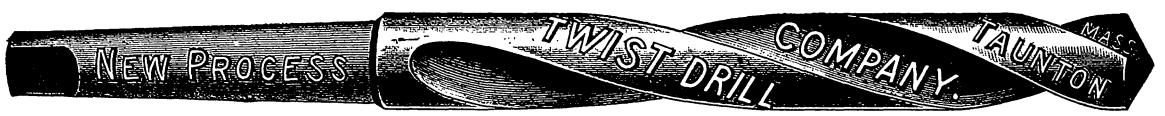
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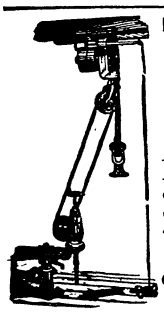
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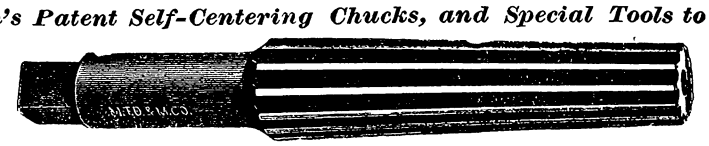
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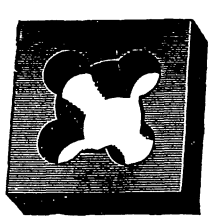


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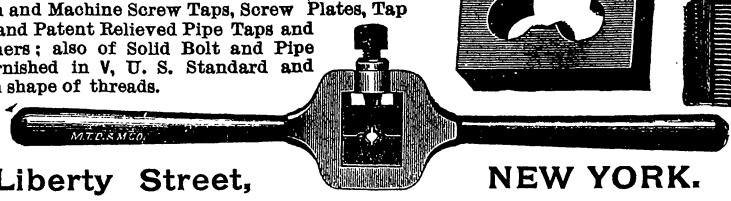
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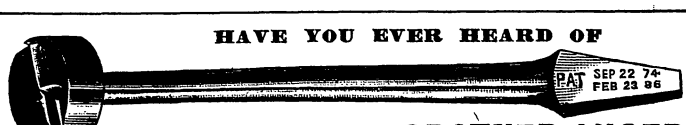


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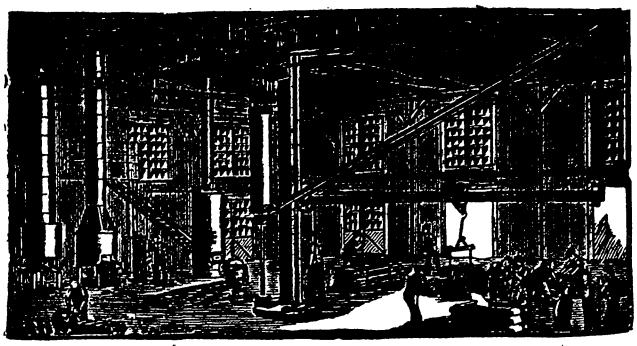
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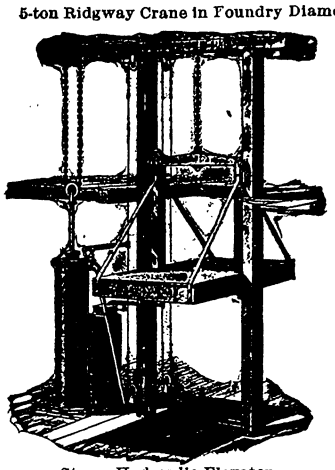
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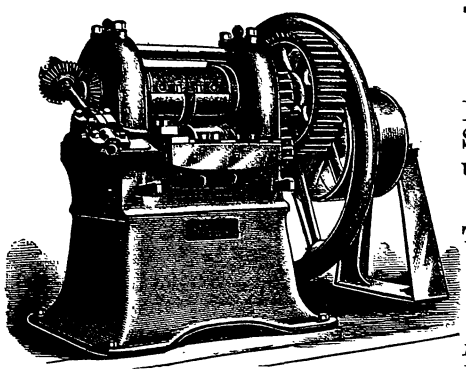
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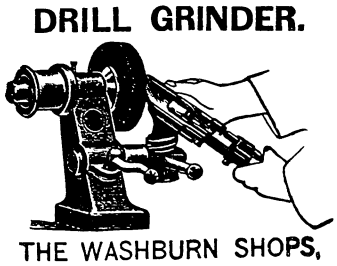
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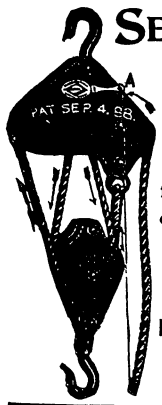
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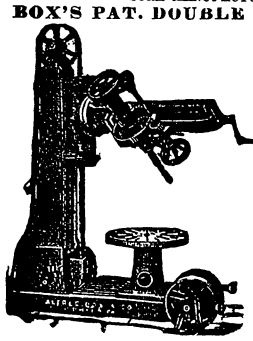
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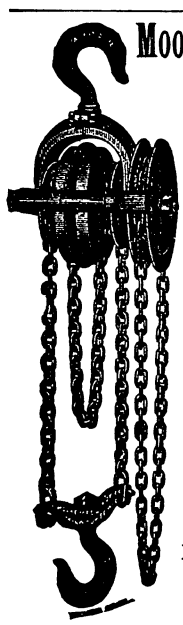
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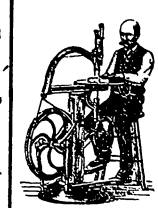
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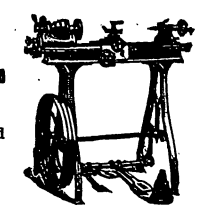
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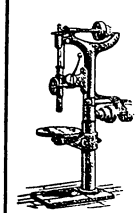
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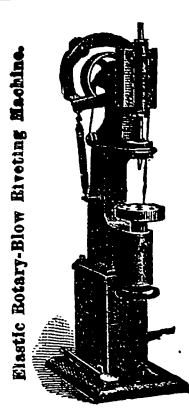
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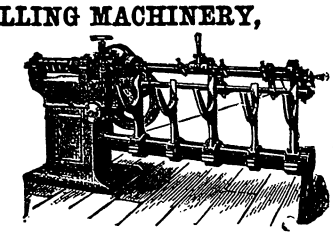


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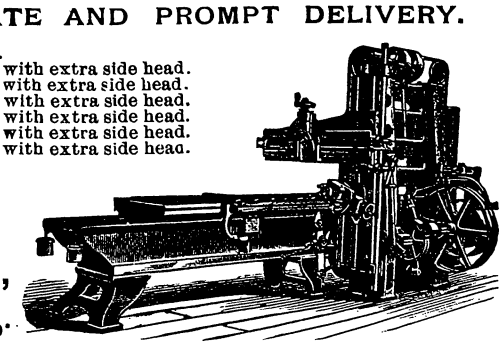


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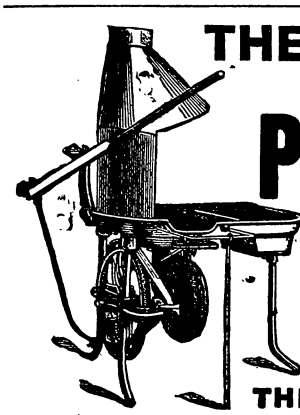
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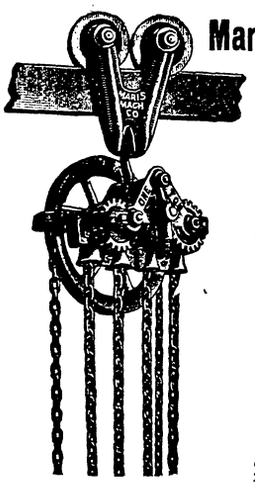
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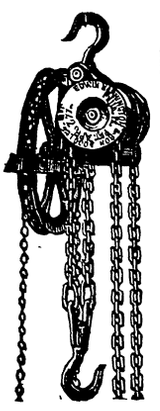
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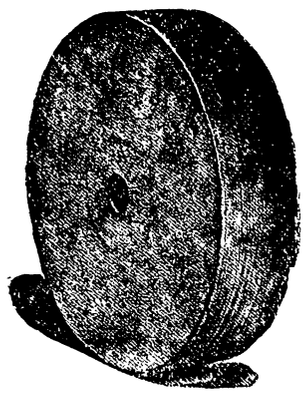
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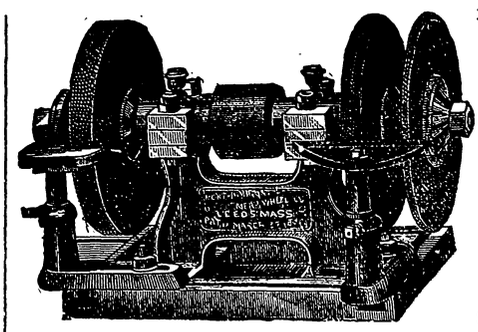
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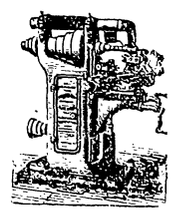
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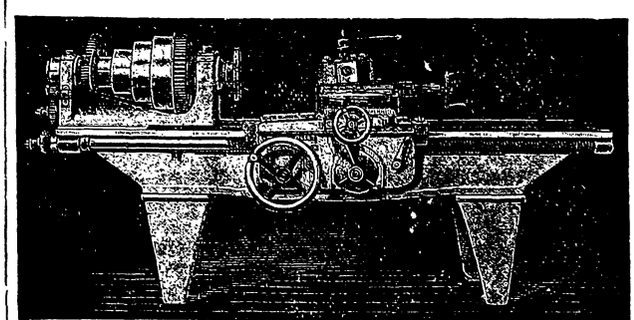
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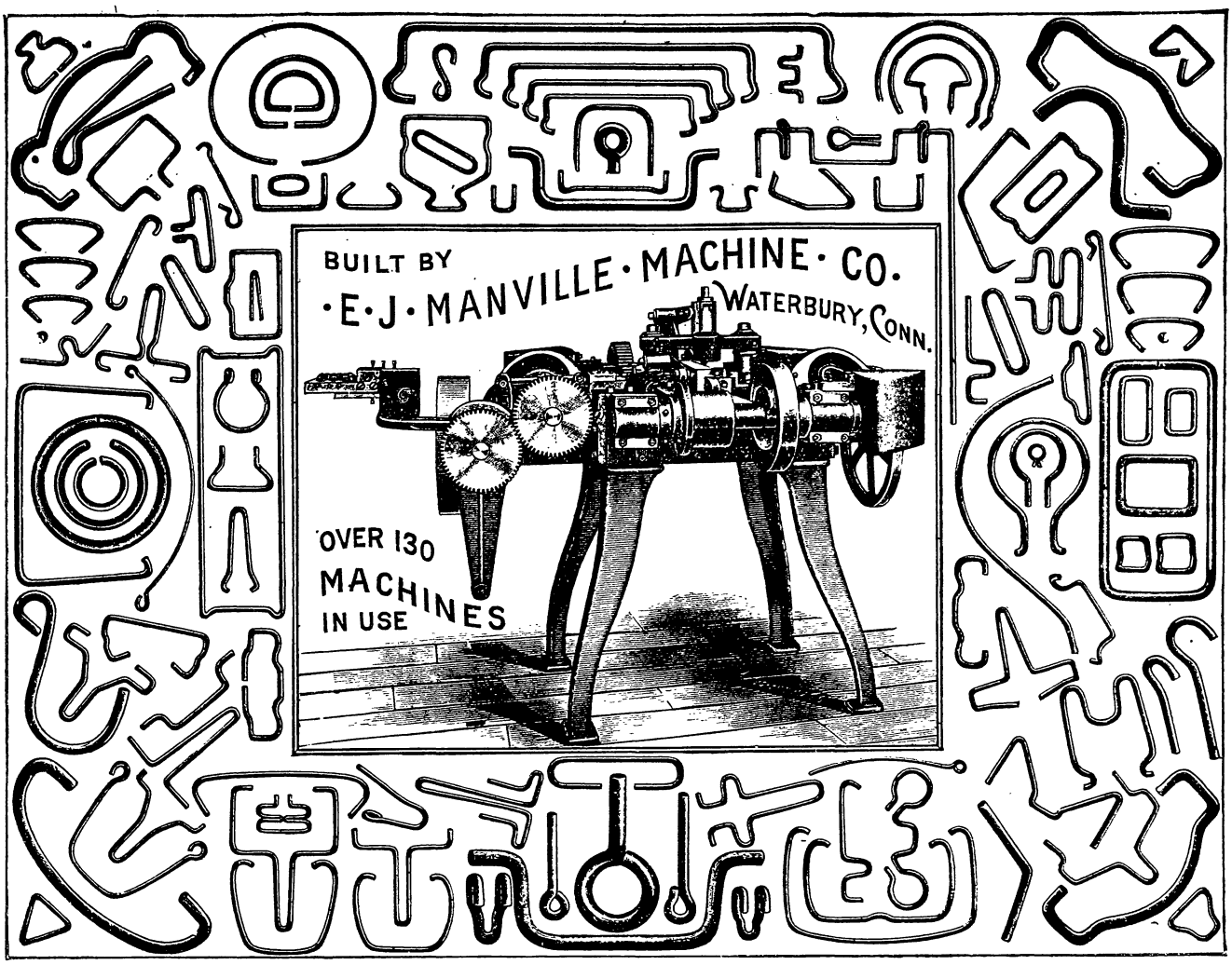
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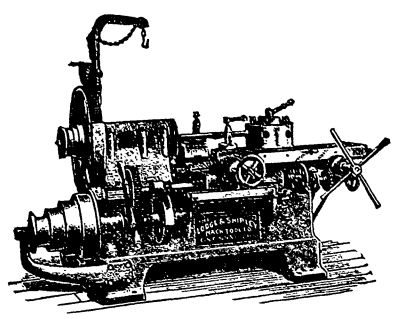


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1 16 x 36 in. Slide Valve Engine.
1 14 x 42 Greene Engine.
1 16 x 42 Babcox & Wilcox.

Large assortment of Knowles, Blake and Worthington Steam Pumps. Write for prices and full description to

D. B. CRUICKSHANK,
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BOILERS THREE:

1 100 H.-P. 2 80 H.-P.

All Second-Hand.

The 100 H.-P. is Steel; the 80's are Iron. All have full Arch Fronts, Grates, Steam Blowers Safety, Water and Steam **GAGES.**

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For Sale, Very Low for Cash.

500 tons Relaying Steel Street Rails, side bearing, 35 to 47 lb. sections. Also 25-lb. Iron T's and 65-lb. Steel T's.

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2 Stokes & Parrish 7 in. x 9 in. Hoisting Engines.
3 No. 7 Knowles Pumps.
1 Worthington Duplex Pump, 10 x 6 x 10 in.
Lot 30 and 36 in. Plain Cylinder Boilers.
Lot I Beams, Stacks &c.

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1 Engine Lathe, 24 in. swing x 25 ft. bed. Modern. First-class condition.
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1 No. 1, No. 2 and No. 6 Root's Blower.
Prices very reasonable.

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16 in. x 30 in. Horizontal Engine.

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19½ in. x 48 in. Beam Engine, with Knowles Condenser.

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MACHINERY.

One Belden 100-lb. Upright Power Hammer.

One American Tool Co.'s No. 2 Cabinet Turret Lathe, with slide rest; in fine order.

One Pratt & Whitney 36-in. Gap Chucking Lathe.

One Pratt & Whitney No. 3 Lincoln Milling Machine.

One Iron Planer, 52 in. wide, 44 in. high, 12 ft. long, with two heads.

One Springfield Universal Grinding Machine No. 3, swing 18½ in. over the ways and take 6 ft. between centers. Has been used but a very few times and is practically new.

Send for circular of Second-hand Machinery in stock.

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BARGAINS

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Engine Lathes, from 14 in. to 48 in. swing.
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Drill Presses, all sizes up to 24 in. swing.
Milling Machines, Plain and Universal.
Brown & Sharpe Screw Machines.
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1 Betts Machine Co. Large Horizontal Boring Mill.
2 Large Bliss Power Presses.
1 10 H.-P. Baxter Engine, with 15 H.-P Boiler, complete. As good as new.
Also Tool Grinders, Die Sinkers, Tapping Machines, Bolt Cutters and Large Pattern and Blacksmith Shop Equipments.
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200 tons 60 pound Steel T's.
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15 tons 50 pound Steel T's.
40 tons 40 pound Iron T's
300 tons 40 pound Steel T's
100 tons 30 pound Iron T's.
40 tons 25 pound Steel T's.
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4 tons 16 pound Steel T's.

These Rails are all in first-class condition for relaying, and will be sold very low.

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9 in. Potter & McDougall Steam Hammer.
500 ton Bushnell Knuckle Joint Press.
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ELECTRIC LIGHT PLANT (used 6 months).
1000 light Mather Dynamo.
125 H.-P. Dick & Church Compound Engine.
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2 11 in. x 5 ft. Reed Engine Lathes.
2 11 in. x 5 ft. Prentice Lathes.
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2 13 in. x 5 ft. Ames special feature Lathes.
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1 15 in. x 8 ft. Young Lathe.
1 16 in. x 6 ft. Young Lathe.
1 16 in. x 6 ft. Perkins Lathe.
2 16 in. x 6 ft. Blaisdell Lathes.
1 16 in x 6 ft. Flather Lathe.
1 18in. x 8 ft. New Haven Lathe.
1 18 in. x 8 ft. Dustin Lathe.
2 20 in. x 6 ft. Bullard Lathes.
1 26 in. x 10 ft. Dustin Lathe.
2 20 in. x 8 ft. Bullard.
1 20 in. x 10 ft. Bullard.
1 26 in. x 13 ft. New Haven
1 Dexter Pattern Lathe.
1 Bullard Turret Lathe.
2 Brainard No. 7 Overhanging Arm Plain Millers
2 Brainard No. 7 Lincoln Plain Millers.
1 B. & S. No. 1 Universal
1 Brainard Heavy No 6 Lincoln Pattern Miller.
1 Garvin No. 2 Miller and Screw Slotter.
1 No. 3 Garvin Plain Miller.
1 38 x 18 ft. N. Y. S. E. Lathe.
1 Garvin No. 4 Rack Feed Miller.
1 Brainard No. 15 Universal Miller.
2 Brainard No. 5 Universal Millers.
1 Blaisdell 30 in. Single Spindle Drill.
1 Wilder Punch Press.
1 Grindstone and Frame.
1 Garvin one-spindle Profiling Machine.
1 Garvin No. 2 three-spindle drill.
1 Garvin No. 3 four-spindle Drill.
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1 48 in. Car Wheel Borer.
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Also large stock of New Tools.

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IN STOCK, LARGE LINE OF NEW AND SECOND-hand engines, boilers and machinist's tools for sale or exchange Below are some special bargains:
60 H.-P. Atlas Automatic engine.
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Power shears, 1 in. iron, 36 in. Gap.
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10 H.-P to 100 H.-P. horizontal and vertical boilers.
20 screw-cutting lathes of different sizes.
Several rod-feed turning lathes.
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24 in. and 30 in. planers.
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No 3 Fowler press, 2 10 in exhaust heads
25 lbs. Bradley and 10 lbs. Hotchkiss Hammers.

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4 3 H.-P. Vertical High Pressure Engines.
2 5 H.-P " " " "
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2 8 x 12 " "
2 10 x 14 " "
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5 10 H.-P. " "
1 8 x 12 D. C Hoisting Engine.
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CORLISS

and other Automatic Engines, Slide Valve Engines, Boilers, Steam Pumps, Tanks, &c., &c.

Corliss Engines, 10 x 20; 16 x 42; 23 x 36; 26 x 48; 26 x 60; 30 x 60; 30 x 72. Also Porter-Allen, 14 x 30; 11 x 16; Slide Valve, Back Valve, Cut-off 18 x 36; Slide Valve, 16 x 48; 16 x 36; 14 x 24; an assortment of Steam Pumps. 100 gal. Steam Fire Pump. Bogardus Mill, Simpson Crusher, Brennan Crusher. Ingersoll Rock Drill 30 in. Burr Stone Mill, 8 and 9 ft Fan Blowers, Platform Scales. Four Side Wood Planer and Matcher, &c., &c.; 4 Rendering Tanks, Round, Square and Jacket Tanks. Send for catalogue.

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Locomotive Boilers, all with full fixtures and insured for 80 lbs. 1 each 30 H.-P.; 45; 50; 60; 70; 100 and 150. Also Horizontal Tubular Boilers, 36 x 16 ft; 45 x 16 ft.; 24 x 14 ft.; 34½ x 12 ft. Slide Valve Engines, 15 x 18; 14 x 30; 15 x 36; 10 x 20; 10 x 24; 10 x 12; 8 x 10. High Speed Automatic, Engines, all modern first-class, 14½ x 15; 14 x 16; 11 x 20; 12 x 18; 10½ x 12; 9½ x 12; 7 x 10.

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Worthington Underwriter Fire Pump, 8 ft. Exhauster, Hydraulic Press 600 tons, 250 H.-P. Berryman Heater, 18 x 10 Double Hoister, 1 12 x 36 Hamilton Corliss Engine. 1 10 x 24 Wetherill Corliss Engine.

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BAKER BLOWERS, Nos. 1, 4½, 5, 6 and 7.
ROOT BLOWERS, Nos. 1, 2, 3, 4, 5, 6 and 7.
Sturtevant Blowers, Nos. 4, 5, 6, &c.
1 Corliss Band Wheel, 12 ft. x 24 in., in halves.
A Variety of Machinery. Such as Boilers, Engines, Pumps, Crushers, &c., very cheap.
Do you want to buy or sell Machinery? If so, write

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For sale cheap. Made by Garrison & Co., Pittsburgh; complete and modern; 3-roll high, flywheel 20 tons, 5 sets Housings, pinions, rolls, bedplates, &c., in perfect condition. Address

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FOR QUICK SALE.

One Otis Steam Shovel in good condition.
Two 12 ton 3-ft. Gauge Locomotives.
Two Standard Gauge Saddle Tank Locomotives.
20 Dump Cars, 3-ft. Gauge, 3 yd. Capacity, Side Dump.
3000 tons Mill Cinder, &c.
Also Pig Iron, Muck Bars, Bar Iron and Steel Billets, Scrap, &c. We are always in the market to buy and sell Equipment and Scrap.

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Engines with Cylinders 26 in. x 48 in. and smaller.
Portable, Tubular and Vertical Boilers of all sizes.
13 2-yard 3-ft. gauge all around Dump Cars.
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1 Large Worthington Duplex and other Pressure Pumps. New and Second hand.
Hoisting Engines and Grinding Pans.
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SOME BARGAINS HERE.

1 Hendey Shaper, 15 in. stroke, imp. vise.
1 14 x 6 Screw Cutting Engine Lathe; new.
4 H.-P. Comb. Engine and Boiler. Fine condition.
2½ Hendey Cutting-off Machine. New.
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100 H.-P Woodbury Engine. 2d-hand Good order.
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Also variety of Engines, Boiler Pumps, &c.
And other machinery, new and second hand. Write for prices. **Machinists' Supply Company,**
39, 41 and 43 Central Ave., Rochester, N. Y.

Second-Hand Rails

FOR SALE.

In lots to suit, and ready for delivery.

2000 tons 60 lb. Steel T Rails.
800 tons 54 lb. Steel T Rails.
400 tons 50 lb. Steel T Rails.
550 tons 50 lb. Iron T Rails.
600 tons 45 lb. Iron T Rails.
2000 tons 40 lb. Steel T Rails.
600 tons 30 lb. Iron T. Rails.
150 tons 40 lb. Steel T Rails.
200 tons 25 lb. Steel T Rails.
1700 tons Johnson Girder Rails, 38, 48, 52 and 66 lb Rails.

All selected and in excellent condition for relaying and only slightly worn. For prices and particulars apply to

JOSEPH JEWKES,

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For second-hand FOUNDRY RUMBLERS, LATHE DRIP PANS, one large BORING MILL, one universal MILLING MACHINE, one "PECK" DROP and LIFTER, one TRIP HAMMER and a five-ton "BEMENT" FOUNDRY CUPOLA. Also 1000 feet of WROUGHT IRON RAILING and 50 LAMP POSTS. First-comers get lowest prices Write at once.

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STEEL STREET RAILS,
Side and Center Bearing.

Fit to relay. Apply to
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2 Double Deck Boilers about 40 H.-P. each, cheap. Hoisting Engine. Cylinder Boilers for Stacks, 30, 40 and 42 in. diameter. Round and Square Iron Tanks. Book Binding Machinery. Smoke Stacks, light and heavy, all sizes. Large lot Cast and Wrought Scrap Iron on hand. Also Dealers in Metals.

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CRANK and GEARED SHAPERS.

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One No. 5 Gates Rock Breaker with revolving screen, engine, boiler, winding drum, wire rope, dump cars, rails, turn table, steam drill, picks, shovels, sledges, striking hammers, steel drills, crow bars, etc., etc.

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STEAM PUMPS FOR SALE.

We have on hand
One new Worthington Pump, 7½ x 4½ x 10.
Also two second-hand Pumps, in good order.
One Smith Vaile, 6 x 4 x 6.
One Knowles, 6 x 3¾ x 6.

HOOKER-COLVILLE STEAM PUMP CO.
St. Louis, Mo.

Send for descriptive catalogue of Hooker Pumping Machinery.

OFFICE OF THE LIGHT-HOUSE ENGINEER, Seventh District, New Orleans, La., September 23, 1893.—Sealed proposals will be received at this office until 2 o'clock P. M. of Tuesday, the 24th day of October, 1893, for furnishing materials and labor of all kinds necessary for the completion and delivery of the metal-work for the beacons for Tampa Bay, Florida. Plans, specifications, forms of proposal, and other information may be obtained on application to this office. The right is reserved to reject any or all bids and to waive any defects. JAMES B. QUINN, Major of Engineers, U. S. A., Light-House Engineer, Seventh District.

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One pair Alligator Shears, suitable for shearing old rails and other heavy work 14 in. Shear Blade, Bed 3 ft. wide, 13 ft. long, 6 in. Center Pin, 8 ft. 6 in. Cog Wheel, with eccentric. Engine has 16 in. Stroke, Cylinder 10 x 16 in. In perfect order.
One set Pinion Housings with 3 high V pinions
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Two sets Roll Housings with 13 in. window.
One set Roughing Rolls, 51 in. long, 12 in. in diameter.
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Gothic Grooves from 3 in. to 1⅛ Billet, neck 7 in. long and 1 in. in diameter.
Wobblers, 3 podds 6⅜ in. in diameter and 5 in. long.
Complete set of Carriers, Riders and Brasses.
3 sets coupling Boxes and Spindles
2 sections of Bed Plate, each 9 ft. long.
All new and in perfect order. Inquire of

PITTSBURGH TOOL STEEL CO.,
Room No. 201, Ferguson Block, Pittsburgh, Pa.

Relaying T Rails.

WANTED.

Three miles 25 to 35 lb Steel or Iron T Rails, in good condition for relaying. State lowest price and where lying. Address

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SALES AGENCY,

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A $15,000 Stock of Hardware and Tools,

In best business town in California of 25,000 population. Capital of the richest county in California, and the climate the year round is the most delightful in the world. Oldest stand in the city, and has been in same room for 23 years. Paid 40 per cent. on investment in 18 months previous to inventory last January. The principal hardware house in the county. Business calls proprietor elsewhere. Investigation solicited. Address

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FIRST LOFT, 50 FEET FRONT.
THIRD LOFTS, 100 FEET FRONT.

To Let for Light Manufacturing Business,

Fourth and Fifth Lofts, 50 Feet Front.

Excellent Light, Elevator, Power and Steam Heat.

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BICYCLE MANUFACTURING PLANT FOR SALE.

Located in a prominent Western city and adapted to the manufacture of bicycles of any grade. Capital required, $75,000 to $100,000. Good orders for season of 1894 assured. For particulars apply to

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A nice clean stock of Shelf and Heavy Hardware, Stoves and Tinware, invoicing about $10,000. Centrally located in a thriving city of 15,000 population in Eastern Nebraska. Business long established, and trade all that could be desired. Rent reasonable. A rare opportunity. Satisfactory reasons for selling. Address

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Hardware Stock and Building in a county seat town in Nebraska. Location good. Business profitable. No dead stock. Good reasons for selling. Amount required $5500, one-half cash. Address

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CHARLES WEILAND.

I make a special business of buying and selling Job Lots of

HARDWARE AND CUTLERY.

Tools and Second Quality Files a Specialty.
Send for Catalogue,

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Patent covering method for making Fence Staples from Steel Nail Plate on an ordinary cut-nail machine. Goods have been sufficiently introduced to demonstrate their utility. Can be made cheaper than wire staples. Address

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Successors to
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To furnish reasonable estimates on specialties in light metal work.
CLARK & COWLES, Plainville, Conn.,
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Our methods are new. Are you dissatisfied with present results? Do you want bigger profits? Write to us.

Anything you want made, write us. We astonish the trade with delicate or difficult parts. Our novelty work is unequaled. THE H. H. FRANKLIN MFG CO., Syracuse, N. Y.

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COMPETENT FOREMAN, in wrought iron and wire factory; must be experienced in all its branches; give references and salary expected. Address "WIRE AND IRON WORKER," office of *The Iron Age*, Bank of Commerce Building, St. Louis.

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BY A PRACTICAL Rolling Mill Man of experience and ability, as manager; is thoroughly competent and reliable; engaged now with a large concern who are going out of business. Address "MANAGER," No. 1012, office of *The Iron Age*, 96-102 Reade St., New York.

HARDWARE AGENCY.—Gentleman having 20 years' experience and established trade, with large hardware jobbing house and retailers, desires to represent manufacturers of staple lines of hardware and kindred goods with headquarters in Chicago. Address "AGENCY," office of *The Iron Age*, 59 Dearborn St., Chicago.

AS FOREMAN of iron foundry; 14 years' experience as foreman; light or heavy castings in green or dry sand; best of references. Address "LIGHT OR HEAVY," office of *The Iron Age*, 96-102 Reade St., New York.

AS MECHANICAL ENGINEER or Superintendent; has made a specialty of design and construction of heavy hydraulic machinery; has designed and superintended the erection of some of the largest hydraulic forging plants in this country; also familiar with modern bridge plants and their machinery; the very best of references. "ENGINEER OR SUPT.," office of *The Iron Age*, 96 102 Reade St., N. Y.

BY A YOUNG MAN of ability and push, with large wholesale hardware house; has had three years' practical experience in heavy and shelf hardware and builders' supplies; references from former employer; would like to engage by the 1st of November. Address "PUSH," No 1012, office of *The Iron Age*, 96-102 Reade St., New York.

BY A MAN, who has had years of experience as superintendent and manager of both iron and steel mills, a position as superintendent or assistant; will work for a moderate salary; best of references; am a good draftsman and can furnish drawings and working plans for new mill; have built several from ground up. Aodress "NEW MILL," office of *The Iron Age*, 96-102 Reade St., New York.

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BY A GUIDE MILL ROLLER of wide experience; can furnish best of references as to ability and sobriety. Address "S. A. H.," office of *The Iron Age*, 96-102 Reade St., New York

BY A THOROUGHLY Practical Sheet Mill Manager of many years' experience; good references. Address "CASTLE," office of *The Iron Age*, 96-102 Reade St., New York.

BOOKKEEPER—A young man, 38 years of age, with 20 years' experience as manager and bookkeeper, desires a position where ability is necessary; is well versed in the iron business; am able financier and a thorough accountant and will furnish the best of references; willing to go to city or country. Address "BOOKKEEPER," office of *The Iron Age*, 220 So. 4th St., Philadelphia, Pa.

FOREMAN.—By an experienced setter and finisher on architectural iron work; have had charge of important work in New York and elsewhere, attending to laying out the work and erecting; strictly sober and have good references. Address "S. and F.," Box 1012, office of *The Iron Age*, 96-102 Reade St., New York.

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BY AN EXPERIENCED SALESMAN and Traveler; familiar with the manufacture and sale of seamless boilers for kitchen ranges, and seamless tubes, and controlling valuable patents connected with the manufacture of same. Address, for two weeks, "TUBES," Box 95, office of *The Iron Age*, 96-102 Reade St., New York.

MAN of practical and commercial experience in hardware, cutlery, notion and electrical work desires engagement in a responsible position; highest references. Box 2268, General Post Office, New York City.

AS TRAVELING SALESMAN for a good iron or steel works; have a practical knowledge both in the manufacture and sale of iron and steel, having had 25 years' experience in mills and on the road; well acquainted with the trade; can furnish the best of references. Address "J. D.," office of *The Iron Age*, 509-510 Hamilton Building, Pittsburgh, Pa.

WOULD LIKE to associate myself with some large manufacturer of hardware or commission hardware house as salesman or house position; have been on the road for the last six years, and can furnish A1 references. Address "HARDWARE," P. O. Box 182, Baltimore, Md.

AS MANAGER or foreman of a wire mill; have a thorough and practical knowledge of the wire trade in all its branches; twenty-five years' experience, twelve years as foreman; have charge of a large mill at present; am a good all-round mechanic, understanding the working of wire mill machinery and the building of annealing furnaces, bluing ovens, &c.; am strictly temperate and can furnish the best of recommendations from past and present employers; firms desiring a man that knows how to practice economy and run a mill on business principles will find it to their advantage to correspond with me. Address "TEMPERED STEEL WIRE," office of *The Iron Age*, 220 So. 4th St., Philadelphia.

BY A MIDDLE AGED married man; has had many years' experience as bookkeeper, special accountant, keeping cost sheets, etc., of the various articles manufactured in machine shop, boiler shop, foundry and wire mill work; thoroughly understands business, clerically, in all details. Address "CLERICAL," office of *The Iron Age*, 59 Dearborn St., Chicago.

RESPONSIBLE POSITION by a graduated chemist and engineer in steel works or furnace plants; reference President Midland Blast Furnace Co. Address C. W. Kolbe, Midland, Mo.

BY A MECHANICAL ENGINEER, first-class draftsman, graduate from the German Polytechnic High School as Government machine engineer, with two years' practical experience; secured highest award for competitive work in the construction of modern derricks. Address D. KOPS, 500 Broadway, New York City.

BY A GUIDE MILL ROLLER; have had 8 years' experience in guide mill rolling on all sorts of small iron and steel; am strictly temperate, and can give good references as to ability and character. Address "GUIDE MILL," office of *The Iron Age*, 96-102 Reade St., N. Y.

A WELL KNOWN and successful Blast Furnace Superintendent or Founder will be open for engagement after Oct. 1st, 1893. Is thoroughly competent as constructor or in the management. Practical, theoretical and in touch with latest improvements in blast Furnace practice. First-class record and references. Address "BLAST FURNACE, No. 921," office of *The Iron Age*, 96-102 Reade St., New York.

BY A MEMBER of the A. S. M. E., expert in shop management and economical production of machinery, as superintendent or manager; well posted on dynamical, hydraulic and mechanical engineering and inspection of materials. Address "W. O. W.," office of *The Iron Age*, 96-102 Reade St., New York.

ANY EASTERN MANUFACTURING CO. wanting a good man of experience in steam engines and general machinery, thoroughly trained in office work, practical draftsman, having well developed general business ideas, clean cut appearance and address, with honest determination to do his best, address MR. JNO. T. DREYFIT, office of *The Iron Age*, Room 509, Hamilton Building, Pittsburgh, Pa. ☞ I can hustle mentally and physically. ☜

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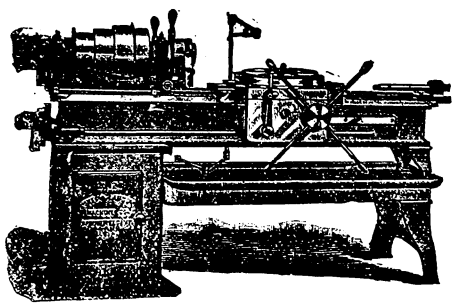
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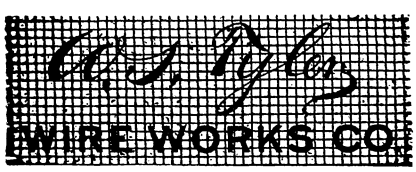
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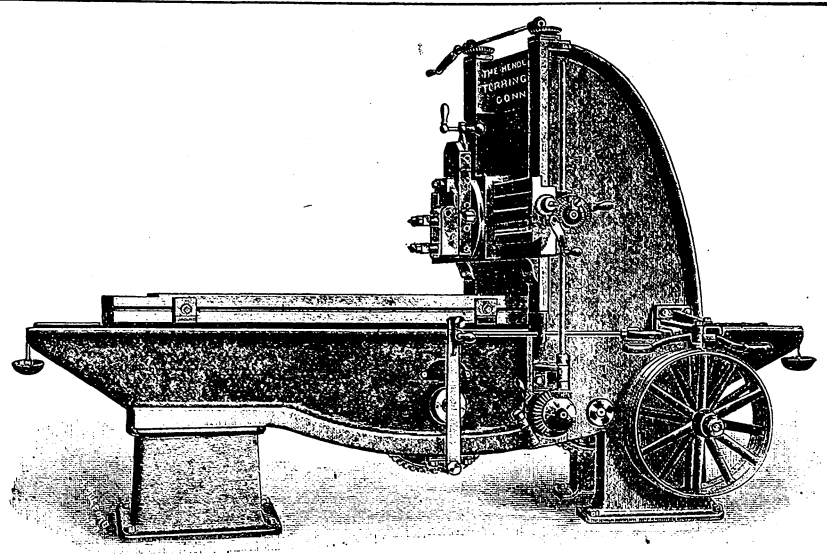
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If you happen to have one of them upstairs, *the tank can easily be removed and taken down to the kitchen to be filled*, and again replaced in the Stove.

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JAR ENTIRELY COVERED.
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CAN BE USED ANYWHERE.
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Complete Machine securely packed in one single package.
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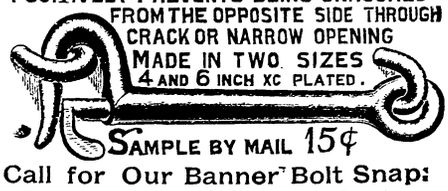
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POSITIVELY PREVENTS BEING UNHOOKED FROM THE OPPOSITE SIDE THROUGH CRACK OR NARROW OPENING



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This snap has many important advantages over other makes of Bolt Snaps, viz.: It is lighter, the spring is entirely covered and protected from foreign substance and freezing, and is lower in price.

Made in all sizes; Round, Loop and Open Eye. **We are headquarters** and the most extensive manufacturers in Saddlery, Coach and General Hardware Specialties.

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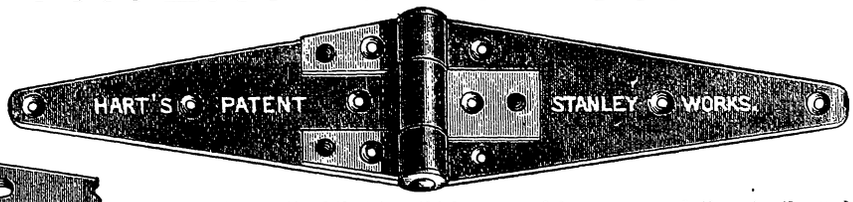
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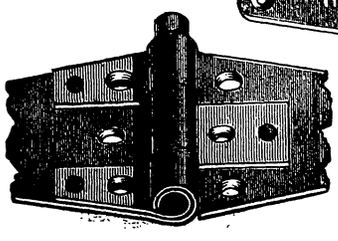
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It will be noticed that two thicknesses of iron surround the pin throughout its length and extend back upon the straps of the hinge, thus giving double thickness of iron at the points where most needed and more than double the strength of an ordinary strap hinge. The short or *inside leaves are galvanized* thus insuring easy working joints, and preventing *breakage on account of rust.*

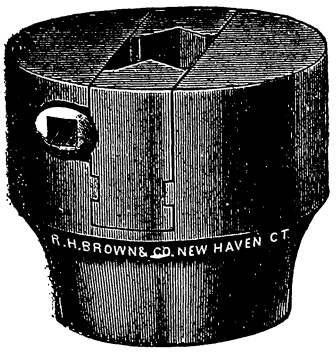
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THREE SIZES.

No. 0 takes any drill from 0 to 1-2 inch inclusive.
No. 1 " " " " 0 " 3-4 " "
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They are the strongest and most durable made. Drill absolutely in the center. No twisting or bending necessary if drill is straight. Can be fitted to hollow spindle lathes for working long rods.

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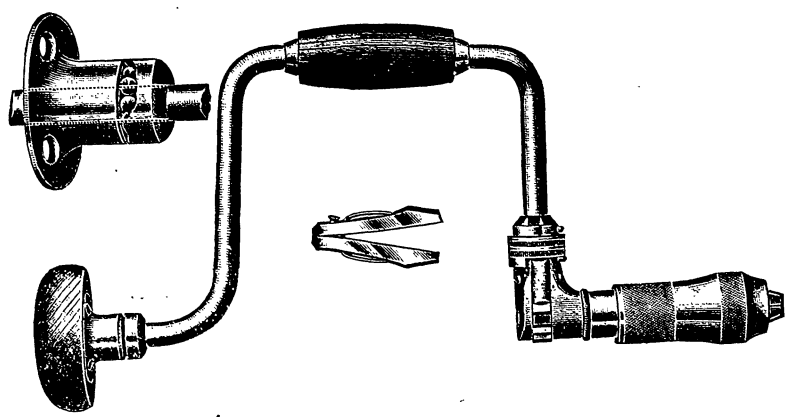


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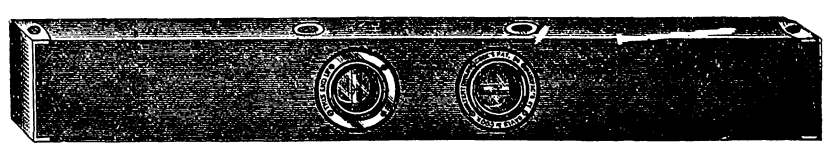
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SOLID STEEL MINCER



Single and Double Blades.

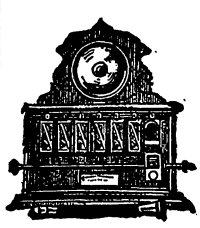
Handle and Blade Formed in one piece.
Always Clean. Indestructible.
No Rivets to Wear Loose.
No Wooden Handle to Shrink, Swell, Loosen, Split, or Fill with Rancid Grease.

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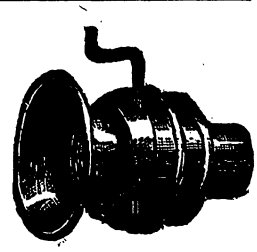


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Made in Wood and Iron. Every Level Fully Guaranteed
Inquire at your nearest hardware store for them. If not in stock, send to
TAKE NO OTHER.
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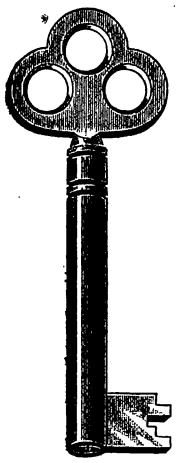


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Complete outfits of Speaking Tubes, Whistles Electric, Mechanical and Pneumatic Bells. A full line always in stock. Send for new catalogue. Factory, DeKalb ave. near Knickerbocker, Brooklyn, N. Y.



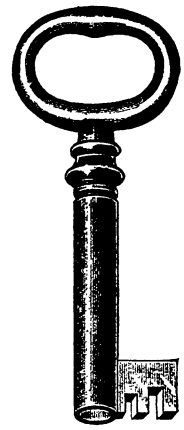
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LePage's Liquid Glue,

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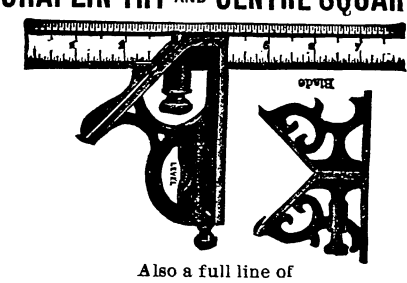
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The Set of Combination Tools No. 1 includes the wrench, two sockets, one for screw-driver, bit or reamer shank, with wood handle, and one socket for drill shank and feed nut. The jaws on this wrench open from 3-16 to 1¼ inches.

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Manufacturers of

All Kinds of Tinware and Sheet Metal Goods.

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Branch Warehouses: 85 and 87 John St., New York; 197 Lake Street, Chicago, Ill.

THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

Pumps, Hydraulic Rams, Garden Engines,

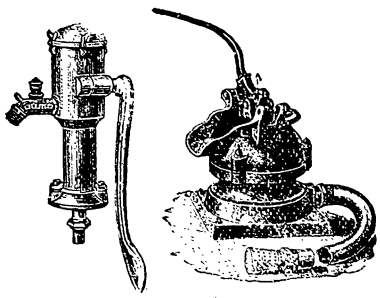
Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines in the World.

DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 209. Fig. 381.



or wherever it is desired to raise a large quantity of water by

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The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

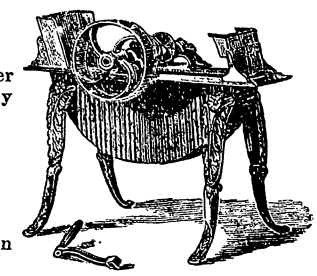
CAPACITY

from 3,000 to 4,500 gallons per hour.

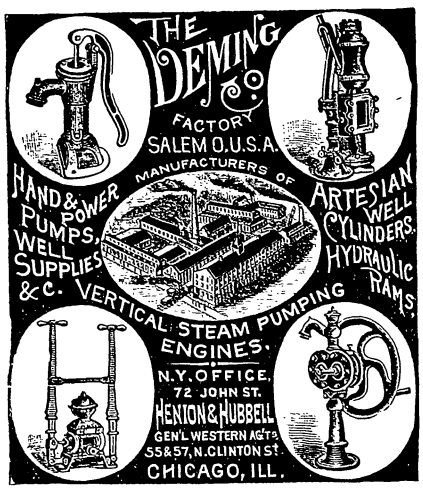
These pumps are simple, durable and low priced.
Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.

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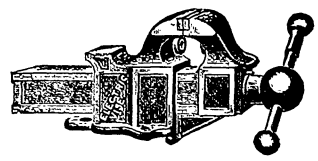
Fig. 145.



C. I. Grindstone Frame.



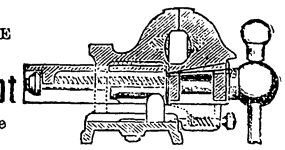
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Patented Dec. 27, 1892.
IT HAS QUALITIES THAT ARE UNDISPUTED.

Rapid, Active, Prompt

One movement in and out, one turn of the hand and the work is secured.



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F.E.MYERS & BRO.

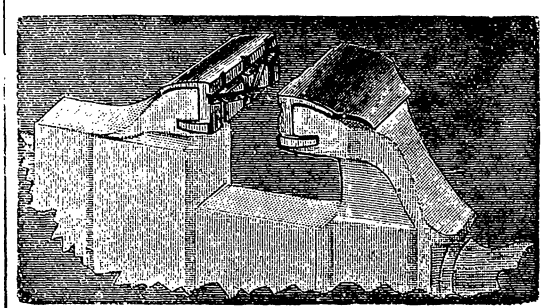


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The New York Safety Dumb Waiter,
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Made specially to be sold by Hardware Stores. Thousands in use. Catalogues on application.

THE STORM MANUFACTURING CO
NEWARK, NEW JERSEY.
Formerly of Poughkeepsie, New York.



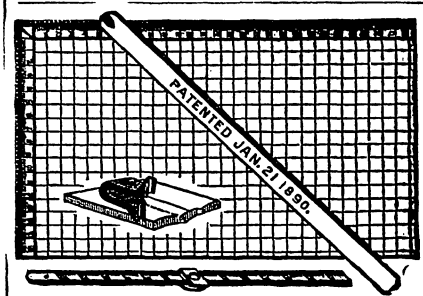
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Will Fit any Kind of Vise.

For protecting finished work. Will hold finished rods of any shape without injury.

3½ inch.....per pair, 40 cents.
4 " ..... " " 50 "
4½ " ..... " " 60 "

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The Canton Glass Board.

Cuts any Fraction of an inch by Eighths.

Unequaled for accuracy and quick work in cutting square or at any angle. Saves breakages, &c.

—ALSO—

IMPROVED TRAMMEL RULE for Cutting Circles
From 3 inches up to 48 inches, Segments, Gothic Shapes, &c.

Send for Circular.

The Canton Saw Co, Canton, Ohio.

ACME CUTTING TOOLS.

Made in all Sizes.



SOLID STEEL ACME PLIER AND WIRE CUTTER.
Made with cutters of best steel.

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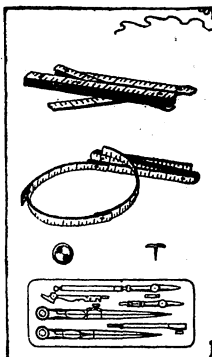


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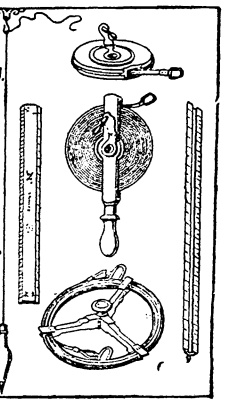
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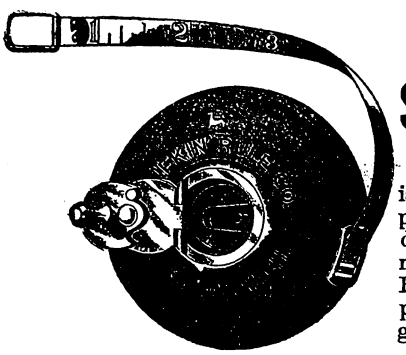
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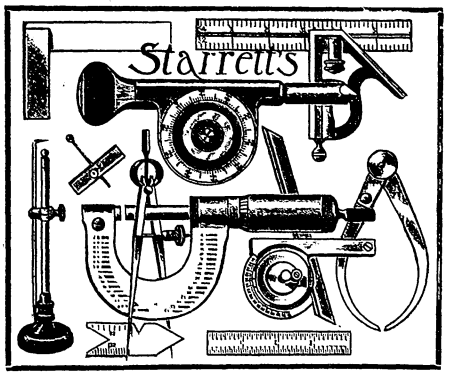
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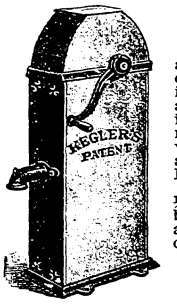
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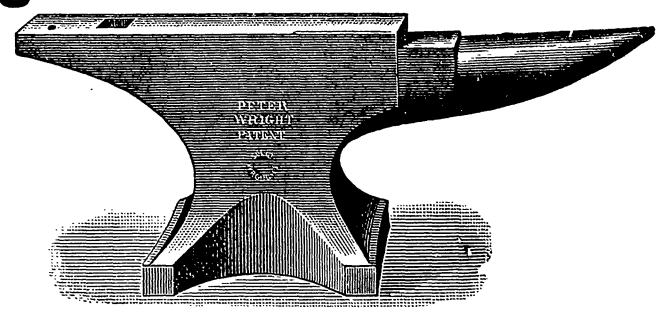
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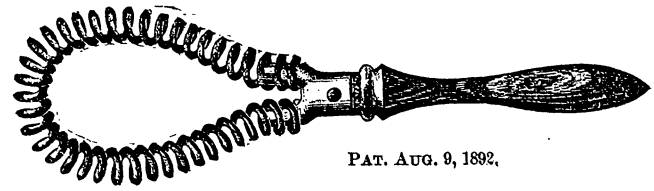
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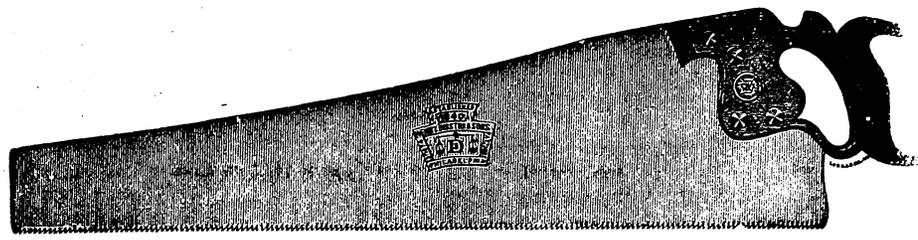
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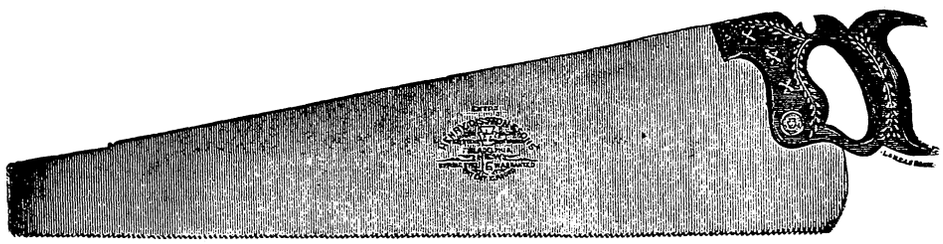
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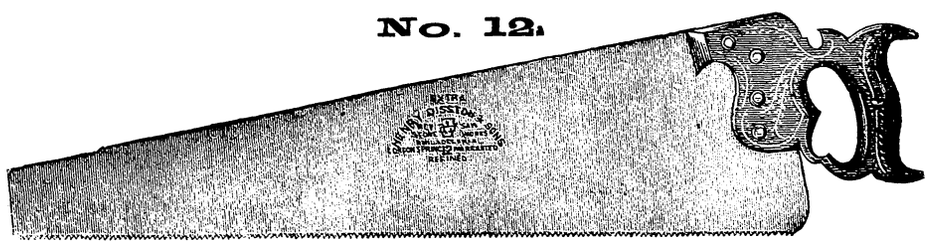
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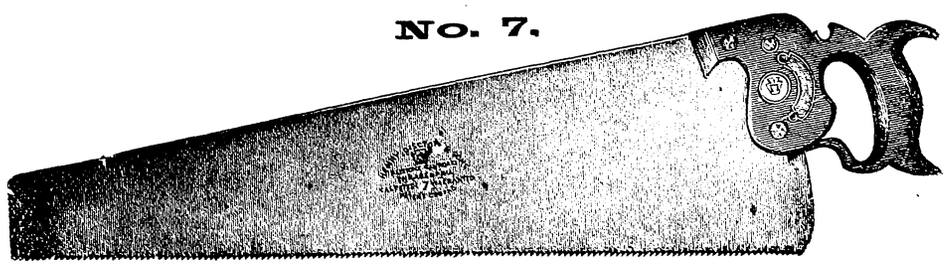
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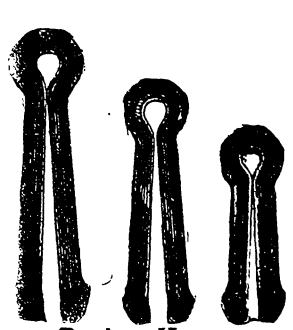
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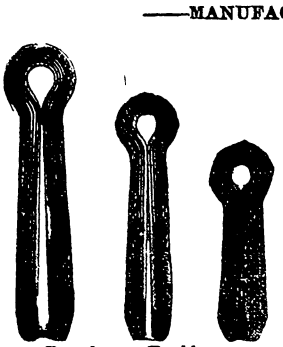
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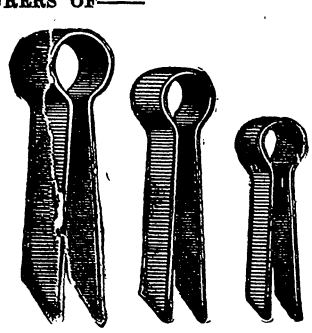
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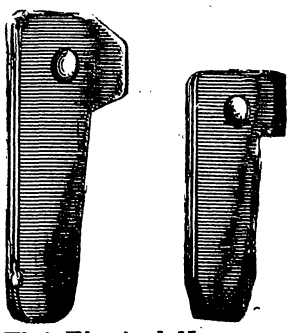
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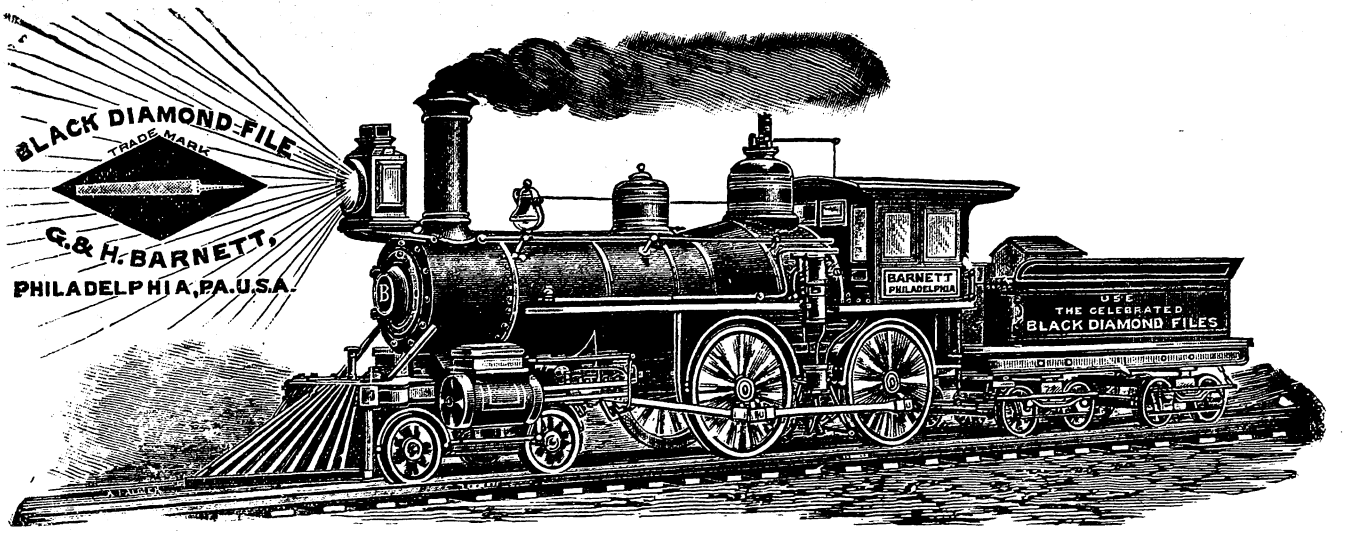
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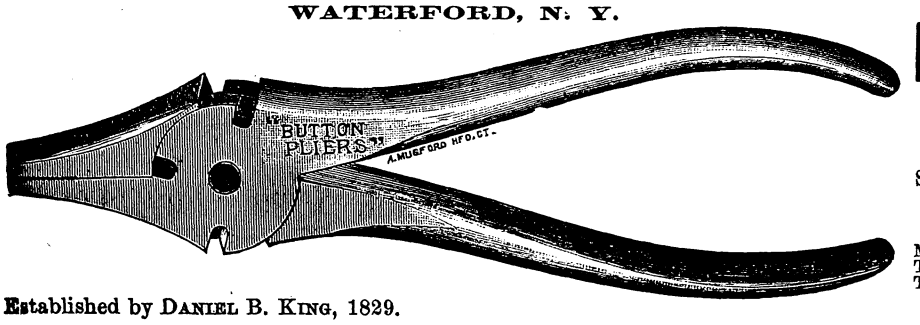
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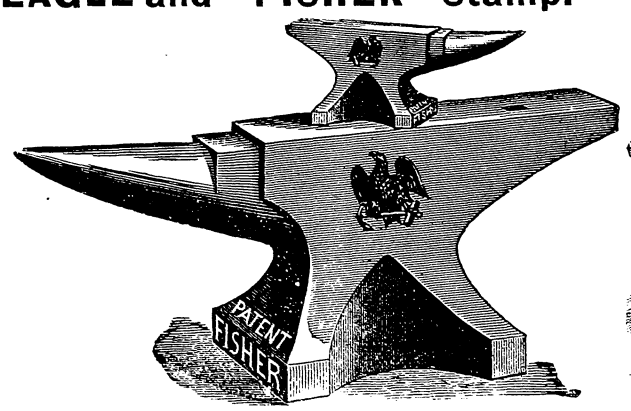
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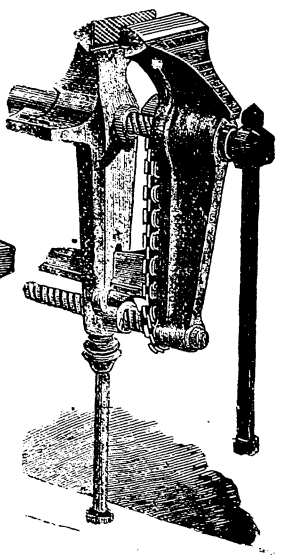
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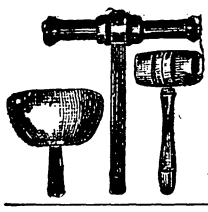
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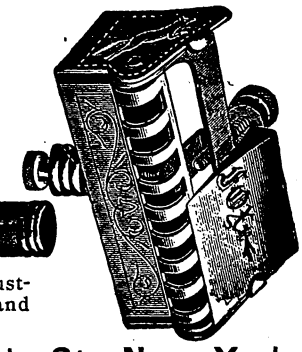
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Makes shaving a luxury; no danger of cutting. Adjustable blade. Silver plated frames. Sole manufacturer and patentee,

E. LOTHAR SCHMITZ, 92 Reade St., New York.

Sold by all the Leading Hardware and Cutlery Houses.

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American Screw Co.'s Screws, Bolts, Rivets, &c.
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THE TRADE acknowledges our make of **BUTCHERS' STEELS**

THE BEST IN THE WORLD.

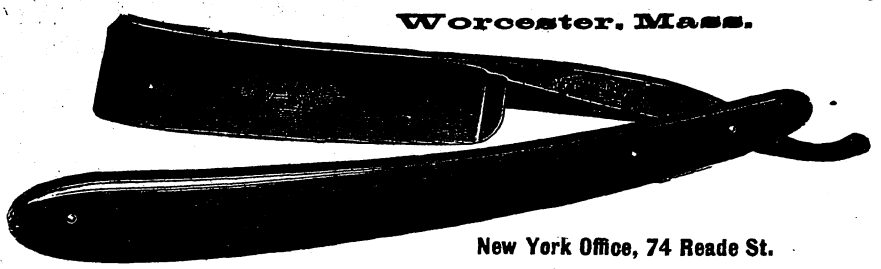
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New York Office, 74 Reade St.

Our Razors have become the standard for excellence and are no higher in price than the foreign. We manufacture and carry in stock more than 200 styles. Send for illustrated catalogue.

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BUCK BROTHERS,

MILLBURY, MASS.

The Most Complete Assortment in the U. S. of

Shank, Socket Firmer and Socket Framing Chisels.

PLANE IRONS.

CAUTION.—Buyers should be on their guard and not have inferior goods palmed on them by unprincipled persons who represent them as our make. Our tools are stamped "BUCK BROTHERS," and our labels have on our trade-mark also, "Riverlin Works."

Established 1825. **Incorporated 1892.**

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NEWARK, N. J., U. S. A.

New York office, No. 90 Chambers St.

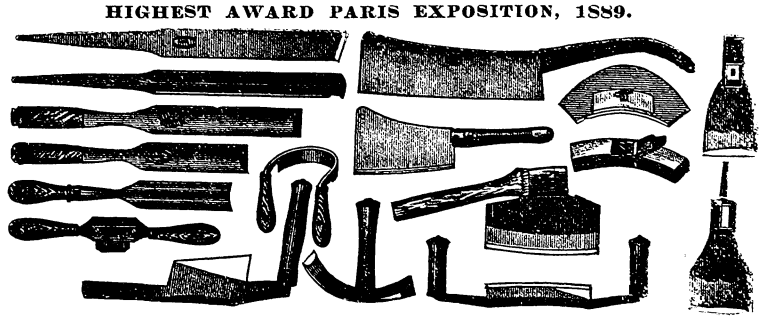
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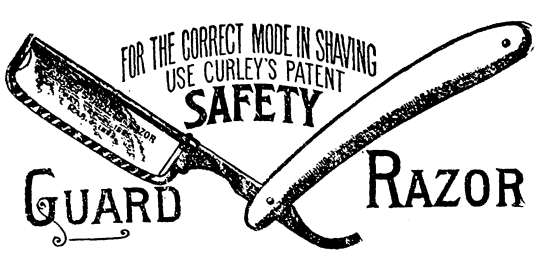


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MANUFACTURERS OF **EDGE TOOLS.**

Coopers', Carpenters' and Ship Tools, Plane Irons, Cleavers, &c. Full Line Chisels.



THIS improvement permits CORRECT SHAVING, therefore no irritation is caused, and the most inexperienced can shave with perfect safety.

We also carry the largest line in the United States of CUTLERY of every description.

J. CURLEY & BROTHER,

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ACME SHEAR CO.,

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MARTEN DOSCHER,

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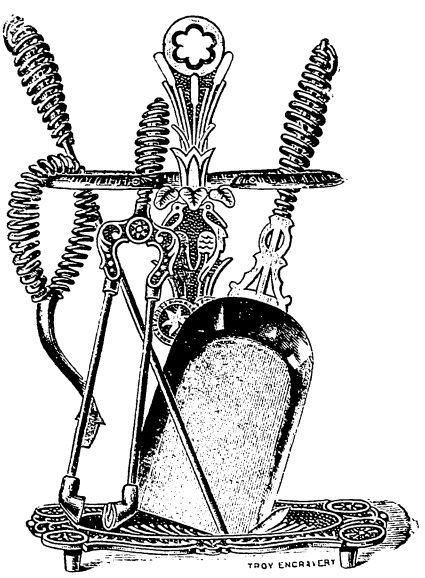
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ALWAYS COLD.

Stove Trimmings.

Pokers, Lifters, Shovels, Fire Sets,



For Sale by All

First-class Jobbers in Hardware.

Made under Gaitly Patents and only by

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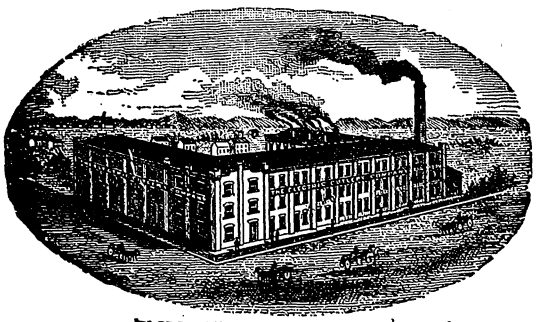
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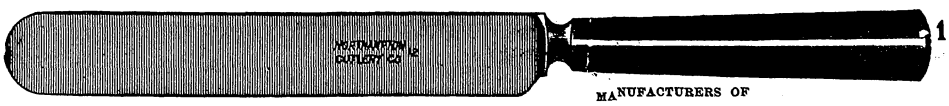
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MANUFACTURERS OF

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W. & S. BUTCHER, Sheffield, England, and 135 Duane St., New York Makers for over *One Hundred Years* of the celebrated *"W. Butcher"* Files and Edge Tools and *"Wade & Butcher"* Razors, and the Original Manufacturers of Hollow Ground Razors, can with confidence highly recommend their goods and particularly their SPECIAL Brand as being the most perfect *Extra Hollow Ground* Razors ever manufactured and especially suited for the use of Barbers and for private use. Genuine Razors are marked with one of the following Corporate Trade-Marks:

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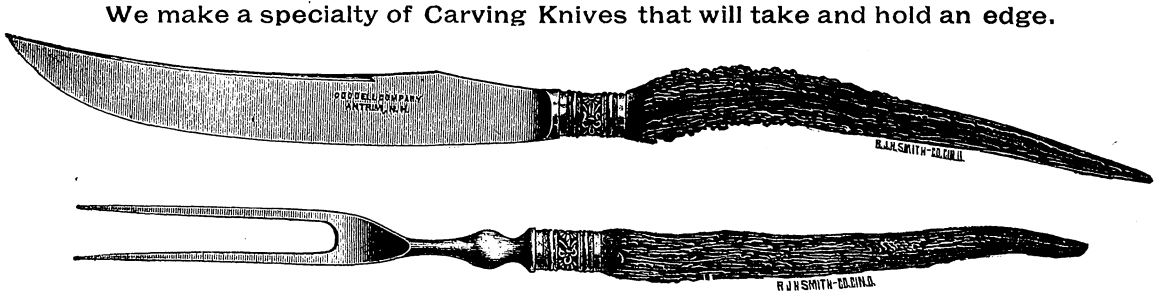


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FOR SALE BY ALL DEALERS IN HARDWARE, CUTLERY AND FANCY GOODS.

HOW IS YOUR STOCK OF CARVERS.

We make a specialty of Carving Knives that will take and hold an edge.



Most any man will pay a fair price for a pair of Carvers, but he wants good ones. Buy Goodell's and you can give him what he wants, make a profit and expect further trade. We can give you Wood, Bone, Stag, Im. Stag, Rubber and Celluloid handles, with blades of various shapes and sizes; also Table Knives, Butcher, Boning, Sticking, Skinning, Hunting, Bread, Cheese, Kitchen, Putty, Cigar and Shoe Knives. Butter Spades, Butcher Steels, &c., &c.

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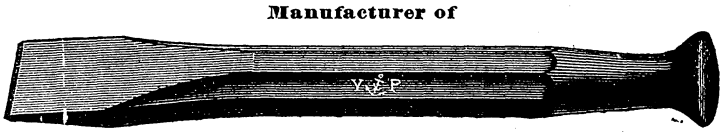
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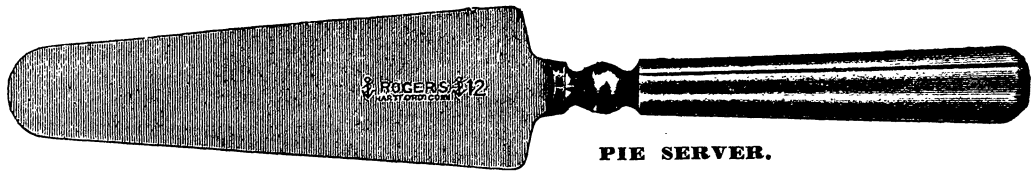
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THAN THE

TRADE ROGERS TRADE MARK MARK

SILVER PLATED WARE.



PIE SERVER.

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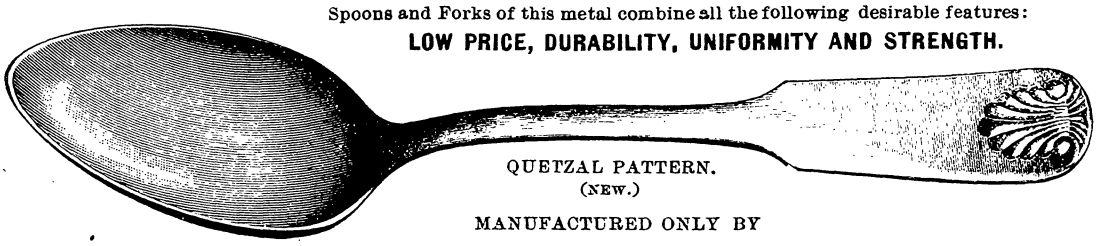
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AZTEC COIN METAL

MADE INTO SPOONS AND FORKS.

Spoons and Forks of this metal combine all the following desirable features:

LOW PRICE, DURABILITY, UNIFORMITY AND STRENGTH.



QUETZAL PATTERN.
(NEW.)

AZTEC COIN METAL has no plating to wear off. Made of solid metal. Easily kept clean.

MANUFACTURED ONLY BY

THE HOLMES & EDWARDS SILVER CO., - Bridgeport, Conn.



The Bridgeport Chain Co.'s Triumph Chain, made into Halters Traces, Cow Ties, Tie-outs, Kennel Chains, &c.; also cut to lengths for manufacturers' use.

The cut represents the exact size of 6/0.

Thirteen Sizes made, 6/0 being the Largest.

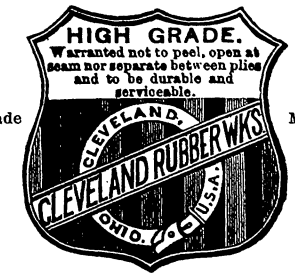
FACTORY AT BRIDGEPORT, CONN.

"SHUT DOWN!" What's the Matter?"

"BELT BROKE AGAIN!"

"See here, Mr. Foreman, if you don't have fewer stoppages I'll——"

"Stop, Mr. Proprietor, the fault is yours. Quit buying belts that crack, peel, open between plies, stretch and break, and I'll give you a smooth run. You think it economy to buy cheap belts from Worthless & Co. Why! the time lost and trouble and annoyance caused by shut-downs would pay the difference between good and bad belts ten times over. Why don't you buy Cleveland's 'Shield High Grade,' sold by Reliable & Co.? It has an established reputation, has been thoroughly tested, and is in use in all the large mills and elevators here. You take no chances on it. Besides, a strong warrantee is indelibly branded upon it, as no manufacturer would dare put on a poor belt. You remember that threshing machine man, whose engine we repaired, said he had a Cleveland High Grade Belt in use over five years, and if it will stand such severe work, it certainly will ours."

Trade  Mark.

LABEL INDELIBLY STAMPED ON EVERY 30 FEET OF BELT.

GUARANTEE.

We Guarantee *our "Shield High Grade" Belt to be made of best long staple, 30 & 32-oz. cotton duck; To be the most durable, because it is made of best materials, by special machinery; To be the best selling belt, because it has the best reputation, a cleaner record of long service, and because its warrantee is stronger, bolder, broader than any other, and is irrevokable, protecting both dealer and consumer. We further guarantee that, should any belt, under fair and reasonable service, fail or give out from any defect in material or manufacture, to replace same free of charge, on return to us.*

Witness *our hand and seal.*

CLEVELAND RUBBER CO. SEAL CLEVELAND O.

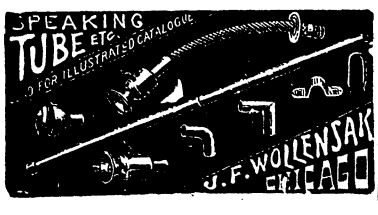
Cleveland Rubber Works

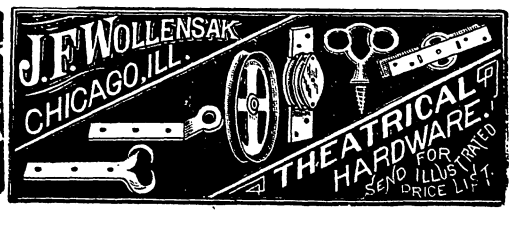
Of the Mechanical Rubber Co.

We are the only manufacturers who indelibly stamp a warrantee on each and every belt (see copy of label) and it remains as long as the belt lasts; and who give a written guarantee (see fac-simile). Our threshing machine belts have made a wonderful record, and our endless belts have given splendid service, the splice being as strong as the solid part of the belt. Suction Hose for Portable Engines and all other purposes.

We Want Your Trade.
Send for 60-page Catalog.
Write for Prices and Samples.

CLEVELAND RUBBER WORKS
OF THE MECHANICAL RUBBER CO., **CLEVELAND, OHIO.**





JESSE JONES & CO.,

HARDWARE SHELF BOXES

Made of Wood. No screws or nails used to work out and cut your shelving.

615 & 617 Commerce St., Phila.

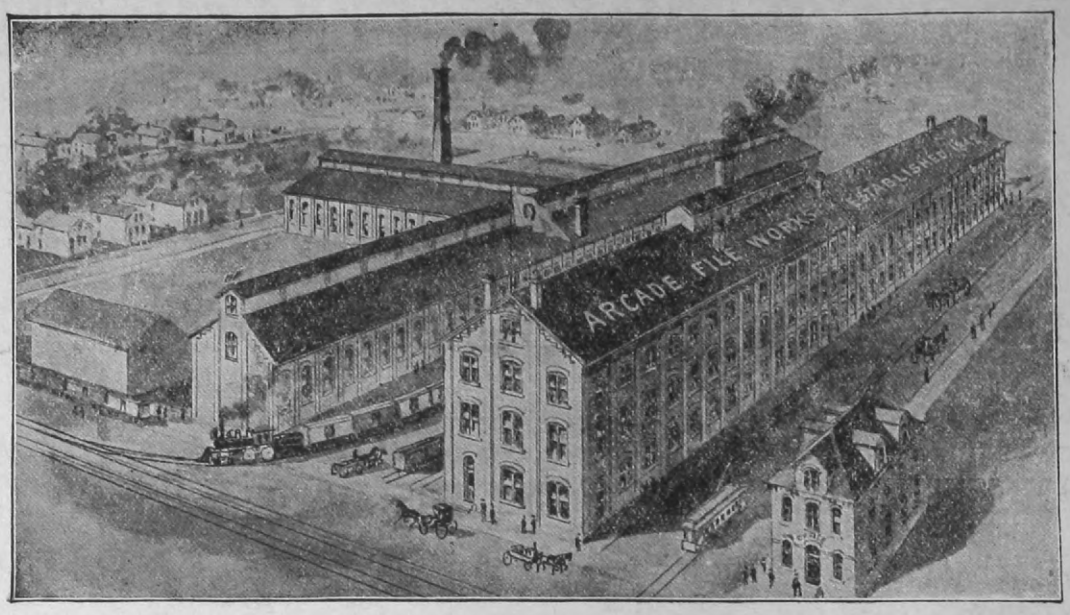
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THE BEST EQUIPPED FILE WORKS IN THE WORLD.

The fact that we alone use the improved File Machinery recently invented by Alfred Weed, and the even heat of natural gas, enables us to produce a file that will cut faster and wear longer than any on the market

Just Published.—THIRD REVISED EDITION.

THE IRON AGE STANDARD HARDWARE LISTS

FOR USE IN PRICE BOOKS.

Compiled by R. R. WILLIAMS, Hardware Editor of The Iron Age.

This pamphlet contains the principal standard Hardware price-lists in as clear and compact an arrangement as possible, so as to permit their being advantageously cut out and inserted in the price book. In order to make them adapted to this use they are printed on thin and tough paper of fine quality and on only one side of the paper.

The success of the effort to give the lists in small space is illustrated in many of the lists, in which a clear and condensed arrangement is secured. For instance, the wrench list occupies but 3 inches by ¼ inch, while the list of Stove Hollow Ware, in very small space, gives the list prices on a large and important line of goods which often occupy several pages in catalogues. In several lists, such as Strap and T Hinges and Butts, a new arrangement is adopted, which is regarded as presenting these lists in a very convenient as well as condensed form.

As is obvious from the lists herewith reproduced, the shape and size of the different lists varies greatly, the aim being to give each list the smallest and most convenient arrangement possible. None of the lists are, however, more than 3½ x 6 inches in size, very few of them being as large as this and most of them very much smaller. In use it is intended that they shall be trimmed closely before they are inserted in price books, when they may be attached either by one edge close to the hinge of the book, as will, perhaps, be most convenient with the larger lists, permitting the use of the entire page for memoranda, or the smaller lists may be pasted on the page in connection with the entries in regard to discounts, freights, &c. Many of the lists are so compact in arrangement as when thus inserted to leave ample room for recording quotations.

Saucepans and Round Boilers.

	Plain	Turned.	Tin'd or En'd.
Pints.			
1	$0.30	.35	.39
1½	.32	.37	.44
2	.35	.39	.48
3	.42	.47	.56
Quarts.			
2	.50	.56	.63
2½	.53	.59	.68
3	.55	.62	.73
4	.60	.68	.84
5	.65	.75	.96
6	.70	.81	1.11
7	.75	.84	1.21
Gallons.			
2	.85	.96	1.31
2½	1.05	1.18	1.56
3	1.20	1.35	1.70

Stove Hollow Ware. Ground and Unground.

POTS, KETTLES, ETC. (CAST IRON.)

No.....	6	7	8	9	10	11
Pots.....	$0.65	.75	.85	1.00	1.25	1.75
Kettles.....	.55	.65	.70	.85	1.00	1.40
T Kettles.....	.75	.80	.90	1.00	1.25	....
Spiders.....	.27	.30	.35	.40	.50	.60
Griddles Round	.22	.25	.27	.30	....	....
" Long..	.40	.50	.60	.75	....	....

SCOTCH AND YANKEE BOWLS.

No ...	1	2	3	4	5	6
Scotch Bowls..	$0.35	.40	.45	.50	.60	.70
Yankee Bowls.	.35	.45	.55	.65	.75	.90

Wrenches. Standard List.

Inches.	6	8	10	12	15	18	21
Black...	$9.00	$10.00	$12.00	$14.00	$24.00	$30.00	$36.00
Bright..	10.00	11.00	14.00	16.00	26.00	32.00	38.00

Some merchants use this pamphlet for reference, checking off invoices, etc., as it gives the leading lists in a more convenient form than they can otherwise be obtained. The lists are, however, intended primarily to be cut out and inserted in price books, and *can be used in connection with any of The Iron Age Hardware Price Books.*

Glue Pots. Tinned or Enameled

No. 4/0....	$4.50	No. 2	$8.40
3/0....	5.00	3	10.26
2/0....	5.50	4	12.42
0	6.00	5.....	14.58
1	6.75	6.	16.94

That the Standard Hardware Price Lists meet a want of the trade is evident from the fact that a Third edition is already called for.

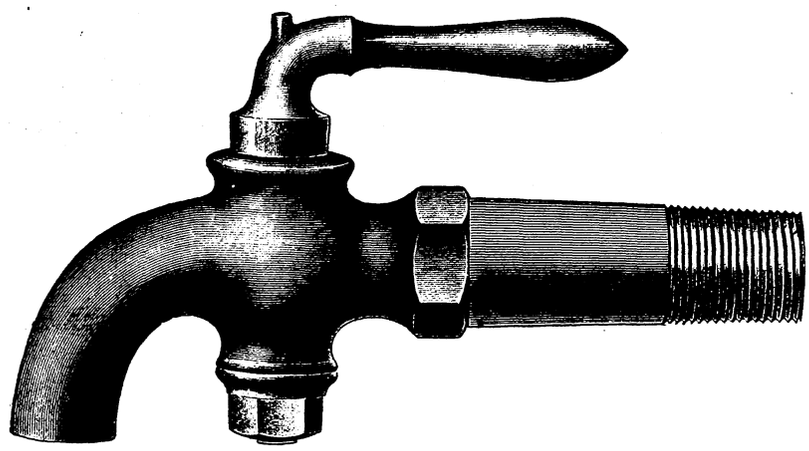
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DAVID WILLIAMS, Publisher and Bookseller, 96-102 Reade Street, N. Y.

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Standard Petroleum Oil Faucets.



These Faucets are made from the best Refined Iron, with Solid Brass Key, and are fully warranted. The bearing is longer than in the ordinary faucet, making them less liable to break. Made in following sizes.

	3/8 in.	1/2 in.	5/8 in.	3/4 in.	1 in.
SCREW SHANK,	No. 13	No. 14	No. 5	No. 6	No. 7
TINNED "	No. 013	No. 014	No. 05	No. 06	No. 07
LIST,	$6.75	$8.25	$9.00	$10.50	$12.00 per Dozen.

Write to us for Discounts, we can interest you.

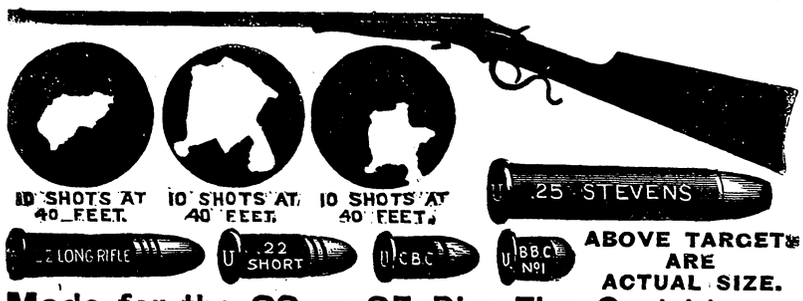
JOHN H. GRAHAM & CO., SOLE AGENTS,

113 CHAMBERS ST., NEW YORK.

P. O. BOX 1042.

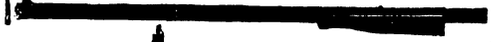
A Triumph in Small Bore Rifles.

STEVENS' "FAVORITE" RIFLE.



ABOVE TARGETS ARE ACTUAL SIZE.

Made for the 22 or 25 Rim Fire Cartridge.

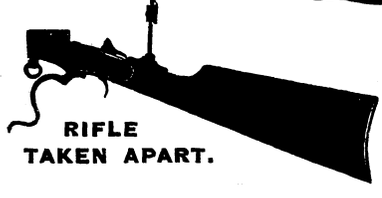


WEIGHT, 4½ POUNDS.

22-INCH BARREL.

LEVER ACTION LIKE SHARPS.

TAKEN APART IN TEN SECONDS.



RIFLE TAKEN APART.

IT IS SIMPLY IMPOSSIBLE TO MAKE MORE ACCURATE SHOOTING BARRELS THAN ARE ON THIS RIFLE.

No. 17. Plain Open Sights.....$12.50
No. 18. Vernier, Open Back, and Beach Front Sights..... 17.00
No. 19. Lyman Peep, Open Back, and Lyman Front Sights, 17.00

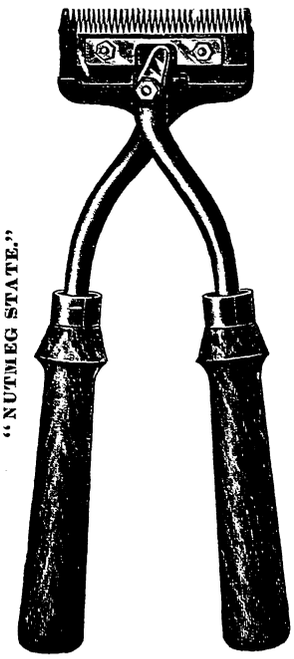
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P. O. Box 5729.
Chicopee Falls, Mass. U. S. A.

Edward S. Hotchkiss,

MANUFACTURER OF HARDWARE,
BRIDGEPORT, CONN.



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SATISFACTORY PRICES. Standard goods. Don't fail to write when in want of Horse and Barber's Clippers, No. 20 Steel Rat Killers, Curry Combs, Metal and Wood Choker Mouse Traps, Lemon Squeezers, Baxter Pattern Wrenches, &c., &c.

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NEW YORK,
MANUFACTURERS OF

TOOL CHESTS

Of all sizes, complete with tools, for Hardware, Toy, Notion and Variety trades.
Factory and Salesroom,
200 West Houston Street, near Varick.
Also Machinists' Tool Chests, empty. Illustrated Catalogue and prices furnished on application.

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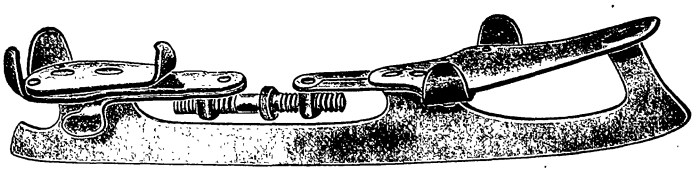
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Headquarters for Winslow Skates.

Obtain our Prices before Ordering Elsewhere.

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The SAMUEL WINSLOW SKATE MFG. CO., Worcester, Mass., U.S.A.



The most extensive Skate Factory in the World.

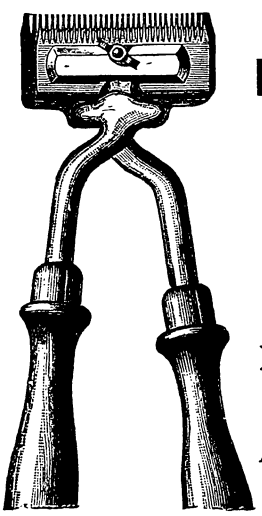
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26 Warren St., New York,

Headquarters for

Coates' Horse Clipper



AND

Barber Clippers.

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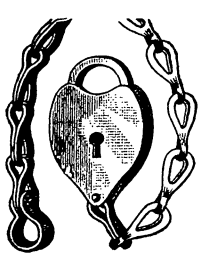
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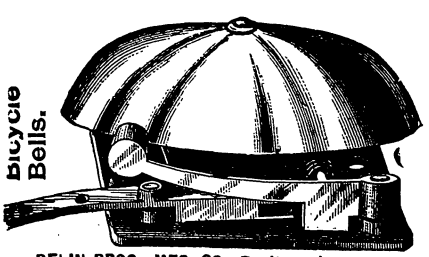
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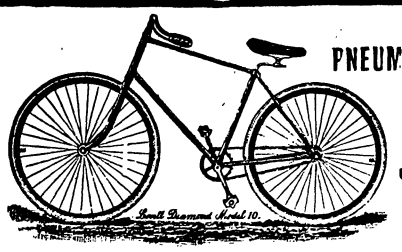
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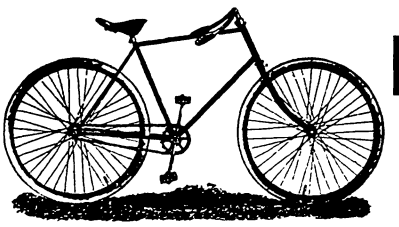
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HIGHEST GRADE.
PNEUMATIC, CUSHION AND SOLID TIRES.
FOR LADIES AND GENTLEMEN.
MANUFACTURED BY
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CYCLE CATALOGUE FREE.

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TOLEDO BICYCLE COMPANY, TOLEDO, OHIO.

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Such are the

SOLD ON SIGHT.

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FALCON JUNIOR, for Boys.

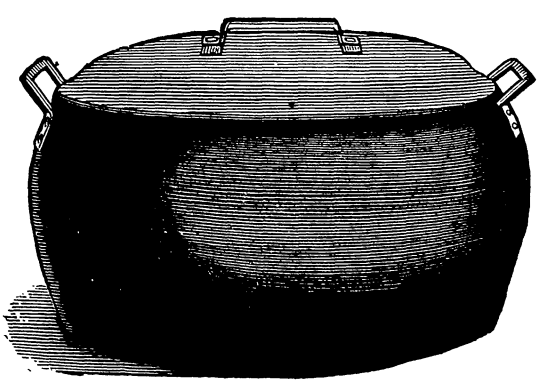
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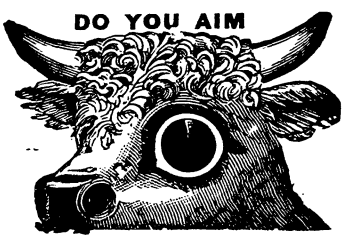


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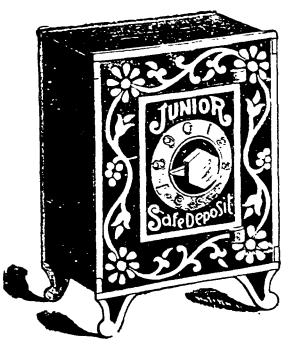


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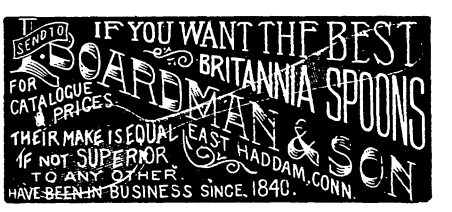


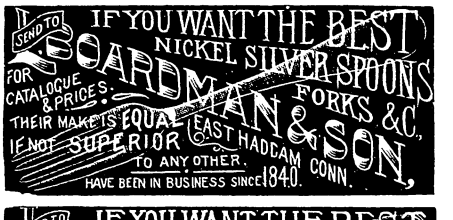
BEST

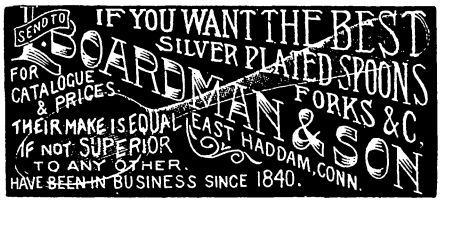
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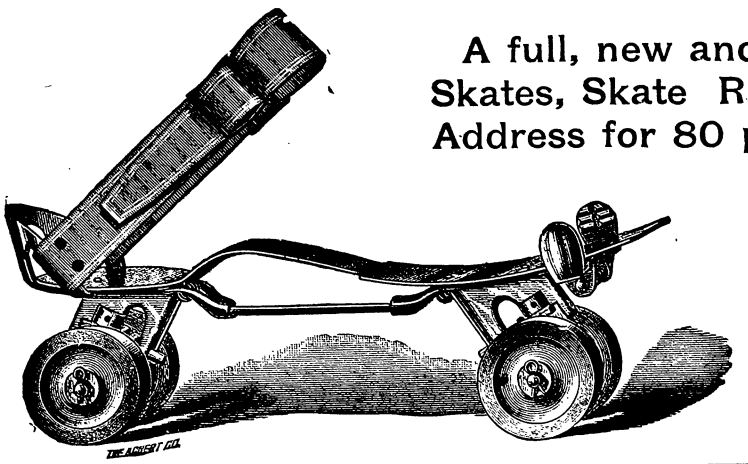






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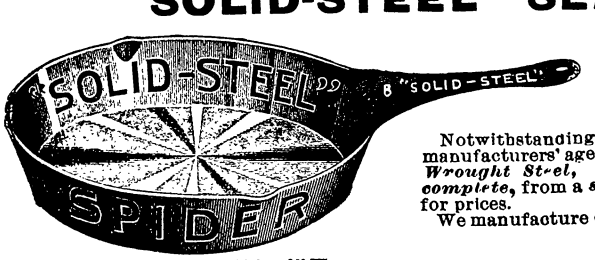
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No Seams, no Rivets in "Solid-Steel" Ware.

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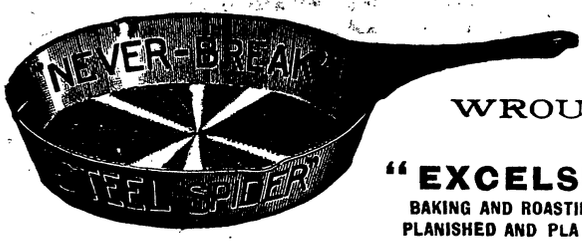


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IS THE Best Street Lamp Manufactured.
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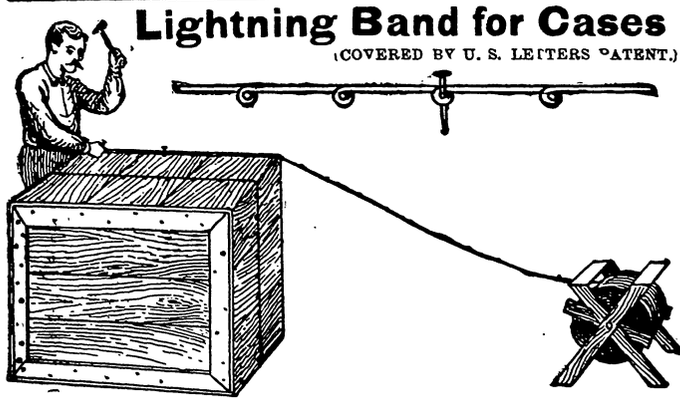
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Lightning Band for Cases and Crates.

(COVERED BY U. S. LETTERS PATENT.)



Mounted on reels and always ready for use and convenient to handle. Easily and quickly binds shipping cases and crates in a neat, strong and substantial manner.

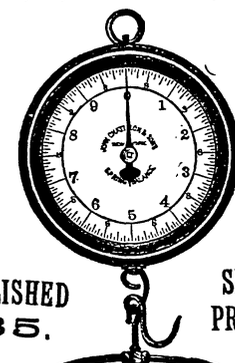
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Pliers for cutting wire, 50 cents extra.
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FOR GASOLINE OR OIL.

14 JETS OF LIGHT,



3 to 6 INCHES LONG.

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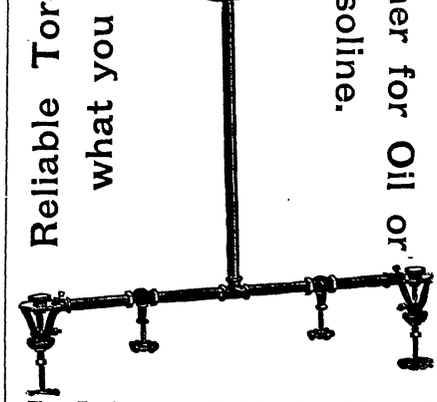
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Reliable Torches are what you want.



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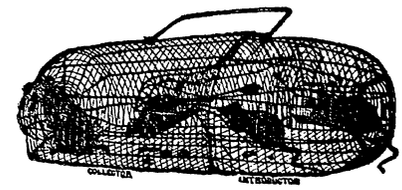
These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner.

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ALWAYS IN STOCK.



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MEAT Choppers



Enough Said!

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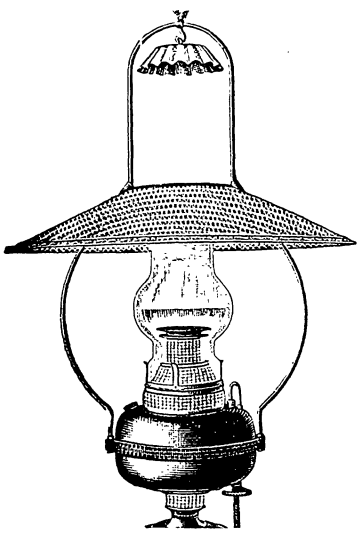
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Brilliantly Illuminates a room 35 feet square at the cost of about one penny per hour.

Save your gas bills. Sold at no higher price than inferior lamps. Made also in handsome designs, with library extensions, for dining rooms, halls, libraries, &c. Sold everywhere. If your dealer does not keep it, write

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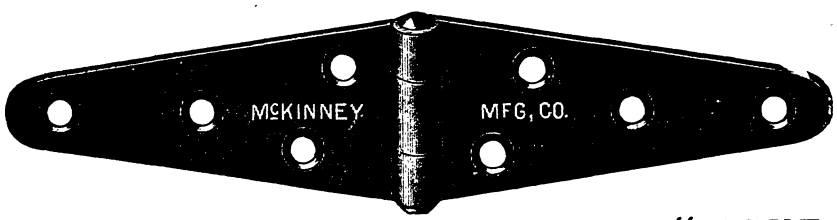
96 98, 100 & 102 READE ST., - - NEW YORK

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WE CLAIM

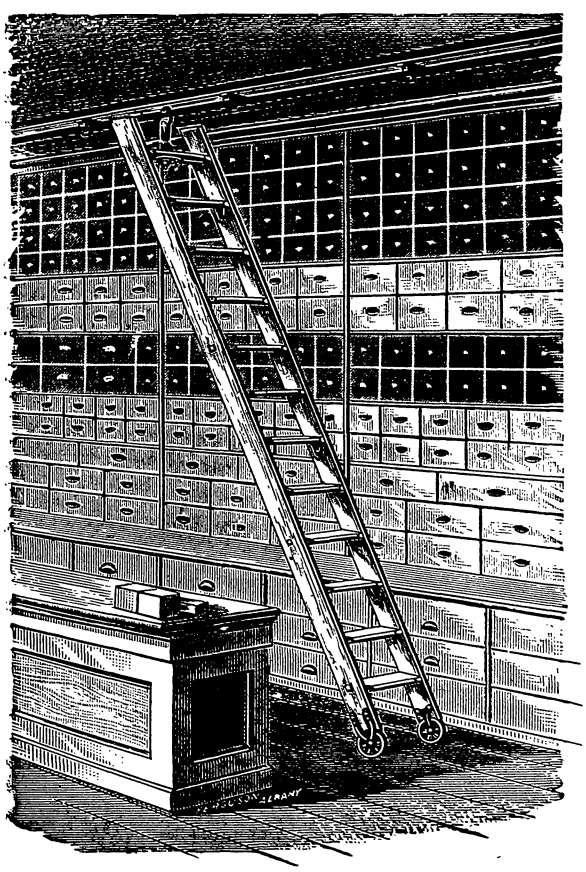
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McKINNEY MFG. CO., ALLEGHENY, PA.

Steel  Hinges.

SEND FOR LIST. "NONE BETTER."

THE "NOISELESS" STORE LADDER.

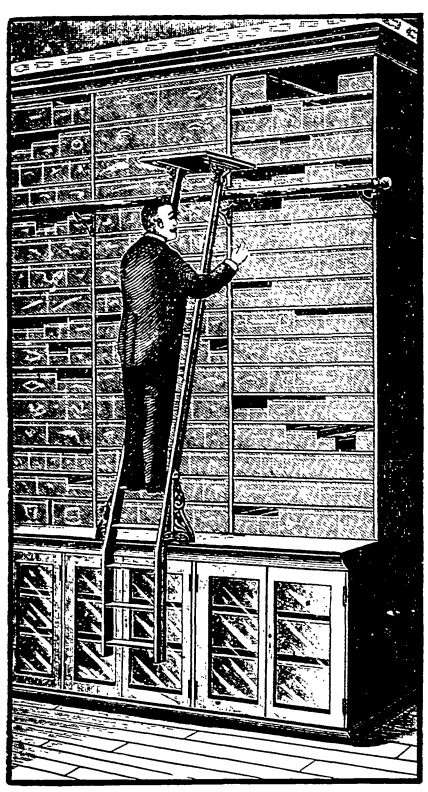


The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by

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THE BICYCLE STEP LADDER

The Newest, Neatest, Simplest, Easiest Operated and Safest Store Ladder made.

Ladders are not *Suspended*, but *Supported* from below on wheels. Move easier with operator on than others when empty. Highly finished, and very handsome. Made in different grades and prices to suit.

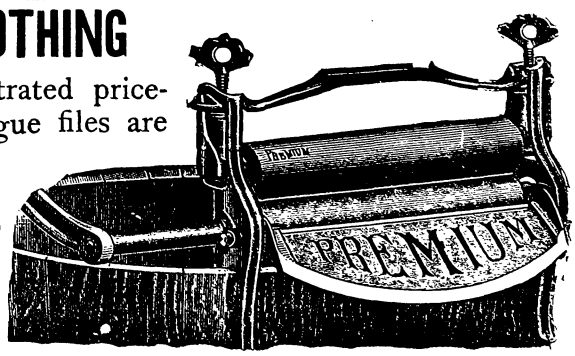
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See this space next week for other styles.

The Bicycle Step Ladder Co., 50 State Street, Chicago, Ills.

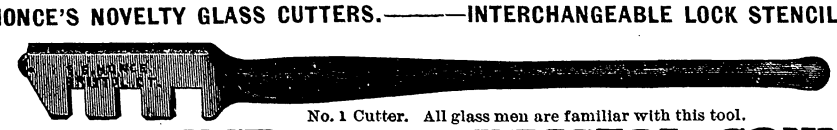
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to send for our illustrated price-list, and your catalogue files are incomplete without it. Write to the Factory, Montpelier, Vt., or to our Chicago store, 68 Lake St.



COLBY WRINGER COMPANY.

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No. 1 Cutter. All glass men are familiar with this tool.

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HARDWARE DEALERS

CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

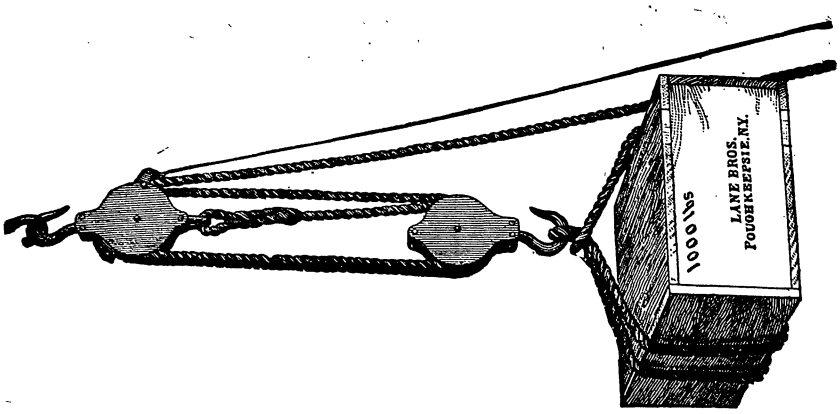
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TACKLE BLOCKS,

Anti-Friction Steel Bushings,

Holds the load at any point, and always sure.

SEND FOR CIRCULAR.

For sale by the Hardware trade.

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You are selling that kind of a lock every day and your customers think you are selling the best the market affords.

ARE YOU SELLING the best the market affords?

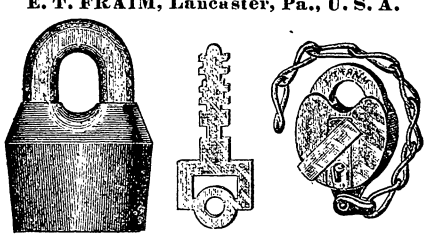
The Craig Locks are guaranteed Sneak Thief Proof.

Send for Catalogue. KEYLESS LOCK CO., I. A. 197 So. Canal St., Chicago, Ill.

ESTABLISHED 1879.

KEYSTONE LOCK WORKS,

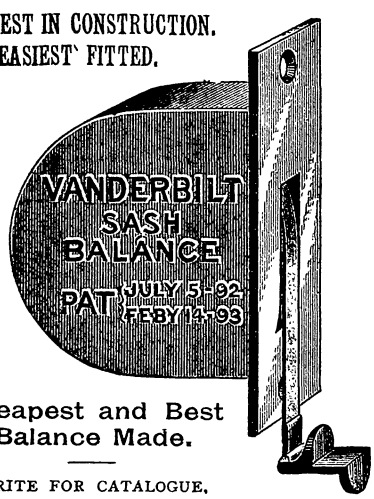
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Originators, designers, patentees and manufacturers of all the leading popular styles of PADLOCKS, Key-Locking Scandinavian with our patent Inter-Locking Tumblers; the only reliable lock of this style ever made. SELF-LOCKING Scandinavian of the highest type of perfection. Dust Proof Railroad, Freight Car and Switch Padlocks. Brass, Bronze, Steel and Malleable Iron Padlocks for all purposes and in all finishes. 131 different kinds. Write for our new 100-page catalogue.

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CANANDAIGUA, N. Y.

General Agents, Harmon & Dixon, 118 Chambers St. New York.

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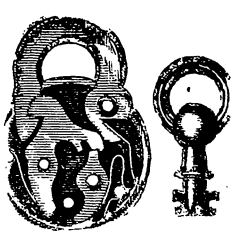
Ripley Mfg. Co., Unionville, Conn



Porcelain-Lined Lemon Squeezers, Steak Hammers, Boot Jacks Magnetic Tack Hammers, Mallets, Bung-Starts, Hand Screws Beacon Hill Pat. Mouse Traps. Sunny-Side 2 lb. Lap Board

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PATENT PERFECTION PADLOCK

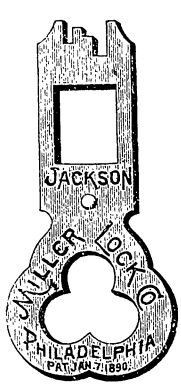


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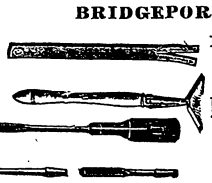
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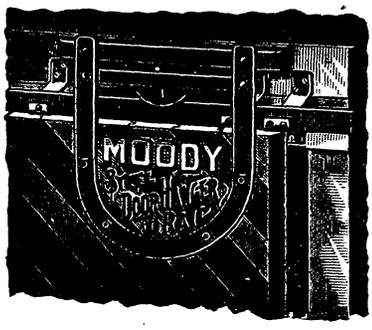


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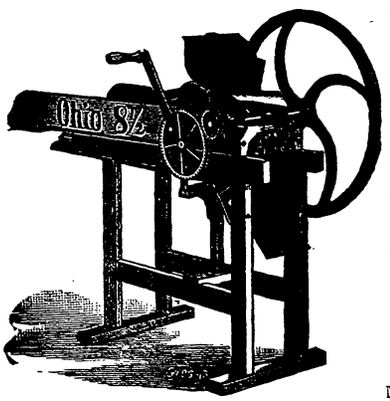
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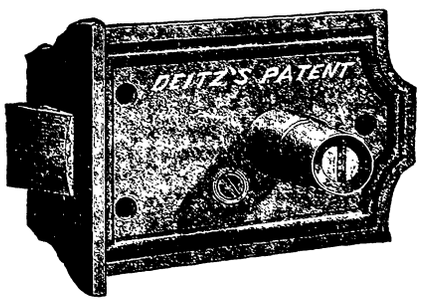


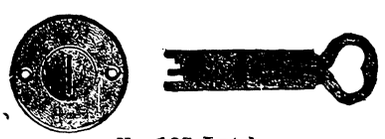
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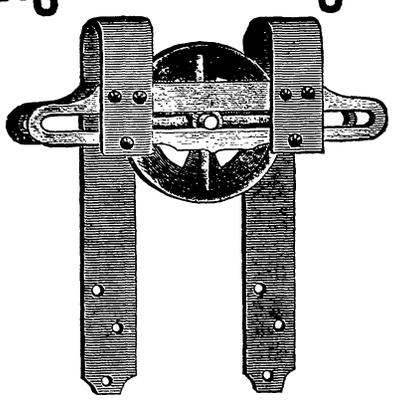
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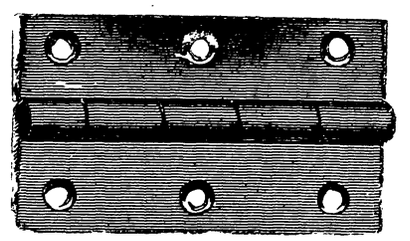
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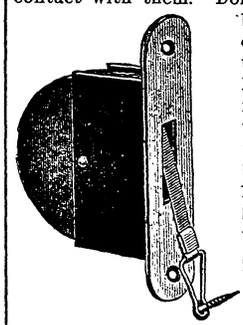
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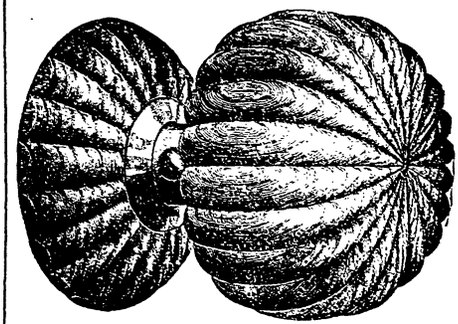
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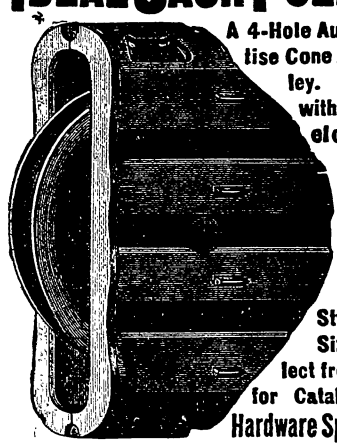
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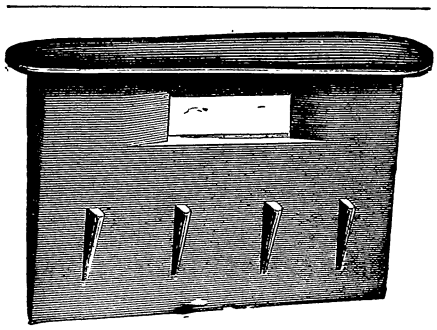
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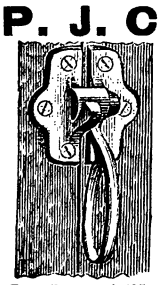


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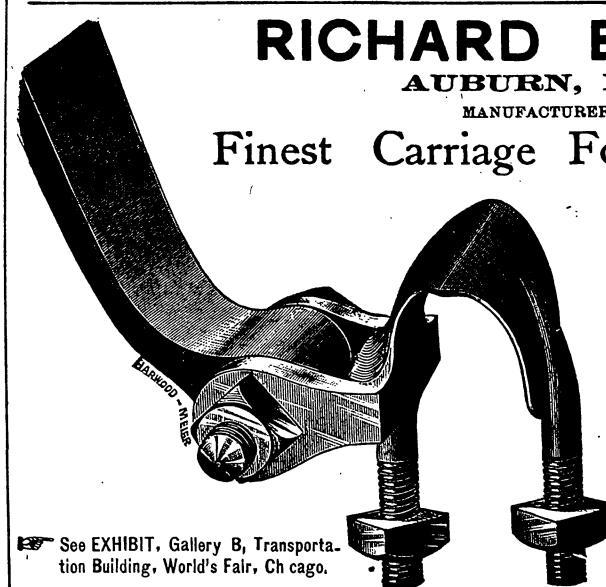
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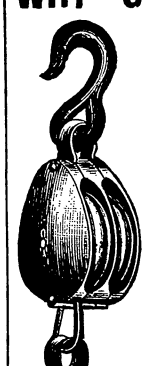
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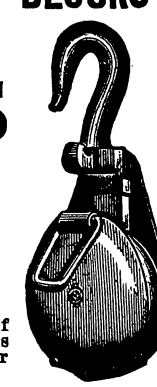
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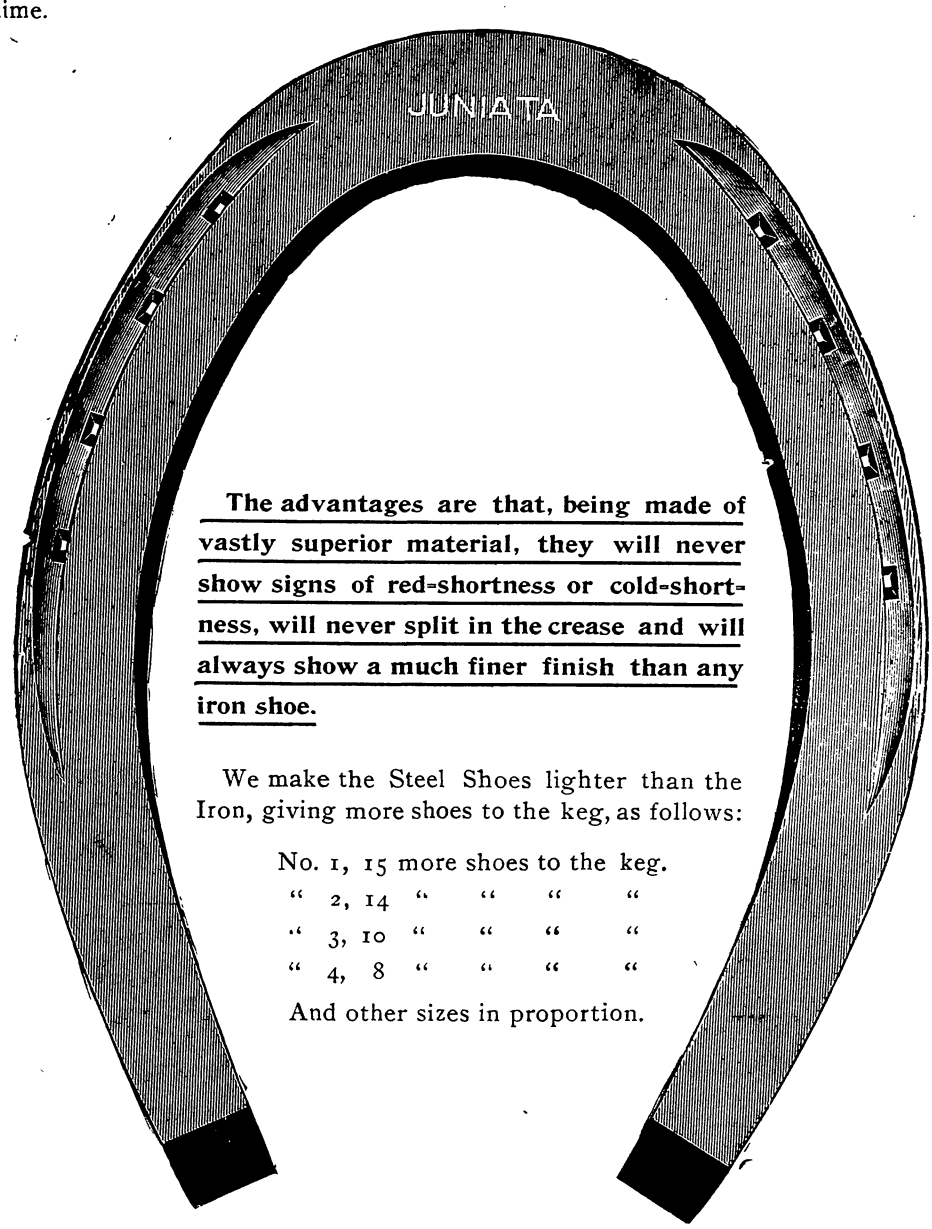
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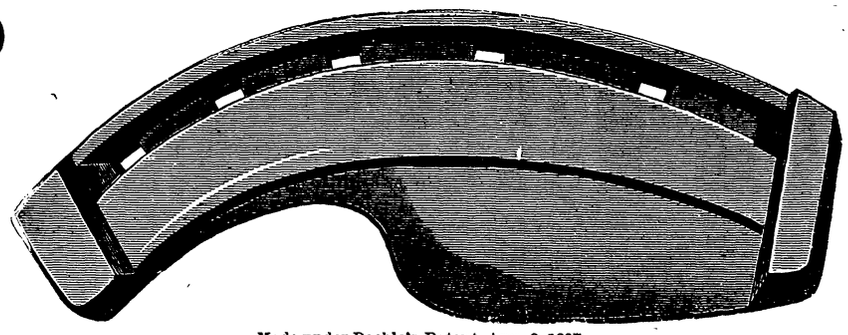
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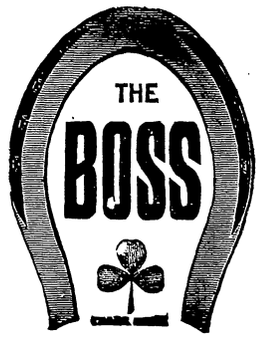
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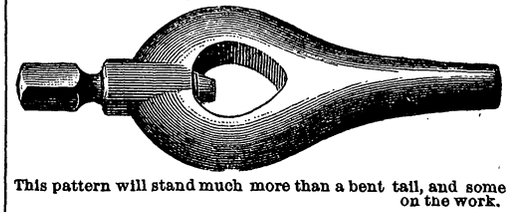
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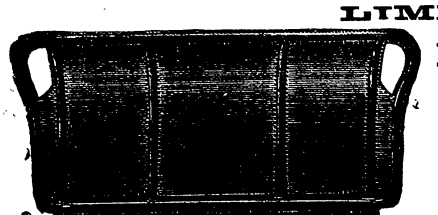
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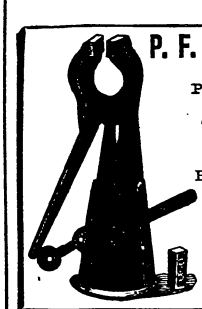
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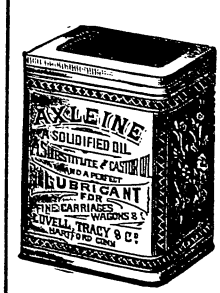
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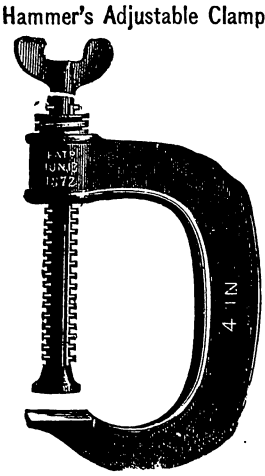
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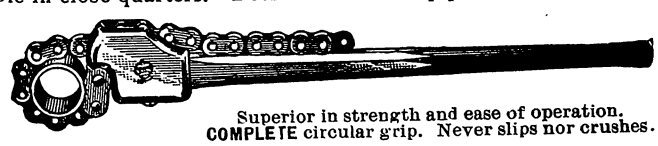
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Case-Hardened Throughout. Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal.
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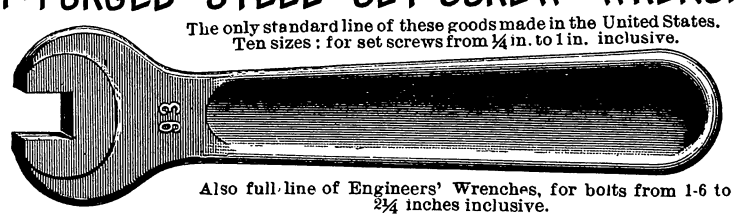
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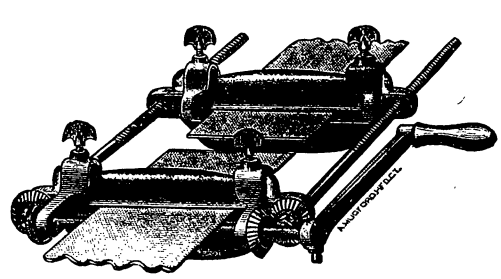
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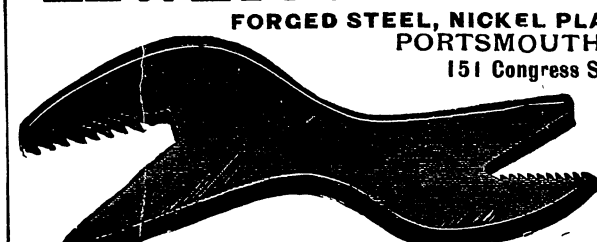
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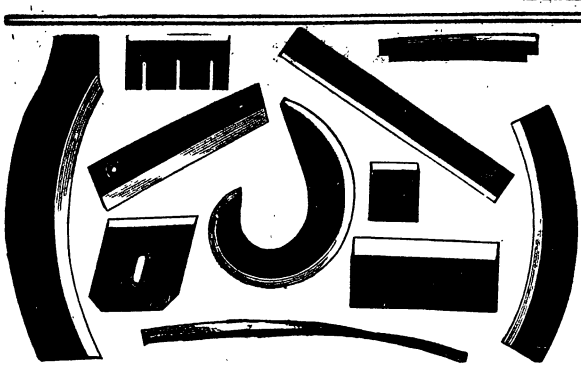
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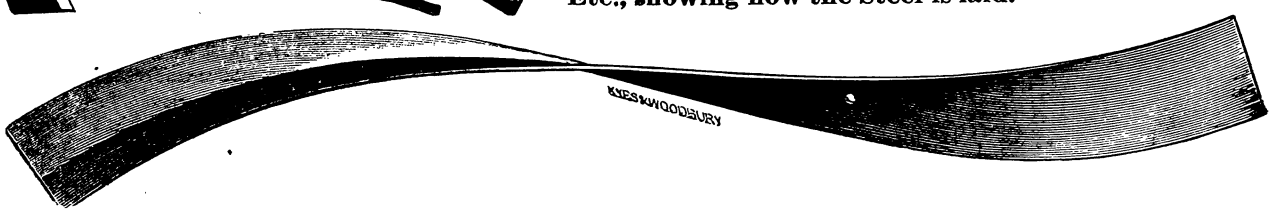
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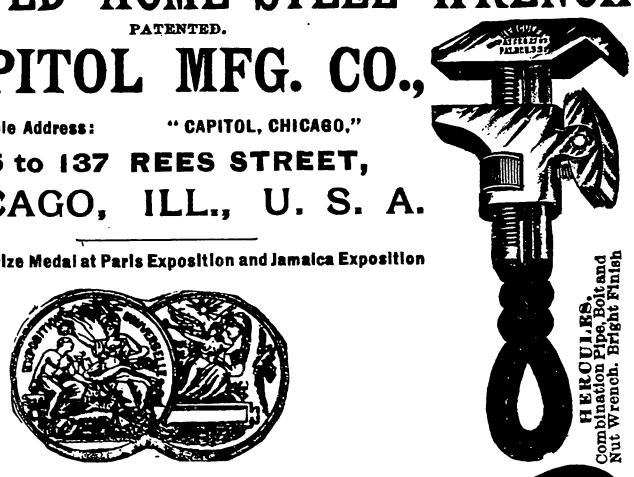
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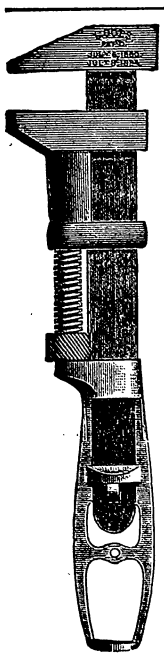
PATENT

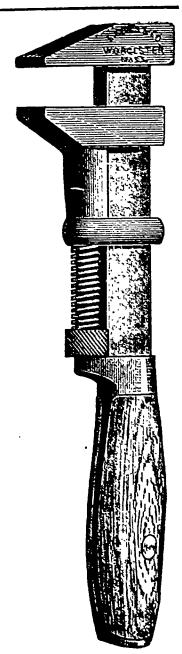
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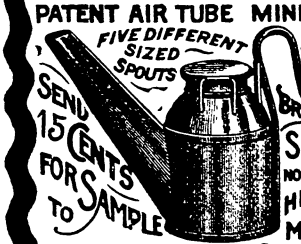
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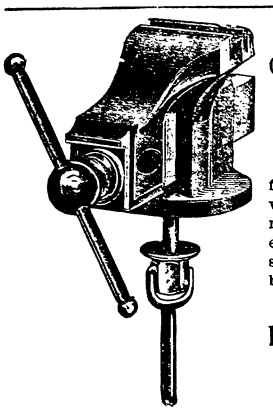
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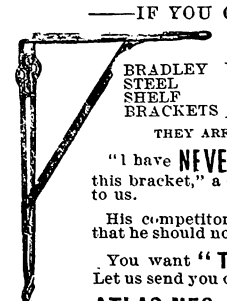
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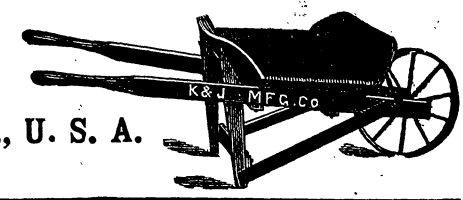
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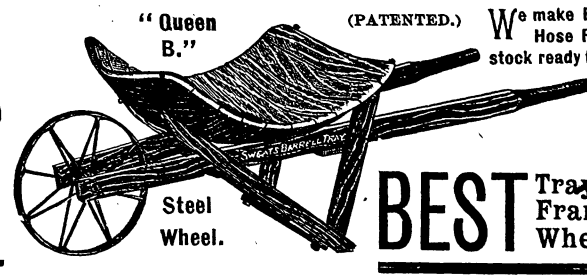
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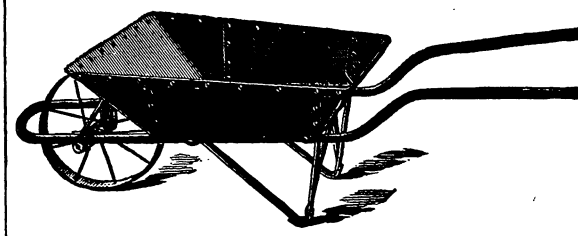


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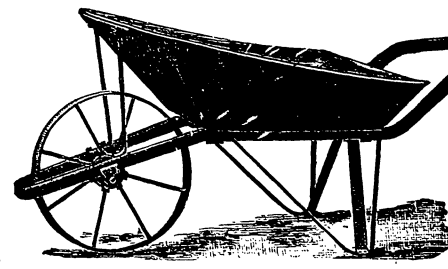


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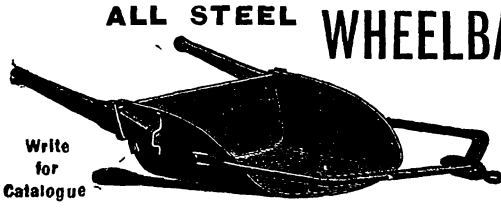
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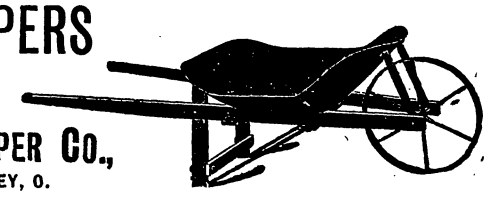
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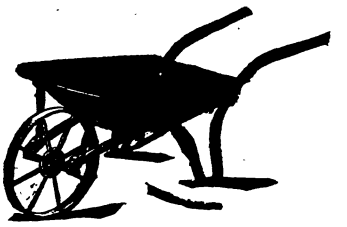
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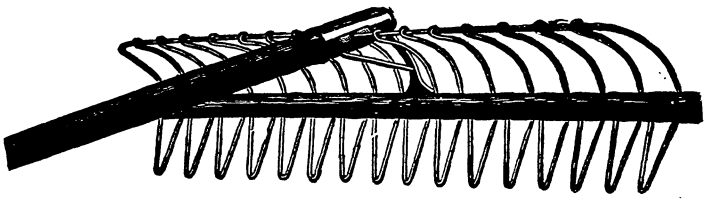


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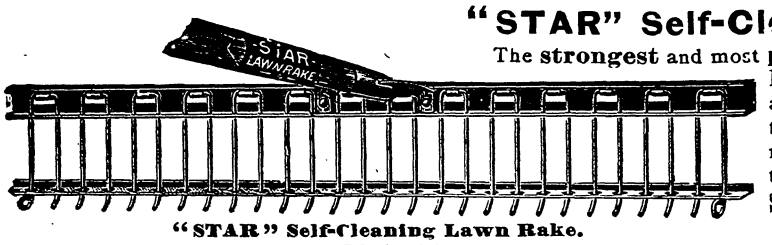
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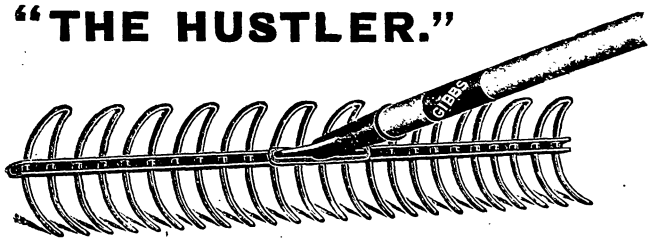
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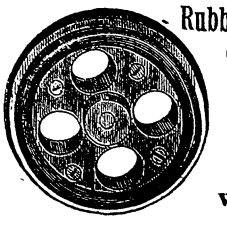
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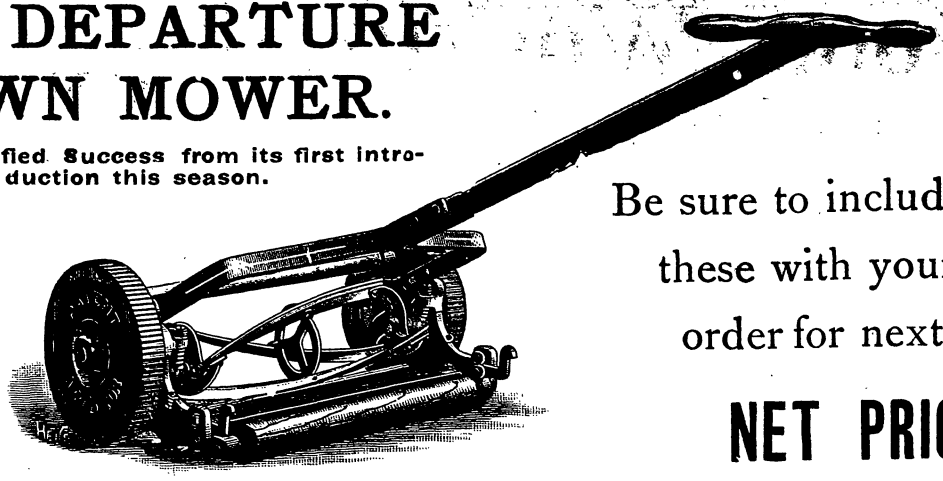
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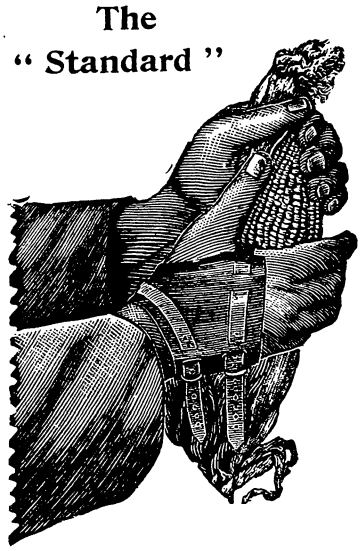
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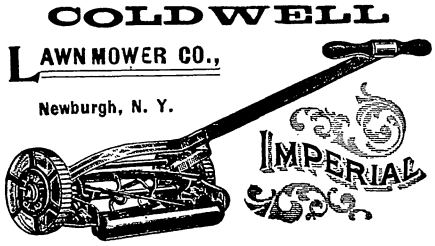
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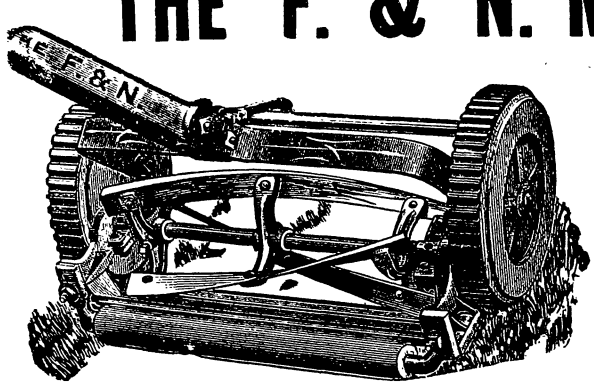
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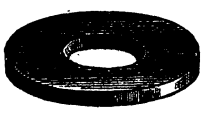
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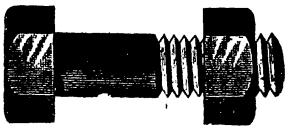
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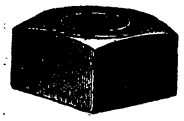


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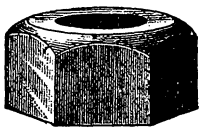
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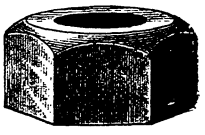
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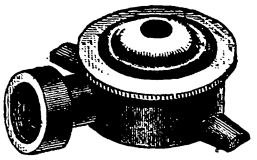


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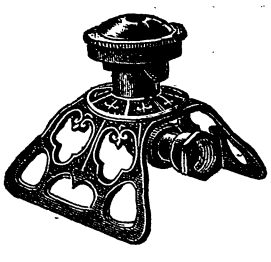
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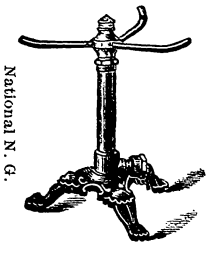


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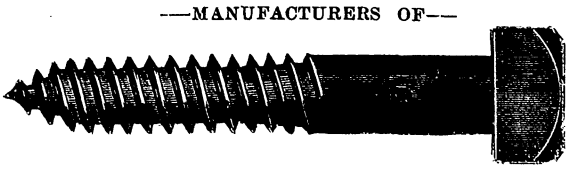
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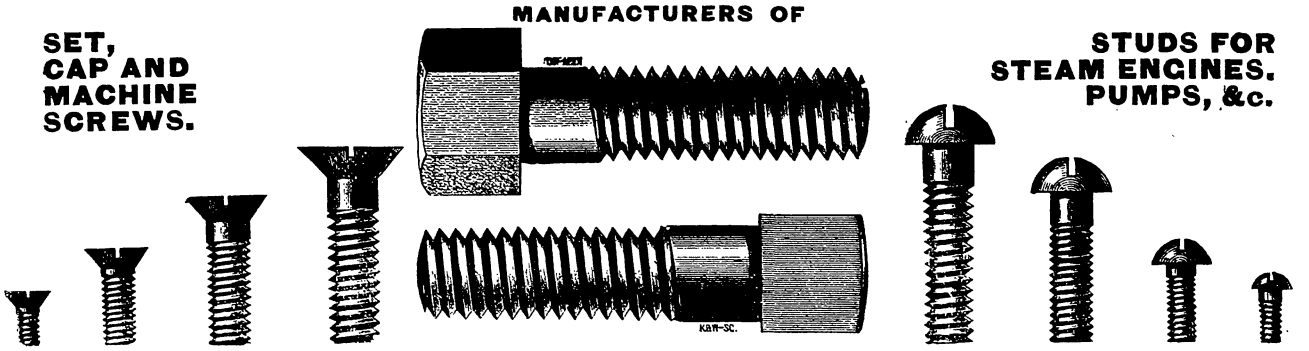
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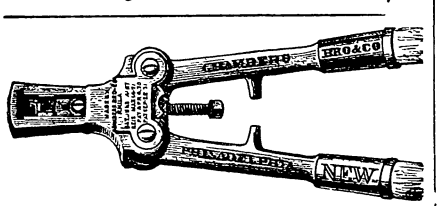
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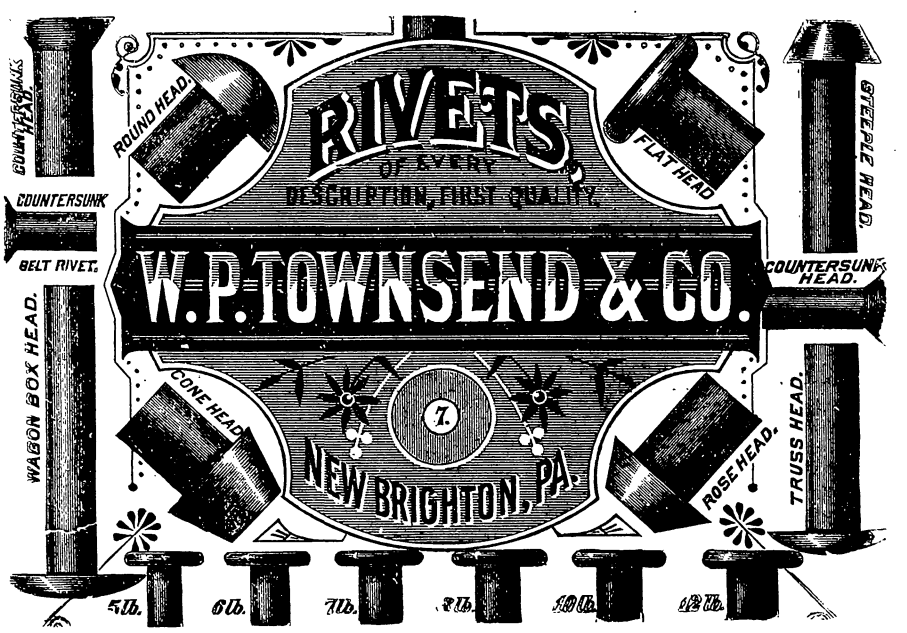
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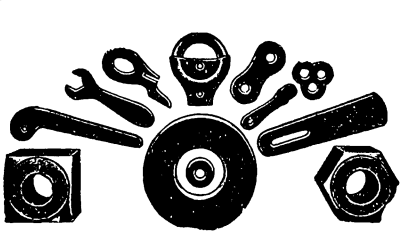
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Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Dumb Waiters.
Storm Mfg. Co., Newark, N. J.

Dust Beaters.
Peabody & Parks, Troy, N. Y,

Dynamite.
New York Powder Co., 62 Liberty St N. Y.

Dynamos.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Lovell Mfg. Co., Ltd., Erie, Pa.
Zucker & Levett Chemical Co., 10 & 14 Grand St., N. Y.

Edge Tools. *Makers of.*
Buck Bros., Millbury, Mass.
Butcher, W. & S., 135 Duane St., N. Y.
Buffalo Edge Tool Wks., Buffalo, N.Y
Plumb, Fayette R., Philadelphia, Pa
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
North Bros. Mfg. Co., Philadelphia.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St., New York
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines.
Eddy Electric Mfg. Co., Windsor. Conn

Electro-Platers.
Boardman, L. & Son, East Haddam Ct.

Elevators. *Makers of.*
Link-Belt Engineering Co., Phila., Pa
Morse, Williams & Co., Phila., Pa.
Salem F'dry & Mch. Co., Salem, Mass.

Emery and Emery Wheels.
Bell, Geo. E , 36 John St. N. Y.
Grant Corundum Wheel Mfg. Co. Worcester, Mass.
N Y. Belting & Packing Co. Ltd. N Y
Northampton Emery Wheel Co
Leeds, Mass.
Norton Emery Wheel Co., Worcester Mass.

Enamels.
Nubian Iron Enamel Co., Cragin, Ill.

Engineers and Contractors.
Aiken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amsler & Co., Pittsburgh, Pa
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa
Witherow, Jas. P. Co., Pittsburgh; Pa.

Engines, Gas.
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg. N. Y.

Engines, Steam. *Makers of.*
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Erie Engine Works, Erie, Pa.
Harrisburg Fdy. & Machine Works Harrisburg, Pa.
Norwalk Iron Works Co., So. Norwalk, Conn.
Phila. Engineering Works, Phila., Pa.
Phoenix Iron Wks. Co. Meadville, Pa.
Shipman Engine Co., Boston, Mass.
Southwark Foundry and Machine Co. Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.
Sweester, W. A., Brockton, Mass.

Expansion Bolts.
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O

Faucets, Self-Measuring
Lane Bros., Poughkeepsie, N. Y.

Faucets, Wooden. *Makers of.*
Boston & Lockport Block Co., Boston Mass., and Lockport, N. Y.
John Sommer's Son, Newark, N. J.

Feed-Water Heaters.
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N.Y
Harrison Safety Boiler Wks. Phila, Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
DeKalb Fence Co., DeKalb, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hartman Mfg. Co., Ellwood City, Pa.
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire & Iron Wks., Milwaukee

Files, *Importers of*
Moss, F. W., 80 John, N. Y.

Files and Rasps, *Manufacturers of*
Arcade File Works, Anderson, Ind.
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
Butcher, W. & S., 135 Duane St., N. Y.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.

Fire Brick. *Makers of.*
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer B & Sons, foot E. Houston, St
McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro., Woodbridge.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Fishing Tackle.
Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flour Sifters.
Sills, W. H., 83 Lake St., Chicago, Ill.

Flue Cleaners.
Mackey, Jas. T., St. Louis, Mo.

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Forges, Portable, &c.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Foos Mfg. Co., Springfield, Ohio.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Scranton Forging Co., Scranton, Pa.

Foundry Facings.
Paxson, J. W. & Co., Phila.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.

Foundry Riddles.
Estey, W. S. 65 Fulton, N. Y.

Foundry Supplies.
Colliau, Victor, Detroit, Mich.
S. Obermayer Co., Cincinnati, O.
Paxson, J. W. & Co., Philadelphia.
Smith, J. D. Fdy. Supply Co., Cinn., O

Friction Clutches.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.
Evans Friction Cone Co., Boston, Mass

Fruit Presses.
Enterprise Mfg. Co. Philadelphia, Pa.

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Gas Producers.
Wood, R. D. & Co. Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast, Henry B. & Co., Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
D. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston' Mass.
New Process Raw Hide Co., Syracuse, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.

Glass Boards.
Canton Saw Co., Canton, O.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glass Tubes,
Ashcroft Mfg. Co., 111 Liberty St., N.Y.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.
Supplee Hardware Co,, Phila., Pa.

Grinding Mills.
Foos Mfg. Co., Springfield, O.

Grinding and Polishing Machines.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grindstone Dressing Machinery
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gunpowder, *Makers of.*
Laflin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich.

Handles.
New Process Raw Hide Co., Syracuse, N. Y.
New York Mallet and Handle Wks. 456 E. Houston St., N. Y.

Hangers, Door.
Chicago Spring Butt Co., Chicago, Ill.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Hotchkiss, E. S. Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Graham, John H. & Co., 113 Chambers,
McCoy, Jos F. Co., 26 Warren St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N. Y,
Underhill, Clinch & Co., 94 Chambers St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co. New Haven. Conn.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Haines & Zimmerman, Phila Pa.
Hart, H. C Mfg. Co., Detroit, Mich.
Henn, A. S. & Co., New Haven. Conn
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Philadelphia, Pa
Peabody & Parks, Troy, N. Y.
Weiland, Chas., 149 Chambers St., N.Y
Wilson, J. Fred, Worcester, Mass.
Underhill, Clinch & Co., 94 Chambers Street, N. Y

Hardware, Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N.Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co. Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Stuart & Peterson Co., Phila., Pa.

Hollow Ware, Aluminum.
Illinois Pure Aluminum Co. Lemont, Ill

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, *Makers of.*
National Horse Nail Co., Vergennes, Vt,

Horse and Mule Shoes. *Makers of.*
Bryden Horse Shoe Co., Catasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.

Hose.
Cleveland Rubber Works, Cleveland, O.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N.Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Shavers.
Enterprise Mfg. Co., Philadelphia, Pa.

Injectors.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. Hartford Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y

Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 480 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron, *Merchants.*
Barnes, C. K. & Co., Philadelphia, Pa
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Bradley & Co., Philadelphia
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co. 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St. N. Y
Pickards, Brown & Co., Chicago, Ill.
Pierson & Co., 29 Broadway, N. Y.
Richards, D. W. & Co., 88 Maiden St. N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, *Importers.*
Abbott Wheelock & Co. N. Y, and Boston
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet. *Manufacturers of.*
Cambridge Iron & Steel Co., Cambridge Ohio
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladles.
Detroit Fdy. Equipment Co., Detroit, Mich.

Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.

Lamps.
Standard Lighting Co, Cleveland, O.

Lanterns.
Ohio Lantern Co., Tiffin, Ohio.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls N. Y.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mowers.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Coldwell Lawn Mower Co., Newburg, N. Y.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Lape, W. E., Syracuse, N. Y.
Mast, Foos & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila. Pa.

Lawn Rakes.
Gibbs Mfg. Co, Canton, Ohio.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse N. Y.

Lawn Sprinklers.
Ette & Henger Mfg. Co., St. Louis,
McGowan, John H. Co., Cincinnati, O.

Lawn Sweepers.
Lape, W. E., Syracuse, N. Y.

Lemon Squeezers.
Ripley Mfg. Co., Uxonville, Conn.

Letters and Figures, Metallic
White, A. A. & Co., Providence, R. I.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.

Locks & Knobs, *Manufacturers of*
Deitz, A. E., 97 Chambers, N. Y
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg Co. Bridgeport, Conn
Yale & Towne Mfg. Co., Stamford, Conn

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Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N.Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N.Y
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Cruikshank, D. B., Providence, R. I.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila. Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield Vt
Lodge & Shipley Mch. Tool Works, Cincinnati, O.
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co. Rochester, N.Y
Manville, E. J. Mch. Co, Waterbury, Conn
Newark Mch. Tool Works, Newark, N.J
New Haven Mfg. Co., New Haven, Conn
New York Mach'y Depot, N. Y.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn
Prentiss Tool & Supply Co., N. Y
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ld., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.
Adt, Jno. & Son, New Haven, Conn.

Machine Knives.
Loring Coes & Co., Worcester, Mass
Loyd, John, 558-562 Water St., N. Y.

Machine Tools.—*See Machinery.*

Machine Work.
Papping, J., 58th St., & 11th Ave., N.Y. City.

Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y.
Starrett, L. S., Athol, Mass.

Machinists' Tools and Supplies.
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.

Mallets.
N. Y. Mallet & Handle Works, N. Y.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St,, N.Y.
Lufkin Rule Co., Saginaw, Mich

Meat Cutters.
Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Instruction.
Correspondence School of Mechanics Scranton, Pa.

Metals.
Fearing, Wm. S., 100 Chambers, N.
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
American Metal Co., N. Y.

Metallurgists.
Britton J. Blodgett, Phila.

Milling Machines.
Cin. Milling Mch. Co., Cincinnati Ohio.

Mincing Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
Darby, Edw. & Sons Phila. Pa
Leonard, B. E., Scranton, Pa.
Leonard, T. F., Scranton, Pa.

Mining Screens.
Harrington & King Perforating Co Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y

Mirrors.
Rice, C. F., Chicago, Ill.

Molding Sand.
Obermayer, S. Co, Cincinnati, O.
Paxson, J. W. & Co., Phila.

Motors, Water and Electric.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington, N.
Pottstown Iron Co., Pottstown, Pa
Riverside Iron Wks, Wheeling, W. Va.

Neck Yokes.
Johnson, S. C., Racine, Wis.

Nickel Platers' Supplies.
Eddy Electric Mfg. Co., Windsor, Conn
Zucker & Levett Chemical Company. 10 to 14 Grand St., N. Y

Norway Shapes, *Rollers of.*
Bowland, William & Harvey, Frankford, Philadelphia

Novelty Manufacturers.
Franklin, H. H. Mfg., Syracuse, N. Y.

Nut Machines.
Dunham Nut Mch. Co., Unionville, Ct

Nuts, Bolts, &c., *Makers of.*
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Haskell, Wm H. Co., Pawtucket, R. I.
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Port Chester Bolt and Nut Co., Port Chester, N. Y.
Russell, Burdsall & Ward, Port Chester
Sternbergh, J. H. & Son, Reading, Pa.
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R.

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
Glazier Stove Co., Chelsea, Mich.

Ores.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Billington, Jas. H. & Co., Phila., Pa.
Morrison, Robt., St. Louis, Mo.
N. Y. Belting & Packing Co. Ltd., N.Y.

Padlocks.
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Miller Lock Co., Philadelphia, Pa.

Paint.
Dixon, Jos. Crucible Co., Jersey City, N.J
Garry Iron & Steel Roofing Co., Cleveland, O.

Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O

Paint Cans.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Patent Solicitors.
Howson & Howson, Phila. & Wash'gton.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co. Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., Boston, Mass.
Halk & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

Pile Drivers.
Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast Henry B. & Co., Philadelphia.
Saunder's Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c., *Makers of.*
McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas. *Makers of.*
Cumberland Nail & Iron Co., Phila, Pa
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W Va.
Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.

Planes, *Manufacturers of.*
Stanley Rule & Level Co., N. Y

Plate Bending Rolls.
Schneekloth, H. A., 530 W. 28th St., N.Y

Plate, Iron and Steel, *Mfrs of*
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa
Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.

Polishing Machines.
Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
La Massena, C. E. & Co., Newark, N.J.

Post Hole Diggers.
Kohler, F. E. & Co. Canton, O.
Wister, L & R, & Co., Philadelphia, Pa.

Poultry Nettings.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Wks. Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
Laflin & Rand Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y.

Power Hack Saws.
Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Jenkins & Lingle, Bellefonte, Pa.

Presses, Dies, &c.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Stark Mch & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn

Presses, Power, *Makers of.*
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct,
Merriman, A. H., Meriden
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
Keystone Clutch Mch. Wks., Phila., Pa.

Pulverizing Mill.
Bradley Fertilizer Co., Boston, Mass.

Pumping Machinery.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Hooker-Colville Steam Pump Co., Chicago, Ill.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa
Valley Pump W'ks, Easthampton, Mass
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, *Makers of.*
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Mast, Foos & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Henderer, A. L., Wilmington, Del.
Schneekloth, H. A., 530 W. 28th St., N. Y
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
Perry, W. H. & Co., Providence, R. I.
Schwarzenberg Bros. & Co, Cleveland O

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Estey, W. S. 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.

Razors.
Butcher, W. & S., 135 Duane St., N. Y.
Curley, J. & Bro., 6 Warren St., N. Y.
Electric Cutlery Co., 113 Chambers, N.Y
Schmitz, E. Lothar, 92 Reade St., N. Y.
J. R. Torrey Razor Co., Worcester, Mass

Reels.
Hendryx, A. B. Co., New Haven, Conn

Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.

Rivets.
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Troy, N. Y.
Cobb & Drew, Plymouth, Mass.
Henderson, Jas. S., 165 Greenwich, N.Y.
Plymouth Mills, Plymouth, Mass.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Rock Drills.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Rand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd, Co., Youngstown, O.
Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning F'dry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd, Co., Youngstown, O.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh Pa.

Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Cincinnati Corrugating Co., Piqua, O.
Johns, H. W Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N.Y

Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa.

Rubber Goods.
Canfield, H. O., Bridgeport, Conn.

Rules, *Manufacturers of.*
Keuffel & Esser Co., 127 Fulton St., N.Y
Lufkin Rule Co., Saginaw, Mich,
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Pullman Sash Balance Co., Rochester, N. Y.
Vanderbilt Sash Balance Co., Canandaigua, N. Y.

Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.
Cincinnati Corrugating Co., Piqua, O.

Sash Fasteners.
Wooster, F. V., Boston, Mass.

Sash Locks.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Portable Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.

Saws, *Makers of.*
Disston, Henry & Sons, Phila., Pa.
Hiles, C. A. & Co., 336-338 Carroll Ave Chicago, Ill.
National Saw Co., 96 Reade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Kohler, F. E. & Co., Canton, Ohio.
Taintor Mfg. Co., 84-86 Chambers, N

Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N.Y

Scrapers, Road.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.

Screens, Coal and Ore.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Screens, Door and Window.
Queen Anne Screen Co., Burlington, Vt.

Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Capitol Mfg. Co., Chicago, Ill.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.

Screws, *Makers of.*
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
National Screw & Tack Co., Cleveland, Ohio.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls N.Y

Scythe Stones and Whetstones.
Pike Mfg. Co., Pike Stat'n, N. H.
Cleveland Stone Co., Cleveland, O.

Shafting, *Makers of.*
Cresson, Geo. V., Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Fitzsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc. Phila. Pa.
Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel,—*Manufacturers of.*
Ætna-Standard Iron & Steel Co. Bridgeport, O.

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Allentown Rolling Mill, Allentown, Pa
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville Pa
Roberts, A. & P. & Co., Phila., Pa.
The Phœnix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn
Heinischs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, *Manufacturers of.*
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh, Pierson & Co., 29 Broadway, N. Y.
Reily, John W., Fort Hunter P.O., Pa.
Singer, Nimick & Co., Ld., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch. A. B. & Co., Peoria, Ill.

Sinks.
Douglas, W. & B., Middletown Conn.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Sickels, Sweet & Lyon, 25 Barc'ay St., N. Y.
Winslow, Sam'l, Skate Mfg. Co. Worcester, Mass.

Skates, Roller.
Henley, M. C., Richmond, Ind.
Winslow, Saml., Skate Mfg. Co., Worcester, Mass

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.

Speed Indicators.
Church & Sleight, 109 Fulton St., N. Y.

Spelter.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford Conn.
Rogers & Hamilton Co., Waterbury, Conn.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y

Springs.
American Spiral Spring Co., Pittsburgh, Pa.
Cary, Alanson, 240-242 W. 29th St., N.Y
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y
Morgan Spring Co., Worcester, Mass
Nourse, Fred. Co., 315 to 319 E. 22d St., N. Y.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Bardsley, J., 149 & 151 Baxter St., N.Y.
Chicago Spring Butt Co. Chicago, Ill.
Pullman Sash Balance Co., Rochester N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Spring Keys and Cotters.
Whitman & Barnes Mfg. Co., Syracuse N. Y.

Sprinklers.
Smith, Oliver A., Clarkston, Mich.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St. New York

Stamping Works.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co. Binghamton N.Y

Steam Gauges.
Ashcroft Mfg Co., 111 Liberty St., N.Y
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., *Makers of*
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Camden, N.J.

Steam Separators.
Goubert Mfg. Co., 32 Cortland St N. Y.
Harrison Safety Boiler Wks. Phila. Pa

Steel Balls.
Grant Anti-Friction Ball Co., Fitchburg, Mass

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.

Steel Figures and Alphabets.
Krogarud, W., 61 Fulton, N. Y.

Steel Importers.
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 91 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Ætna-Standard Iron & Steel Co., Bridgeport,
Bethlehem Iron Co., S. Bethlehem, Pa
Boker, Hermnan & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Elken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 91 John St., N. Y.
Jessop, Wm. & Sons, Sheffield. England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa
Moorhead-McCleane Co., Pittsburg Pa
Moss, F. W., 83 John N. Y
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Reily, J. W., Fort Hunter P. O., Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co. High Bridge, N.J
Wordlaw, S. & C., Sheffield, Eng
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn

Steel, *Manufacturers' Agents.*
Barnes, C. K. & Co., Philadelphia, Pa
Corning, Edw, & Co., 29 B'way, N. Y.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, *Manufacturers of.*
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville Pa
Riverside Iron Wks., Wheeling, W. Va

Steel, Tool.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.

Steel Wheels.
Lilienberg, M. N., 150 Broadway, N. Y.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill
Croissant, M., Albany, N. Y.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunder's Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y

Stove Pipe Thimbles.
Cheney, S. & Son Manlius, N. Y

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse N. Y.

Strops.
Electric Cutlery Co. 113 Chambers, N.Y
J. R. Torrey & Co., Worcester, Mass.

Stropping Machines.
Schmitz, E. Lothar, 92 Reade St., N. Y.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co. La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation. Boston, Mass
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland O.
Phillips, E. & Sons, South Hanover.
Plymouth Mills, Plymouth, Mass.
Trafant, W. E., Whitman, Mass.

Taps and Dies.
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila.

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tin Plate Machinery.
Lloyd Booth Co., Youngstown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St.,

Tire Upsetters.
Butts & Ordway, Boston, Mass,

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N.Y.

Tools.
Britton, Horace E., Stoughton, Mass.
Brown, R. H. & Co., New Haven, Conn.
Frasse Co., 19 Warren St., New York.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.

Tools, Blacksmith and Wheelwrights.
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R. Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasolene.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
Standard Lighting Co., Cleveland, O.

Transom Lifters.
Wollensak, J. F. Chicago, Ill.

Trucks, *Manufacturers of.*
Berger Bros., Philadelphia, Pa.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co. Lansing Mich.

Tubes, Seamless Drawn Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.
Leng's John S. Son & Co., 4 Fletcher St., New York.
Mannesmann Tube Co. Ltd., Landore, England.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills. *Makers of.*
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 56 John N. Y.
Mason Regulator Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vises.
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Wheelbarrows.
Akron Tool Co., Akron O.
Amer. Steel Scraper Co., Sidney, Ohio
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Sweatt Mfg. Co., Minneapolis, Minn.

Whips.
American Whip Co., Westfield, Mass,

Window Cord, *Makers of.*
Samson Cordage Works, Boston, Mass

Wire, *Manufacturers of.*
Amer. Spiral Spring Co., Pittsburg, Pa
Consolidated Steel & Wire Co., St. Louis, Mo,
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven. Conn.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co. Worcester, Mass

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Wks. Milwaukee Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.
Higganum Hdw. Co., Higganum, Conn
King, J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.

Wire Door Mats.
Hartman Mfg. Co., Elwood City, Pa.
Horrock, Joshua, 45 Cliff St., N. Y.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods, *Manufacturers of.*
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Whitman & Barnes Mfg. Co., Syracuse, N. Y.
Wickwire Bros, Cortland, N. Y.
Williamson, C. T. Wire Novelty Co., Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester Mass.
Waterbury Mch. Co., Waterbury, Conn

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wire Nails.
Consolidated Steel & Wire Co., St. Louis, Mo.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
Phillips, E. & Sons, South Hanover Mass
Phillips, Townsend & Co., Phil., Pa.
Plymouth Mills, Plymouth, Mass.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City

Wire Rods, Steel.
Consolidated Steel & Wire Co., St. Louis, Mo.
New Castle Wire Nail Co., New Castle Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Wire Rope, Iron and Steel
Makers.
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco
Hasard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Wood-Working Machinery.
Seneca Falls Mfg. Co., Seneca Falls, N.Y

Wrenches, *Manufacturers of.*
Bemis & Call Hardware & Tool Co Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn
Capitol Mfg. Co., Chicago, Ills.
Central Iron & Steel Co., Brazil, Ind.
Coes Wrench Co., Worcester, Mass.
Keystone Mfg. Co., Buffalo, N. Y.
Portsmouth Wrench Co., Boston, Mass
Trimont Mfg. Co., Roxbury, Mass.
Williams, J. H., Brooklyn, N. Y.

Wringers.
Colby Wringer Co., Montpelier, V

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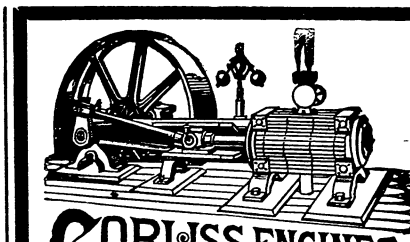
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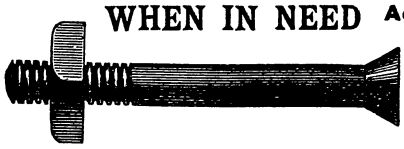
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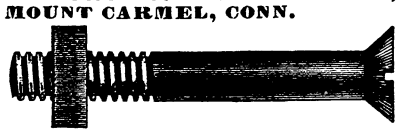
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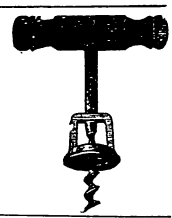
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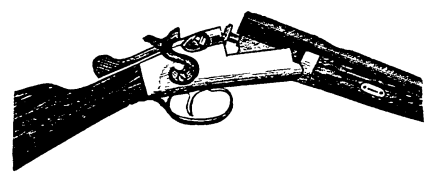
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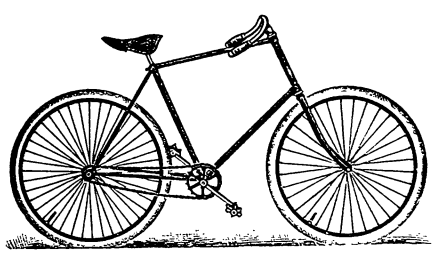
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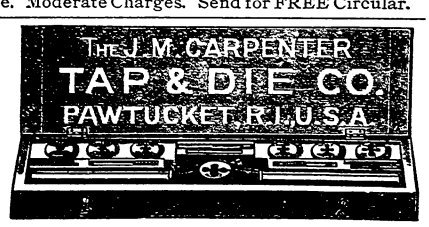
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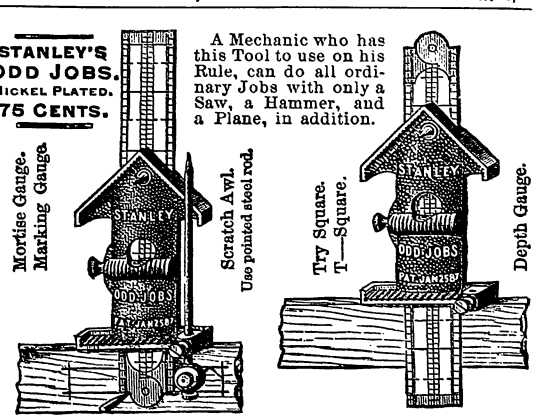
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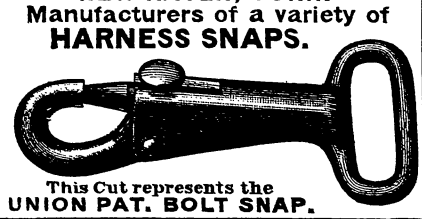
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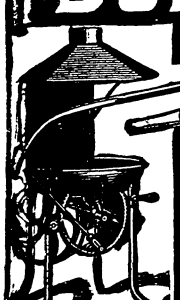
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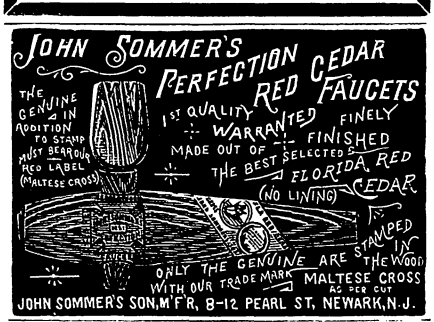
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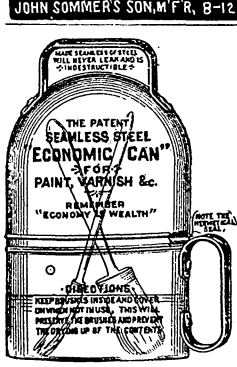

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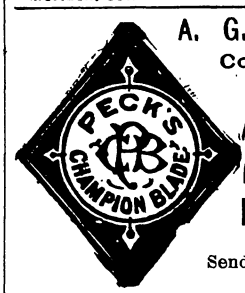


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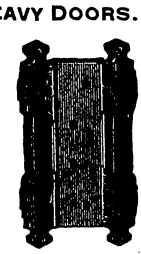
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Vol. LII: No. 16. *New York, Thursday, October 19, 1893.* $4.50 a Year, including Postage. Single Copies, Ten Cents.

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Advertising and Subscription Rates " 739

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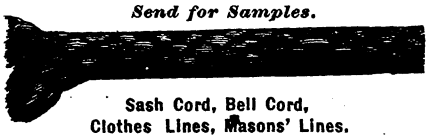
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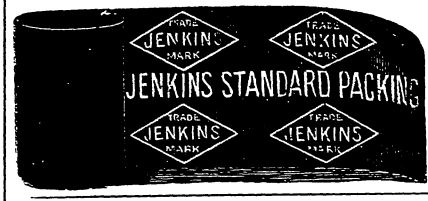
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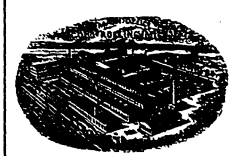


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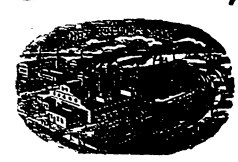
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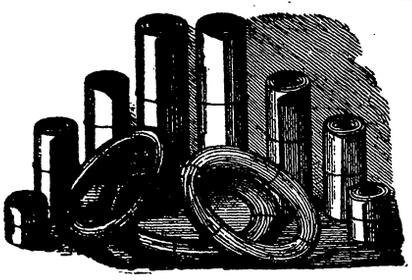
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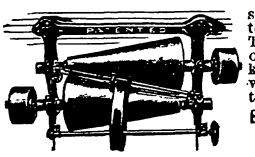
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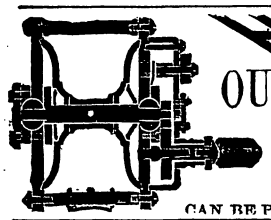
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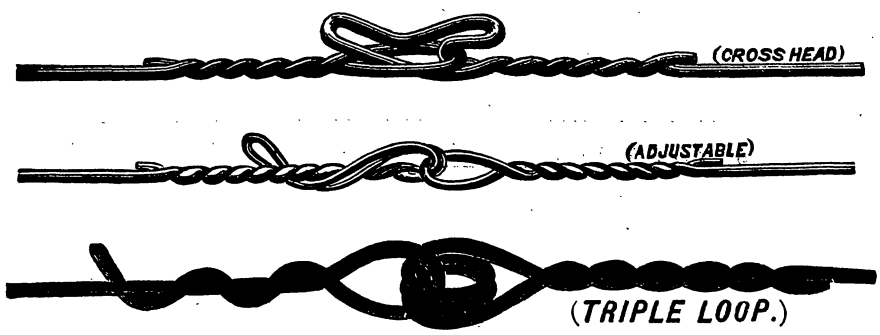
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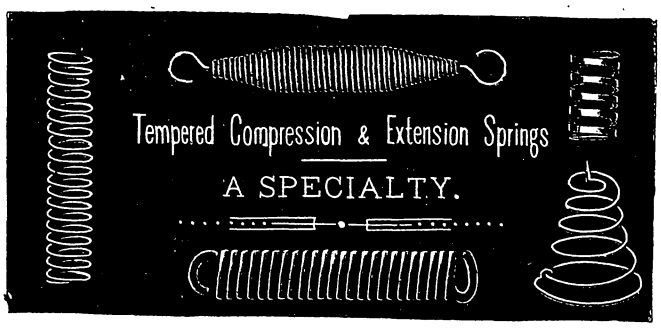
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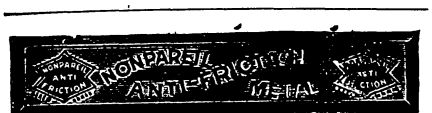
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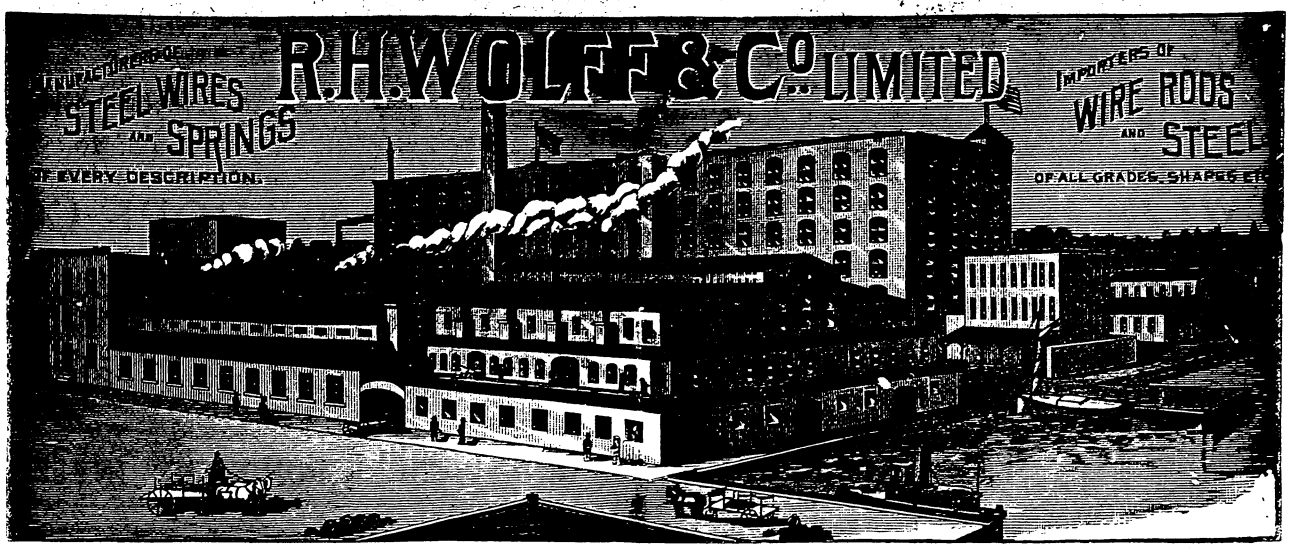
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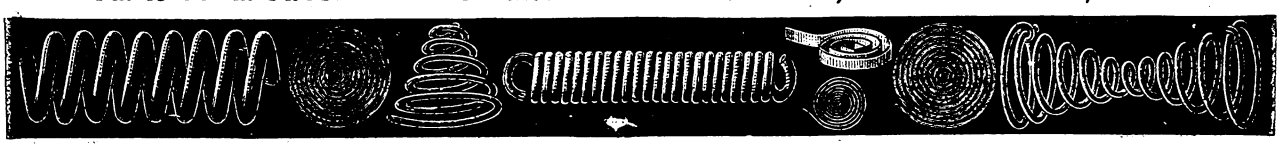
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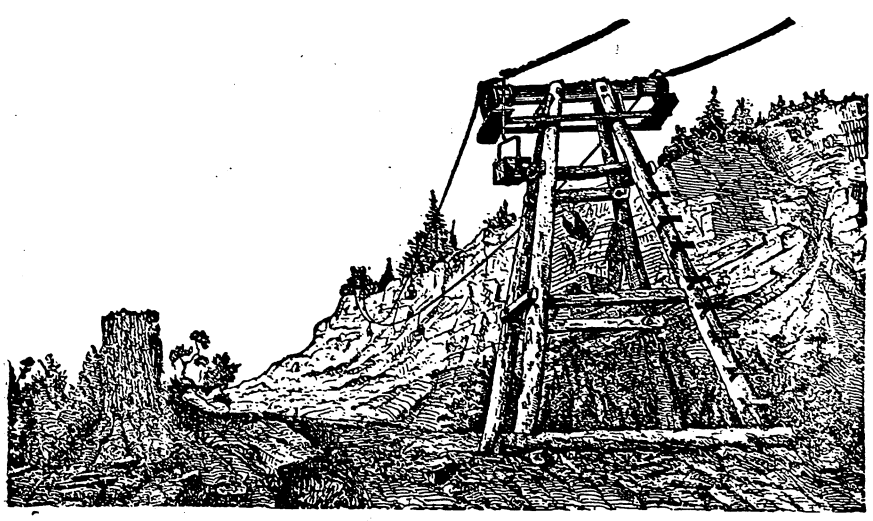
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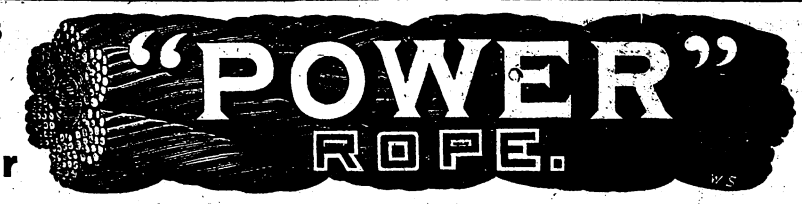


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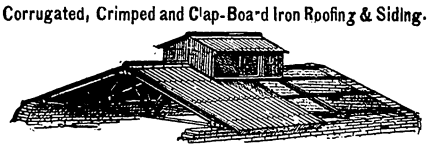
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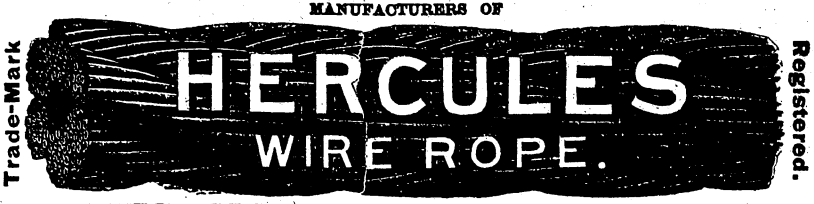
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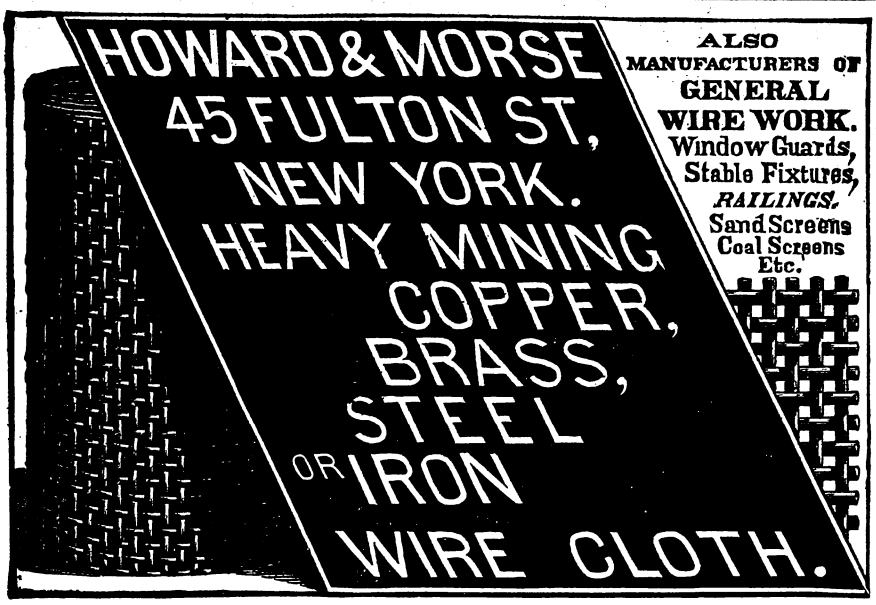


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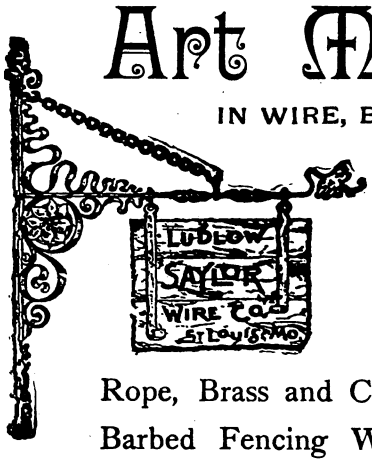
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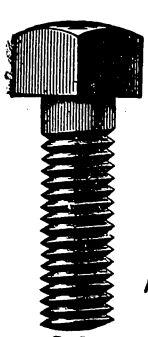
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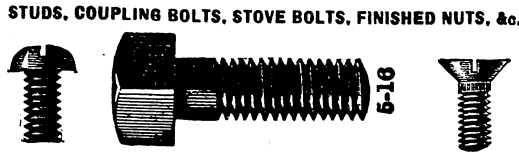
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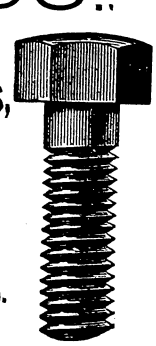


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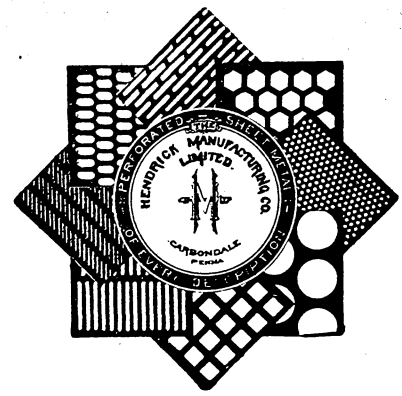
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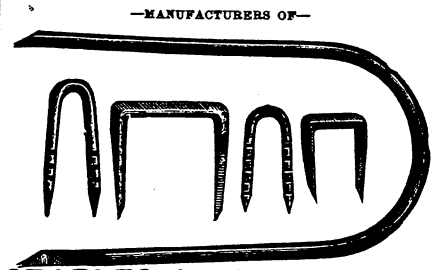


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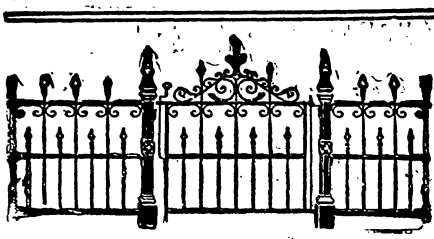
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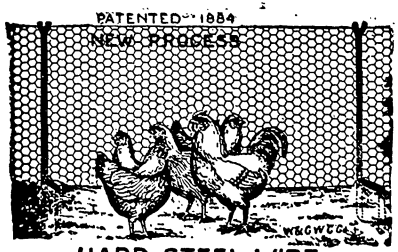
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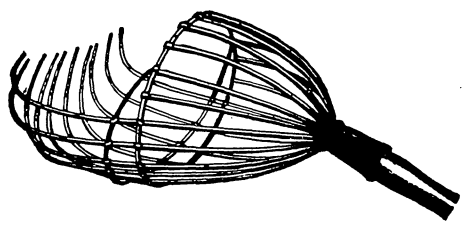
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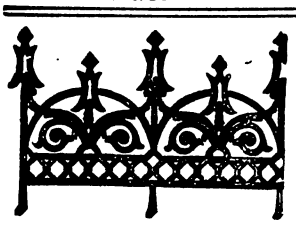
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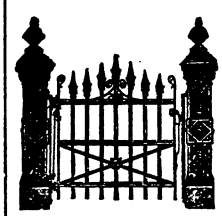
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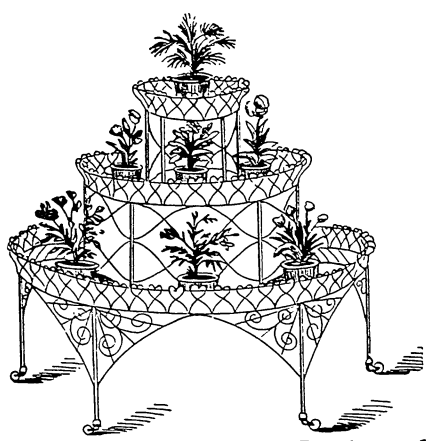
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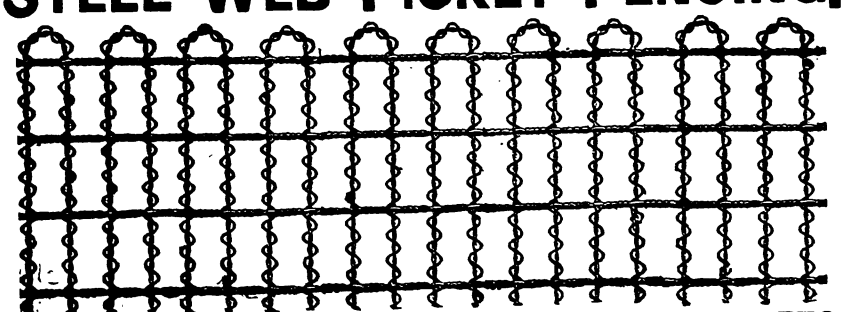
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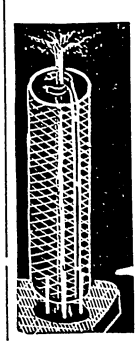
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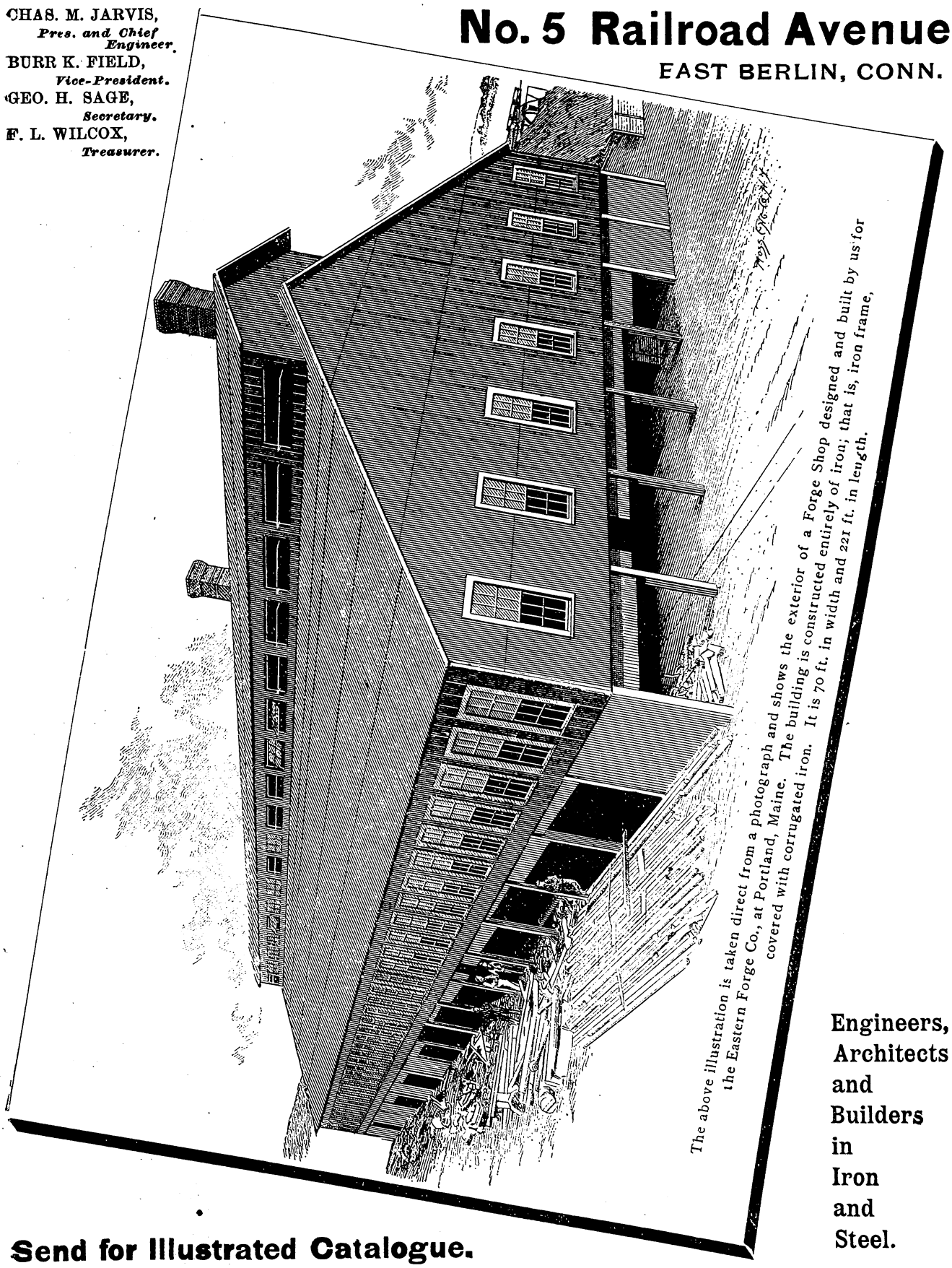
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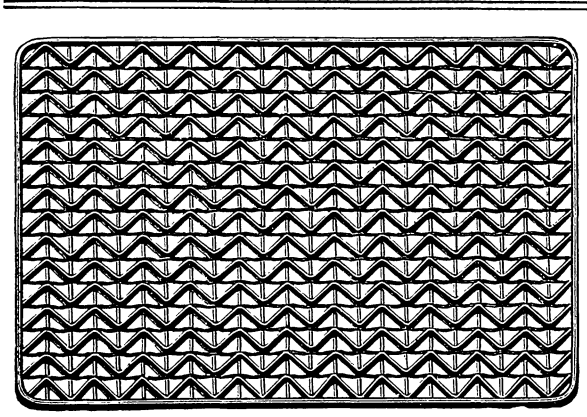
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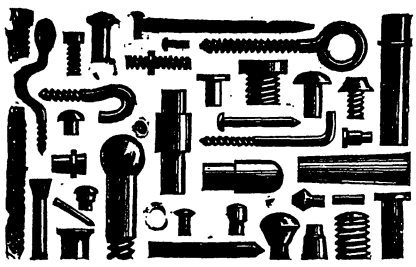
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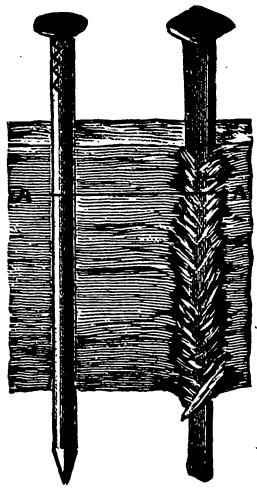
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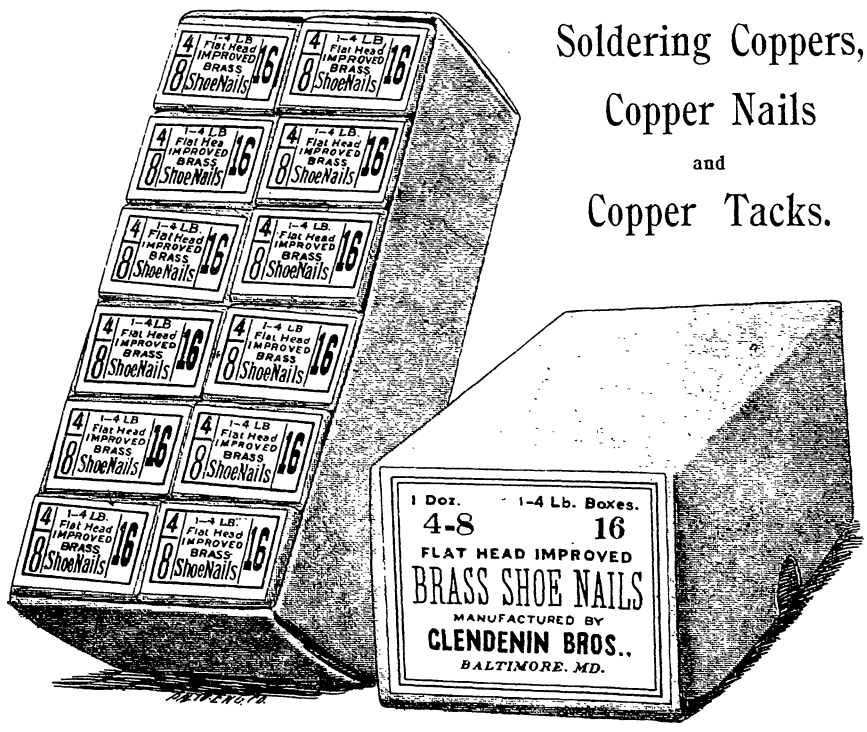
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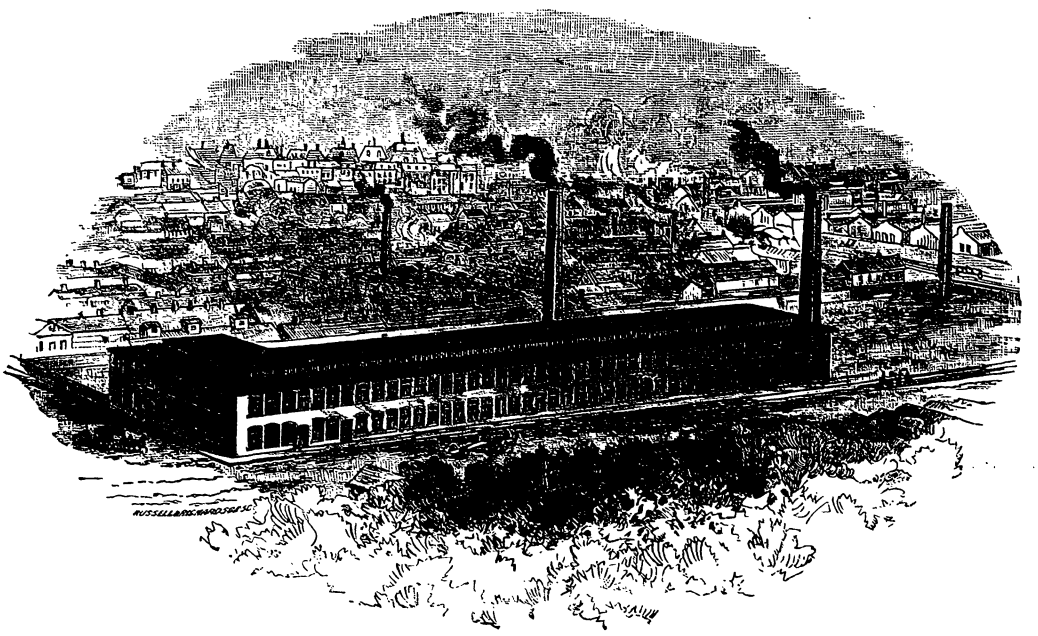
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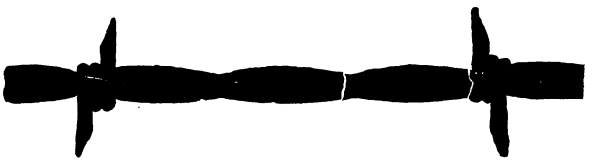
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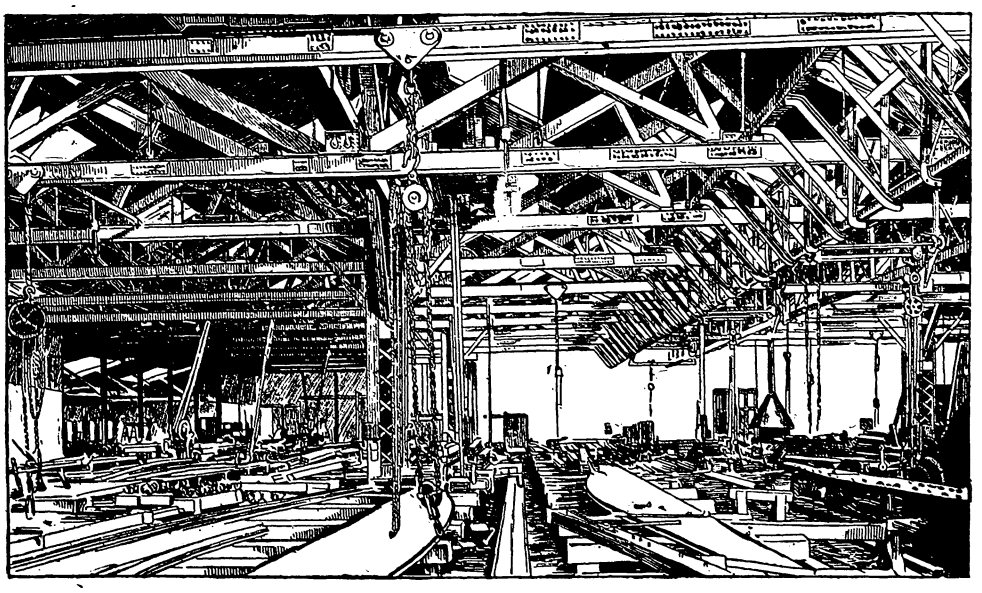
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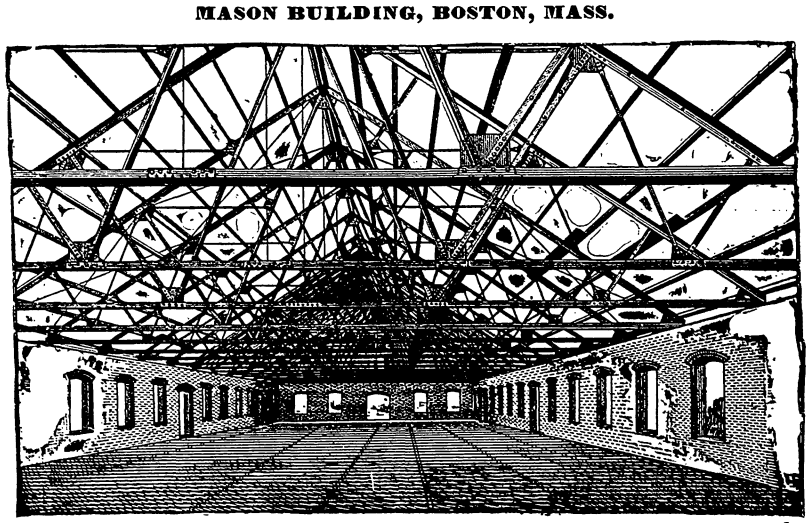
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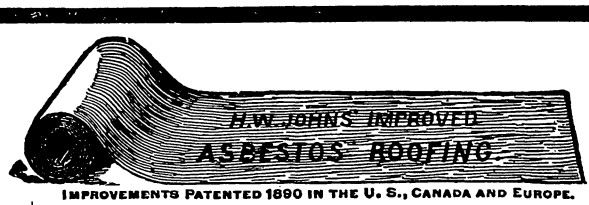
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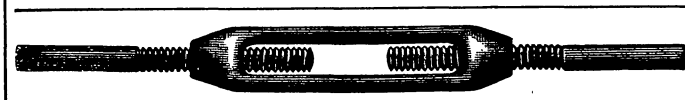
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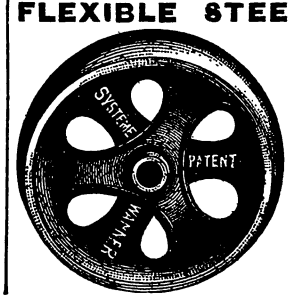
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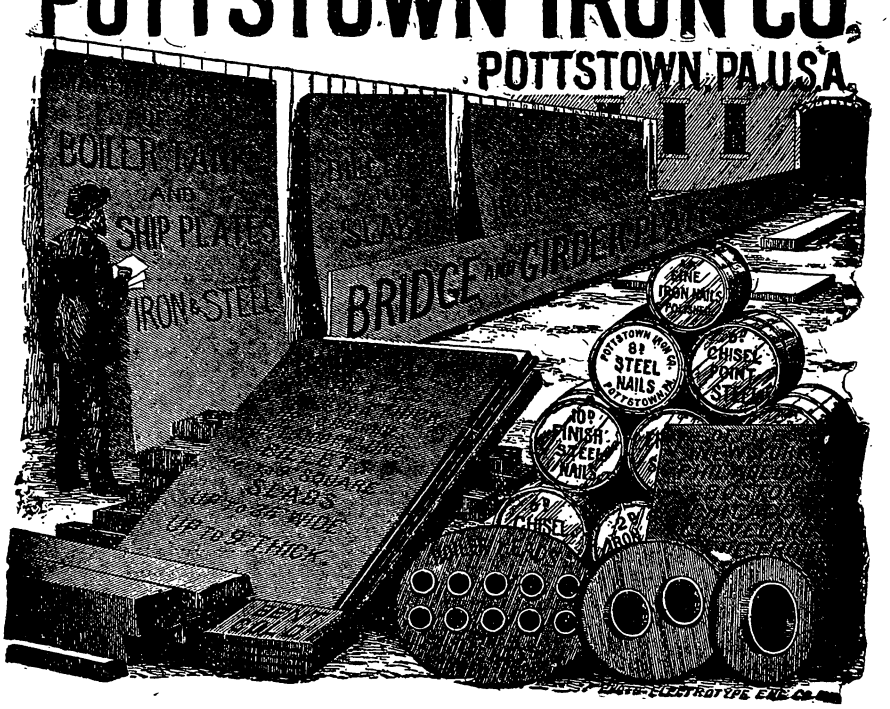
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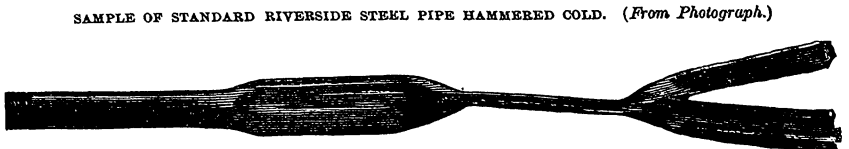
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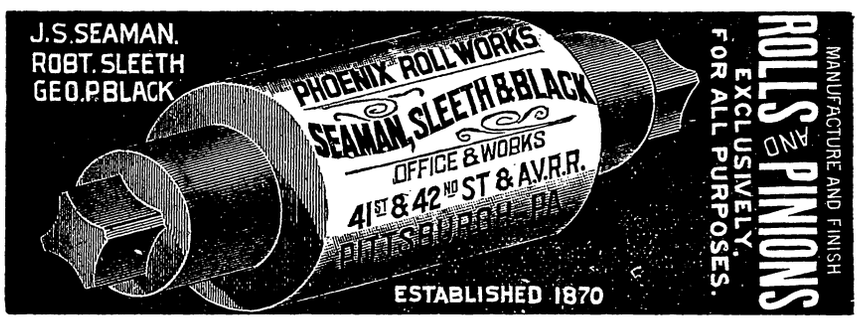
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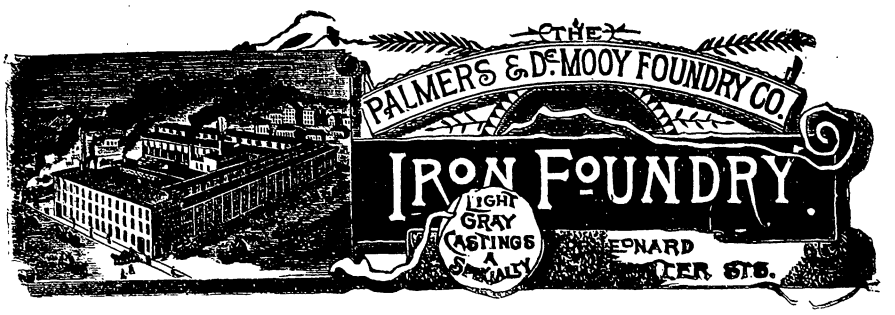


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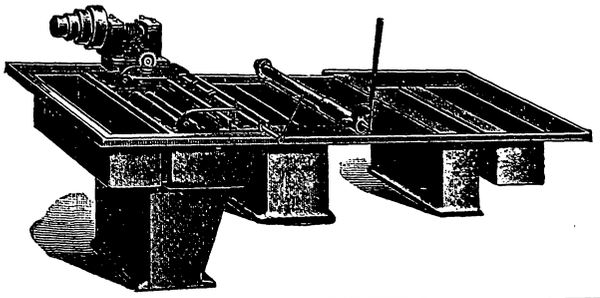
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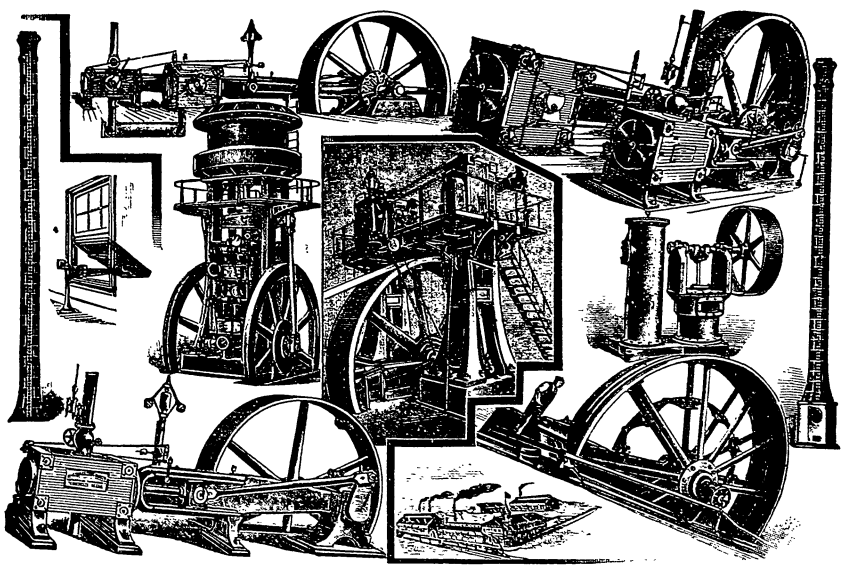
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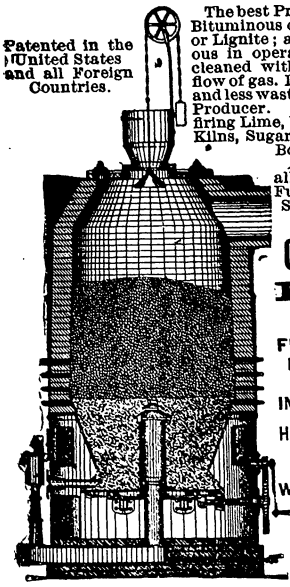
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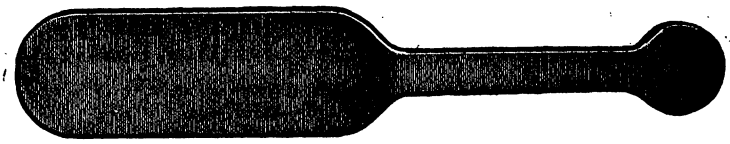
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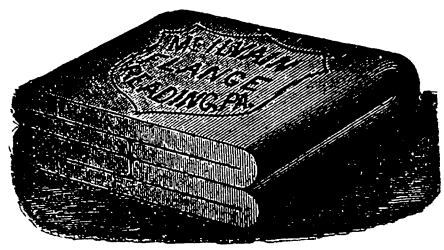
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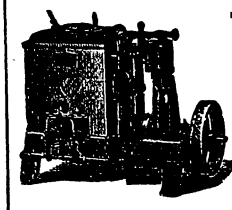
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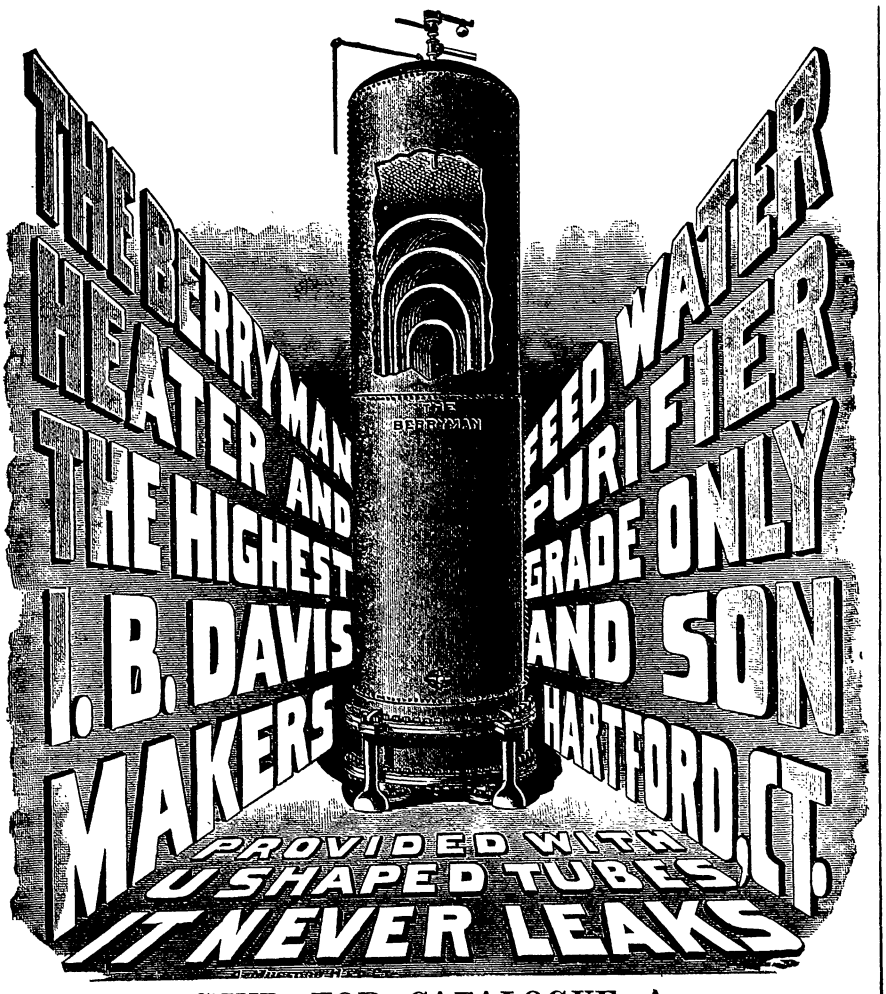
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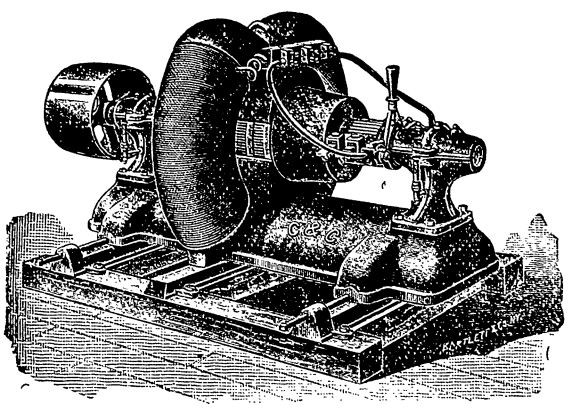
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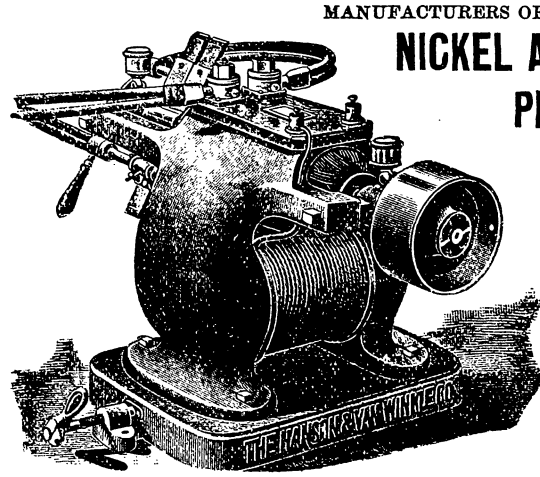
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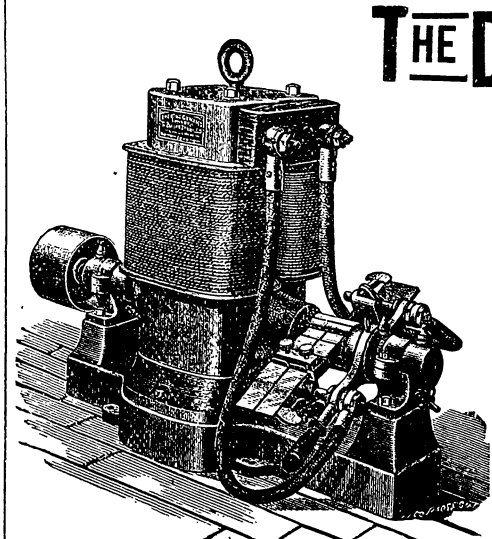
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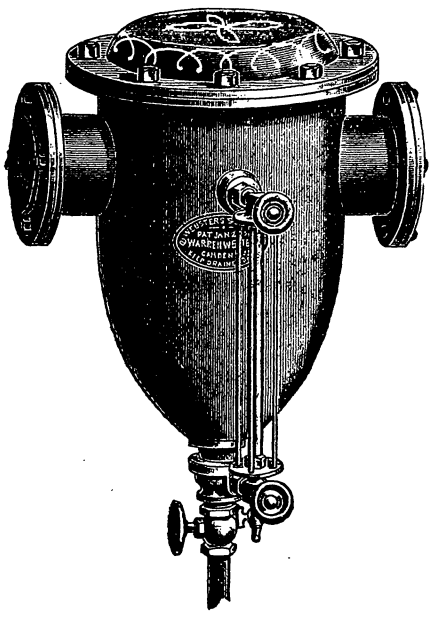
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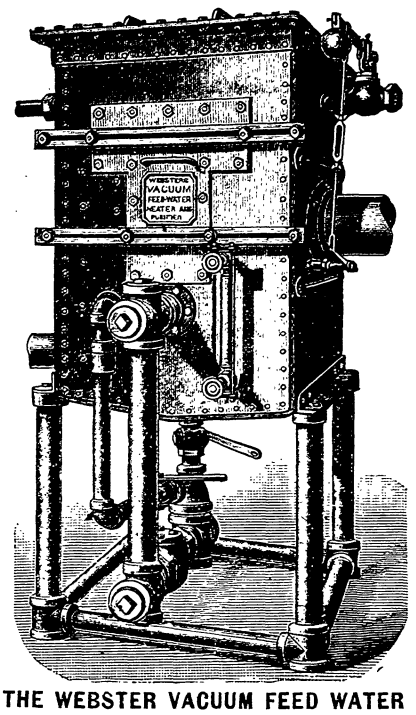
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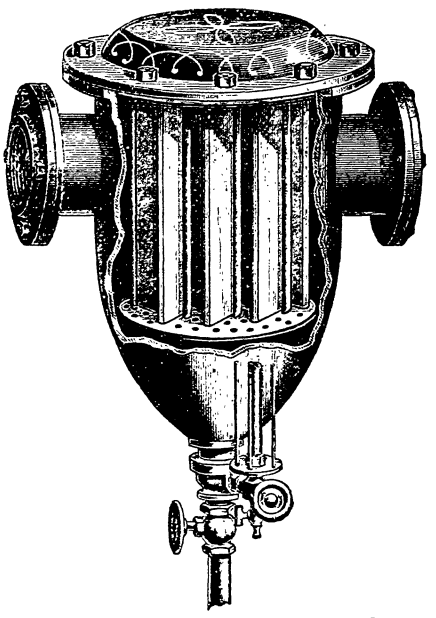
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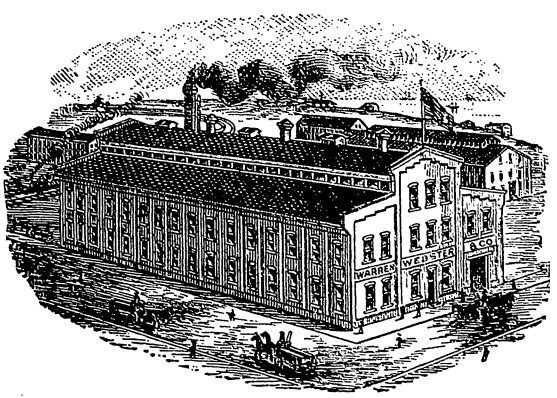
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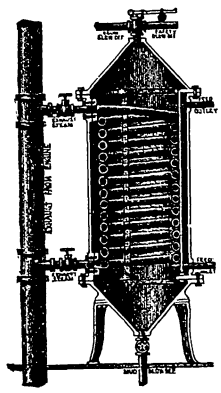
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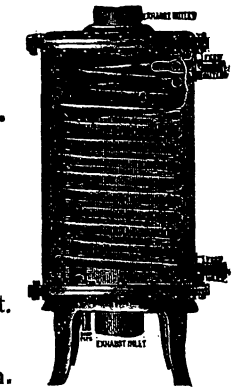
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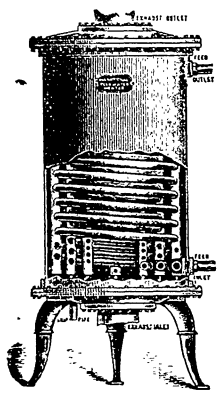
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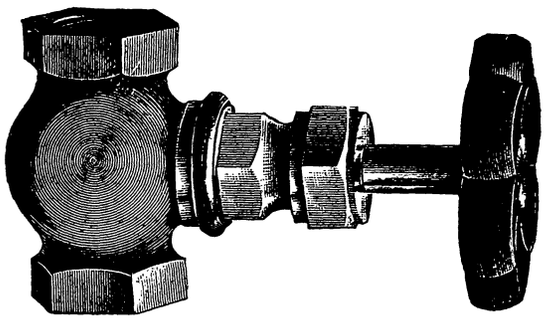
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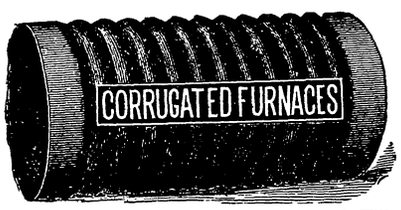
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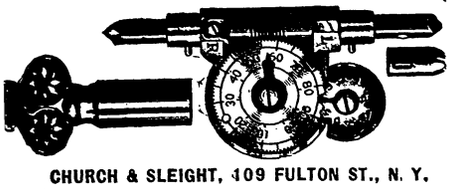


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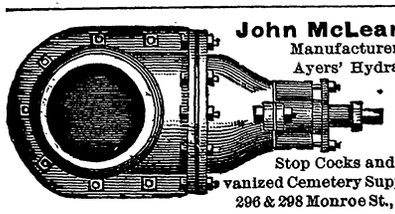
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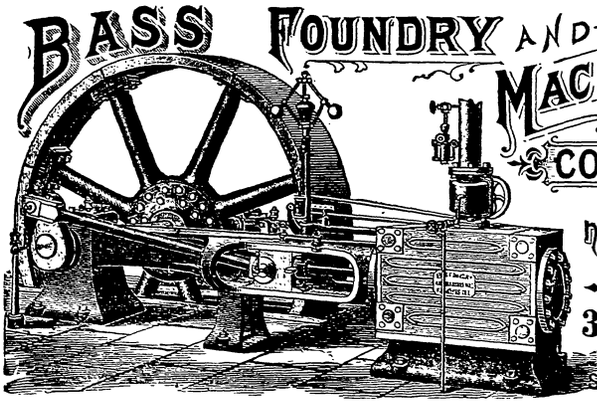


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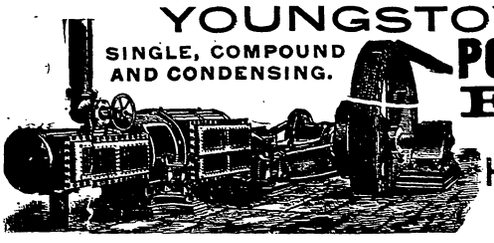
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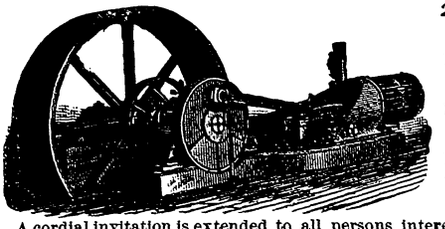
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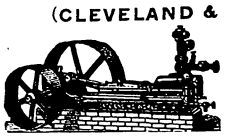
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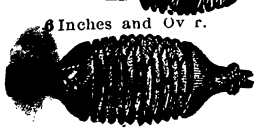
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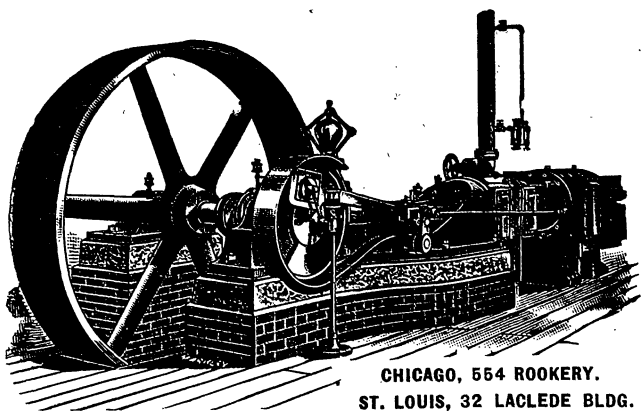


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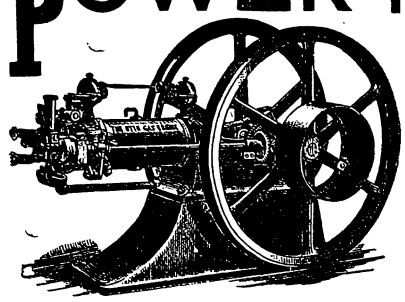
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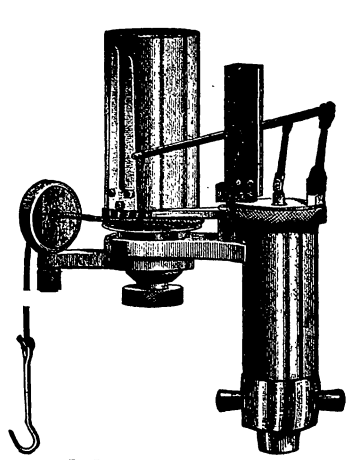
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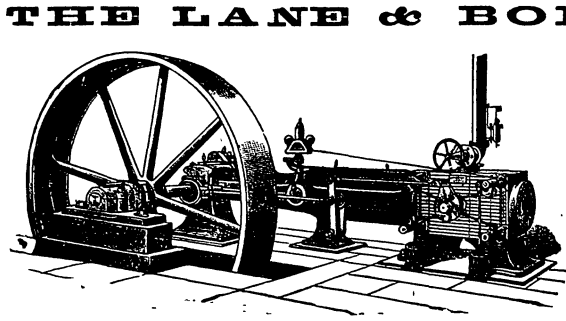
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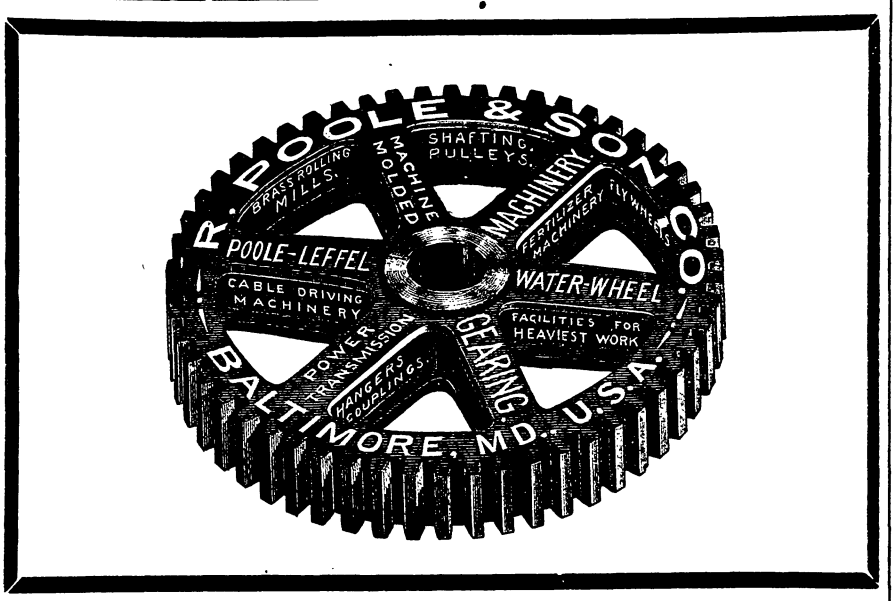
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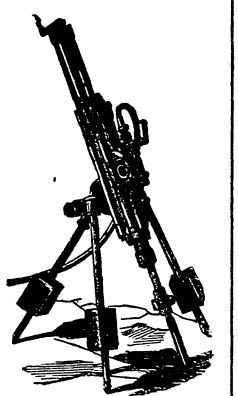
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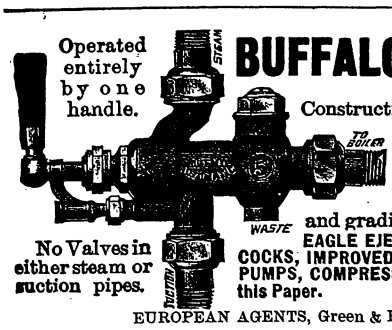
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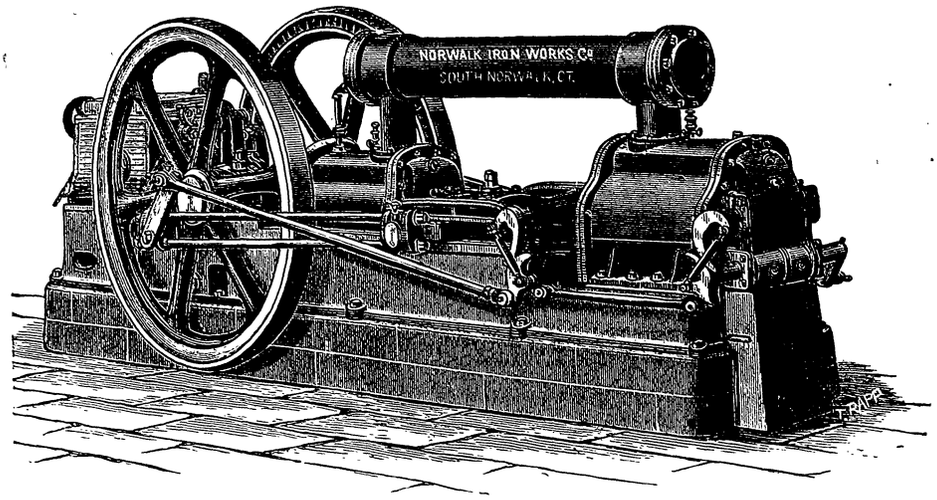
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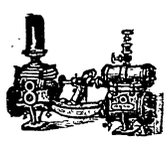
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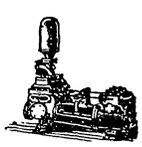
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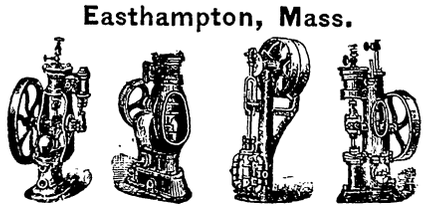
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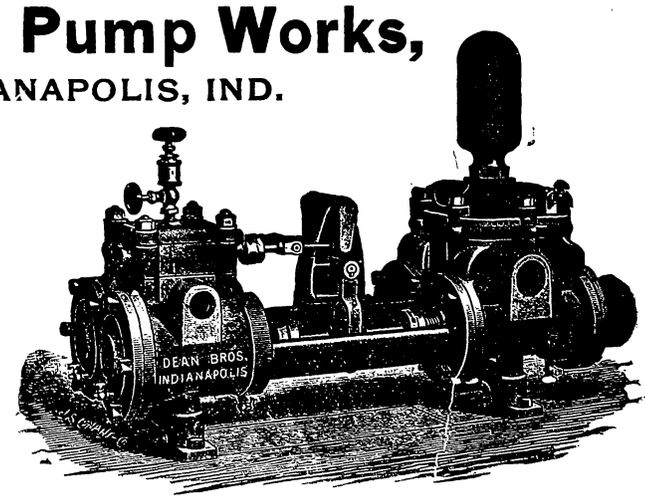
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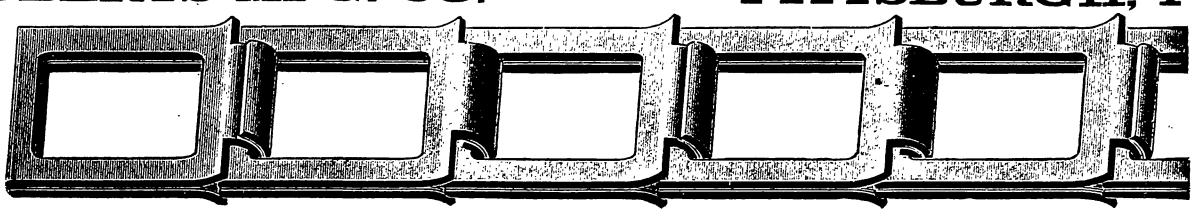
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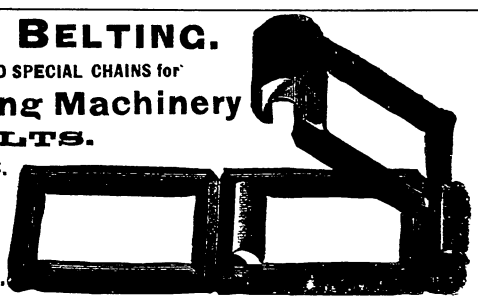
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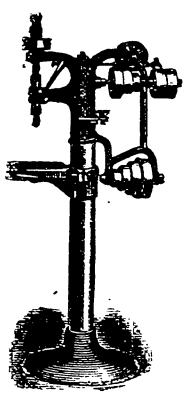
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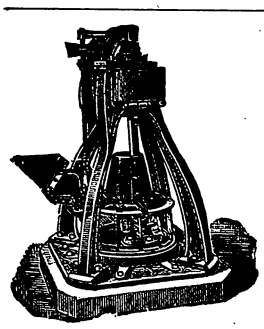
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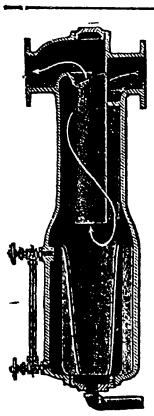
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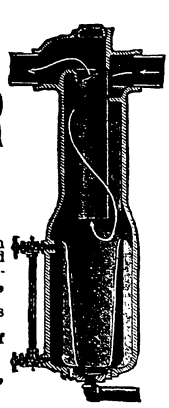
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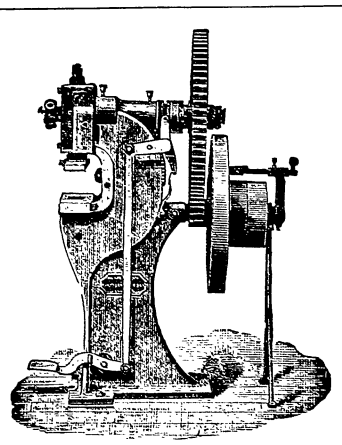
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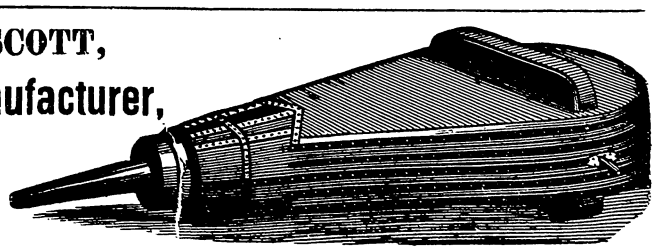
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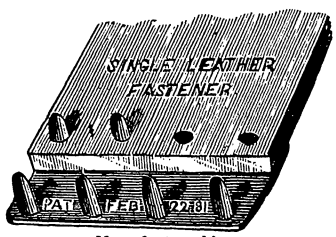
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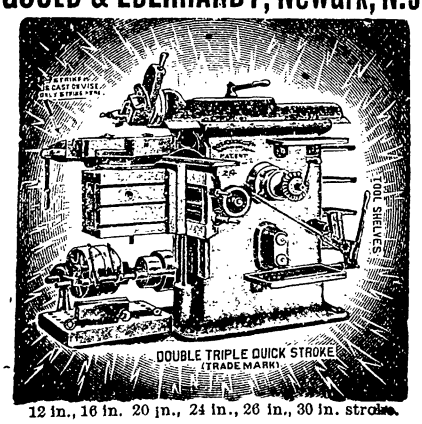
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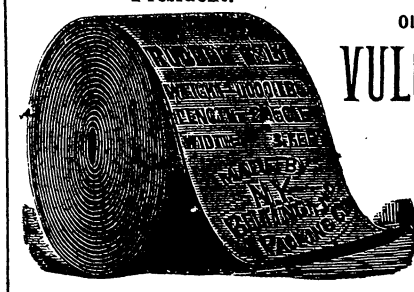
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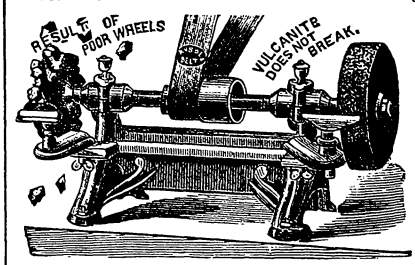
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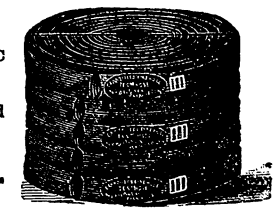
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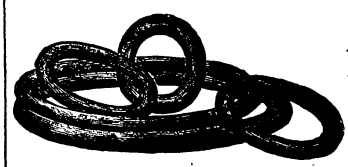
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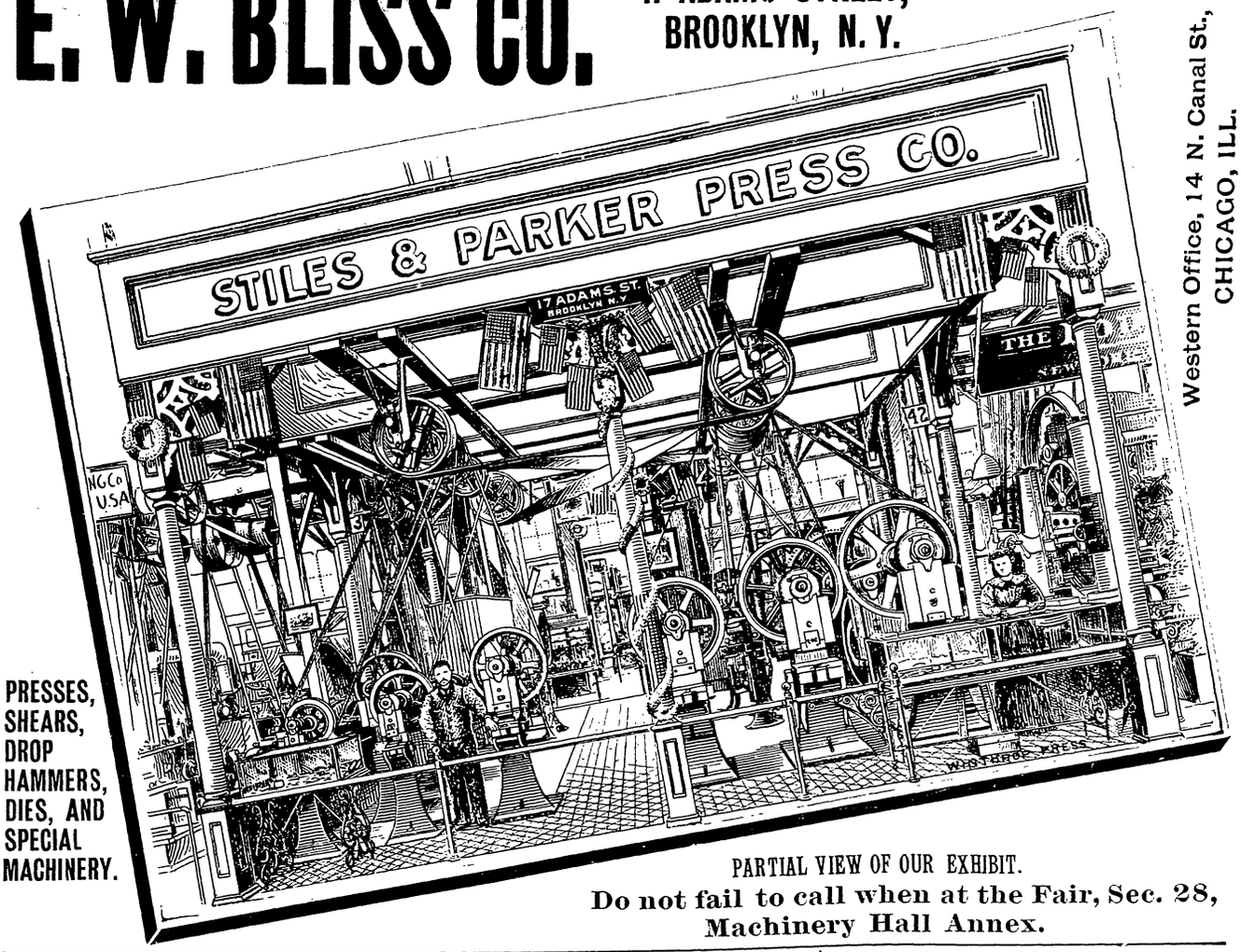
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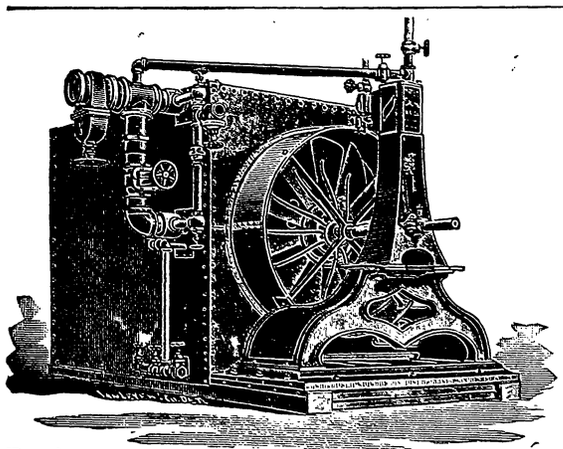
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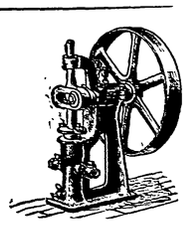
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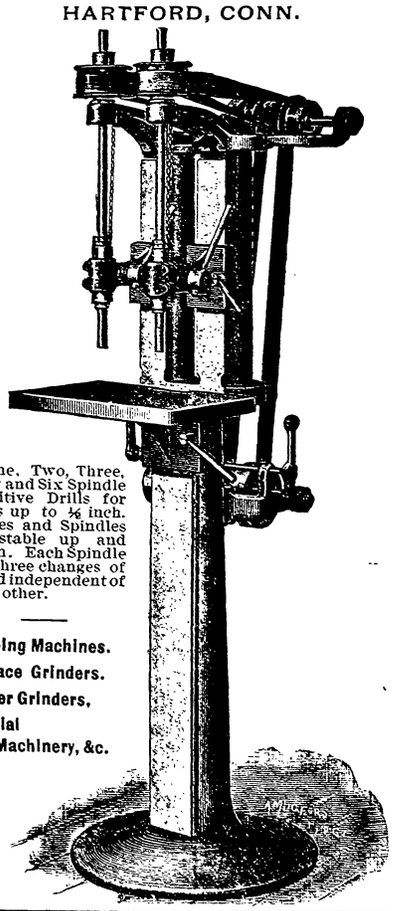
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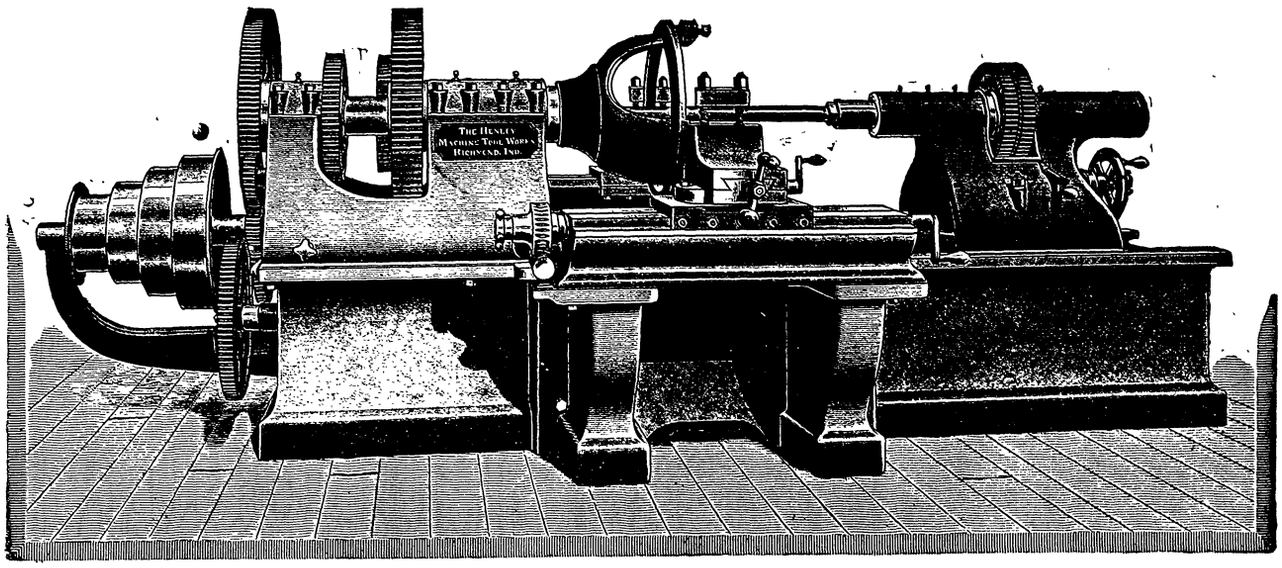
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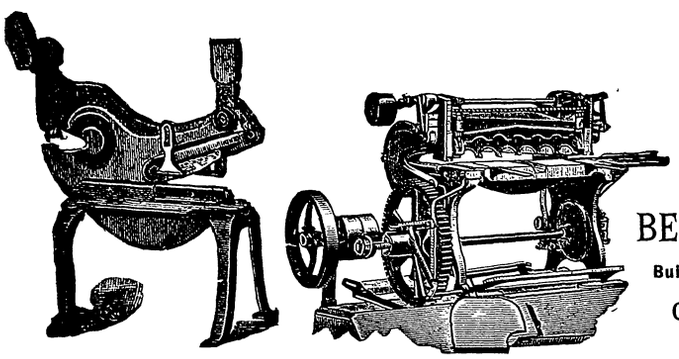
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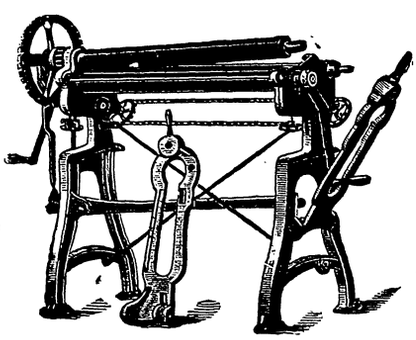
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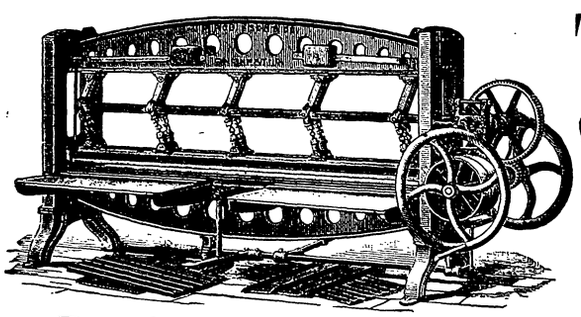
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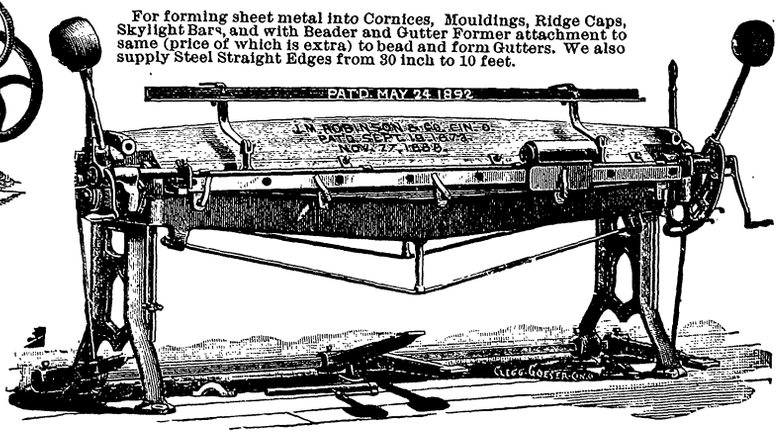
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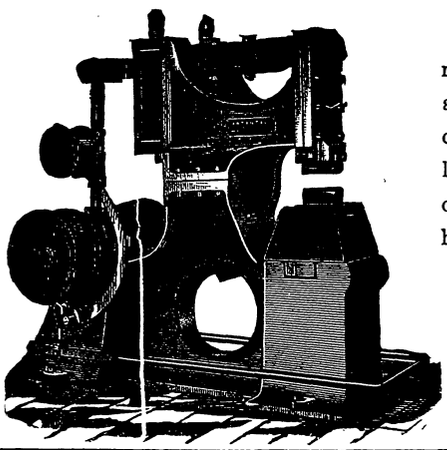
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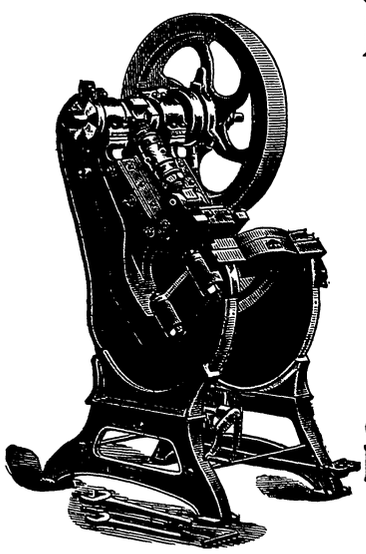
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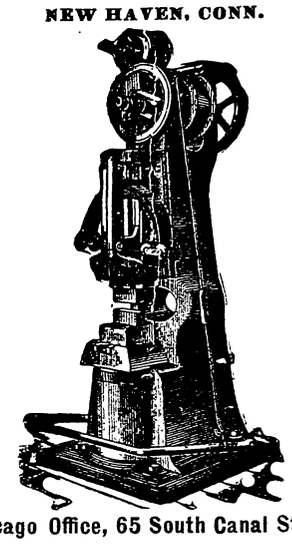
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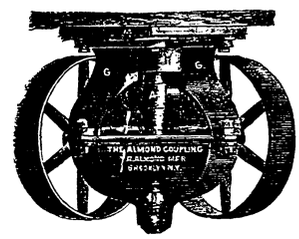
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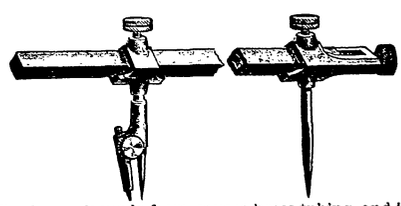
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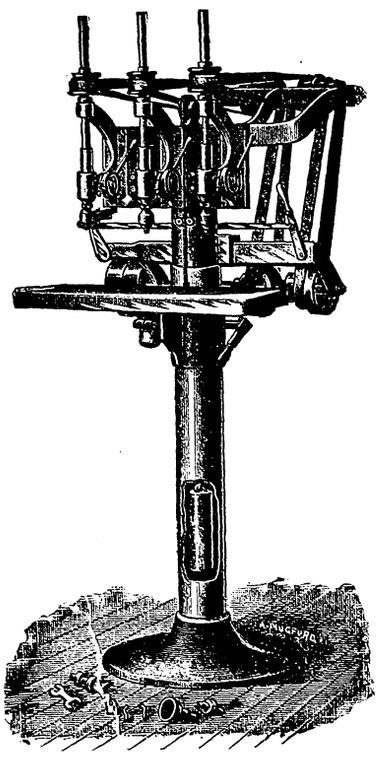
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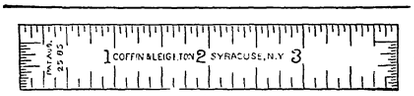
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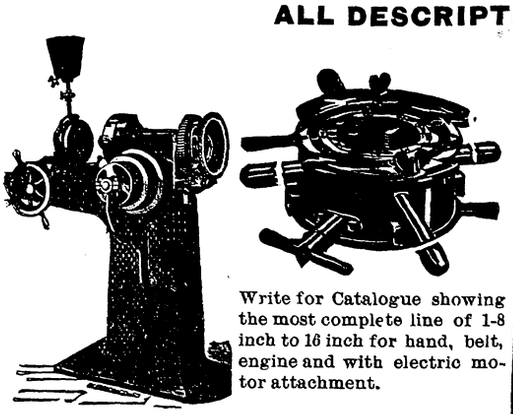
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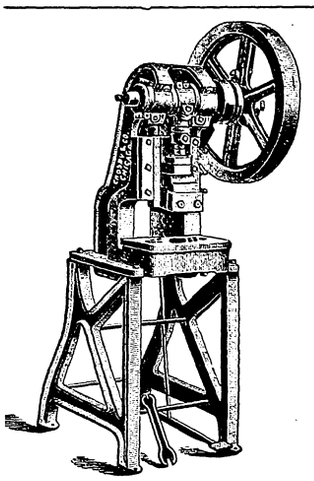
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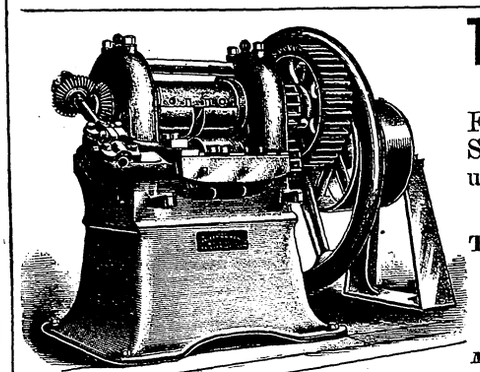
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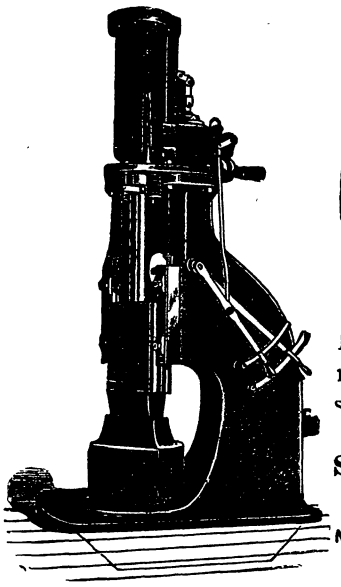


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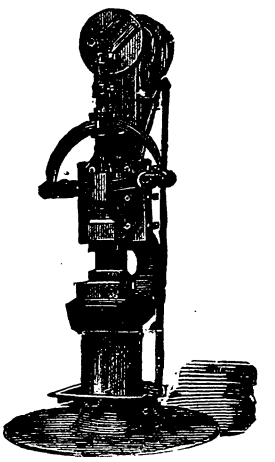
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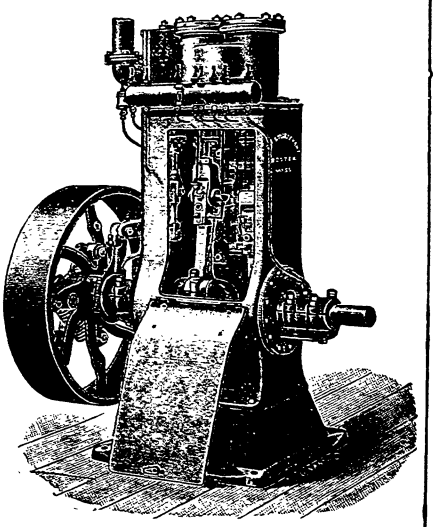
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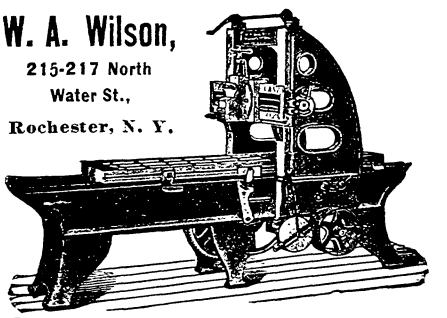
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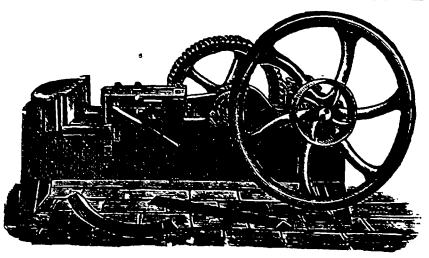
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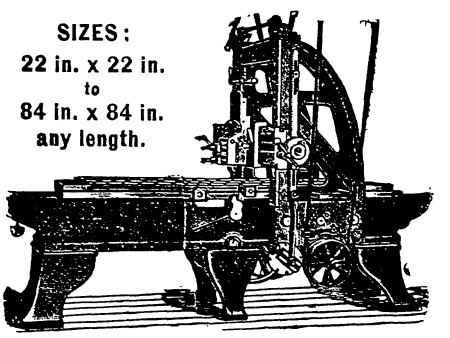
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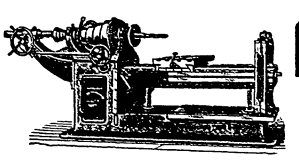
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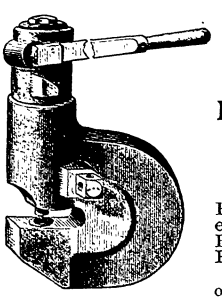
AND OTHER METAL-WORKING MACHINES.



Horizontal Boring and Drilling Machine.

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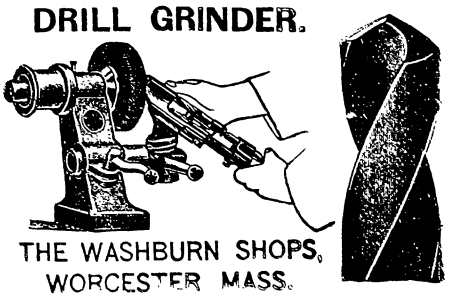
Hydraulic Punches, Screw Punches,

Forged Steel Expanders, Flue Hole Cutters, Boiler Test Pumps and Pipe Vises.

Price-lists and discounts on application.



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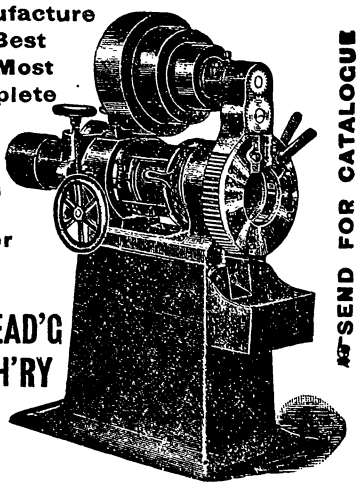
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The Merrill Manufacturing Co.,

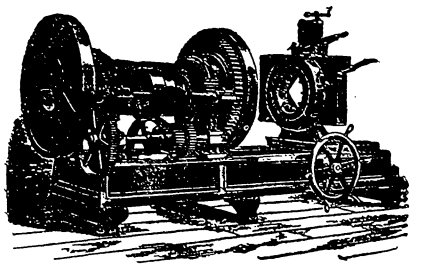
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Manufacture The Best and Most Complete Line of Hand and Power

PIPE THREAD'G MACH'RY IN USE.



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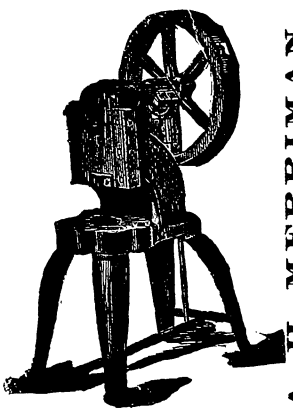


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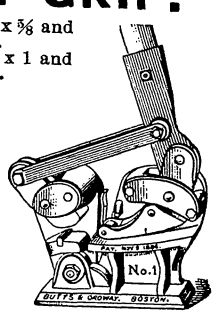
SURE GRIP.

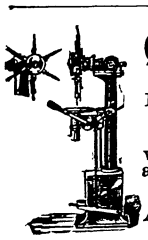
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IS WITHOUT A FAULT. ONE MOTION DOES IT ALL.

Every machine is tested and warranted to give satisfaction. We confidently offer this Upsetter as the best to be had.
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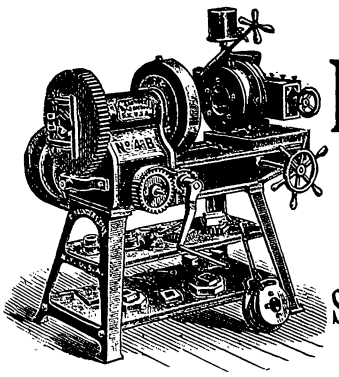
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Six Spindle.
Drills from 1-32 to ½ hole. Speed from 250 to 2000 rev.
Suitable for a large variety of work and is operated with ease and rapidity.

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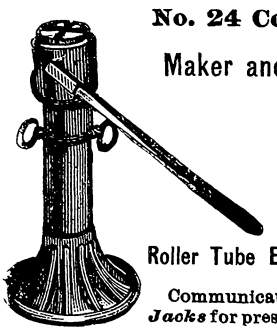
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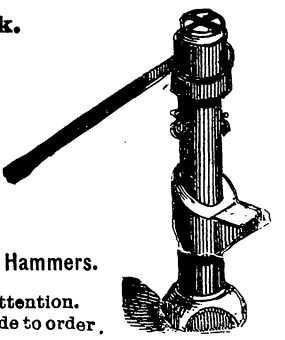
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Hydraulic Jacks AND Punches.



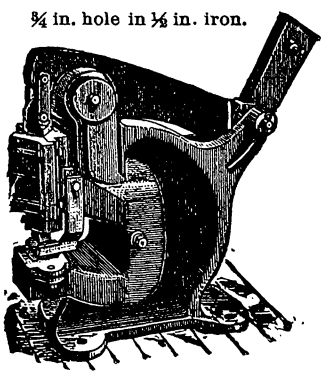
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Communications by letter will receive prompt attention.
Jacks for pressing on Car Wheels or Crank Pins made to order.

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¾ in. hole in ⅛ in. iron.

For Round, Flat, Square and Corrugated Iron.



Portable Hydraulic Beam Punches,

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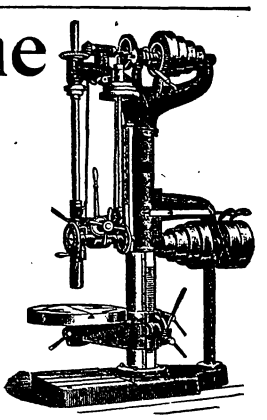
IMPROVED HYDRAULIC JACKS, to raise from 4 to 150 Tons.

Hydraulic Presses, *all styles;* Hydraulic Hand and Power Pumps; Accumulators, &c.

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Those who buy machinery in these times, as even if interest, etc. is added to the investment, the purchase, all things being equal, is still a bargain, for prices on machinery are bound to advance sooner or later. For good machine tools address

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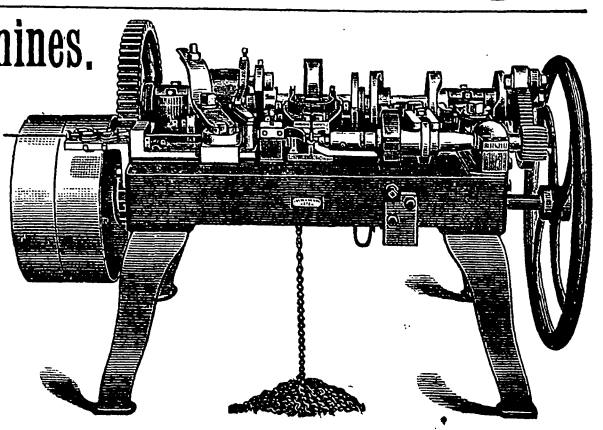
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Entirely automatic, taking the wire directly from the coil and completing chain at the rate of 120 links per minute.

Send for prices.

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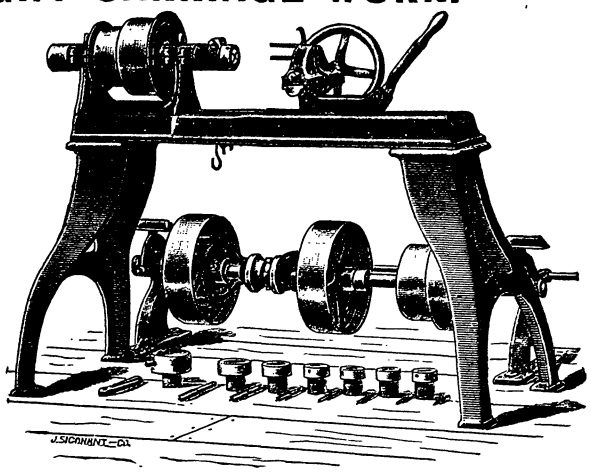
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Makers of the

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If You Wish to Avoid

A Pipe-Threading Die extremely easy of operation by reason of the **proper clearance** of its cutters;

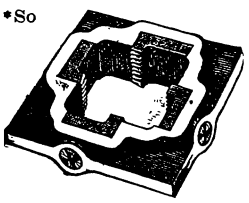
Of surpassing **durability** secured by the accurate and uniform **temper** of said Cutters;

Having Cutters that when dull may be removed in a moment, and **sharpened on a grindstone or emery wheel;**

Of phenomenal **cheapness,** arising from **small first cost** coupled to **excellence** of quality.

If by chance you do not think these points, or the saving of money, objectionable,

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Wire Drawing Machines, Gang Slitters, Power Presses and Dies, Tumbling Barrels, Special Machinery.

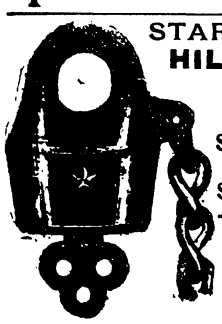
WATERBURY MACHINE CO.,
Waterbury, Conn.

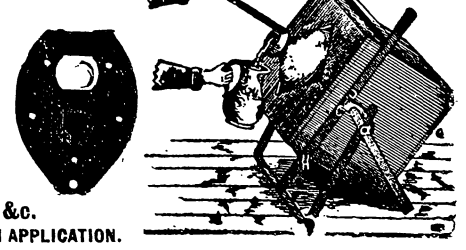
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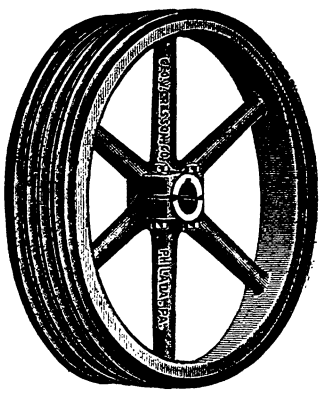




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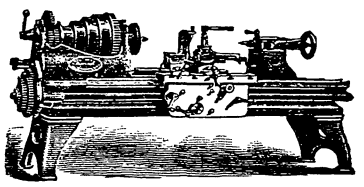
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ROPE WHEELS,

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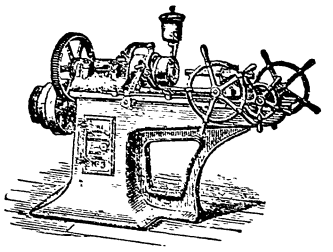
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FOR MAKING CHAMFERED AND TRIMMED NUTS.

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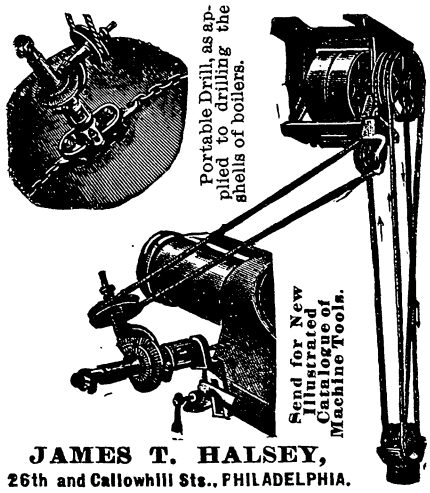
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FRICTION CLUTCHES, SHAFTING, HANGERS, PULLEYS.

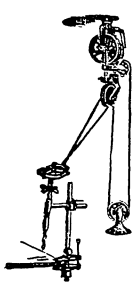
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JAMES T. HALSEY,
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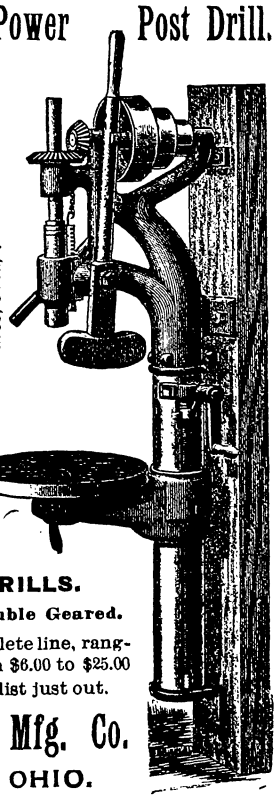


Portable Drilling Machines

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ALBERT M. COLBURN,
4 Wall St., New Haven, Conn.
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Silver's Power Post Drill.

FIG. 727.



Has CUT GEARS, and is a thoroughly first-class tool in all respects. Dia. Column, 4½ in.; Dia. Spindle, 1 3-16 in.; and bored No. 2 Morse Taper; Vertical Travel, 6 in.; Drills to centre 19 in. circle.

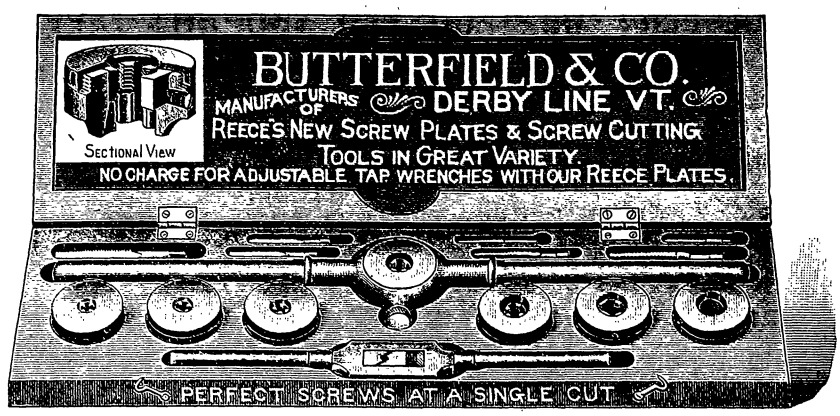
Weight, 325 lbs.; Price, $60.00.

Wheel holding attachment for drilling tires, extra, $5.00.

HAND DRILLS.
Single and Double Geared.

Large and complete line, ranging in price from $6.00 to $25.00 list. New price-list just out.

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We manufacture and keep in stock a full line of chucks for all purposes

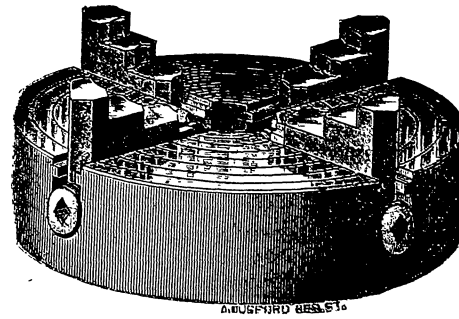
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Reversible Face-Plate Jaws for Use on Lathes from 30 to 72 Inch.
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Special Chucks for Cutting-off Machines. A full line and some new Improvements.

We also make a great variety of special Chucks for holding bicycle parts, valves, fittings and other special shaped pieces.

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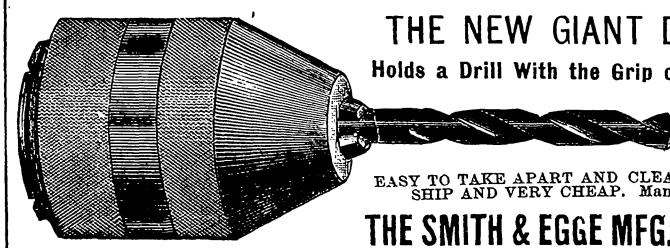
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THE NEW GIANT DRILL CHUCK.
Holds a Drill With the Grip of a Giant. All Steel Parts Interchangeable.
SIMPLE IN CONSTRUCTION.
EASY TO TAKE APART AND CLEAN. BEST OF WORKMANSHIP AND VERY CHEAP. Manufactured and sold by
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Three styles of Screw Plates **BUILT ENTIRELY ON HONOR,** with prices to suit all. Write for catalogue.

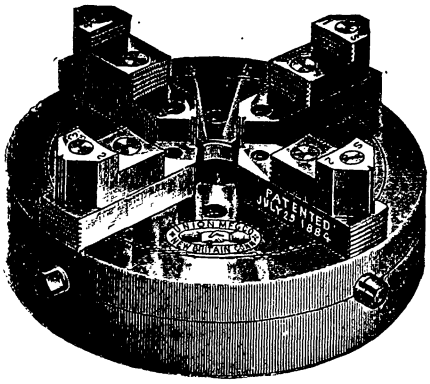
CHAMPION BLOWER & FORGE CO, - - LANCASTER, PA.

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UNION MANUFACTURING COMPANY, .·. NEW BRITAIN, CONN.

WAREHOUSE. 103 CHAMBERS ST., NEW YORK.

Manufacturers of Combination Chucks, Universal Chucks, Independent Chucks, Combination Reversible Jaw Chucks, Car Wheel Chucks, &c., &c.

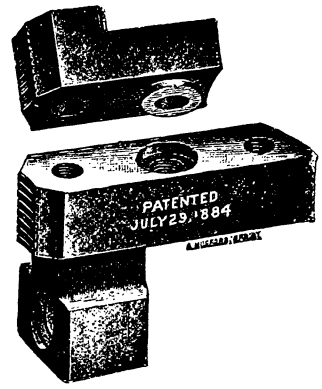


Union Chuck No. 21.

Combination with Reversible Jaws.

ALSO

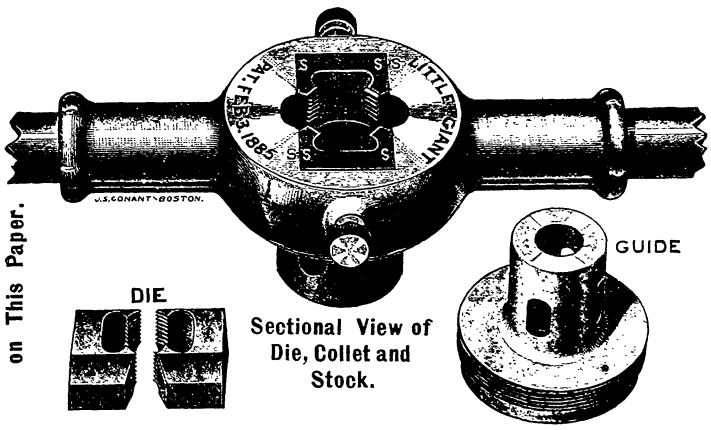
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We guarantee our Chucks in every particular.

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NEW LITTLE GIANT ADJUSTABLE DIE SCREW PLATE FOR PIPE.



DIE

Sectional View of Die, Collet and Stock.

GUIDE

on This Paper.

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To change from one size to another, simply screw out the guide, drop out the die, and replace with size die and guide required.

PRACTICAL, SIMPLE AND DURABLE.

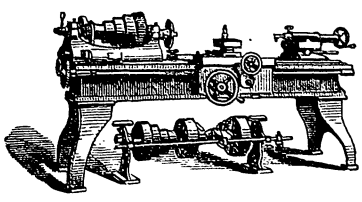
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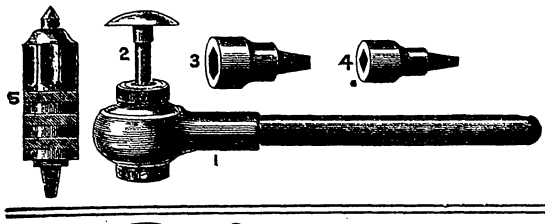


The kinds made and usually carried in stock comprise Hand, Engine, Cutting Off, Turret Head Chucking, Grinding and Centering Lathes, Planers, Shapers, Drilling, Gear Cutting, Milling Cutter Grinding Machines and Milling Machines in great variety.

Screw making, Slotting and Shaving Machines; Bolt Threading and Nut Tapping Machines, Drop Hammers, Die Sinkers, Trimming Presses, Shears, Vises and Centers for Planers and Milling Machines: Chucks for lathes, screw machines and bolt cutters; Renshaw Ratchet Drills; Screw Plates; Hand, Machine, Pulley, Pipe and Stay Bolt Taps; Hand, Chucking, Shell, Pipe, Taper Pin and Locomotive Taper Reamers, Standard Size Cylindrical and U. S. Standard Thread Gauges, Standard Measuring Machines.

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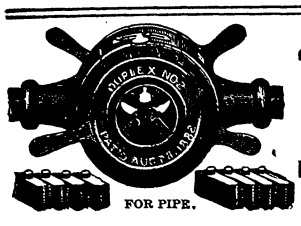
Socket-Wrench and Drill-Stock, Reversible.

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FOR EXPLANATION OF NUMBERS.

Smith Friction Drill & Tool Co.,

BOSTON, MASS.



FOR PIPE.

THE ADJUSTABLE

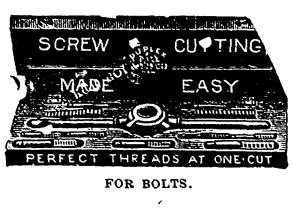
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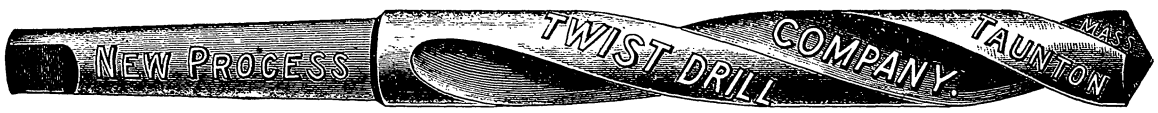
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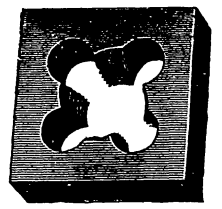


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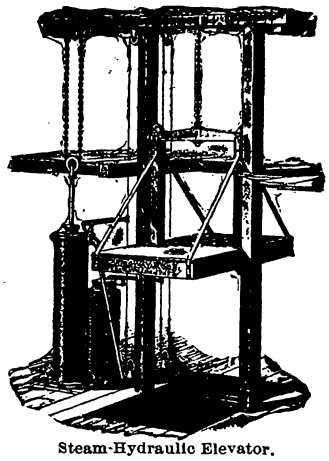
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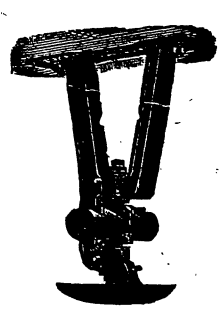
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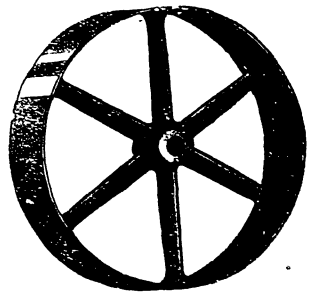
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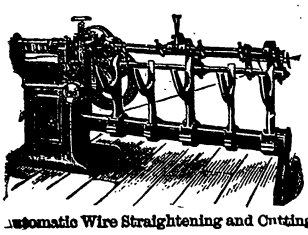


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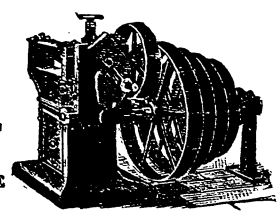
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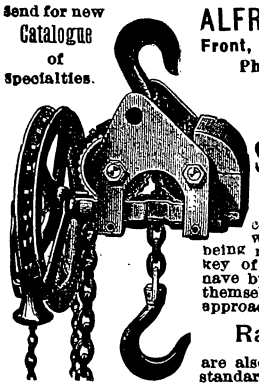
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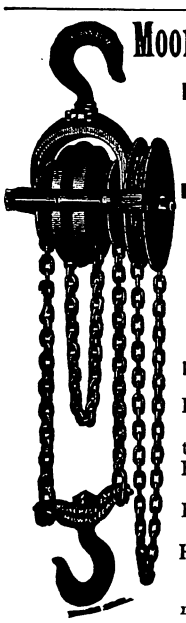


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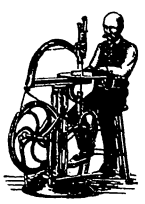
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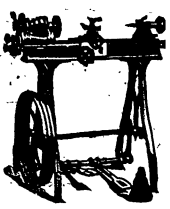
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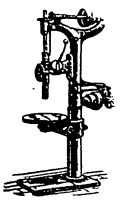
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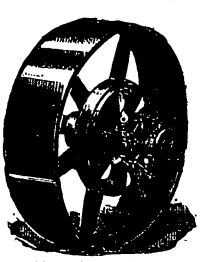
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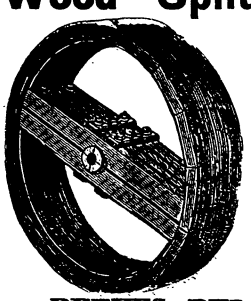


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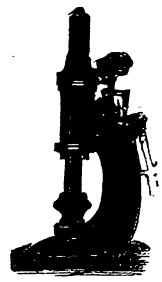
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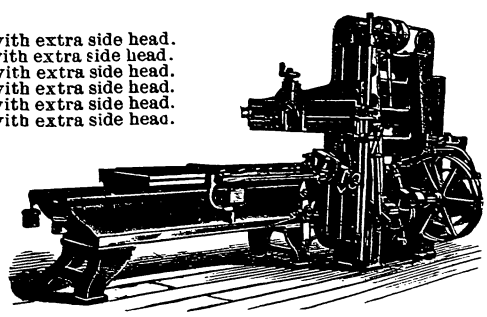
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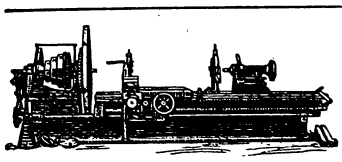
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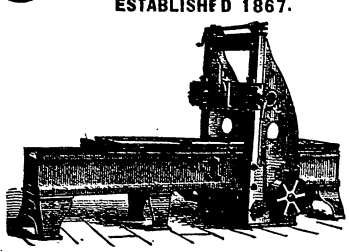


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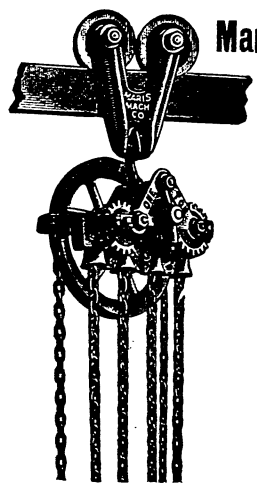
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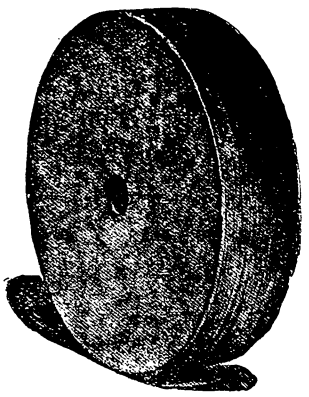
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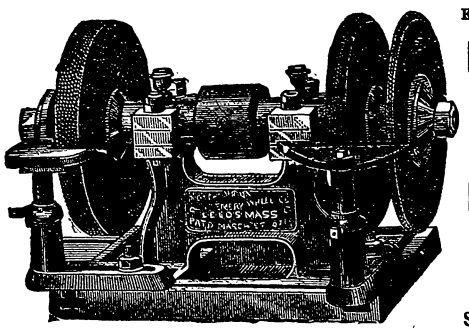
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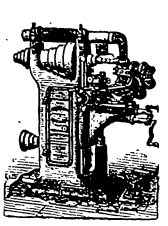
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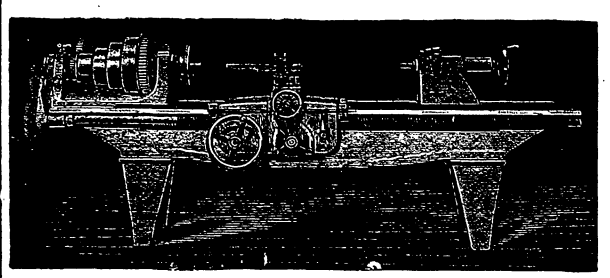


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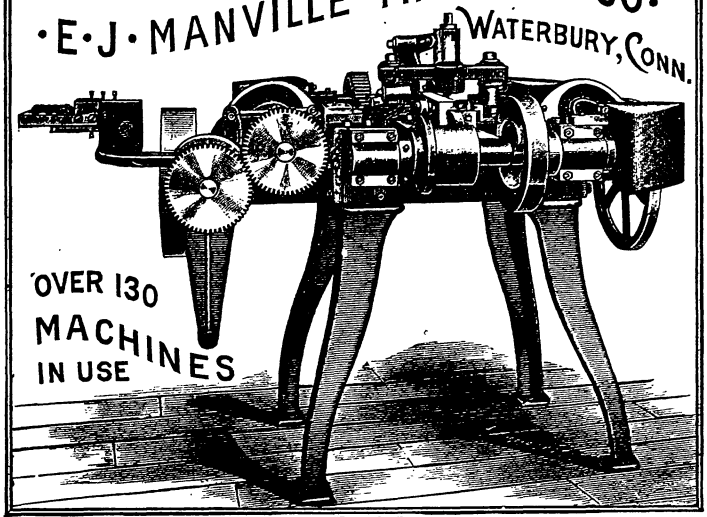


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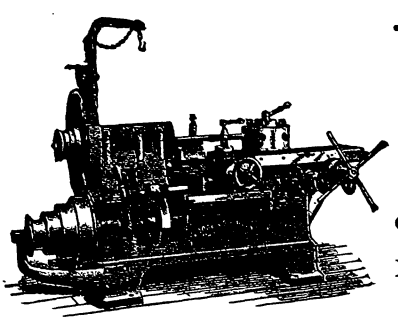
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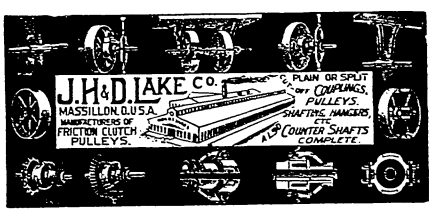


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25 lbs. Bradley and 10 lbs. Hotchkiss Hammers.

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4 3 H.-P. Vertical High Pressure Engines.
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1 Corliss Band Wheel, 12 ft. x 24 in., in halves.
A Variety of Machinery. Such as Boilers, Engines, Pumps, Crushers, &c., very cheap.
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One Otis Steam Shovel in good condition.
Two 12 ton 3-ft. Gauge Locomotives.
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20 Dump Cars, 3-ft. Gauge, 3 yd. Capacity, Side Dump.
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Engines with Cylinders 26 in. x 48 in. and smaller.
Portable, Tubular and Vertical Boilers of all sizes.
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1 Hendey Shaper, 15 in. stroke, imp. vise.
1 14 x 6 Screw Cutting Engine Lathe: new.
1 5 in hole in Turret Screw Machine and Counter, $25.
2½ Hendey Cutting-off Machine. New.
1 3-Spindle Garvin Drill Press, used 1 month.
100 H.-P Woodbury Engine. 2d-hand Good order.
2 50 H.-P. Woodbury Boilers. Good order.
2 75 H.-P Woodbury Boilers. Good order.
1 20 H.-P Woodbury Engine. 2d-hand.
Also variety of Engines, Boiler Pumps, &c.
And other machinery, new and second hand. Write for prices. **Machinists' Supply Company,**
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For second-hand FOUNDRY RUMBLERS, LATHE DRIP PANS, one large BORING MILL, one universal MILLING MACHINE, one "PECK" DROP and LIFTER, one TRIP HAMMER and a five-ton "BEMENT" FOUNDRY CUPOLA. Also 1000 feet of WROUGHT IRON RAILING and 50 LAMP POSTS. First-comers get lowest prices. Write at once.

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SALE OF VALUABLE PROPERTY of the corporation known heretofore as The Albany Stove Company. Whereas, by order of the Supreme Court of the State of New York, granted in the City of Albany, N. Y., on the 10th day of October, 1893, the undersigned, receiver of the assets and effects of the corporation known heretofore as The Albany Stove Company, was directed to offer for sale the following described property, viz.: The real estate and buildings owned by the said corporation "The Albany Stove Company," situated on Tivoli street, in the City of Albany, N. Y., being the same premises used by the said corporation in carrying on its business of manufacturing stoves and iron castings, and is the same real estate conveyed by Eugene Van Rensselaer and others, as executors, etc., to The Capital Co-operative Foundry Company, by deed dated October 15, 1869, recorded in Albany County Clerk's office, December 15, 1869, in Book No 228 of Deeds, on page 241, and by Van Rensselaer Land Company to Albany Stove Company by deed dated January 10, 1890, recorded January 14, 1890, in Book No. 412 of Deeds, on page 318, together with the machinery, tools and implements used in carrying on the business above referred to.

Now, therefore, in pursuance of said order, the undersigned offers for sale to the highest bidder the property above described.

All bids to be sealed, and must be distinctly marked on the envelope in which they are enclosed, "Bids for property of the Albany Stove Company," and addressed and delivered to the undersigned at No. 82 State street, Albany, New York, on or before the 17th day of November, 1893. The right to reject any and all bids is hereby reserved, and sale can only be completed upon order of the court.

Bids will be opened by the receiver at the office of Francis H. Woods, No. 116 State street, Albany, New York, on Saturday, November 18, 1893, at 10 A M Terms, purchase price to be paid within twenty days after notification of acceptance of bid.

Dated October 11, 1893.

JOHN GUTMANN,
Receiver of The Albany Stove Company.

SALE OF VALUABLE PROPERTY of the corporation known heretofore as The Albany Stove Company. Whereas, by order of the Supreme Court, granted in the city of Albany, N. Y., on the 9th day of October, 1893, the undersigned, receiver of the assets and effects of the corporation known heretofore as The Albany Stove Company, was directed to offer for sale the following described property, viz.: The patterns, shop rights and flasks owned by the said corporation, and being the patterns, shop rights and flasks for the "Home Yale" parlor and range, "Yale" cook, "White Oak," "Art Yale Range," "Rose" range, "Oneida," and for other castings, formerly manufactured by the said corporation, a more particular description of which will be given on application to the undersigned.

Now, therefore, in pursuance of said order, the undersigned offers for sale to the highest bidder the property above described.

All bids to be sealed and must be distinctly marked on the envelope in which they are inclosed, "Bids for property of The Albany Stove Company," and addressed and delivered to the undersigned, at No. 82 State street, Albany, N. Y. on or before the 17th day of November, 1893.

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Terms: Purchase price to be paid within twenty days after notification of acceptance of bid.

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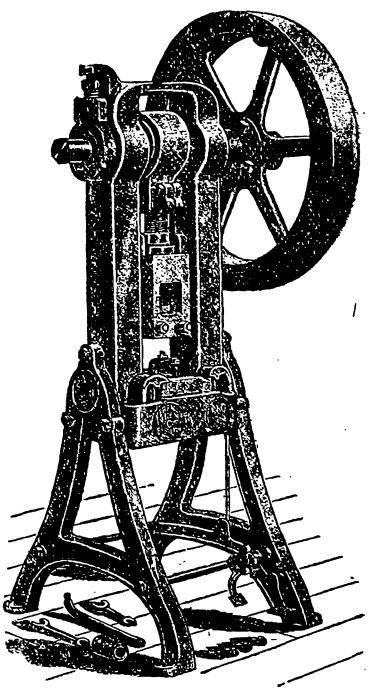
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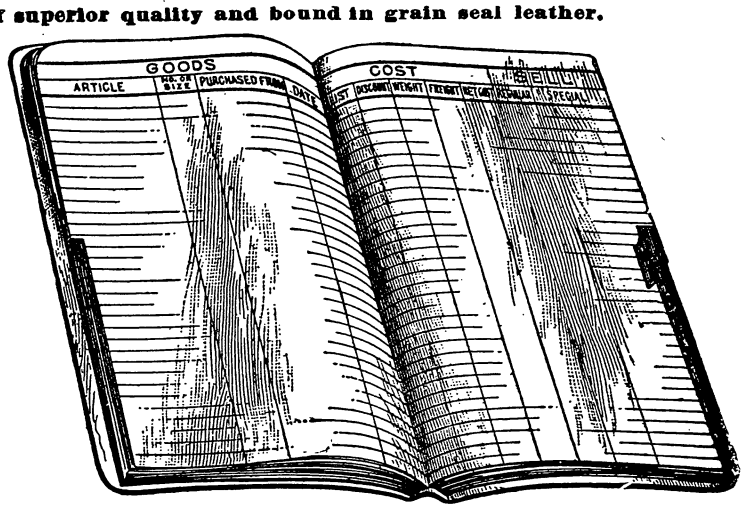
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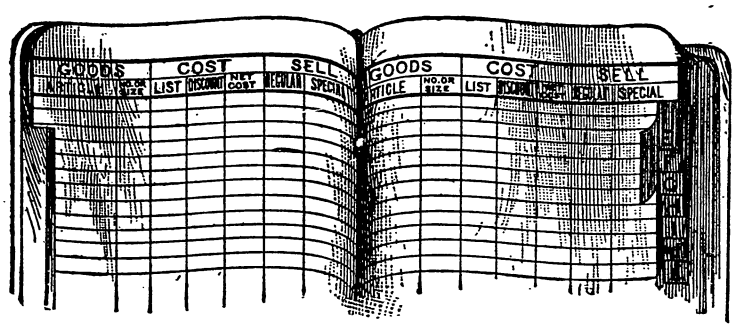
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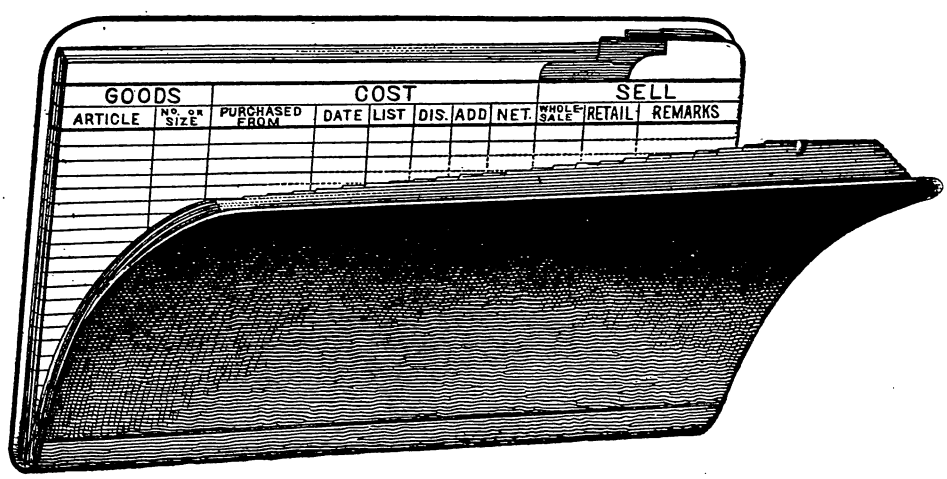
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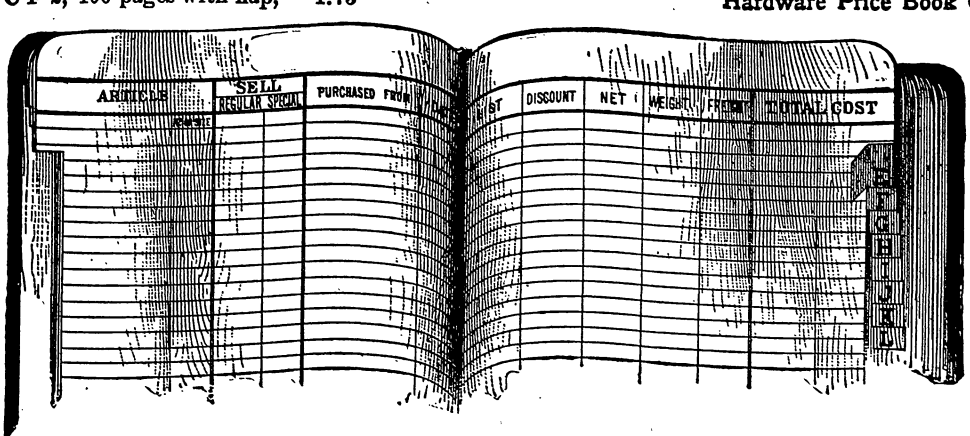
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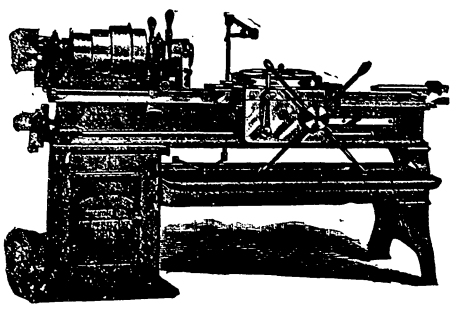
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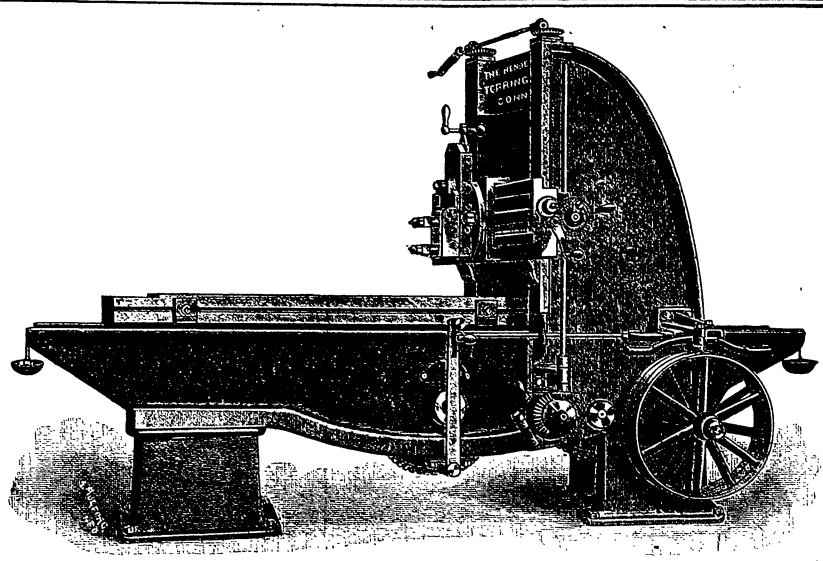
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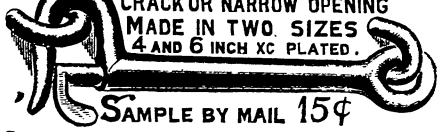


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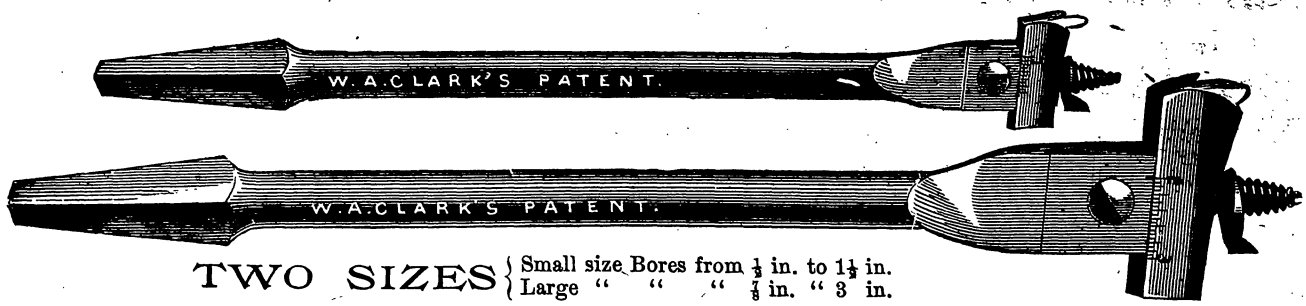
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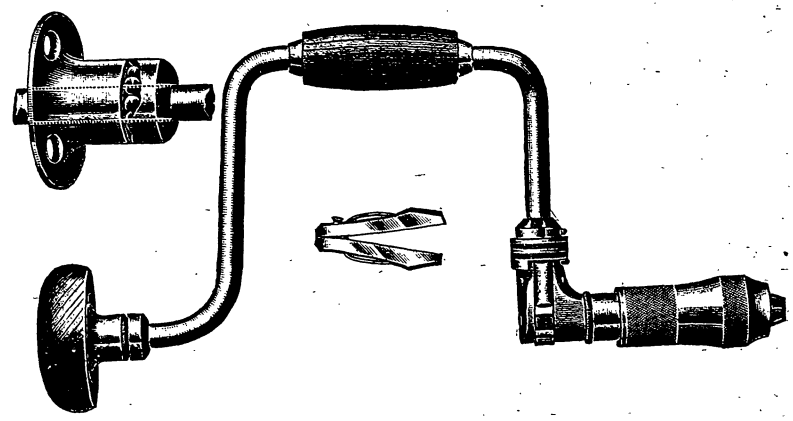
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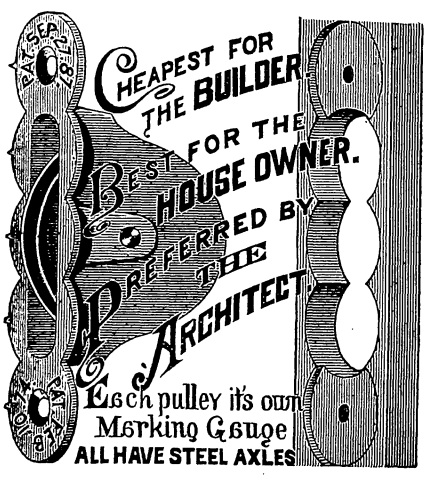


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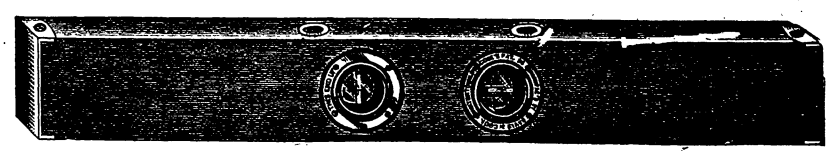
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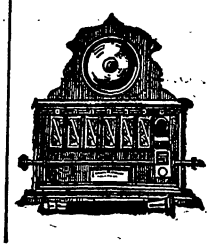


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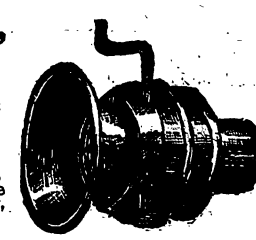
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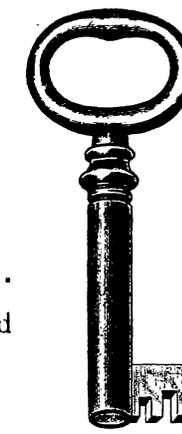
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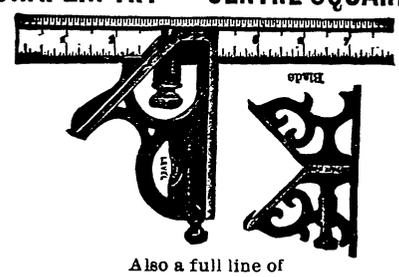
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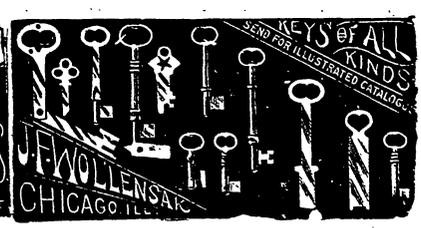
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THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

Pumps, Hydraulic Rams, Garden Engines,

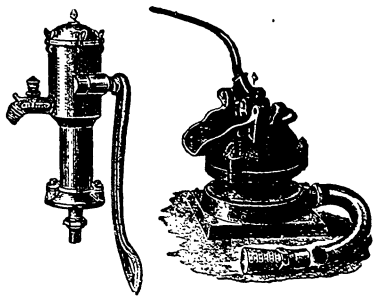
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DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 209. Fig. 381.



or wherever it is desired to raise a large quantity of water by

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The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

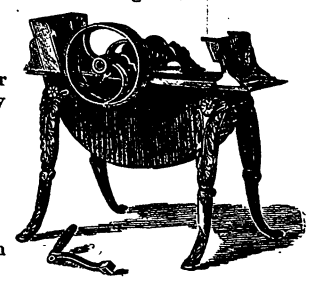
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from 3,000 to 4,500 gallons per hour.

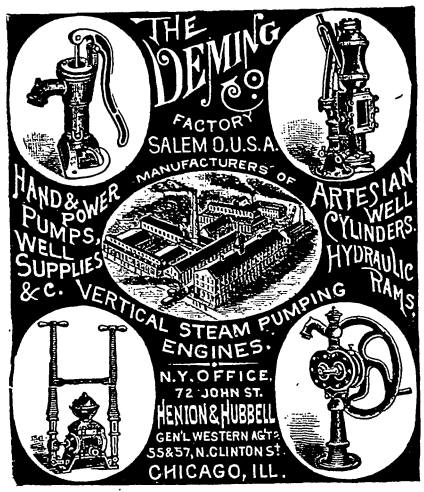
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Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.

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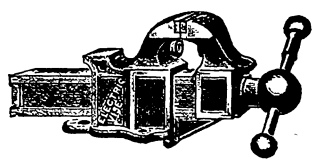
Fig. 145.



C. I. Grindstone Frame.



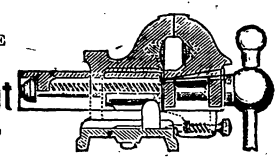
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Patented Dec. 27, 1892.
IT HAS QUALITIES THAT ARE UNDISPUTED.

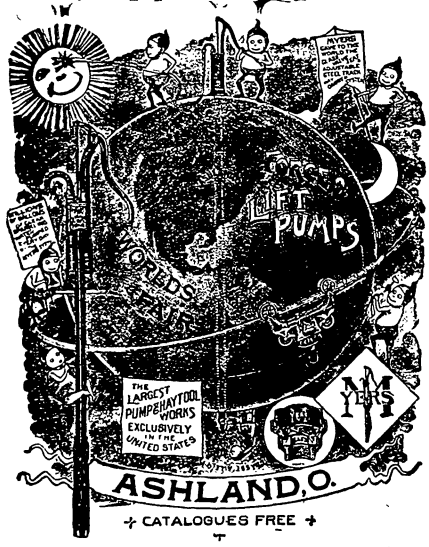
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One movement in and out, one turn of the hand and the work is secured.



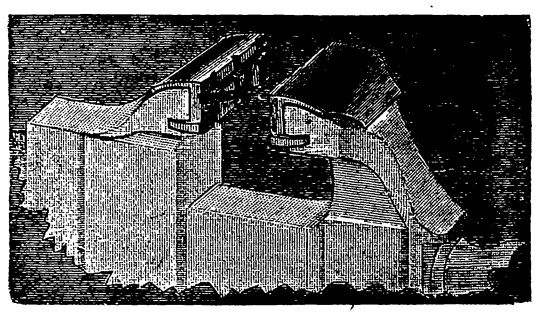
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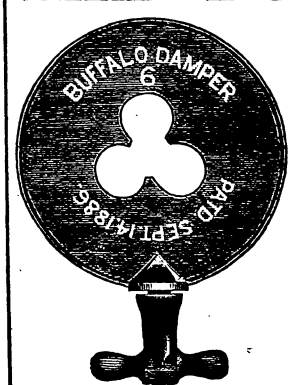
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For protecting finished work. Will hold finished rods of any shape without injury.

3½ inch.....per pair, 40 cents.
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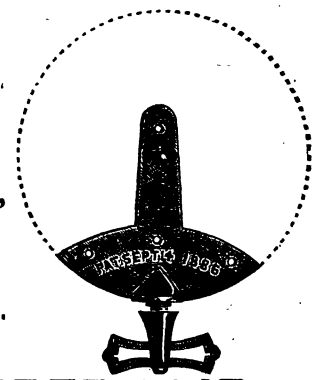
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SIMPLE,

SINGLE BEARING,

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ONLY ONE HOLE IN PIPE.



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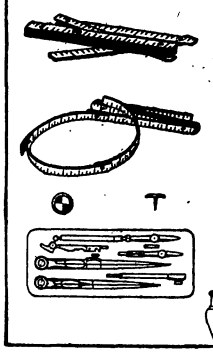
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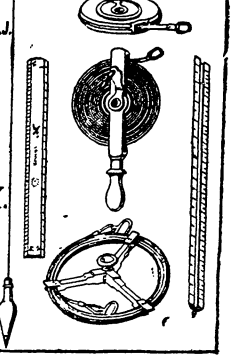
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SUPERIOR QUALITY, LATEST IMPROVED. GREATEST VARIETY.
STEEL · METALLIC · LINEN · POCKET TAPES.
EXCELSIOR BAND CHAINS FOR SURVEYORS; LAND CHAINS, &c.
K&E Co's FOLDING POCKET RULES.
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FLAT & TRIANGULAR BOXWOOD SCALES, BEST MADE.
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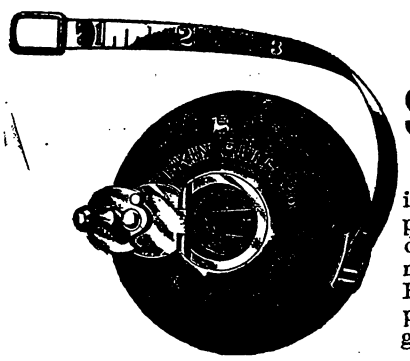
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BECAUSE:

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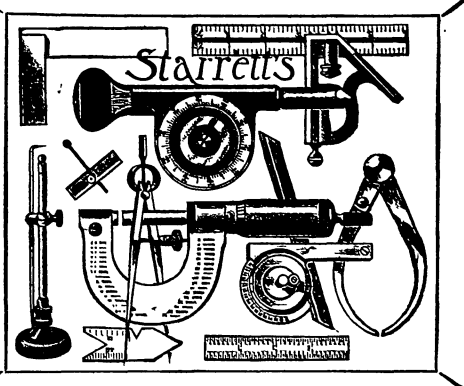
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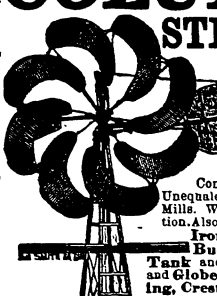


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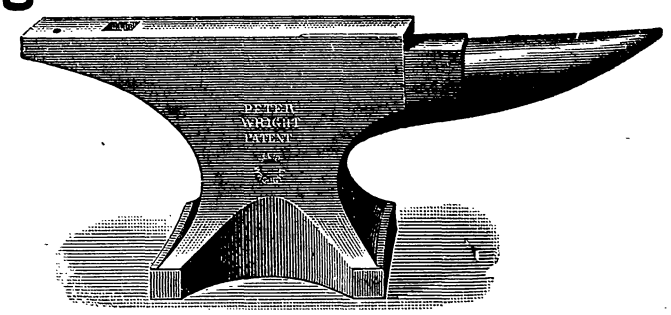
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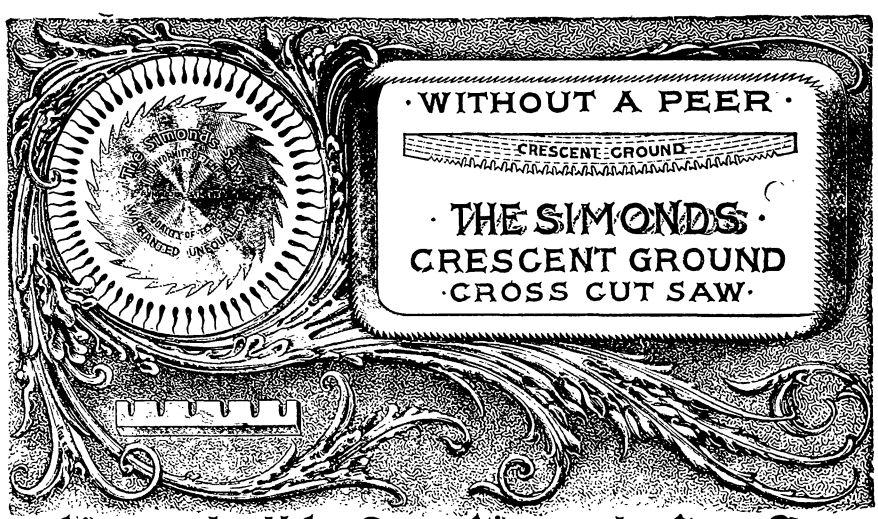
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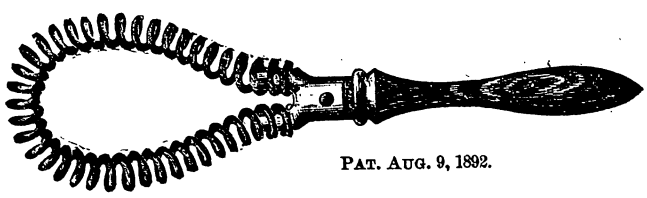
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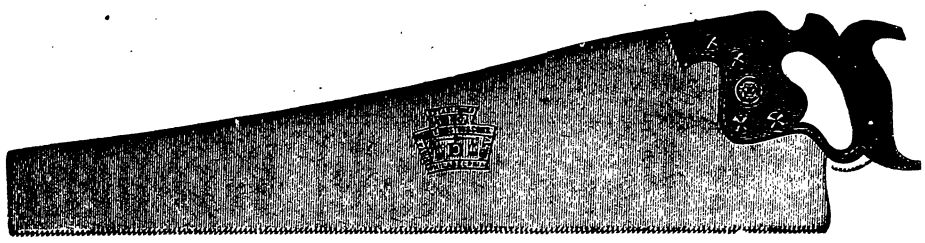
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A man who has made a reputation for his goods knows its value as well as its cost and will maintain it."—HENRY DISSTON.

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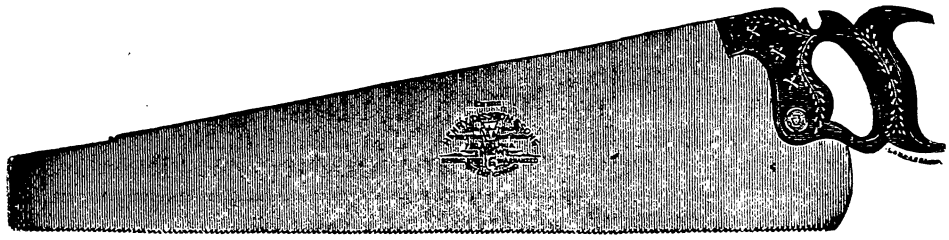
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This Saw combines all the valuable improvements in Hand Saws that have been made by us of late. The first and most important is the hollow or skew back, the success of which can best be attested by the number sold. The peculiar shape of the butt or heel, coupled with the new method of fastening to the handle, give a full stroke of the blade without fear of catching or hooking in the work; and as the handle is put further on the blade you have a full stop on the proper point and a greater command over your Saw, by reason of being two inches nearer the point, which must give more power.

The Saw being let into the handle on a circle, has a perfect bearing, which, with the new screws, makes it stronger and almost impossible to work loose, and avoids the unsightly gap that is seen on the back of the old style handle. All the above features are patented.

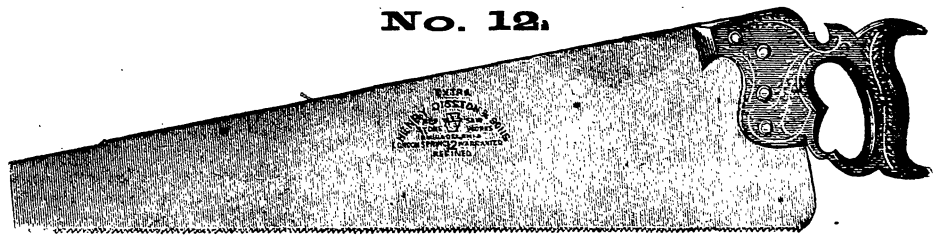
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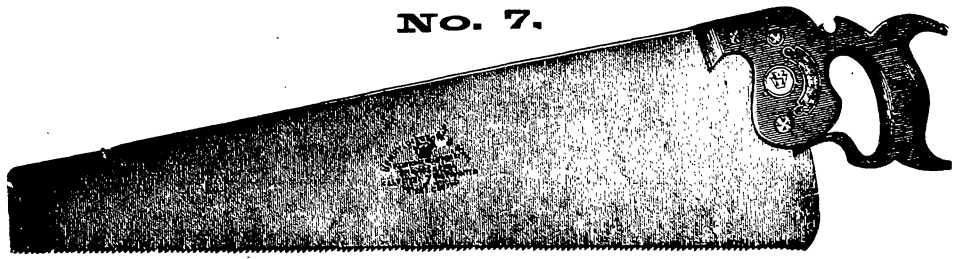
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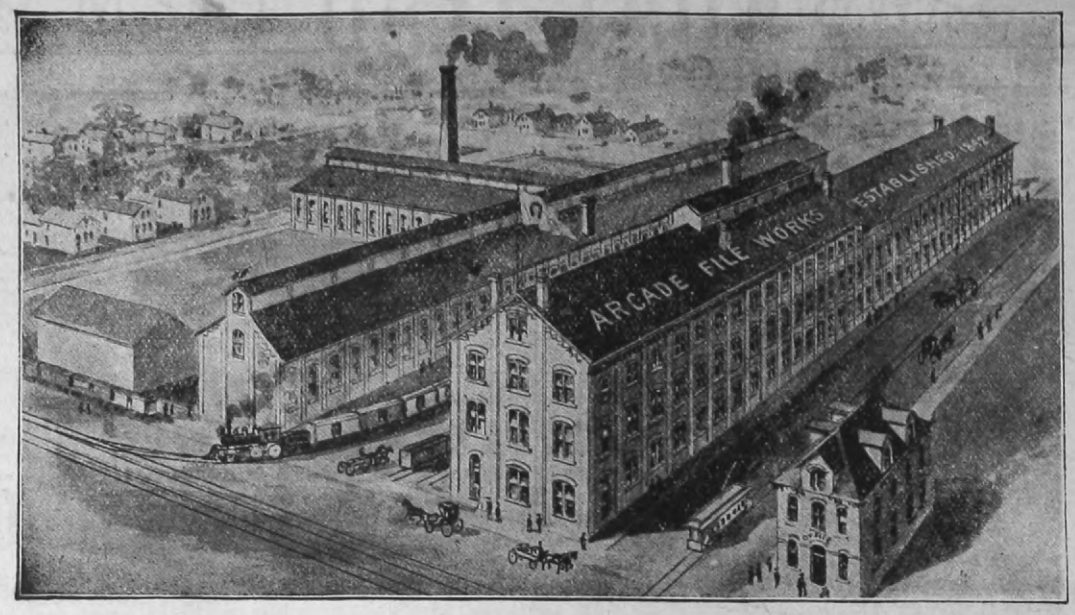
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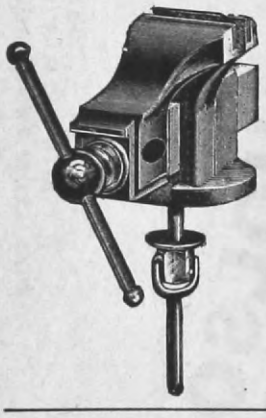
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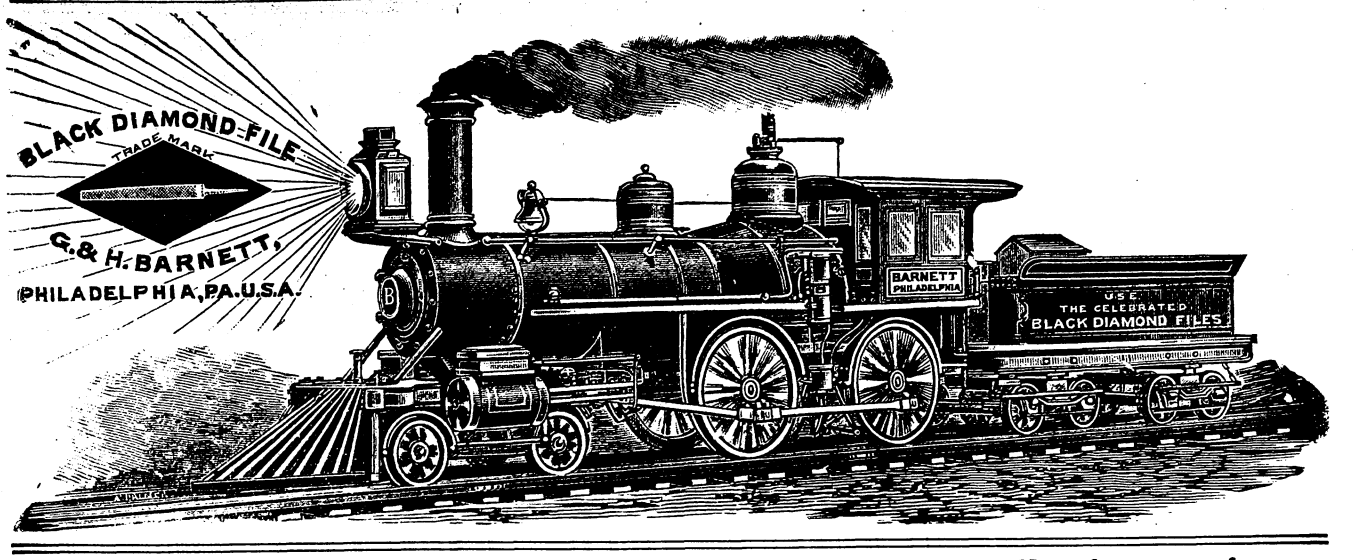
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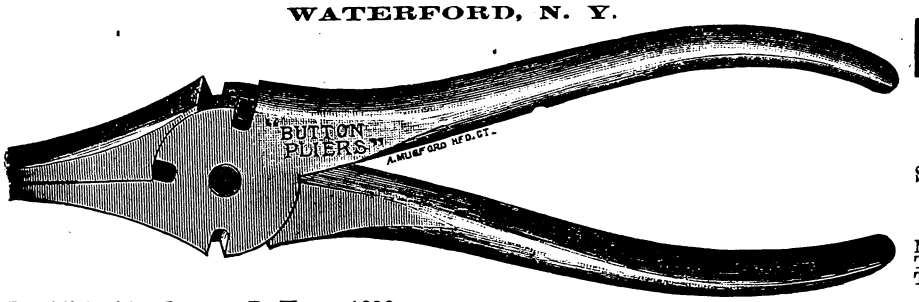
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Specially Adapted for Use on Wire Fence.

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Cronk's Patent Wire Cutter AND Bender.



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This surpasses any Plier in the market for Cutting and Bending Wire, and can also be used in place of Hill's Hog Ringer. Is especially adapted to farmers' use in building Wire Fence, &c.

Our reasons for claiming that we have the best Pliers in the market are:

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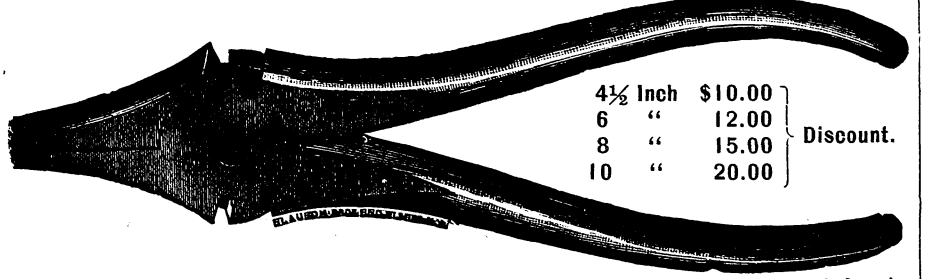
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What we claim for this plier is that it is made from best quality tool steel and is made heavier and stronger than any plier of its kind in the market and the finish is first-class. Also they are made so the jaws are parallel when used on wire from 9 to 14 gauge and will hold the wire solid.

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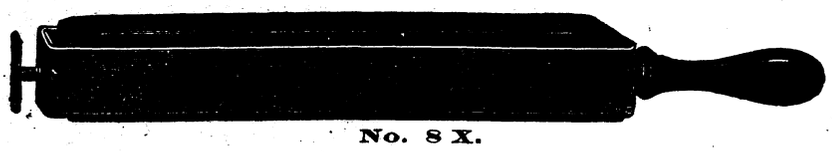
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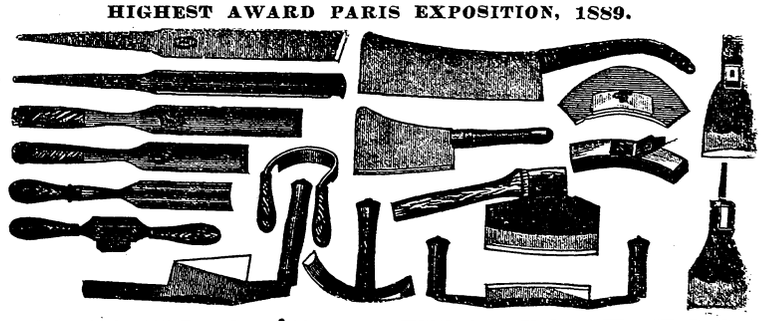
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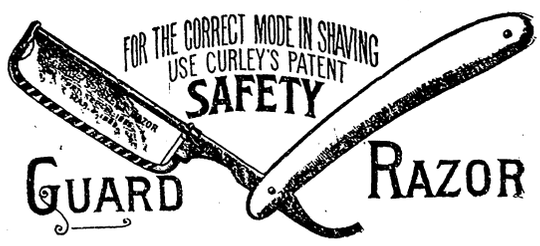


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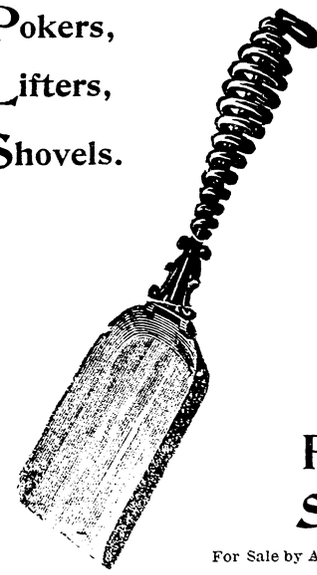
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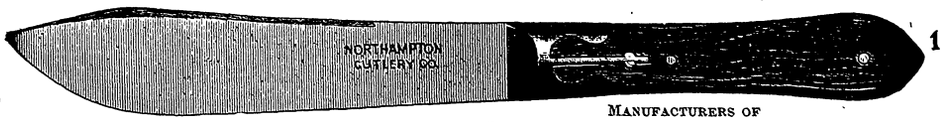
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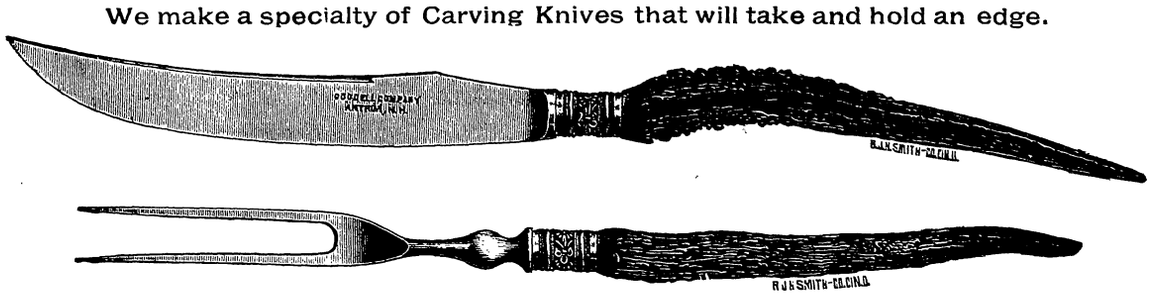
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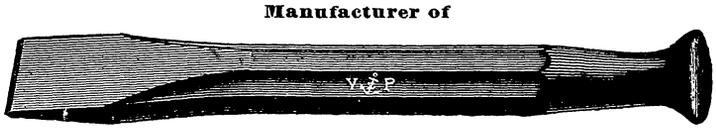
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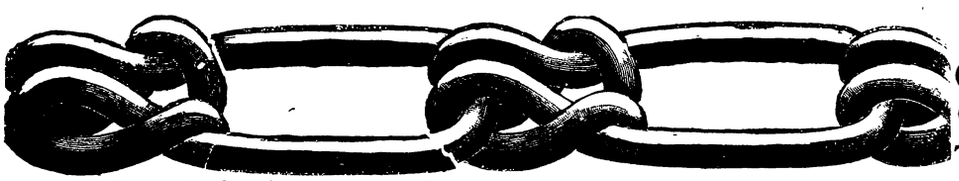
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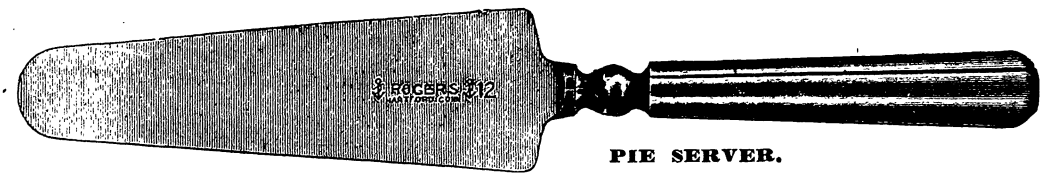
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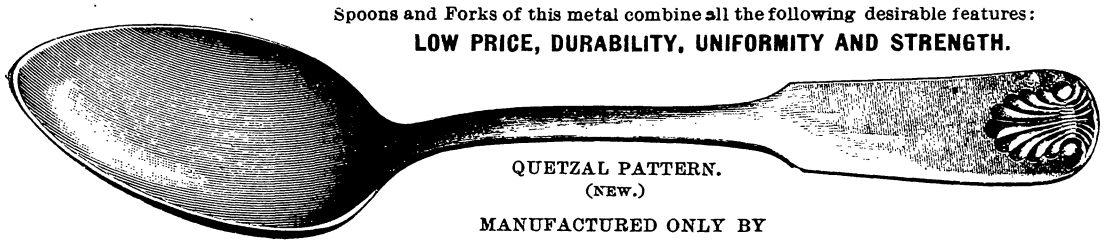
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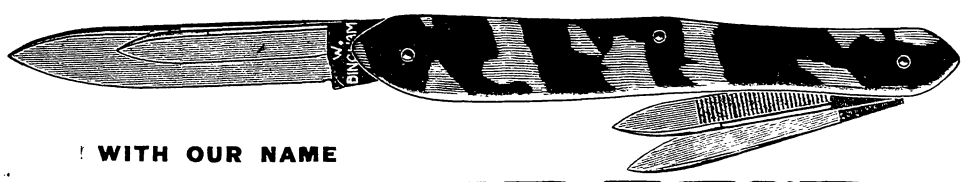
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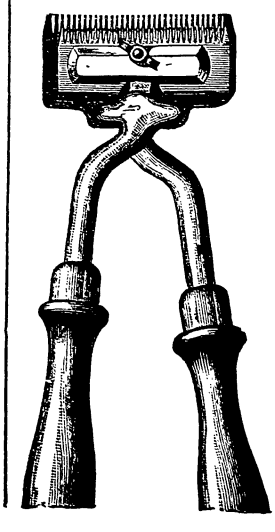
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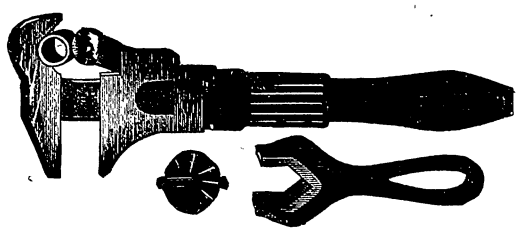
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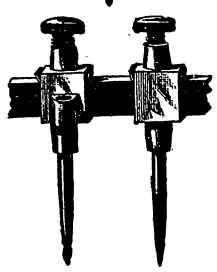
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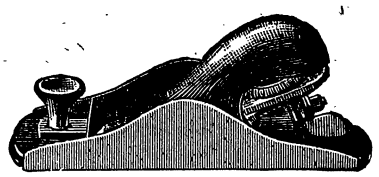




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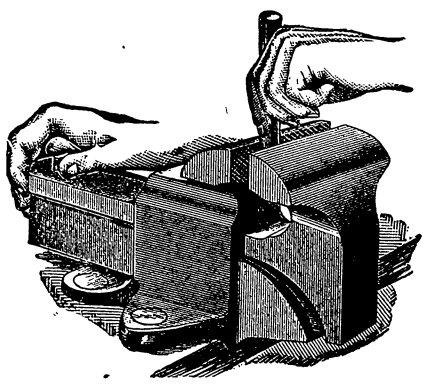




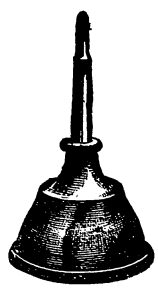




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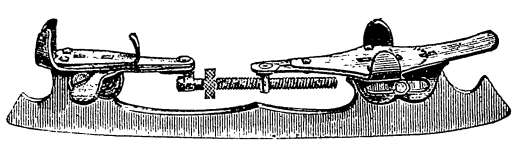
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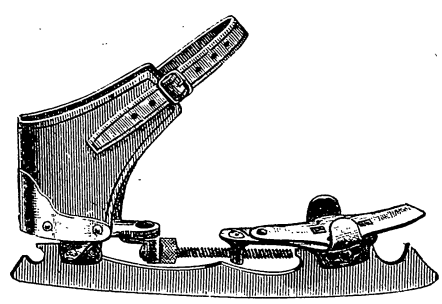
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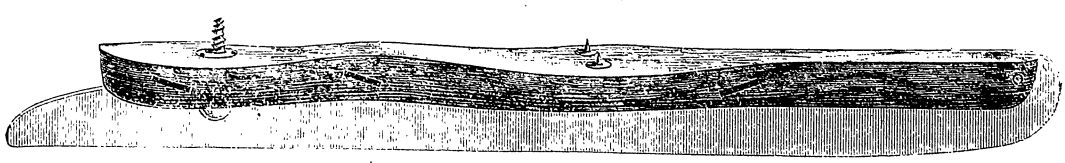
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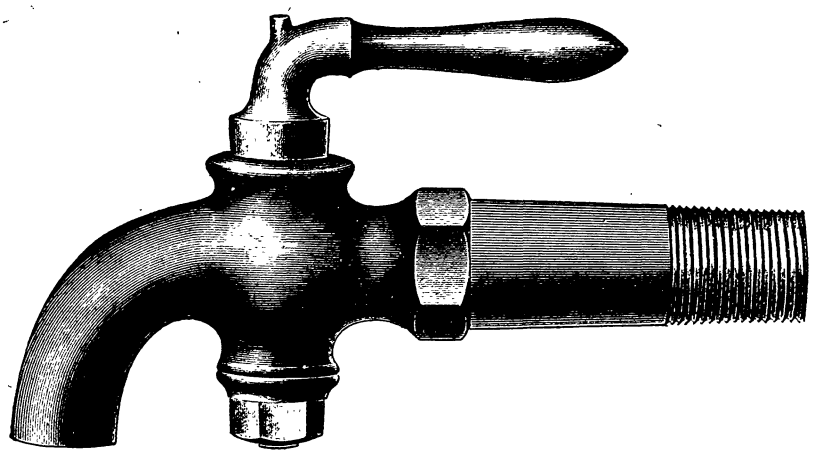
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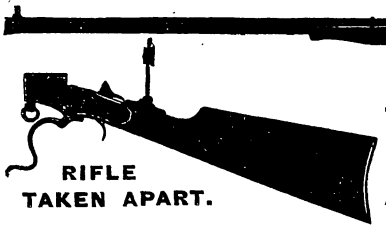
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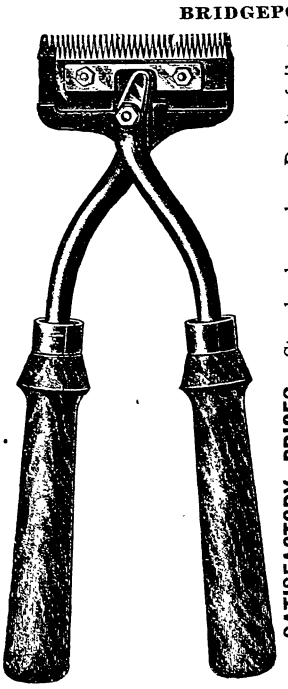
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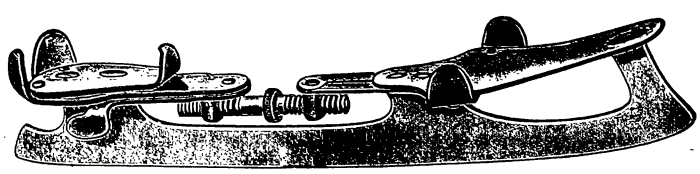
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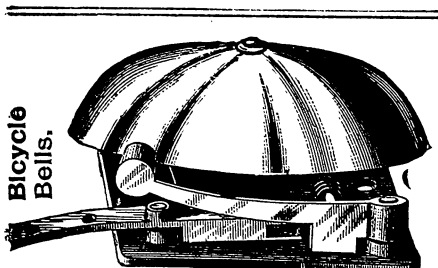
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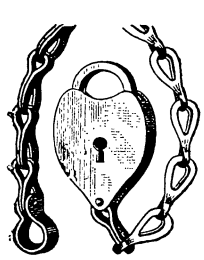


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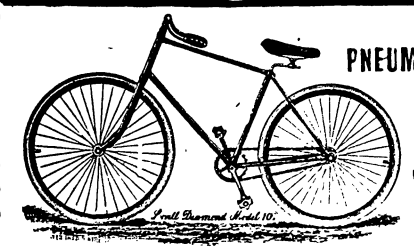
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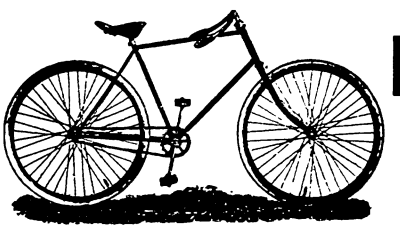
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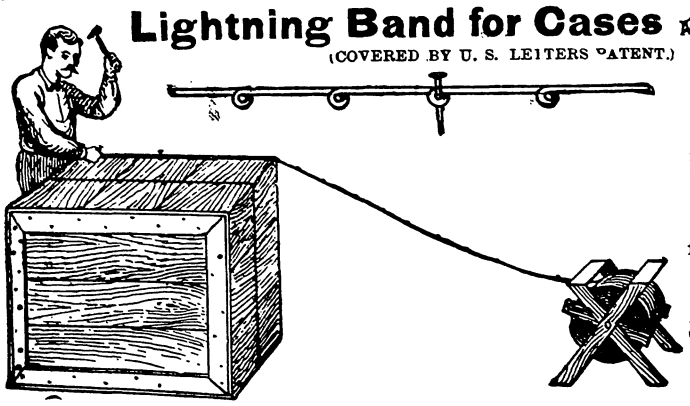
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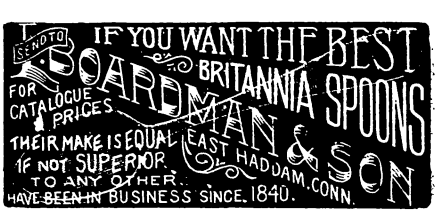
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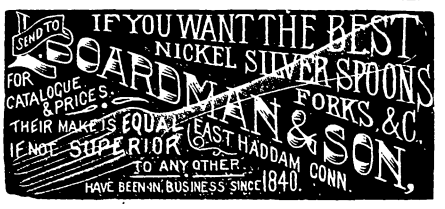
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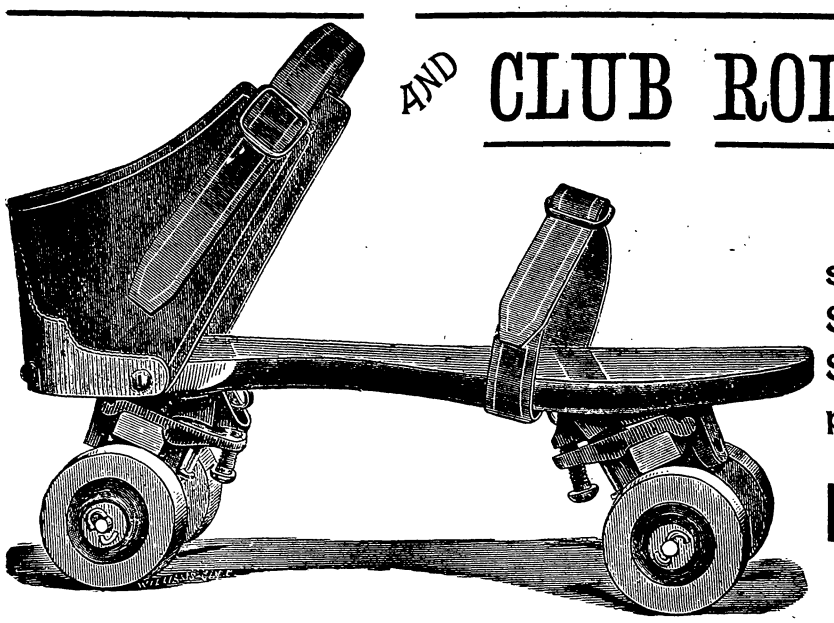






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HENLEY'S CELEBRATED RINK AND CLUB ROLLER SKATES.



A full, new and complete stock of Roller Skates, Skate Repairs and Rink Supplies. Address for '80 page catalogue and prices,

M. C. Henley,

RICHMOND, IND.



Give me 1322 !

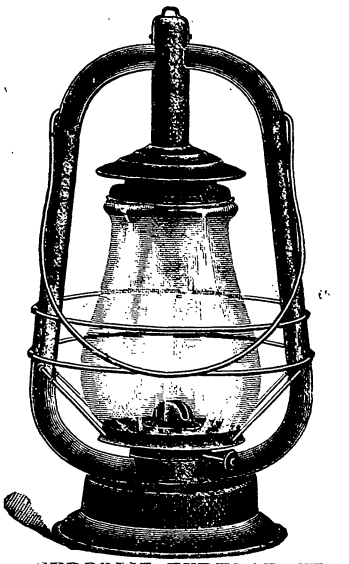
No! You Get It Wrong;

I say 200 dozen "Surprise Tubulars."
Got it? Say! rush; am entirely out.
Yes, same old place.

OHIO LANTERN CO.,
TIFFIN, OHIO.

W. W. PRYOR & CO,
81 Chambers St., New York, Eastern Agents.

A full line of samples can be seen and the trade supplied at factory prices.



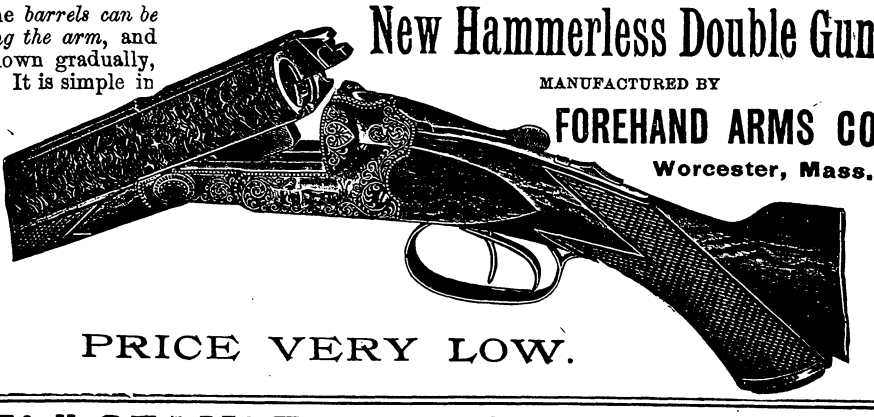
SURPRISE TUBULAR.

This GUN has rebounding locks and the *barrels can be taken off and put on again without cocking the arm*, and when cocked the hammers may be let down gradually, and without the full force of the blow. It is simple in construction, having very many less pieces than any other hammerless gun.

Easily Tipped and Cocked,
Damascus Barrels,
Handsomely Engraved,
French Walnut Stock.

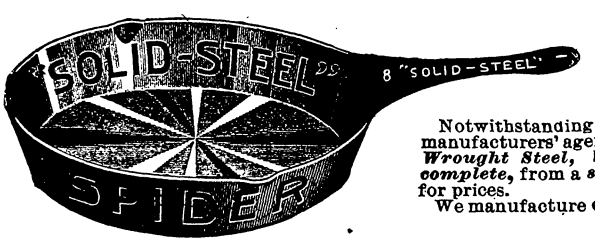
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New Hammerless Double Gun,
MANUFACTURED BY
FOREHAND ARMS CO.
Worcester, Mass.



PRICE VERY LOW.

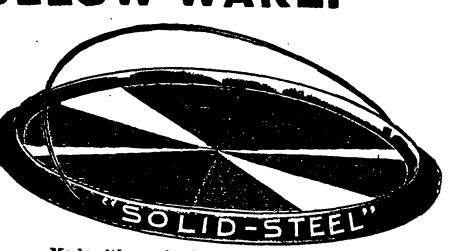
"SOLID-STEEL" SEAMLESS HOLLOW WARE.



No Seams, no Rivets in "Solid-Steel" Ware.

BRILLIANT FINISH.

Notwithstanding the claims made by some manufacturers' agents, *our* spiders are made from *Wrought Steel, Without Seams or Rivets, complete*, from a *single piece of metal.* Write for prices.
We manufacture our own goods.

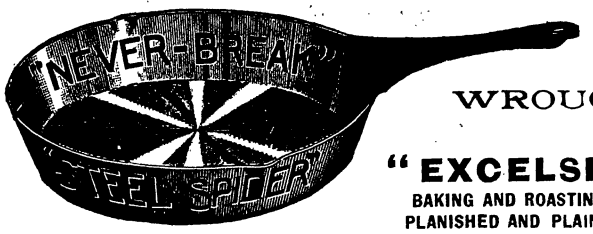


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The Cleveland Stamping & Tool Co., Cleveland, O.

We do Light and Heavy Stamping and Blanking. Also build Dies and Stamping Machinery.

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"MIRROR POLISH," the only Perfect Plain Steel Finish.

"NEVER-BREAK"

WROUGHT STEEL COOKING UTENSILS.

MIRROR POLISHED—TINNED—PORCELAINED.

"EXCELSIOR" BAKING AND ROASTING PANS, PLANISHED AND PLAIN STEEL.

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No. 3 Globe Street Lamp.

Light your Streets and Driveways.

The S. G. & L. CO.

Tubular Globe Street Lamp

IS THE Best Street Lamp Manufactured.
Equal to the best Gas Light.
Will not Blow Out in the Strongest Wind.
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Will Burn Four Hours for One Cent.

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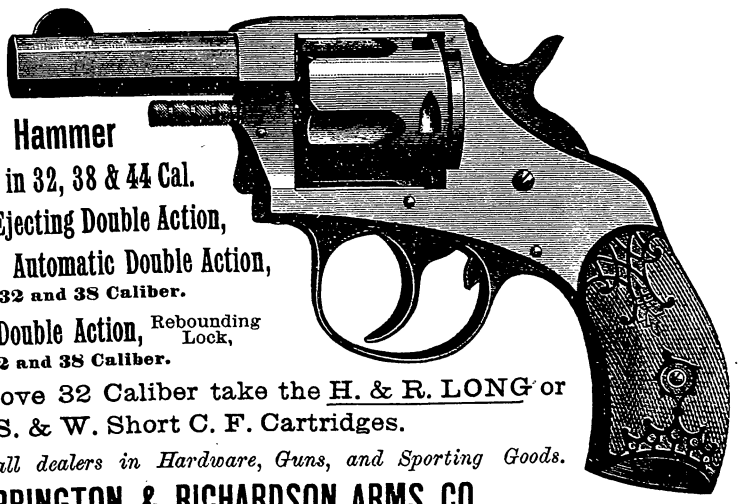
OUR AMERICAN And Safety Hammer

Double Action in 32, 38 & 44 Cal.

H. & R. Imp. Ejecting Double Action,

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In 32 and 38 Caliber.

And Premier Double Action, Rebounding Lock,
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All the above 32 Caliber take the H. & R. LONG or S. & W. Short C. F. Cartridges.

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The Boss 2-speed Boring Machine.

Will operate a two-inch auger with the same effort required in using one and one-half inch in any other machine, and for the small auger have a speed two and one-half times faster. Two augers may be kept in the machine, to use either of which it is only necessary to point it downward by first taking the gear frame out of main frame, inverting and replacing it. For prices and discounts address

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Sheets and Rivets for Boats and Coffins.

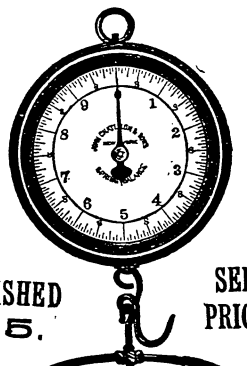
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MANUFACTURERS OF
Improved Adjustable Window Screens.
THE QUEEN ANNE. With box panels; the only screen made and finished alike on both sides.
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SCREEN DOORS. Finished all ready to hang Sticks, Corners, Improved Frames, &c.
Write for circular and Price-list.

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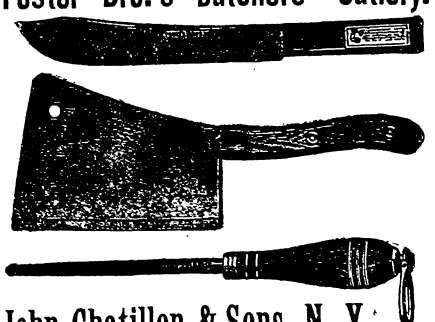
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Sole Agents for

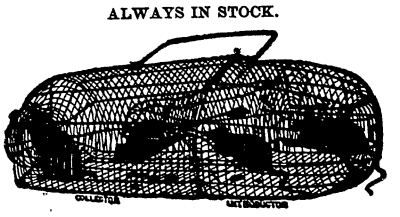
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GENUINE MARTY RAT AND MOUSE TRAPS

ALWAYS IN STOCK.



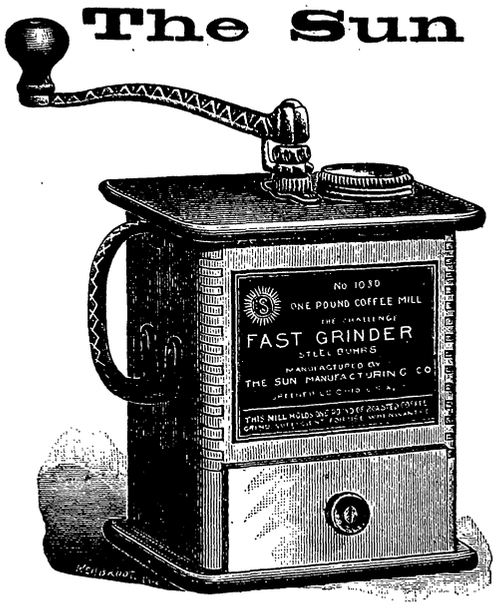
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Orders solicited. Prices on application.

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—SOLE AGENTS AND IMPORTERS.—

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Successors to the Jno. M. Waddel Mfg. Co.,

ARE SOLE OWNERS AND MANUFACTURERS OF

Waddel's Improved Coffee Mills,

Cathedral Gong Money Drawer and Surprise Rat Traps.

Beware of Infringements.—We will protect our Patents.

"THE 'SUN' ONLY, SHINES FOR ALL."

A New Name, A New Reputation,

A New Line of Coffee Mills

That under the SUN Brand shine as leaders.

RAPID GRINDERS that will STAND THE WEAR.

STEEL ALLOY BUHRS,

A metal of recent discovery for this purpose used solely and only by the SUN. Warranted to outwear, outgrind and outsell any Coffee Mill ever put on the market.

We Challenge a Competing Test for Rapid Grinding and Wearing Surface.

Our New Line bears the Sun Trade Mark and is labeled Steel Alloy Buhrs.

Write for Our Catalogue and New Prices.

Order a Sample Mill.

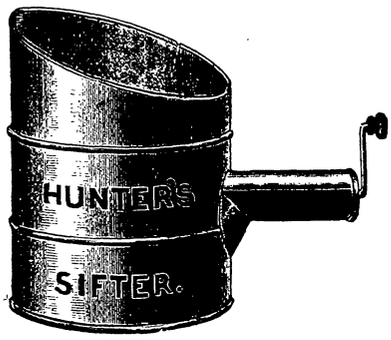
THE SUN MANUFACTURING CO.,

Greenfield, - Ohio, U. S. A.,

MANUFACTURERS OF

Cash Registers, Money Drawers, Coffee Mills and Wooden Ware Specialties.

The Original Hunter Sifters



are now sold at the same price as any other Sifter of *equal merit.* "Equal merit;" there's the rub They can be imitated to be sure, but then—oh! well, what's the use of talking, you are not getting what you pay for.

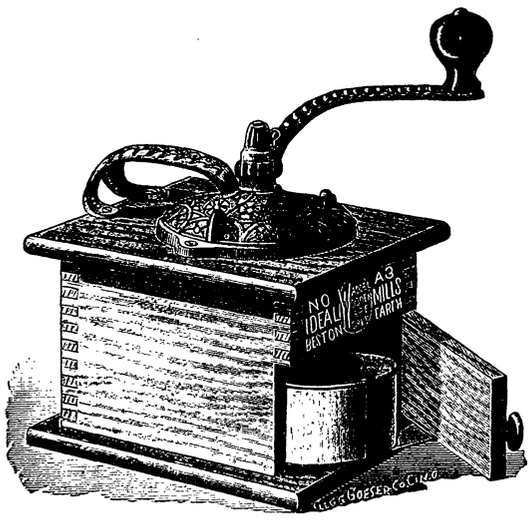
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The FRED J. MEYERS MFG. CO..

COVINGTON, KY.

F. J. MATTISON, Eastern Agent NEW YORK.

"BIG W. W. W. FOUR."



A certain company are claiming to be "sole manufacturers of Waddel's Coffee Mills," ("If you see it in the sun its so"). The statement is designed to mislead the trade. The old line of Waddel's Coffee Mills, which have been on the market the past five years, are not manufactured by *us.* We are making a new line of Coffee Mills which are guaranteed to grind twice as fast as similar goods, and each mill is labeled under a trade-mark "Ideal Coffee Mills manufactured by Waddel Wooden Ware Works; best on earth." Specify the new goods and order "Ideal Mills," and our word for it, you will not make a mistake. Address plainly

Waddel Wooden Ware Works or "4 W.,"

Greenfield, Ohio,

MANUFACTURERS OF

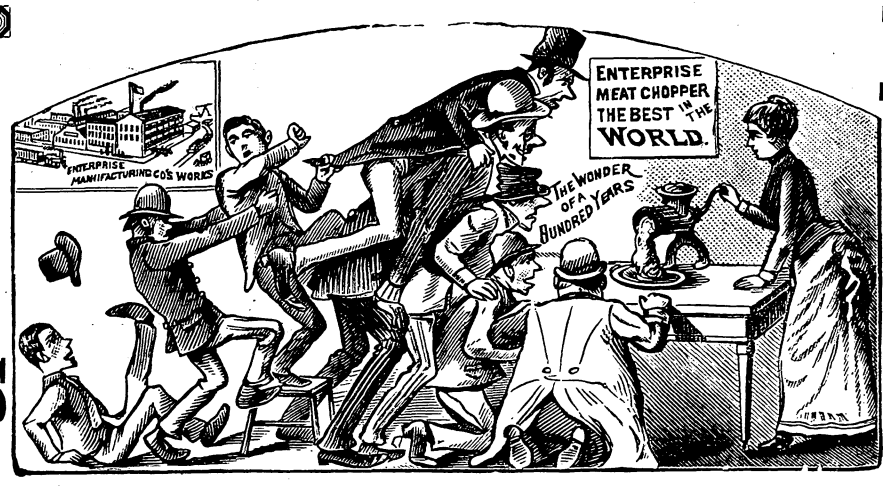
CASH REGISTERS, MONEY DRAWERS, COFFEE MILLS, RAT TRAPS and NOVELTIES.

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The Enterprise M'f'g Co., of Pa.

Third and Dauphin Streets, Philadelphia.

MEAT Choppers



Enough Said!

SOLD BY ALL HARDWARE DEALERS. SEND FOR CATALOGUE.

SPEAKING OF SIFTERS?



A few years ago a Sewing Machine cost $75.00. Since the patents expired you can buy a better one for $25.00.

SAME WAY WITH SIFTERS, SEE?

SEND FOR CATALOGUE AND PRICES.

W. H. SILLS, - - Manufacturer,

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W. H. Neff, Cowan, Indiana. Says

The = Perfection = Washer

is the best on earth. Crowned with laurels wherever introduced. Do you want a Washer for your own use, or do you want to handle the best Washer in the world? If you do, get the best.

It is conceded to be the best by thousands of families who are using them to their entire satisfaction. So simple and easy to operate, a child ten years old can wash with it. Yet more durable than any washer in the market. It has a Steel Bottom, Metal Catches to hang the rubber on, Rubber Packing between the bottom and sides, which relieves the strain on the bottom by the contraction and expansion of the sides. It is handsomely painted, perfect and complete in every particular. The above statements are facts, and a glance at the Washer will convince any one. For further particulars, call on or address

W. H. NEFF, Manufacturer.

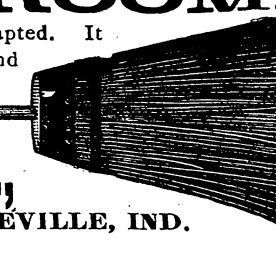
No. 4 ALL RATTAN BROOM.

Made for Switch, Snow, Yard, and all purposes to which an All Rattan Broom is especially adapted. It has been thoroughly tested, and our patent fastening is conceded to be the best, most convenient, and holds the rattan more firmly and in better shape than any other ever introduced. A trial will insure its continued use. We make a specialty of

BROOMS and BRUSHES

FOR

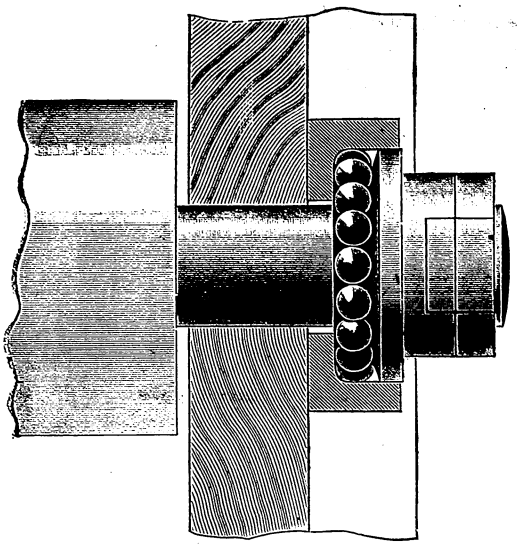
RAILROADS, SHOPS, WAREHOUSES, STREET, STABLE, BLOOM, CHILL, CASTING AND MOULDING PURPOSES. Write



JOSEPH LAY & CO.,

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SOMETHING NEW.

A BALL BEARING WRINGER.

THE CLEVELAND. Patent Applied for.

Only Successful one Ever Invented.

TURNS SO EASILY CAN BE OPERATED BY A CHILD.

All wearing parts revolve upon balls.

OTHER PARTS OF THE ORDINARY MACHINE IMPROVED.

STEEL SPRING AND CHANGEABLE APRON.

Altogether finest machine on the market. Remember this is not a roller bearing, but is made with balls in the bearings like bicycles, which we also manufacture.

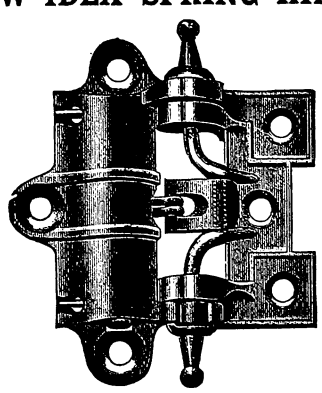
FULLY GUARANTEED.

The Peerless Manufacturing Company,

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NEW IDEA SPRING HINGE

Holds the door strongest when closed.



Resistance gradually decreases in opening

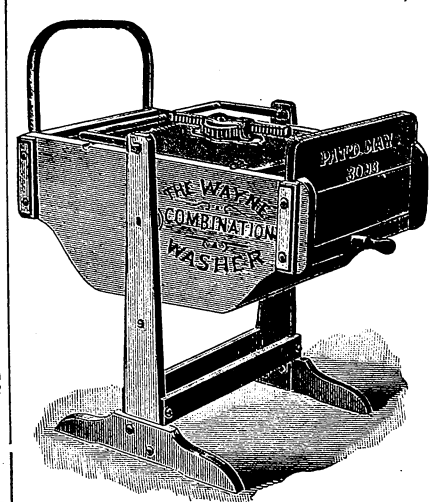
and increases in closing the door.

A covered (patented) hold-back Spring Hinge. Full particulars, free Sample and Prices by mentioning this paper.

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A SMALL PANIC



Has been created among makers of Washing Machines since the introduction of "The Anthony Wayne Combination." Why? The reason is very plain. It's the only washer that has all bad features eliminated and that embodies all the good ones. It washes clean, first, last and all the time with the least labor. To handle it is to sell it. Particulars about it and our others free. Write.

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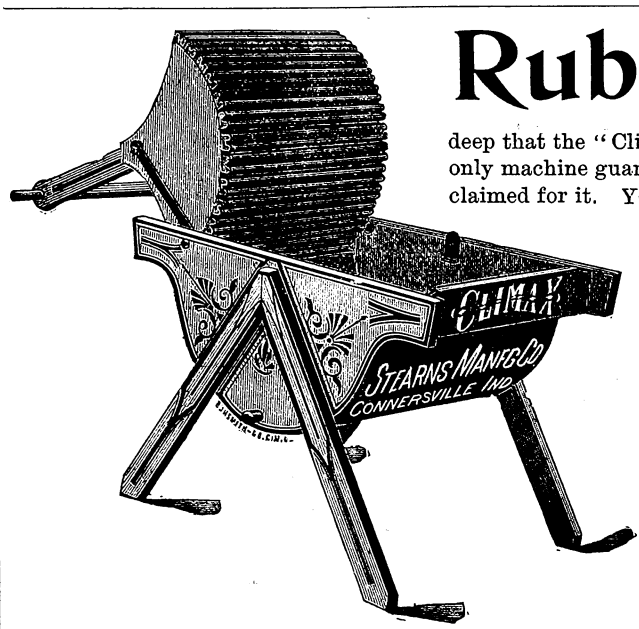
SASH WEIGHTS

E. E. BROWN & CO.,

McKean and Meadow Sts.,

PHILADELPHIA PA.

Rub it in



deep that the "Climax Washer" is the only machine guaranteed to do all that's claimed for it. You don't have to have faith in it. We've got that. For washing clean without rubbing it's unexcelled. We say this and it's so, besides it's the most profitable to handle.

—THE—

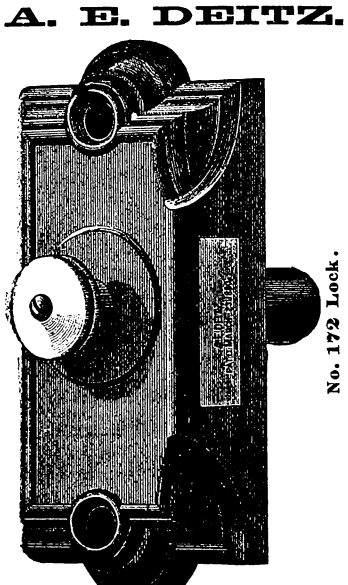
STEARNS MFG. CO.

CONNERSVILLE, IND.,

Manufacturers of

CLIMAX WASHER, CLIMAX WOOD and CHAIN PUMPS, &c.

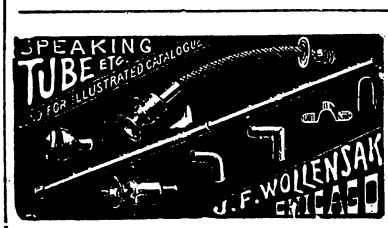
A. E. DEITZ.

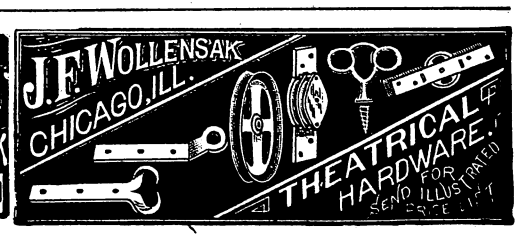


No. 172 Lock.

A. C. McCARTY & CO., Agents, 97 Chambers and 81 Reade Sts., New York.

Factory, BROOKLYN, E. D., N. Y.





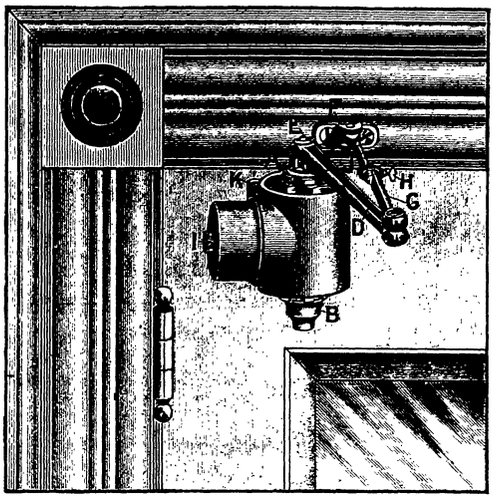
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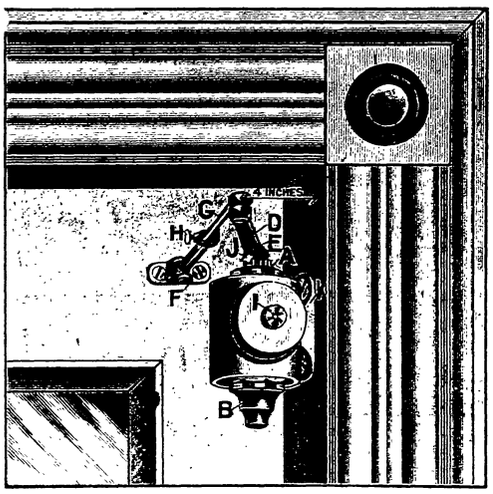
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New Britain, Conn. New York. Philadelphia. Chicago.

——) MANUFACTURERS OF (——

Easily Adjusted and Adapted for all Requirements.





Looks Well, Acts Well, Wears Well.

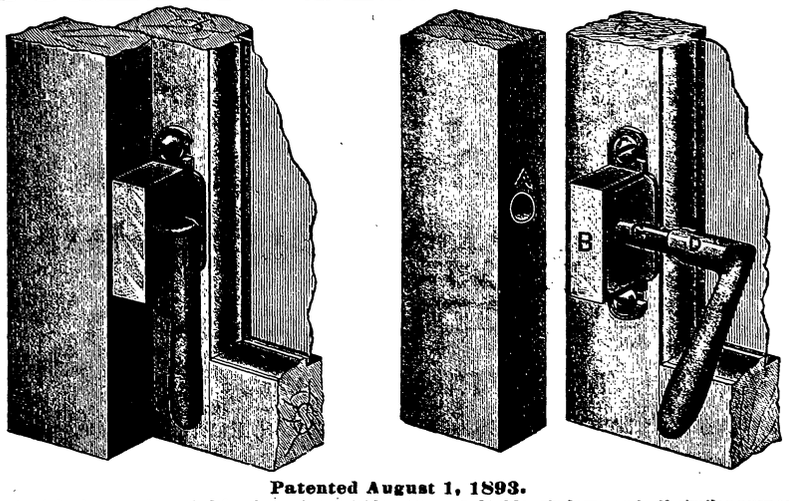
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Fine Builders' Hardware. Wood and Machine Screws.

Catalogues and Prices Furnished on Application.



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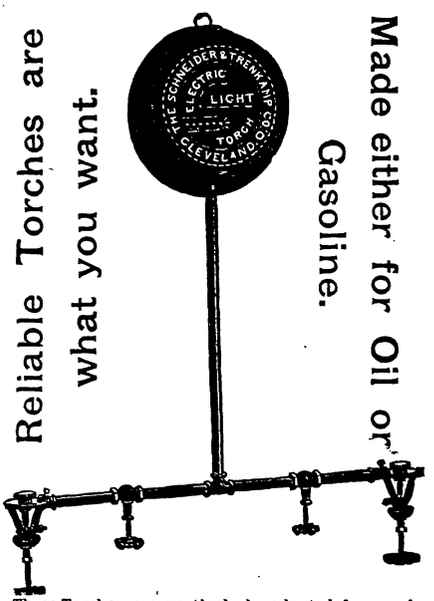
Patented August 1, 1893.

The best device ever invented for fastening outside, storm or double windows, and all similar purposes.

Saves Time, Labor and Expense.

F. V. WOOSTER, Manufacturer, - - - 66 Beverly St., BOSTON

Reliable Torches are what you want.



Made either for Oil or Gasoline.

These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner.

Write us for prices. A liberal discount given to the trade. Manufactured by

THE SCHNEIDER & TRENKAMP CO.,

Nos. 479 to 497 Case Ave., Cleveland, Ohio



WM. KROGSRUD,

Engraver and Die Sinker,

61 Fulton St., N. Y.

Manufacturer of

STEEL STAMPS

For Every Purpose.

Steel Letters and Figures.

Burning Brands, Stencils, &c. Send for Illustrated Catalogue.

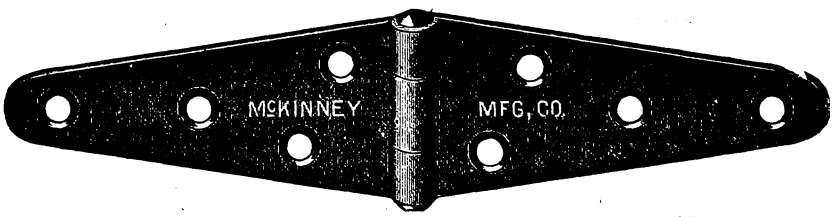


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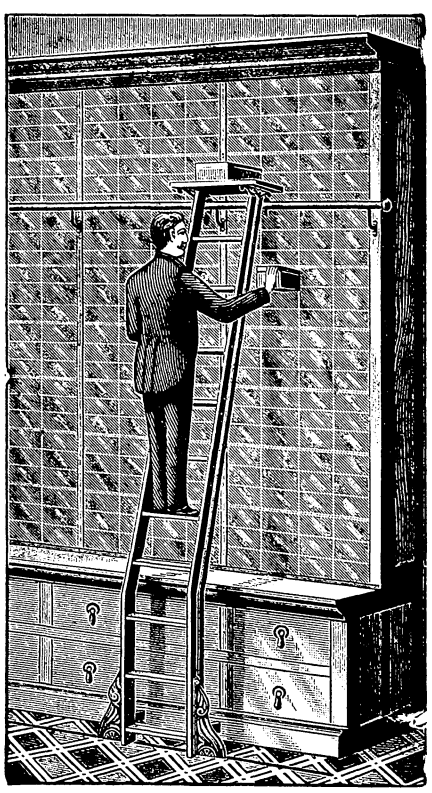
WE CLAIM

That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

McKINNEY MFG. CO., ALLEGHENY, PA.

Steel  Hinges.

SEND FOR LIST. "NONE BETTER."

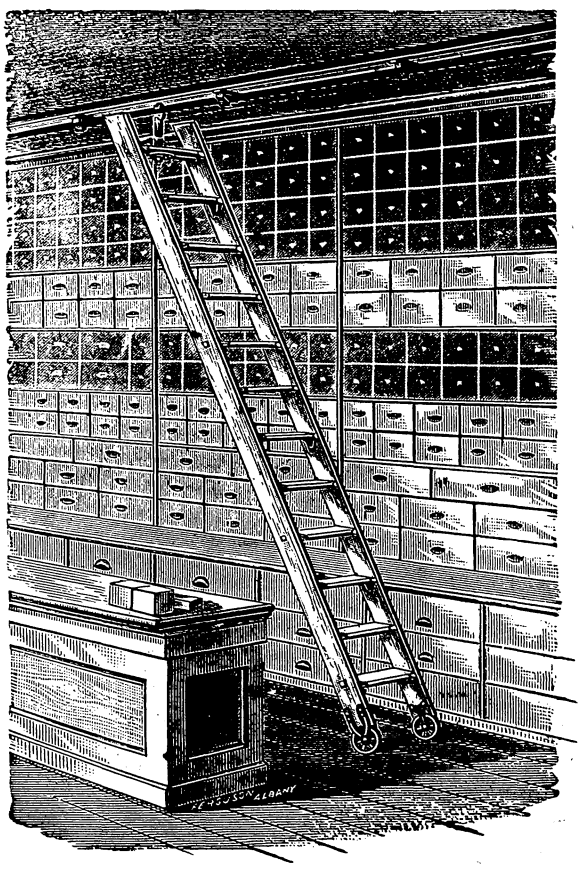


FLOOR TRACK BICYCLE LADDER

No other Ladder Service can approach the "Bicycle" in ease and convenience of operation. Compared with others they work like a bicycle beside a lumber wagon.
Can be applied to any kind of shelving made.
See this space next week for other styles.
Send for Illustrated Catalogue and prices to
THE BICYCLE STEP LADDER CO.,
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HARDWARE DEALERS
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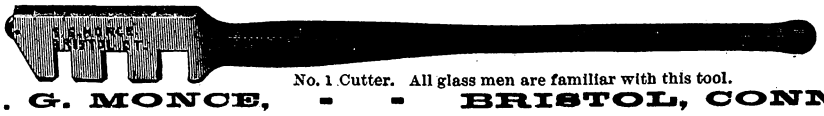


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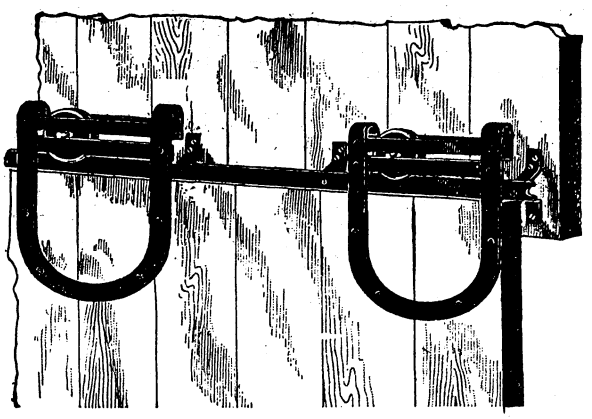
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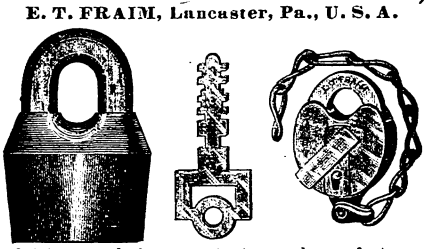
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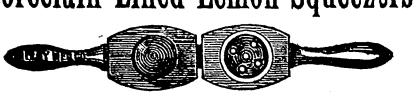
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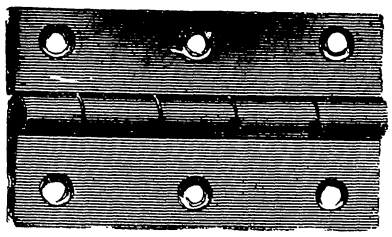
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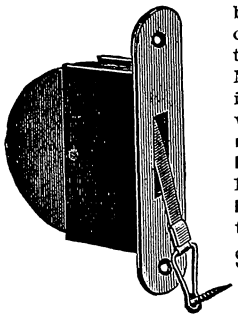
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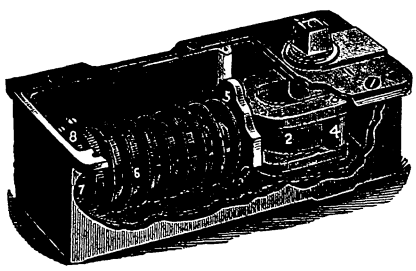
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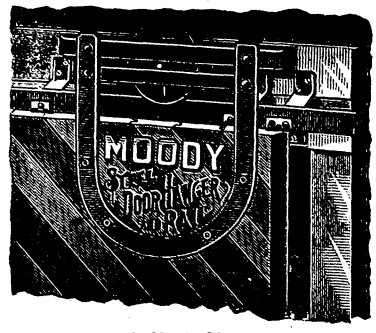
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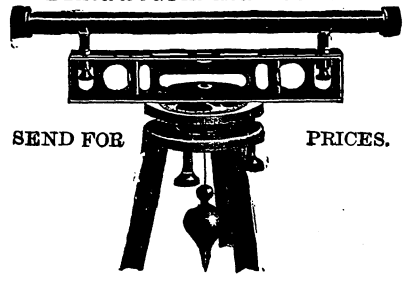
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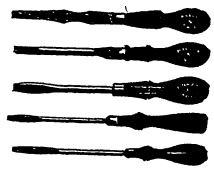
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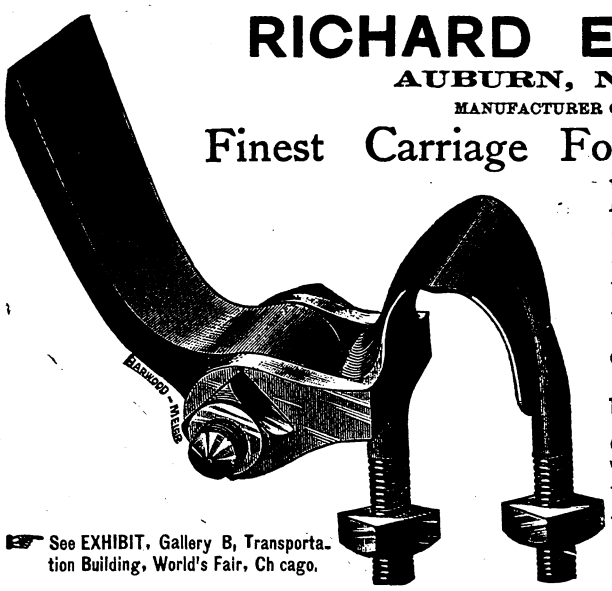


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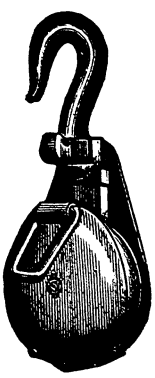
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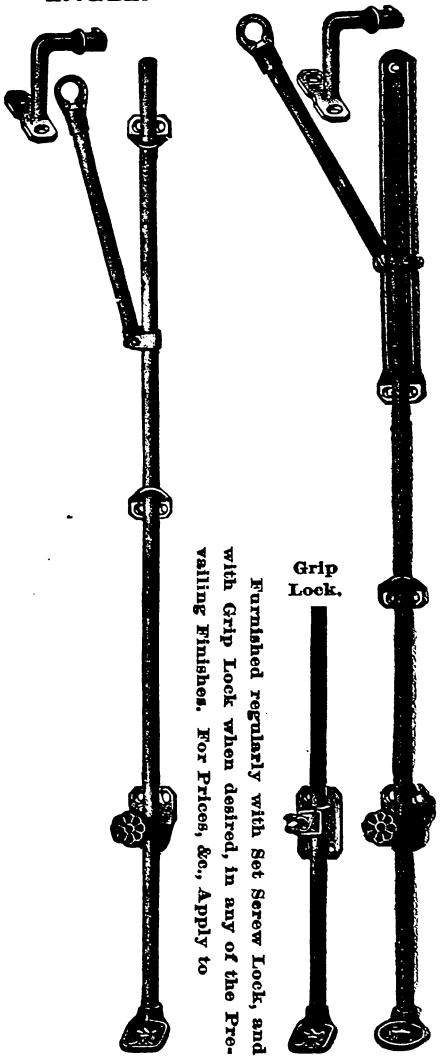
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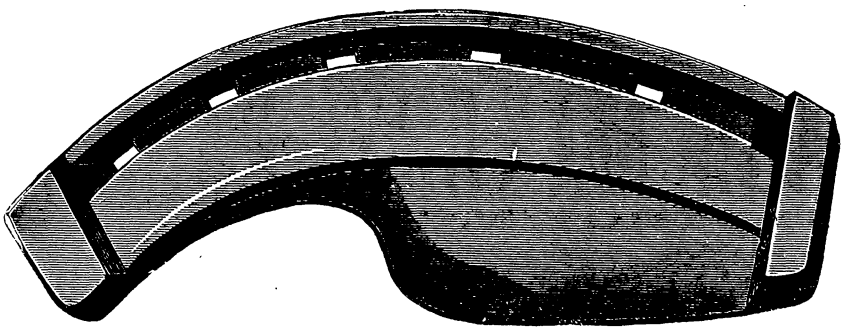
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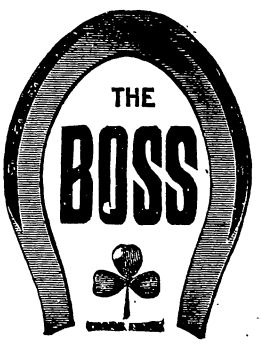
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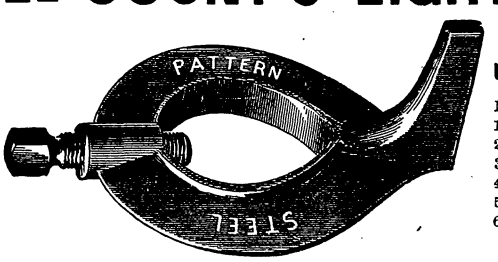
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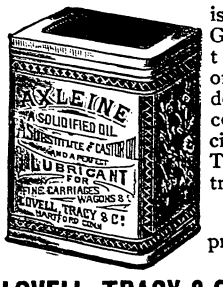
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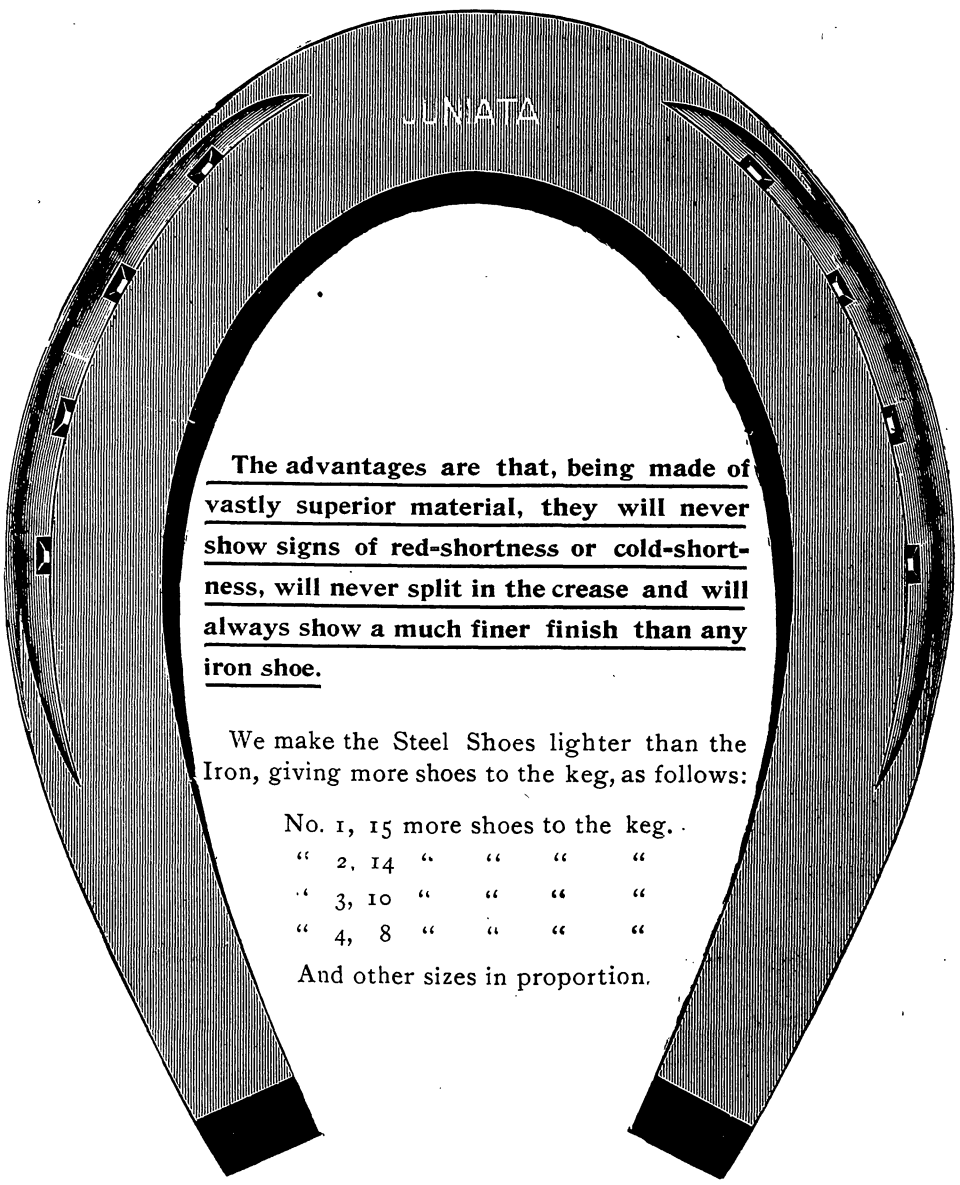
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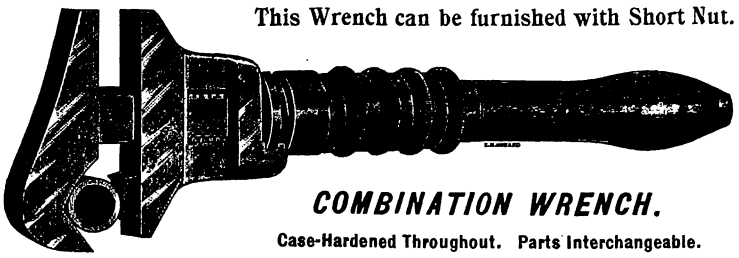
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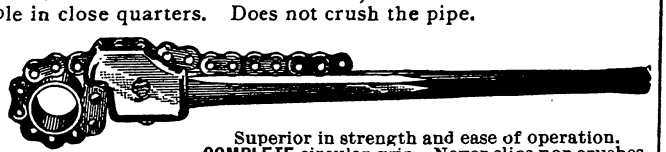


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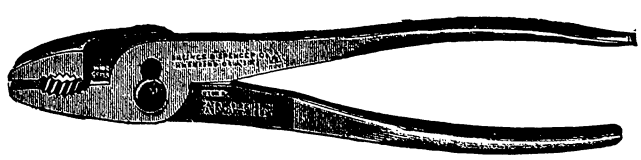
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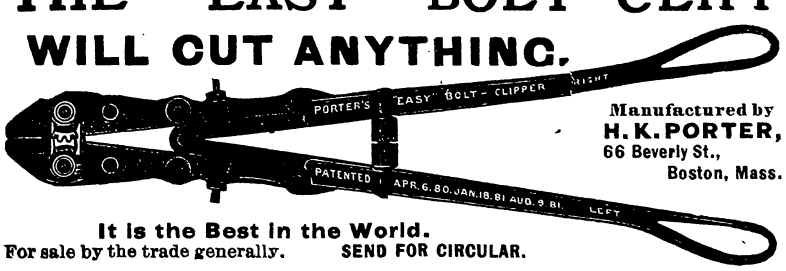
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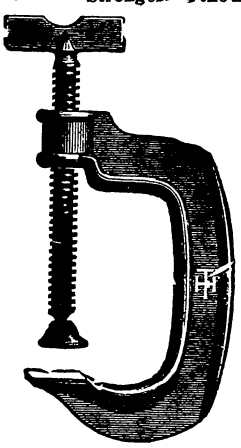
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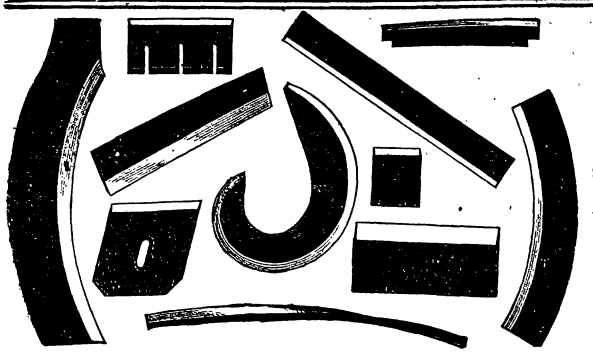






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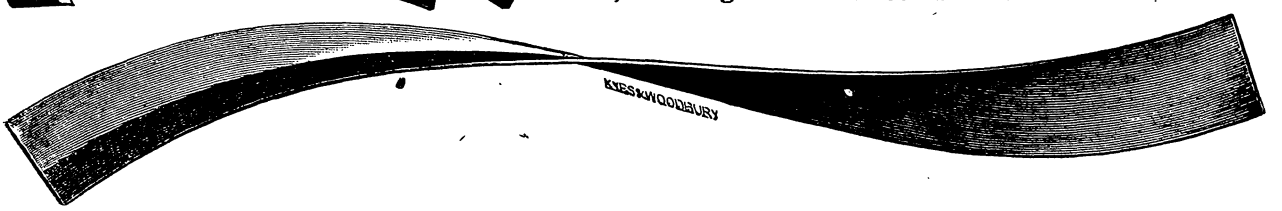
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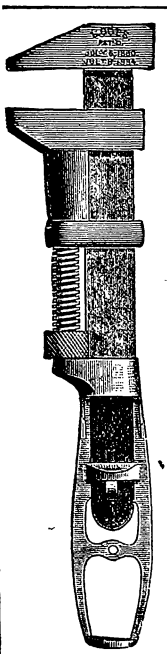


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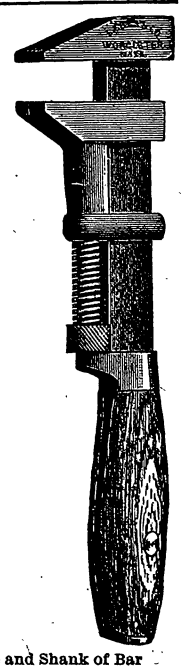
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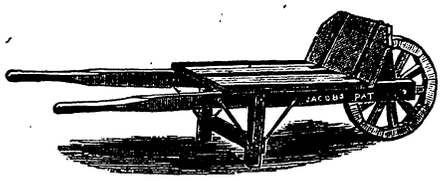
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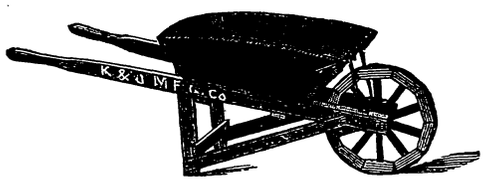
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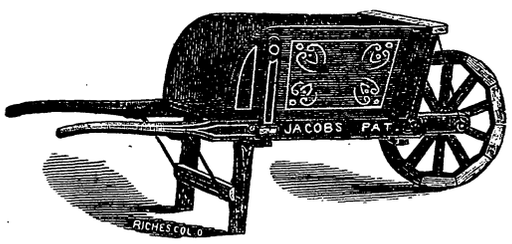
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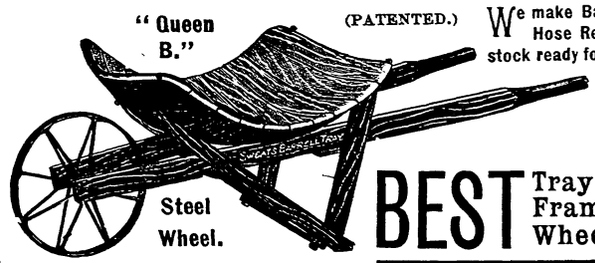


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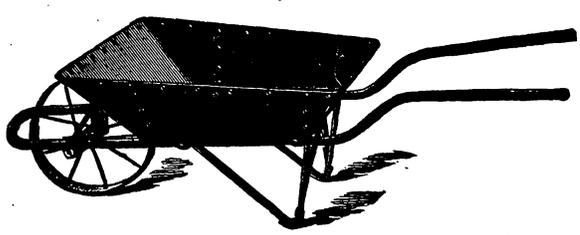


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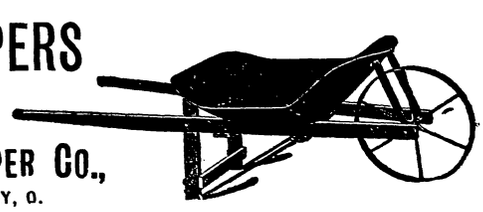
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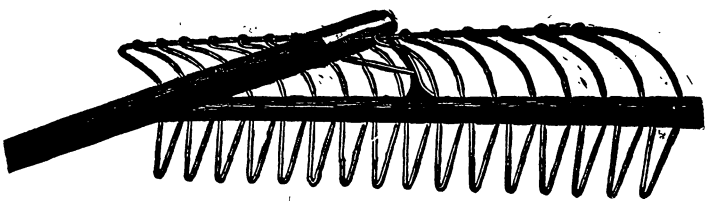


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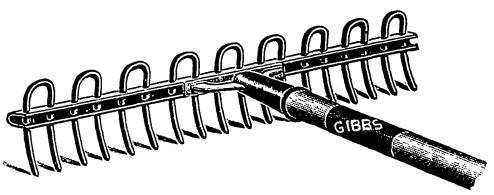
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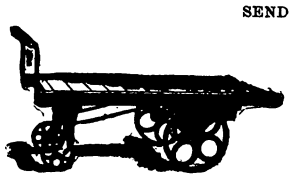
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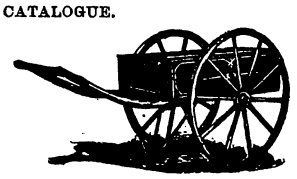
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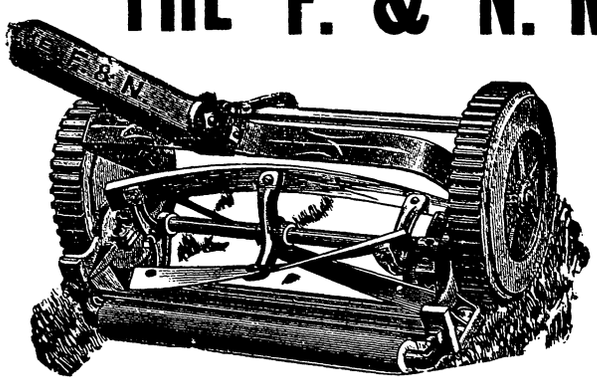
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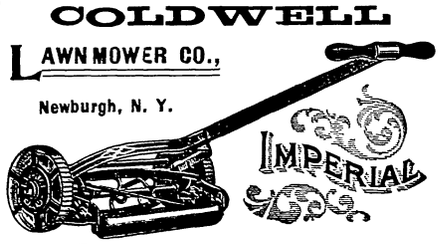
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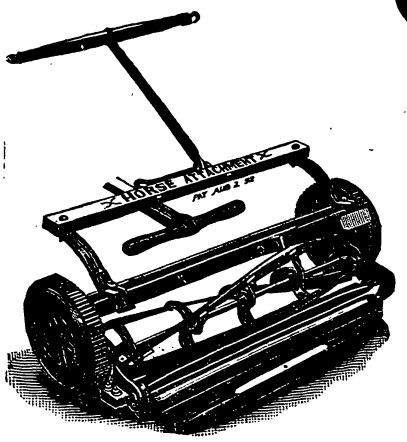
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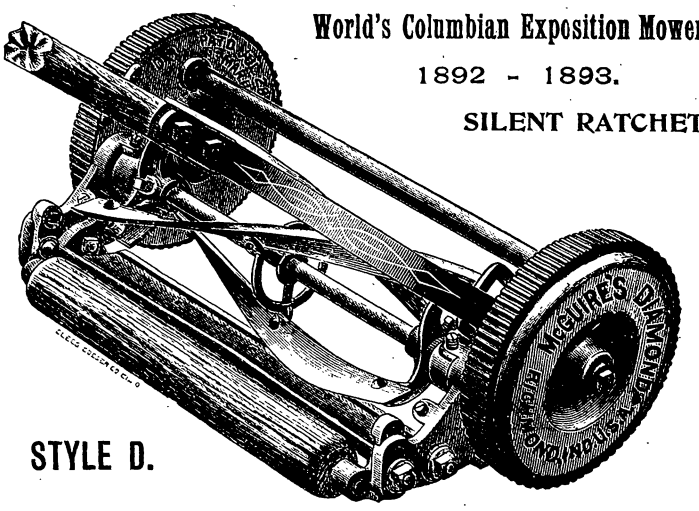
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16 " - - - -	16.00
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FOR USE IN PRICE BOOKS.

Compiled by R. R. WILLIAMS, Hardware Editor of The Iron Age.

This pamphlet contains the principal standard Hardware price-lists in as clear and compact an arrangement as possible, so as to permit their being advantageously cut out and inserted in the price book. In order to make them adapted to this use they are printed on thin and tough paper of fine quality and on only one side of the paper.

The success of the effort to give the lists in small space is illustrated in many of the lists, in which a clear and condensed arrangement is secured. For instance, the wrench list occupies but 3 inches by ¼ inch, while the list of Stove Hollow Ware, in very small space, gives the list prices on a large and important line of goods which often occupy several pages in catalogues. In several lists, such as Strap and T Hinges and Butts, a new arrangement is adopted, which is regarded as presenting these lists in a very convenient as well as condensed form.

As is obvious from the lists herewith reproduced, the shape and size of the different lists varies greatly, the aim being to give each list the smallest and most convenient arrangement possible. None of the lists are, however, more than 3½ x 6 inches in size, very few of them being as large as this and most of them very much smaller. In use it is intended that they shall be trimmed closely before they are inserted in price books, when they may be attached either by one edge close to the hinge of the book, as will, perhaps, be most convenient with the larger lists, permitting the use of the entire page for memoranda, or the smaller lists may be pasted on the page in connection with the entries in regard to discounts, freights, &c. Many of the lists are so compact in arrangement as when thus inserted to leave ample room for recording quotations.

Saucepans and Round Boilers.

	Plain	Turned	Tin'd or En'd.
Pints.			
1	$0.30	.35	.39
1½	.32	.37	.44
2	.35	.39	.48
3	.42	.47	.56
Quarts.			
2	.50	.56	.63
2½	.53	.59	.68
3	.55	.62	.73
4	.60	.68	.84
5	.65	.75	.96
6	.70	.81	1.11
7	.75	.84	1.21
Gallons.			
2	.85	.96	1.31
2½	1.05	1.18	1.56
3	1.20	1.35	1.70

Stove Hollow Ware. Ground and Unground.

POTS, KETTLES, ETC. (CAST IRON.)

No.....	6	7	8	9	10	11
Pots.....	$0.65	.75	.85	1.00	1.25	1.75
Kettles.....	.55	.65	.70	.85	1.00	1.40
T Kettles.....	.75	.80	.90	1.00	1.25	....
Spiders.....	.27	.30	.35	.40	.50	.60
Griddles Round	.22	.25	.27	.30	....	....
" Long..	.40	.50	.60	.75	....	....

SCOTCH AND YANKEE BOWLS.

No	1	2	3	4	5	6
Scotch Bowls..	$0.35	.40	.45	.50	.60	.70
Yankee Bowls.	.35	.45	.55	.65	.75	.90

Wrenches. Standard List.

Inches.	6	8	10	12	15	18	21
Black...	$9.00	$10.00	$12.00	$14.00	$24.00	$30.00	$36.00
Bright..	10.00	11.00	14.00	16.00	26.00	32.00	38.00

Some merchants use this pamphlet for reference, checking off invoices, etc., as it gives the leading lists in a more convenient form than they can otherwise be obtained. The lists are, however, intended primarily to be cut out and inserted in price books, and *can be used in connection with any of The Iron Age Hardware Price Books.*

Glue Pots. Tinned or Enameled

No. 4/0....	$4.50	No. 2	$8.40
3/0....	5.00	3.....	10.26
2/0....	5.50	4	12.42
0	6.00	5.....	14.58
1	6.75	6.	16.94

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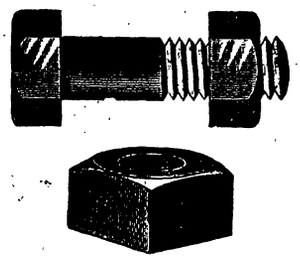
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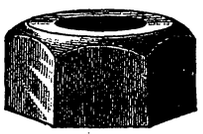
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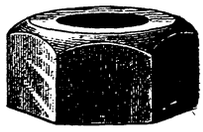
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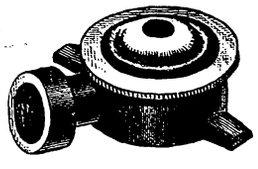
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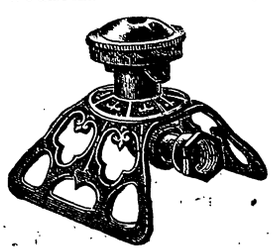
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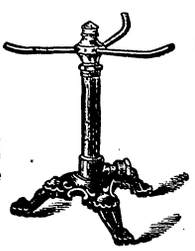


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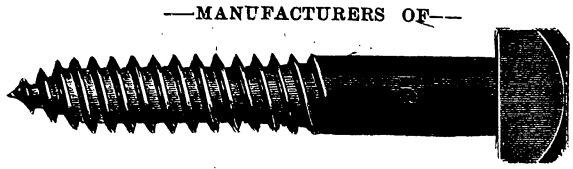
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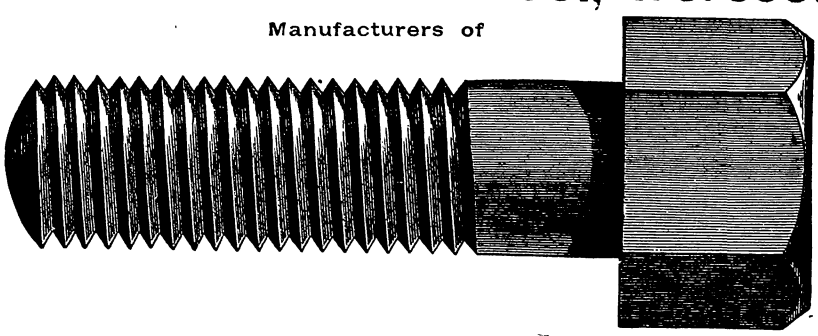
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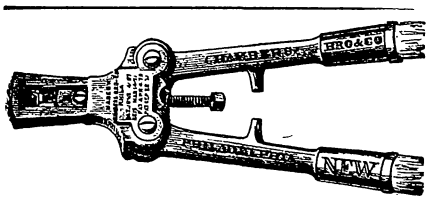


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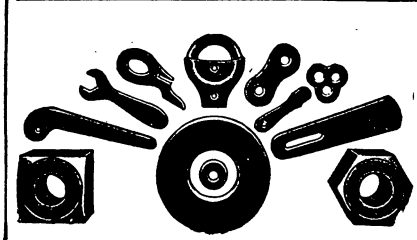
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Phila. Drop Forge Co., Philadelphia, Pa.
Scranton Forging Co., Scranton, Pa.
Spiers, J. C. & Co., Worcester, Mass.
Williams, J. H. & Co., Brooklyn, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.
Wyman & Gordon, Worcester, Mass.

Drop Presses.
Bliss, E. W. Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.

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Ferracute Mch. Co., Bridgeton, N. J.
Miner & Peck Mfg. Co., New Haven Conn.
Robinson, J. M. & Co., Cincinnati, O.
Stiles & Parker Press Co., Brooklyn, N. Y.
Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Dumb Waiters.
Storm Mfg. Co., Newark, N. J.

Dust Beaters.
Peabody & Parks, Troy, N. Y,

Dynamite.
New York Powder Co., 62 Liberty St N Y.

Dynamos.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Detroit Dynamo Co., Detroit, Mich.
Lovell Mfg. Co., Ltd., Erie, Pa.
Zucker & Levett Chemical Co., 10 & 14 Grand St., N. Y.

Edge Tools. *Makers of.*
Buck Bros., Millbury, Mass.
Buffalo Edge Tool Wks., Buffalo, N. Y.
Plumb, Fayette R., Philadelphia, Pa.
Warren Axe & Tool Wks., Warren, Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
North Bros. Mfg. Co., Philadelphia.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St., New York
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines.
Hanson & Van Winkle Co., Newark, N. J.

Electro-Platers.
Boardman, L. & Son, East Haddam Ct.

Elevators. *Makers of.*
Link-Belt Engineering Co., Phila., Pa
Morse, Williams & Co., Phila., Pa.
Salem F'dry & Mch. Co., Salem, Mass.

Emery and Emery Wheels.
Bell, Geo. E., 36 John St., N. Y.
Grant Corundum Wheel Mfg. Co. Worcester, Mass.
N. Y. Belting & Packing Co., Ltd., N. Y.
Northampton Emery Wheel Co. Leeds, Mass.
Norton Emery Wheel Co., Worcester Mass
Sterling Emery Wheel Co., 174 Fulton St., New York.

Enamels.
Nubian Iron Enamel Co., Cragin, Ill.

Engineers and Contractors.
Aiken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amster & Co., Pittsburgh, Pa
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa
Witherow, Jas. P. Co., Pittsburgh; Pa.

Engines, Gas.
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg. N. Y.

Engines, Steam. *Makers of.*
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Erie Engine Works, Erie, Pa.
Lane & Bodley Co., Cincinnati, O.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Phœnix Iron Wks. Co. Meadville, Pa.
Shipman Engine Co., Boston, Mass
Southwark Foundry and Machine Co. Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.
Sweester, W. A., Brockton, Mass.

Expansion Bolts.
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O

Faucets, Self-Measuring
Lane Bros., Poughkeepsie, N. Y.

Faucets, Wooden. *Makers of.*
Boston & Lockport Block Co., Boston Mass., and Lockport, N. Y.
John Sommer's Son, Newark, N. J.

Feed-Water Heaters.
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N. Y
Harrison Safety Boiler Wks, Phila, Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
DeKalb Fence Co., DeKalb, Ill.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hartman Mfg. Co., Ellwood City, Pa.
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire & Iron Wks., Milwaukee

Files. *Importers of*
Moss, F. W., 80 John, N. Y.

Files and Rasps, *Manufacturers of*
Arcade File Works, Anderson, Ind.
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond, Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence, R. I.

Fire Brick. *Makers of.*
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer B. & Sons, foot E. Houston, St
McLeod & Henry Co., Troy, N. Y.
Maurer, H. & son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro., Woodbridge.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Fishing Tackle.
Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flour Sifters.
Meyers, F. J. Mfg. Co. Covington, Ky.
Sills, W. H., 81 Lake St., Chicago, Ill.

Flower Stands.
Cincinnati Mfg. Co., Cincinnati, O.

Flue Cleaners.
Mackey, Jas. T., St. Louis, Mo.

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Foreign Periodicals.
Stechert, G. E., 810 Broadway, N. Y.

Forges, Portable, &c.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Scranton Forging Co., Scranton, Pa.

Foundry Facings.
Paxson, J. W. & Co., Phila.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.

Foundry Riddles.
Estey, W. S. 65 Fulton, N. Y.

Foundry Supplies.
Collian, Victor, Detroit, Mich.
S. Obermayer Co., Cincinnati, O.
Paxson, J. W. & Co., Philadelphia.
Smith, J. D. Fdy. Supply Co., Cinn., O

Friction Clutches.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.
Evans Friction Cone Co., Boston, Mass

Fruit Pickers.
Cleveland Novelty Co., Cleveland O.

Fruit Presses.
Enterprise Mfg. Co. Philadelphia, Pa.

Gas Producers.
Wood, R. D. & Co. Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast, Henry B. & Co., Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
D. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston' Mass.
Gleason Tool Co., Rochester, N. Y.
New Process Raw Hide Co., Syracuse, N. Y
Poole, Robt. & Son Co., Baltimore, Md.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glass Tubes,
Ashcroft Mfg. Co., 111 Liberty St., N. Y.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.
Supplee Hardware Co,, Phila., Pa.

Grinding and Polishing Machines.
Herrick & Cowell, New Haven, Conn.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grindstone Dressing Machinery
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gun Implements.
Union Hdw. Co., Torrington, Conn.

Gunpowder, *Makers of.*
Laflin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich.

Handles.
New Process Raw Hide Co., Syracuse, N. Y
New York Mallet and Handle Wks. 456 E. Houston St., N. Y.

Hangers, Door.
Cronk Hanger Co., Elmira, N. Y.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Hotchkiss, E. S. Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Graham, John H. & Co., 113 Chambers,
McCoy, Jos F. Co., 26 Warren St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N. Y.
Underhill, Clinch & Co., 94 Chambers St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co. New Haven, Conn.
Clark Mfg. Co., Buffalo, N. Y.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Gwinner Mfg. Co., Hamilton, O.
Haines & Zimmerman, Phila Pa.
Hart, H. C Mfg. Co., Detroit, Mich.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
New Britain Hdw. Mfg. Co., New Britain, Conn.
North Bros. Mfg. Co., Philadelphia, Pa
Peabody & Parks, Troy, N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
Weiland, Chas., 149 Chambers St., N. Y
Wilson, J. Fred, Worcester, Mass.
Underhill, Clinch & Co., 94 Chambers Street, N. Y

Hardware, Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.
Cox, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co. Cleveland, Ohio.
Copeland & Bacon, 85 Liberty St. N. Y
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hollow Ware, Aluminum.
Illinois Pure Aluminum Co. Lemont, Ill

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, *Makers of.*
National Horse Nail Co., Vergennes, Vt,

Horse and Mule Shoes. *Makers of.*
Bryden Horse Shoe Co., Catasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phœnix Horse Shoe Co., Poughkeepsie N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.

Hose.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N. Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Shavers.
Enterprise Mfg. Co., Philadelphia, Pa.

Injectors.
Eynon-Evans Mfg. Co., Philadelphia, Pa
Jenkins Bros., New York
Sherwood Mfg. Co., Buffalo, N. Y.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. Hartford Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y

Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia Pa.
Hoffman, J. W. & Co., Philadelphia.
Lewis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron, *Merchants.*
Barnes, C. K. & Co., Philadelphia, Pa
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia
Cotton, Bradley & Co., Philadelphia
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co. 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St. N. Y
Pickands, Brown & Co., Chicago, Ill.
Pierson & Co., 29 Broadway, N. Y.
Richards, D. W. & Co., 88 Manging St. N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, *Importers.*
Abbott Wheelock & Co. N. Y. and Boston
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet. *Manufacturers of.*
Cambridge Iron & Steel Co., Cambridge Ohio
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladles.
Detroit Fdy. Equipment Co., Detroit, Mich.

Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.

Lanterns.
Ohio Lantern Co., Tiffin, Ohio.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls N. Y.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mowers.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Champion Mfg. Co., Richmond, Ind.
Coldwell Lawn Mower Co., Newburg, N. Y.
Dille & McGuire Mfg. Co., Richmond, Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Lape, W. E., Syracuse, N. Y.
Mast, Foos & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila. Pa.

Lawn Rakes.
Gibbs Mfg. Co, Canton Ohio.
Konler, F. E. & Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse N. Y.

Lawn Sprinklers.
Ette & Henger Mfg. Co., St. Louis,
McGowan, John H. Co., Cincinnati, O.

Lawn Sweepers.
Lape, W. E., Syracuse, N. Y.

Lemon Squeezers.
Ripley Mfg. Co., Unionville, Conn.

Letters and Figures, Metallic
White, A. A. & Co., Providence, R. I.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.

Locks & Knobs, *Manufacturers of*
Belts, A. E., 97 Chambers, N. Y
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg Co. Bridgeport, Conn
Yale & Towne Mfg. Co., Stamford, Conn

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Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N.Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N.Y.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Cruikshank, D. B., Providence, R. I.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila. Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Gemey Mch. Tool Wks, Richmond, Ind.
Hill, Clarke & Co., Boston, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield Vt.
Lodge & Shipley Mch. Tool Works, Cincinnati, O.
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co. Rochester, N.Y
Manville, E. J. Mch. Co, Waterbury, Conn
National Machinery Co., Tiffin, Ohio
Newark Mch. Tool Works, Newark, N.J
New Haven Mfg. Co., New Haven, Conn
New York Mach'y Depot, N. Y.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn
Prentiss Tool & Supply Co., N. Y
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ld., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.
Adt, Jno. & Son, New Haven, Conn.

Machine Knives.
Loring Coes & Co., Worcester, Mass

Machine Screws.
New Britain Hdw. Mfg. Co., New Britain, Conn.

Machine Tools.—*See Machinery,*

Machine Work.
Papping, J., 58th St., & 11th Ave., N.Y. City.

Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y.
Starrett, L. S., Athol, Mass.

Machinists' Tools and Supplies
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.

Mallets.
N. Y. Mallet & Handle Works, N. Y

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St., N.Y.
Lufkin Rule Co., Saginaw, Mich.

Meat Cutters.
Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Instruction.
Correspondence School of Mechanics Scranton, Pa.

Metals.
Fearing, Wm. S., 100 Chambers, N. Y
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
American Metal Co., N. Y.

Metallurgists.
Britton J. Blodgett, Phila.

Milling Machines.
Cin. Milling Mch. Co., Cincinnati, Ohio.

Mincing Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
Darby, Edw. & Sons Phila. Pa.
Leonard, B. E., Scranton, Pa.

Mining Screens.
Harrington & King Perforating Co Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y

Mirrors.
Rice, C. F., Chicago, Ill.

Molding Sand.
Obermayer, S. Co, Cincinnati, O.
Paxson, J. W. & Co., Phila.

Motors, Water and Electric.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington.
Pottstown Iron Co., Pottstown, Pa.
Riverside Iron Wks, Wheeling, W. Va.

Neck Yokes.
Johnson, S. C., Racine, Wis.

Nickel Platers' Supplies.
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett Chemical Company. 10 to 14 Grand St., N. Y

Norway Shapes, *Rollers of.*
Bowland, William & Harvey, Frankford, Philadelphia

Novelty Manufacturers.
Franklin, H. H. Mfg, Syracuse, N. Y.

Nut Machines.
Dunham Nut Mch. Co., Unionville, Ct.

Nuts, Bolts, &c., *Makers of.*
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury Conn.
Haskell, Wm. H. Co., Pawtucket, R. I.
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Port Chester Bolt and Nut Co., Port Chester, N. Y.
Russell, Burdsall & Ward, Port Chester
Sternbergh, J. H. & Son, Reading, Pa
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R. I.

Oil Cups and Lubricators.
Sherwood Mfg. Co., Buffalo, N. Y.

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
Glazier Stove Co., Chelsea, Mich.

Ores.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Billington, Jas. H. & Co., Phila., Pa.
Morrison, Robt., St. Louis, Mo.
N. Y. Belting & Packing Co. Ltd., N.Y.

Padlocks.
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila, Pa.
Miller Lock Co., Philadelphia, Pa.

Paint.
Dixon, Jos. Crucible Co., Jersey City, N.J

Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O

Paint Cans.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Patent Solicitors.
Howson & Howson, Phila. & Wash'gton.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co. Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.
Crescent Phosphorised Metal Co., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., Boston, Mass.
Haik & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

Pile Drivers.
Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast Henry B. & Co., Philadelphia.
Saunder's Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c., *Makers of.*
McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas. *Makers of.*
Cumberland Nail & Iron Co., Phila, Pa
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W Va.
Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.

Planes, *Manufacturers of.*
Stanley Rule & Level Co., N. Y

Plate, Iron and Steel, *Mfrs of*
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
Mollvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa
Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.

Polishing Machines.
Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
La Massena, C. E. & Co., Newark, N.J.

Post Hole Diggers.
Buckeye Mfg. Co., Union City, Ind.
Wister, L. & R. & Co., Philadelphia, Pa.

Poultry Nettings.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Wks. Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
Laflin & Rand Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y.

Power Hack Saws.
Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Jenkins & Lingle, Bellefonte, Pa.
Long & Allstatter Co., Hamilton, Ohio.

Presses, Dies, &c.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co. Bridgeton, N. J.
Niagara Stamping & Tool Co., Buffalo, N. Y.
Stark Mch & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn

Presses, Power. *Makers of.*
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct,
Merriman, A. H., Meriden.
Niagara Stamping and Tool Co., Buffalo, N. Y.
Robinson, J. M. & Co., Cincinnati, O.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
Keystone Clutch Mch. Wks., Phila., Pa.
Lane, J. H. & D. Co., Massillon, Ohio,
Reeves Pulley Co., Columbus, Ind.

Pulley Fixings.
Foley, J. W. & Co., Cincinnati, O.

Pulverizing Mill.
Bradley Fertilizer Co., Boston, Mass.

Pumping Machinery.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Hooker-Colville Steam Pump Co., Chicago, Ill.
Lucas, C. O. & Co., Greenville, Ohio.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa
Valley Pump W'ks, Easthampton Mass
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps. *Makers of.*
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Mast, Foos & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.
Bertsch & Co., Cambridge City, Ind.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton N. J.
Henderer, A. L., Wilmington, Del.
Long & Allstatter Co., Hamilton, Ohio.
Niagara Stamping and Tool Co. Buffalo, N. Y.
Robinson, J. M. & Co., Cincinnati, O.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
Perry, W. H. & Co., Providence, R. I.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Estey, W. S., 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.
Sun Mfg. Co., Greenfield, O.

Razors.
Curley, J. & Bro., 6 Warren St., N. Y.
Electric Cutlery Co., 113 Chambers, N.Y
J. R. Torrey Razor Co., Worcester, Mass

Reels.
Hendryx, A. B. Co., New Haven, Conn

Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.

Rivets.
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Troy, N. Y.
Cobb & Drew, Plymouth, Mass.
Henderson, Jas S., 165 Greenwich, N.Y.
New England Screw Co., Boston, Moss.
Plymouth Mills, Plymouth, Mass.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Rock Drills.
Sand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd, Co., Youngstown, O.
Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning F'dry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd, Co., Youngstown, O.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh Pa.

Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Johns, H. W. Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N.Y

Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa.

Rubber Goods.
Canfield, H. O., Bridgeport, Conn.

Rules, *Manufacturers of.*
Keuffel & Esser Co., 127 Fulton St., N.Y
Lufkin Rule Co., Saginaw, Mich.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Pullman Sash Balance Co., Rochester, N. Y.
Vanderbilt Sash Balance Co., Canandaigua, N. Y.

Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.
Cincinnati Corrugating Co., Piqua, O.

Sash Fasteners.
Wooster, F. V., Boston, Mass.

Sash Locks.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Portable Forge Co., Lansingburgo, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.

Saw Handles.
Gwinner Mfg. Co., Hamilton, O.

Saws, *Makers of.*
Disston, Henry & Sons, Phila., Pa.
Hiles, C. A. & Co., 333-338 Carroll Ave Chicago, Ill.
National Saw Co., 96 Reade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Taintor Mfg. Co., 84-86 Chambers, N

Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N.Y

Scrapers, Road.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.

Screens, Coal and Ore.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Screens, Door and Window.
Queen Anne Screen Co., Burlington, Vt.

Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Capitol Mfg. Co., Chicago, Ill.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.

Screws, *Makers of.*
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
National Screw & Tack Co., Cleveland, Ohio.
New England Screw Co., Boston, Mass.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls N.Y

Scythe Stones and Whetstones.
Pike Mfg. Co., Pike Stat'n, N. H.
Cleveland Stone Co., Cleveland, O.

Shafting, *Makers of.*
Cresson, Geo. V., Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Fitzsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc. Phila, Pa.
Snow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel,—*Manufacturers of.*
Ætna-Standard Iron & Steel Co. Bridgeport, O.

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Allentown Rolling Mill, Allentown, Pa.
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville Pa
Roberts, A. & P. & Co., Phila., Pa.
The Phœnix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn
Heinisohs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, *Manufacturers of.*
Ætna-Standard Iron and Steel Co., Bridgeport O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh,
Pierson & Co., 29 Broadway, N. Y.
Reily, John W., Fort Hunter P.O., Pa.
Singer, Nimick & Co., Ld., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch. A. B. & Co., Peoria, Ill.

Sinks.
Douglas, W. & B., Middletown Conn.

Skates, Ice.
Dame, Stoddard & Kendall, Boston Mass.
Sickels, Sweet & Lyon, 35 Barclay St., N. Y
Winslow, Sam'l, Skate Mfg. Co, Worcester, Mass.

Skates, Roller.
Henley, M. C., Richmond, Ind.
Union Hardware Co., Torrington, Conn
Winslow, Saml., Skate Mfg. Co., Worcester, Mass

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.
Clenuenin Bros., Baltimore, Md.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.

Speed Indicators.
Church & Sleight, 109 Fulton St., N. Y.

Spelter.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford Conn.
Rogers & Hamilton Co., Waterbury, Conn.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y

Springs.
American Spiral Spring Co., Pittsburgh Pa.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y
Morgan Spring Co., Worcester, Mass
Nourse, Fred. Co., 315 to 319 E. 22d St., N. Y
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt
Tuck Mfg. Co., Brockton, Mass
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Bardsley, J., 149 & 151 Baxter St., N.Y.
Pullman Sash Balance Co., Rochester N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Sprinklers.
Smith, Oliver A., Clarkston, Mich.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St, New York

Stamping Works.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co. Binghamton N.Y

Steam Gauges.
Ashcroft Mfg Co., 111 Liberty St., N.Y
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., *Makers of*
Dieneit & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N.
Trethewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Camden, N.J.

Steam Separators.
Goubert Mfg. Co., 32 Cortland St N. Y.
Harrison Safety Boiler Wks Phila. Pa

Steel Balls.
Grant Anti-Friction Ball Co., Fitchburg, Mass

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.

Steel Figures and Alphabets.
Krogsrud, W., 61 Fulton. N. Y.

Steel Importers.
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 9 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Ætna-Standard Iron & Steel Co., Bridgeport.
Bethlehem Iron Co., S. Bethlehem, Pa
Boker, Hermnan & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Eiken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 9 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa
Moorhead-McCleane Co., Pittsburg Pa
Moss, F. W., 83 John N. Y
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Reily, J. W., Fort Hunter P. O., Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co. High Bridge, N.J
Wardlaw, S. & C., Sheffield, Eng
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn

Steel, *Manufacturers' Agents.*
Barnes, C. K. & Co., Philadelphia, Pa
Corning, Edw. & Co., 29 B'way, N. Y
Frasse Co. 19 Warren St., New York.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, *Manufacturers of.*
Bethlehem Iron Co., S. Bethlehem, Pa
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville Pa
Riverside Iron Wks., Wheeling, W. Va

Steel, Tool.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.

Steel Wheels.
Lilienberg, M. N., 150 Broadway, N. Y.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill
Croissant, M., Albany, N. Y.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunder's Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Storage.
Security Warehouse, E. St. Louis, Ill.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y

Stove Pipe Thimbles.
Cheney, S. & Son Manlius, N. Y

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse N. Y.

Strops.
Electric Cutlery Co. 113 Chambers, N.Y
J. R. Torrey & Co., Worcester, Mass.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co. La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation. Boston. Mass
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland O.
Phillips, E. & Sons, South Hanover.
Plymouth Mills, Plymouth, Mass.
Trufant, W. E., Whitman, Mass.

Taps and Dies.
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila.

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tinning Process.
Sands, Thomas, Nashua, N. H.

Tin Plate Machinery.
Lloyd Booth Co., Youngtown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St.,

Tire Upsetters.
Butts & Ordway, Boston, Mass,

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N.Y.

Tools.
Brown, R. H. & Co., New Haven, Conn.
Frasse Co., 19 Warren St., New York.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.
Tower & Lyon, 95 Chambers St., N. Y.

Tools, Blacksmith and Wheelwrights.
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R. Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasolene.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.

Transom Lifters.
Wollensak, J. F. Chicago, Ill.

Tree Protectors.
McCallip Fence & Wire Wks., Columbus, Ohio.

Trucks. *Manufacturers of.*
Berger Bros., Philadelphia, Pa.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co. Lansing Mich.

Tubes, Seamless Drawn Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.
Leng's John S. Son & Co., 4 Fletcher St., New York.
Mannesmann Tube Co. Ltd., Landore, England.
Shelby Steel Tube Co., Shelby, O.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills. *Makers of.*
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 56 John N. Y.
Mason Regulator Co., Boston, Mass.

Ventilating Fans.
Huvett & Smith Mfg. Co., Detroit, Mich

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vises.
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Tower & Lyon, 95 Chambers St., N. Y.,
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.

Washing Machines.
Neff, W. H., Cowan Ind.
Stearns Mfg. Co., Connersville, Ind.
Wayne, A. Mfg. Co., Ft. Wayne, Ind.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Wheelbarrows.
Akron Tool Co., Akron O.
Amer. Steel Scraper Co., Sidney, Ohio
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Sweatt Mfg. Co., Minneapolis, Minn.

Whips.
American Whip Co., Westfield, Mass,

Window Cord, *Makers of.*
Samson Cordage Works, Boston. Mass

Wire, *Manufacturers of.*
Amer. Spiral Spring Co., Pittsburg, Pa
Consolidated Steel & Wire Co., St. Louis, Mo.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co. Worcester, Mass

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Wks. Milwaukee Wis.
Scheeler & Sons Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.
Cronk Hanger Co, Elmira, N. Y.
King, J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.

Wire Door Mats.
Hartman Mfg. Co., Elwood City, Pa.
Horrock, Joshua, 45 Cliff St., N. Y.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods, *Manufacturers of.*
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros, Cortland, N. Y.
Williamson, C. T. Wire Novelty Co. Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester Mass.
Waterbury Mch. Co., Waterbury, Conn

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wire Nails.
Consolidated Steel & Wire Co., St. Louis, Mo.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle Pa.
Phillips, E. & Sons, South Hanover Mass
Phillips, Townsend & Co., Phil., Pa.
Plymouth Mills, Plymouth, Mass.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City

Wire Rods, Steel.
Consolidated Steel & Wire Co., St. Louis, Mo.
New Castle Wire Nail Co., New Castle Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Wire Rope, Iron and Steel *Makers.*
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Wood-Working Machinery.
Seneca Falls Mfg. Co., Seneca Falls, N. Y

Wrenches, *Manufacturers of.*
Bemis & Call Hardware & Tool Co. Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn
Capitol Mfg. Co., Chicago, Ills.
Central Iron & Steel Co., Brazil, Ind.
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Gendron Iron Wheel Co., Toledo, O.
Keystone Mfg. Co., Buffalo, N. Y.
Tower & Lyon, 95 Chambers St., N. Y.
Trimont Mfg. Co., Roxbury, Mass.
Williams, J. H., Brooklyn, N. Y.

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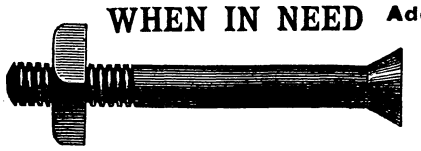
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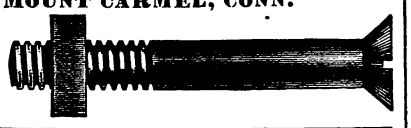
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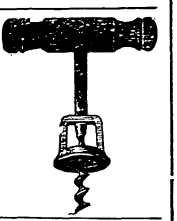
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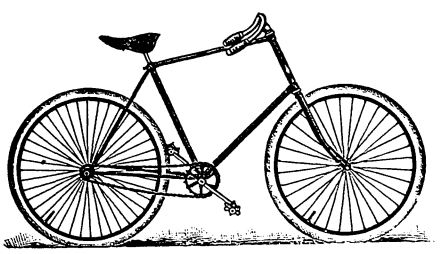
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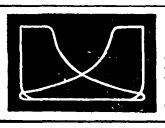
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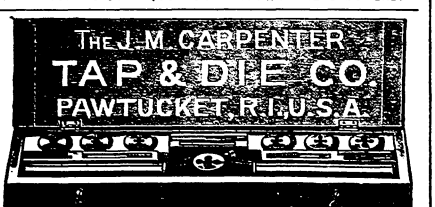
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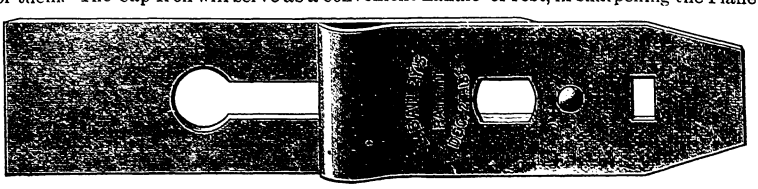
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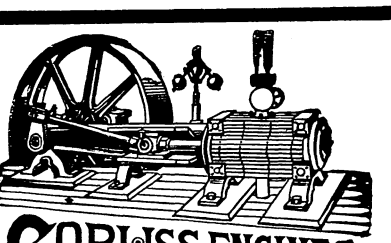
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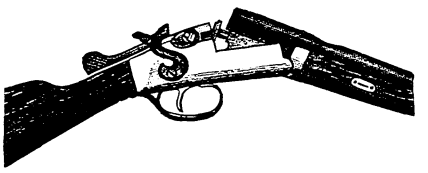
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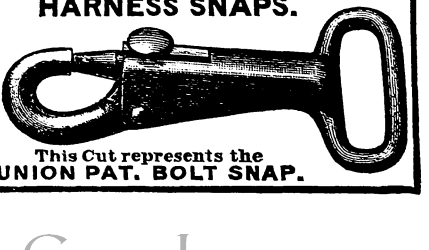
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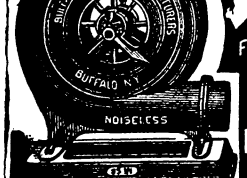
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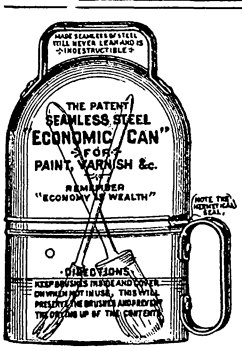
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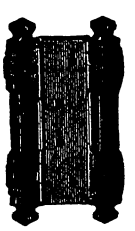
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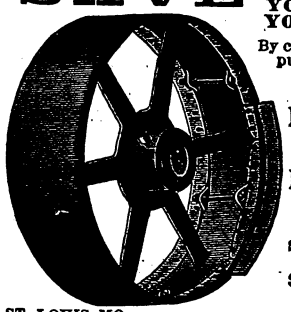
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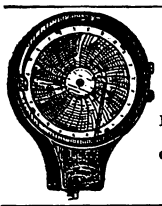
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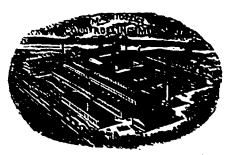
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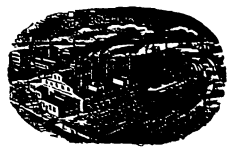
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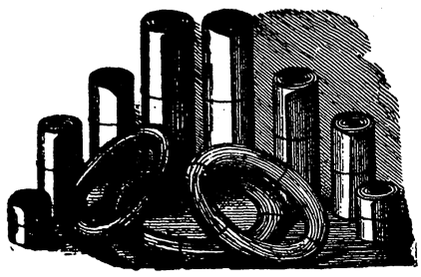
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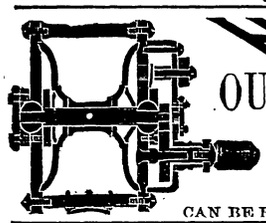
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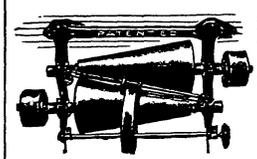
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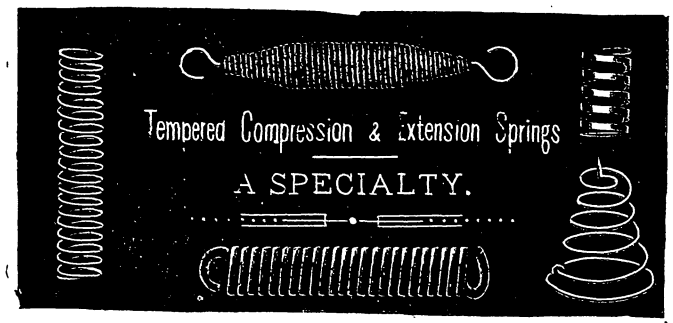
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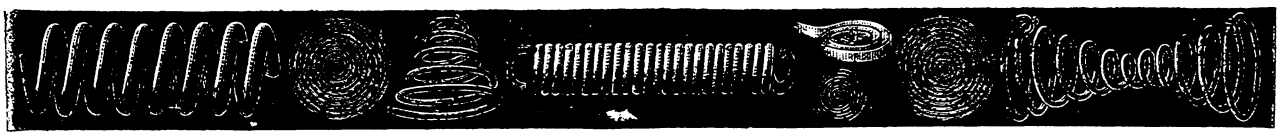
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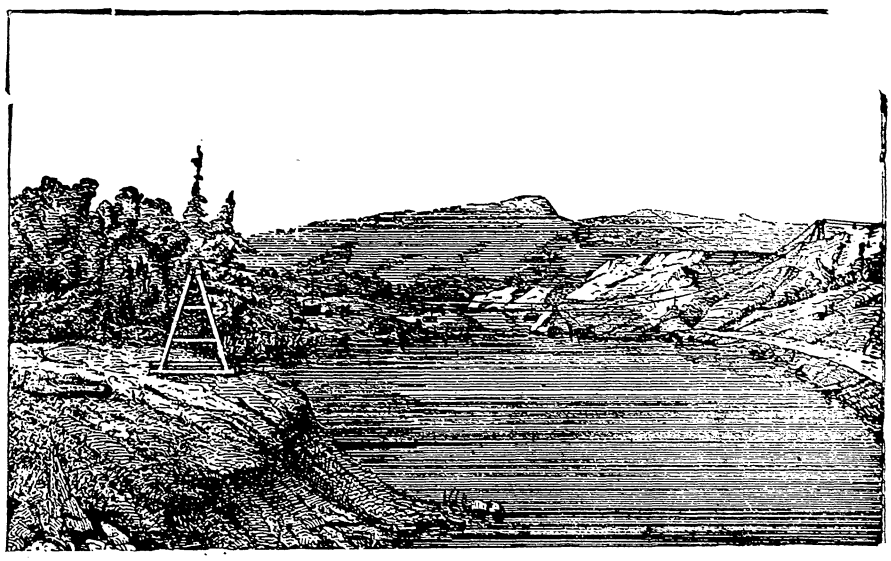
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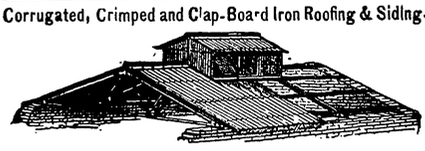
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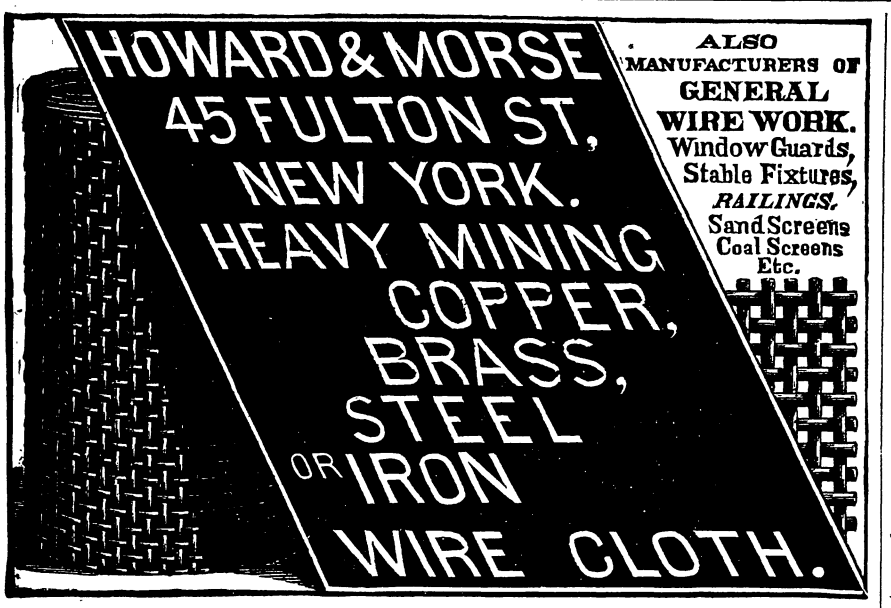
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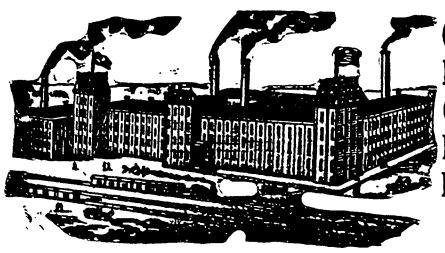
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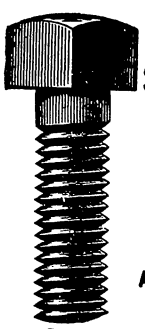
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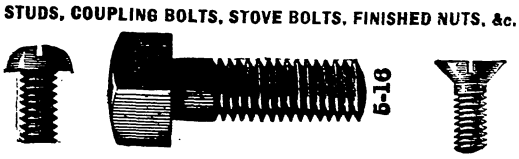
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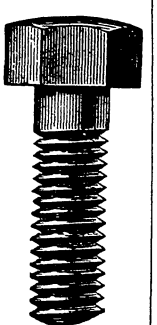
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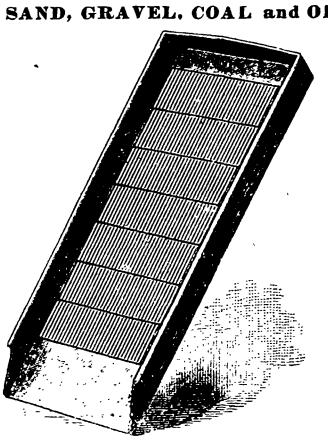
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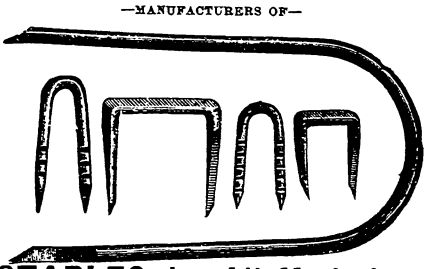
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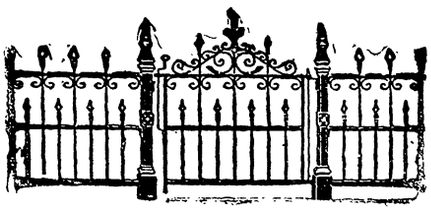
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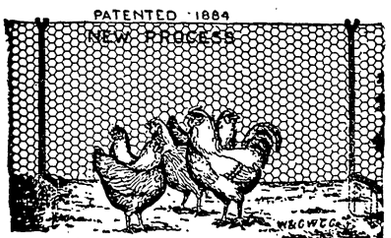
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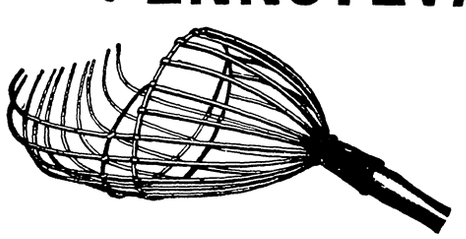
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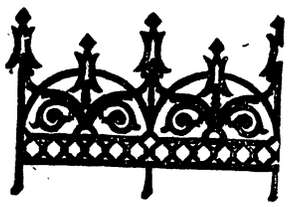
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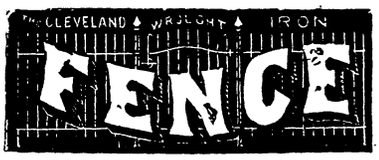
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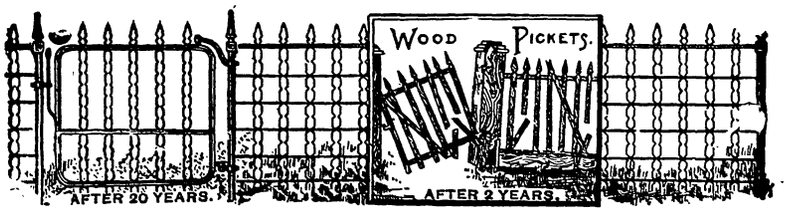


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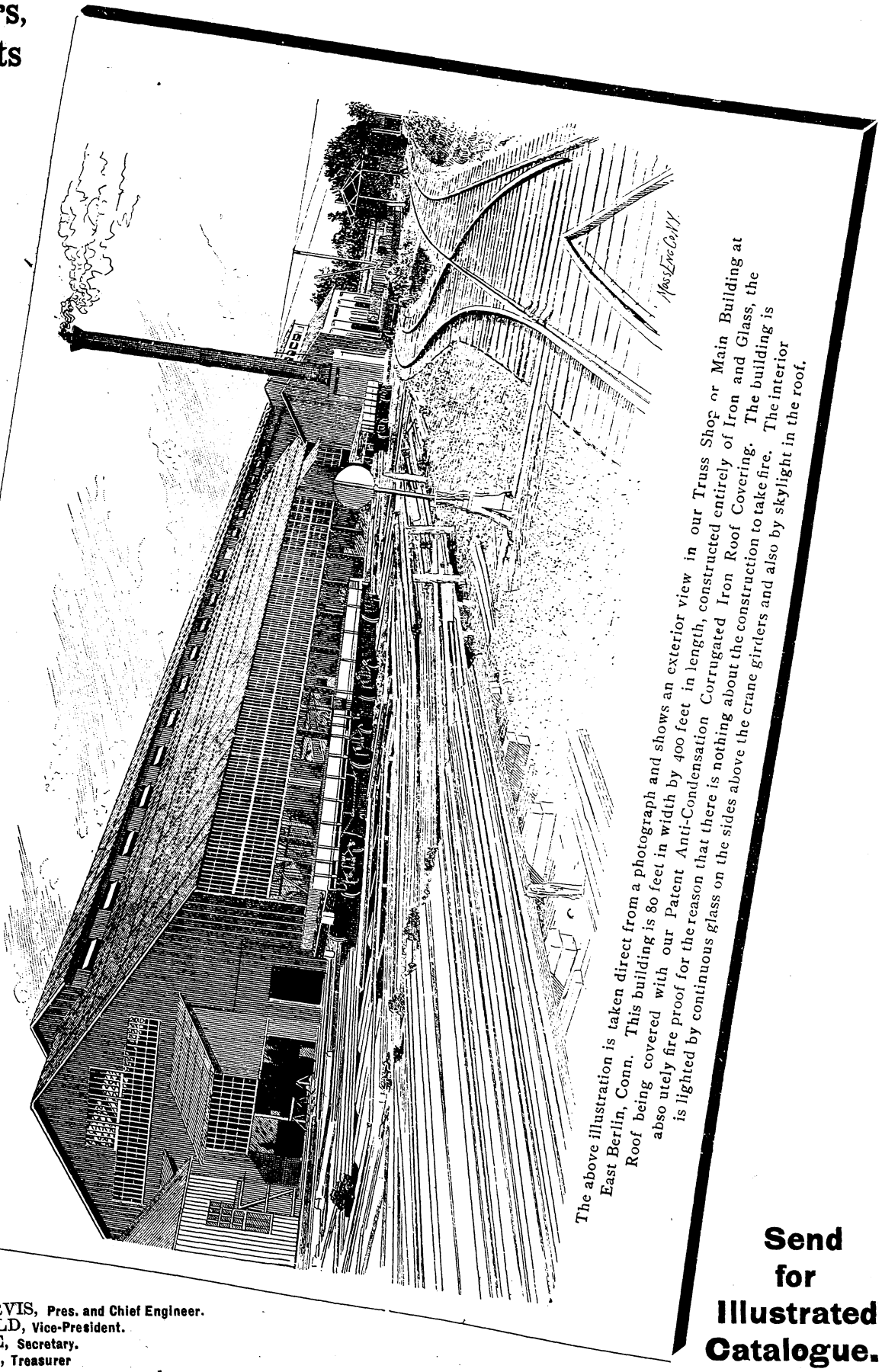
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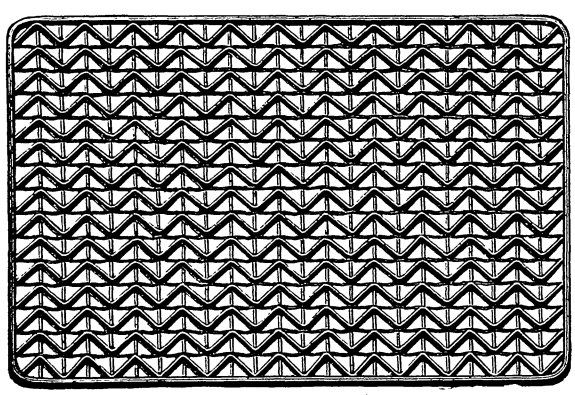
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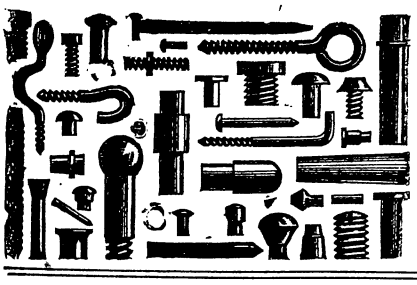
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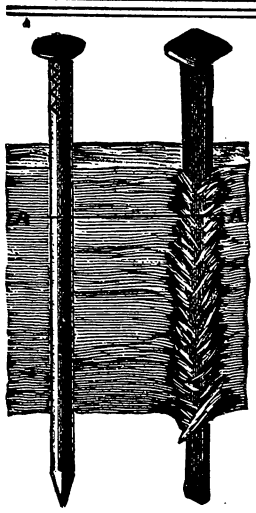
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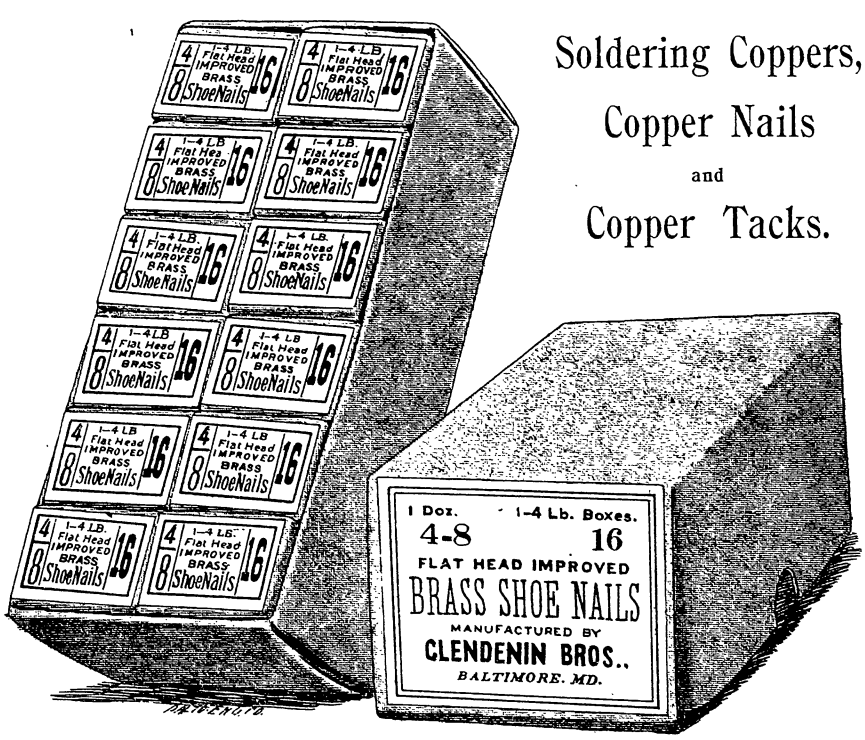
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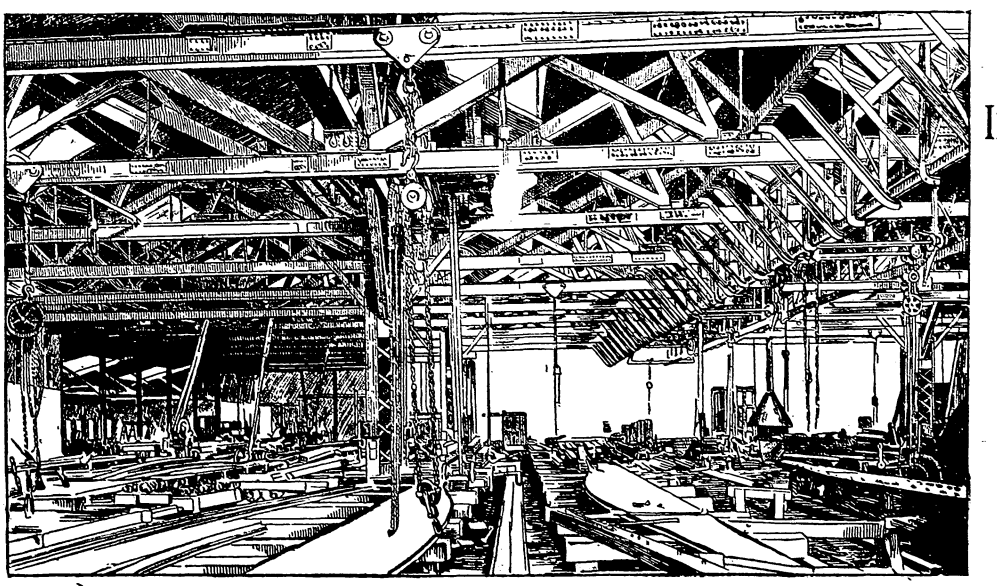
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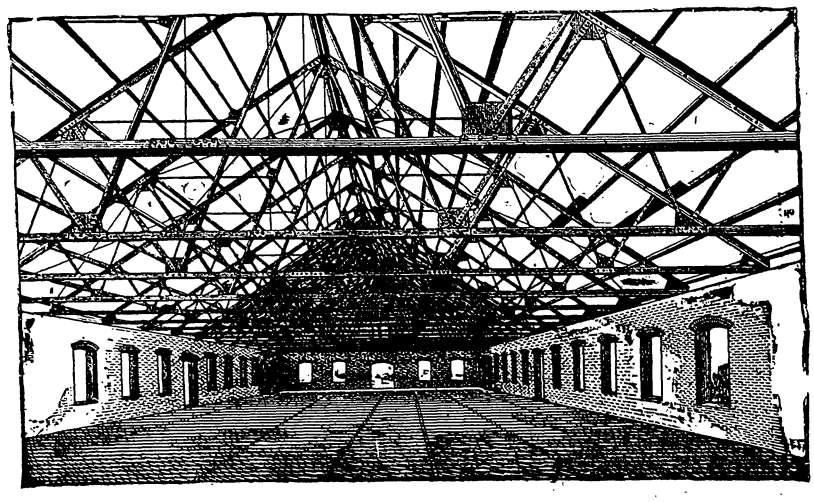
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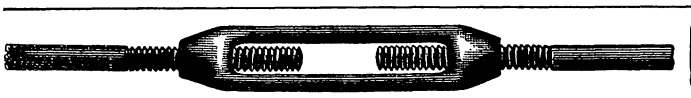
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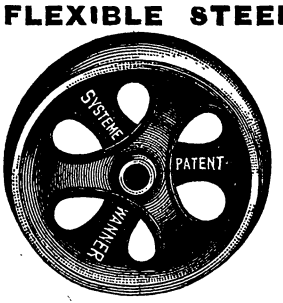
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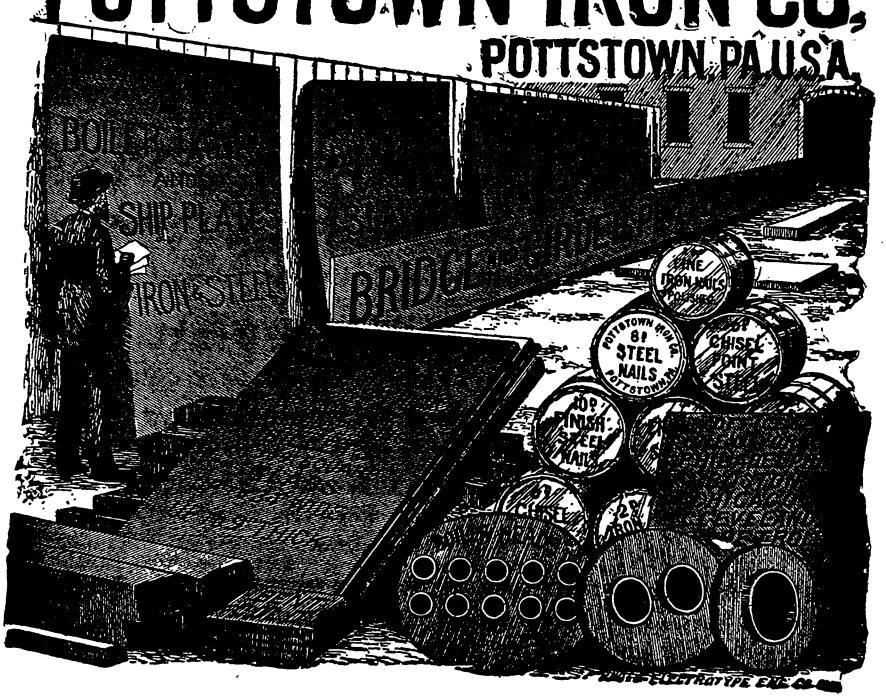
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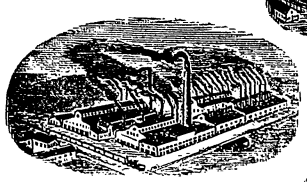
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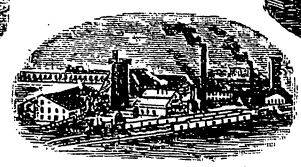
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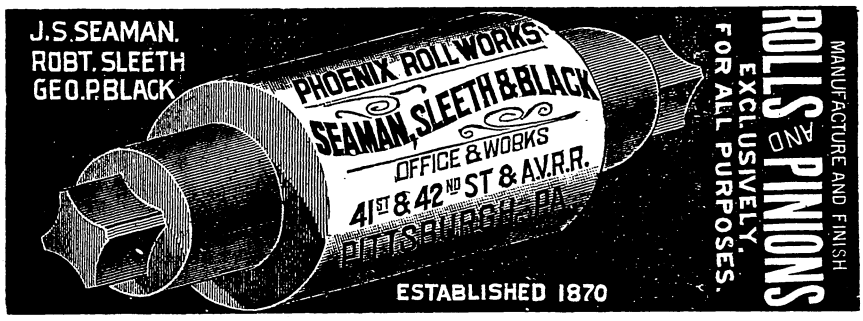
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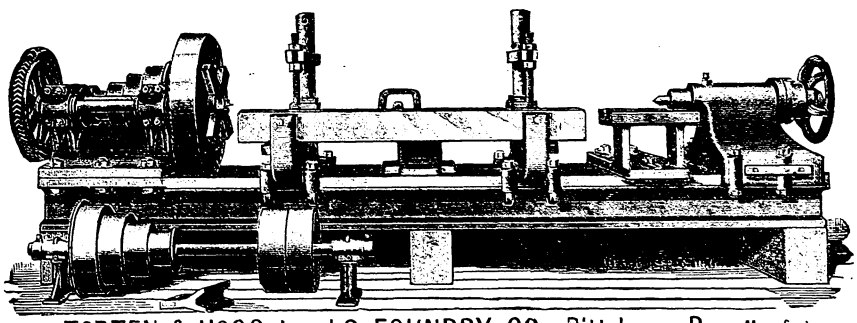
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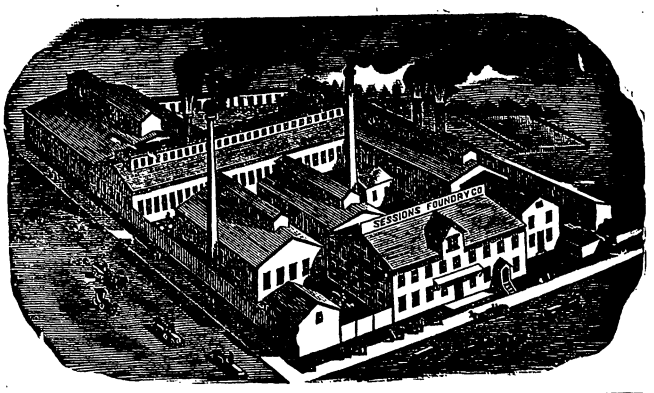
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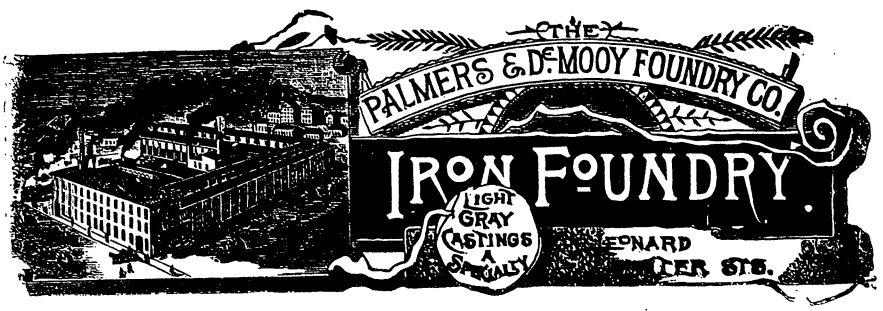
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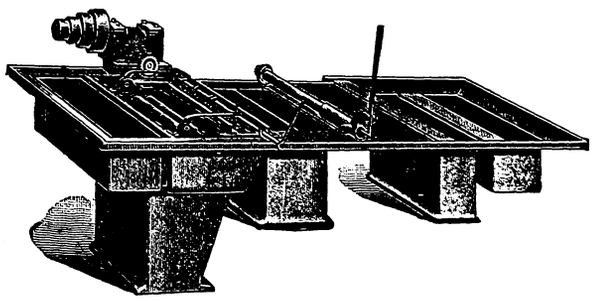
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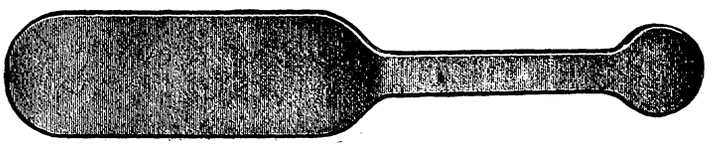
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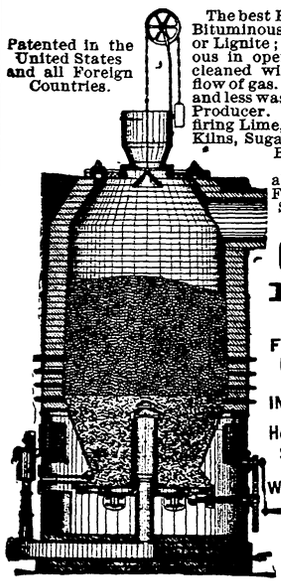
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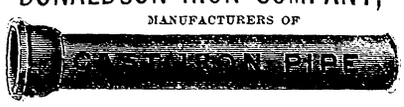
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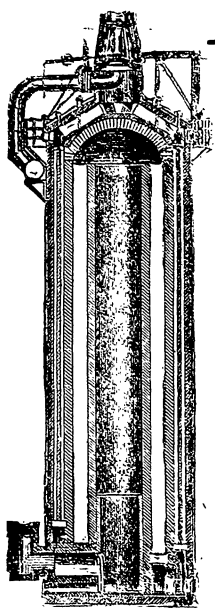
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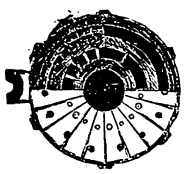
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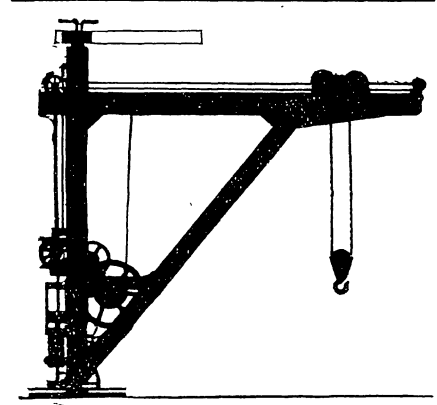
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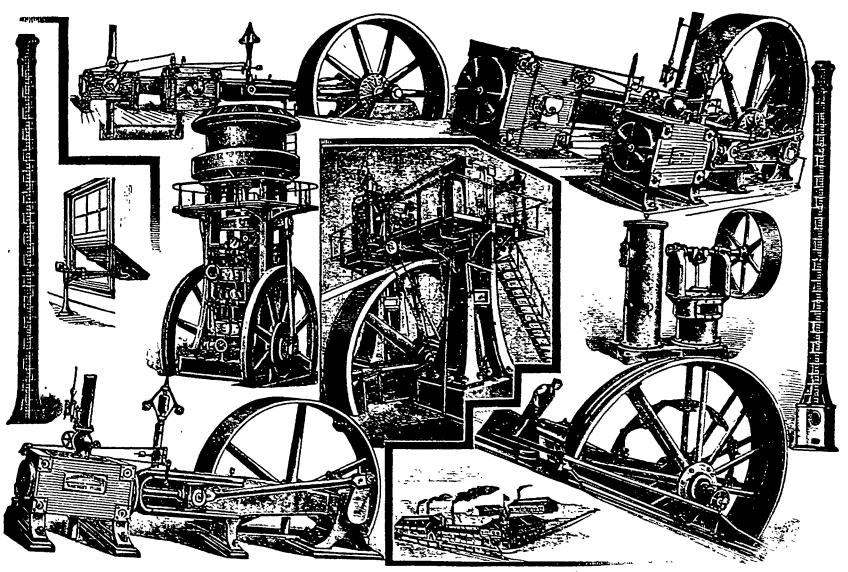
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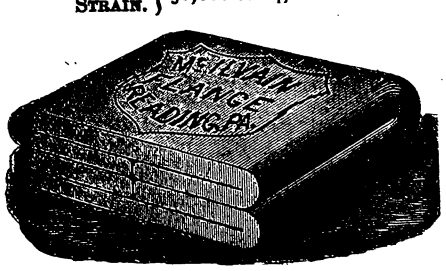
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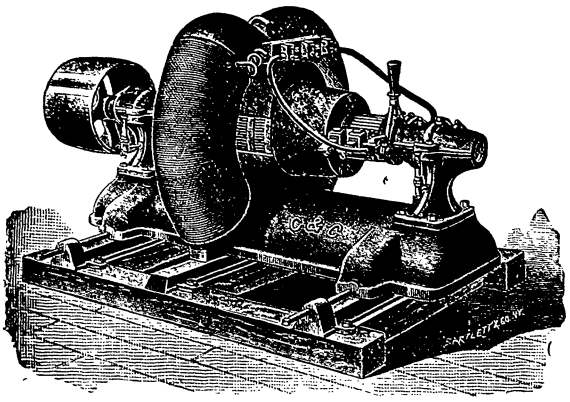
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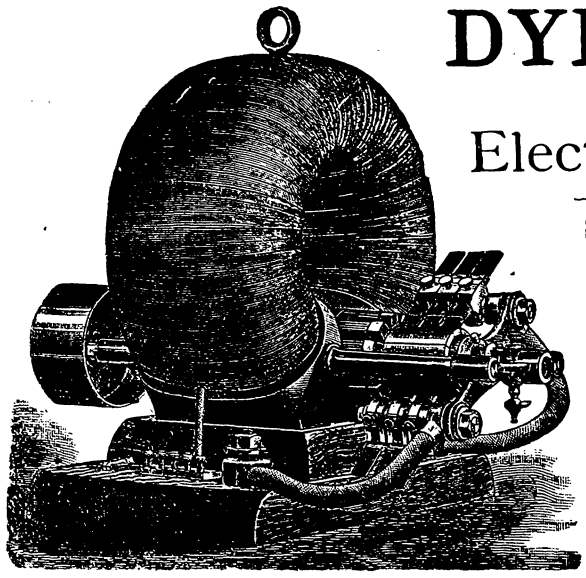
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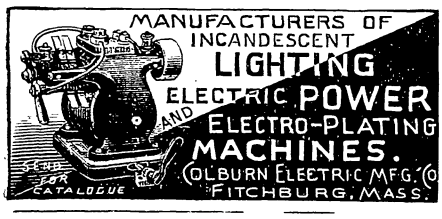


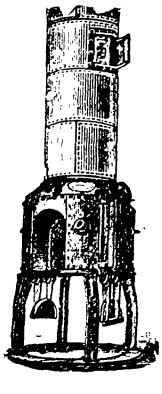
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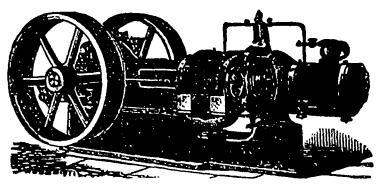
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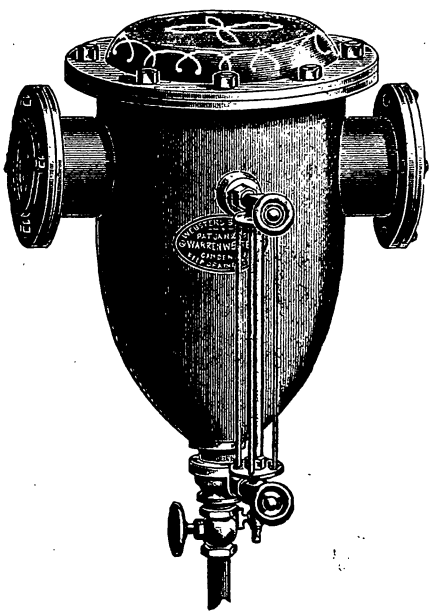
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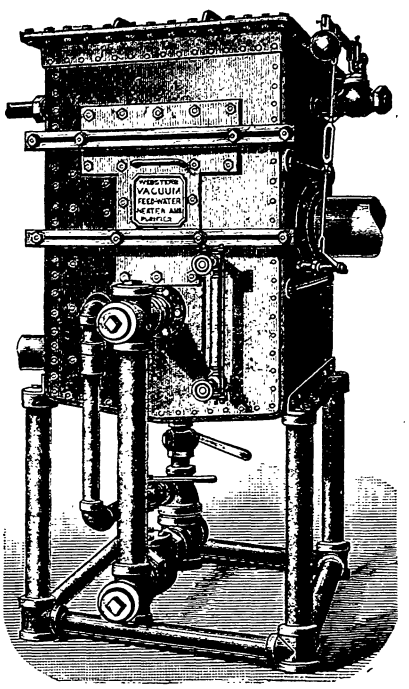
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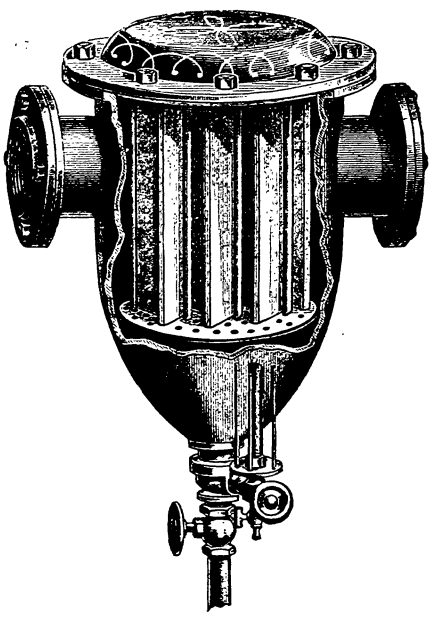
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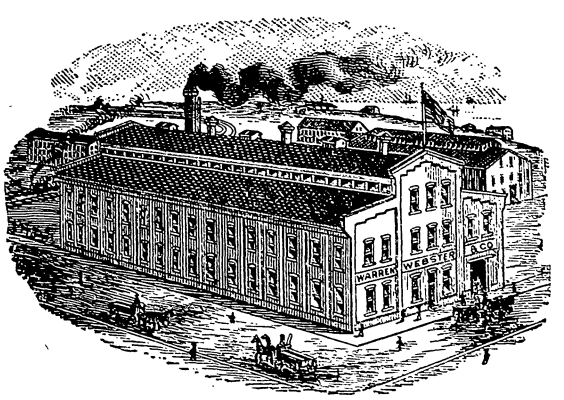
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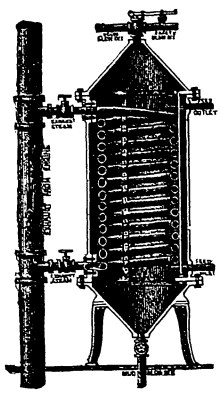
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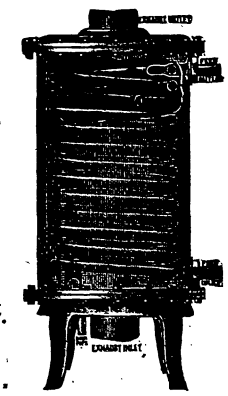
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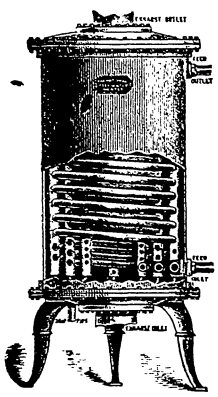
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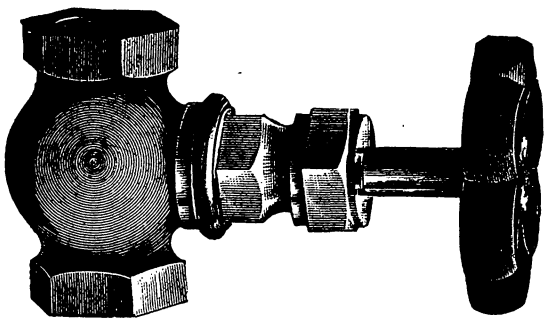
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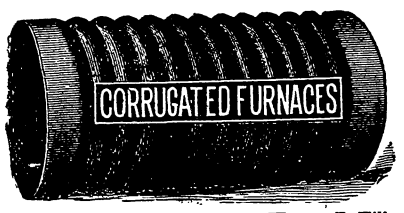
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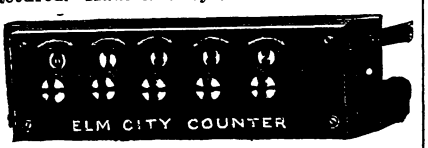
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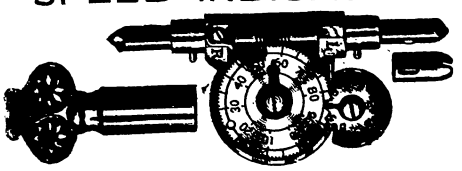


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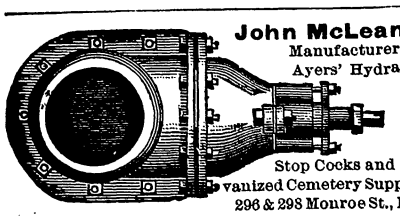
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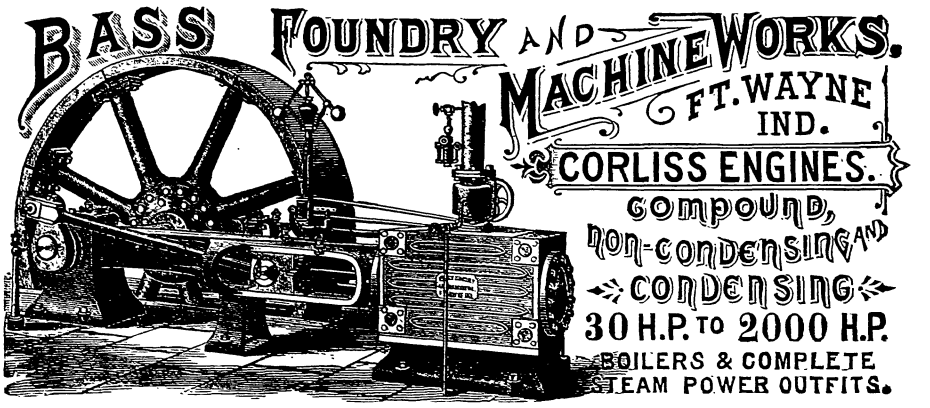


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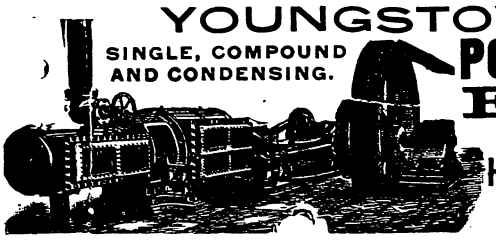
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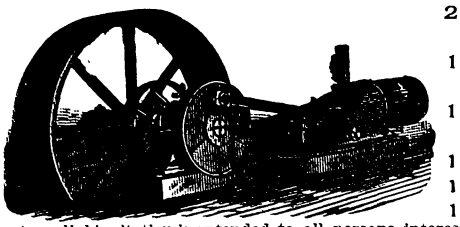


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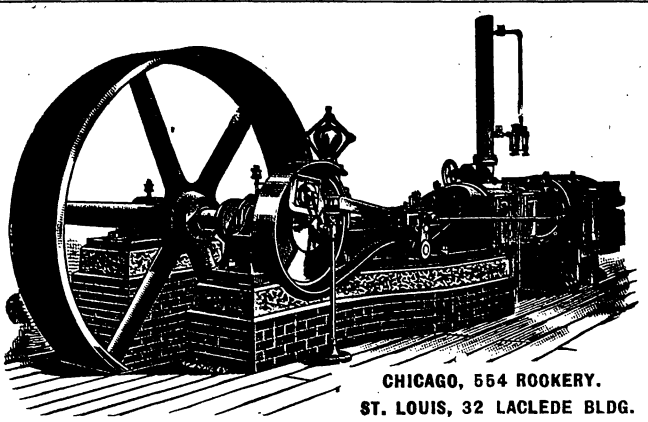
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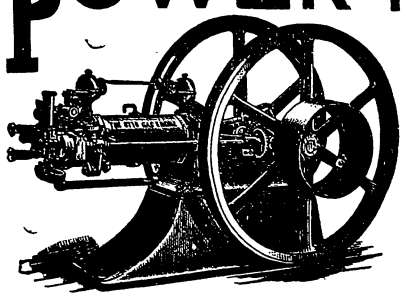
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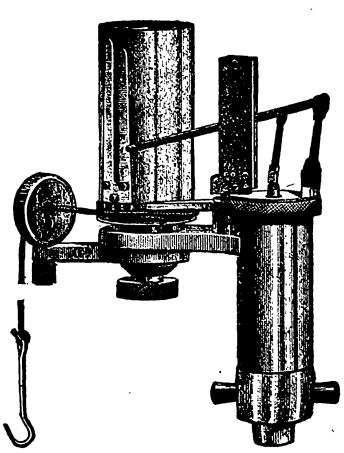
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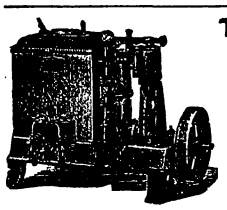
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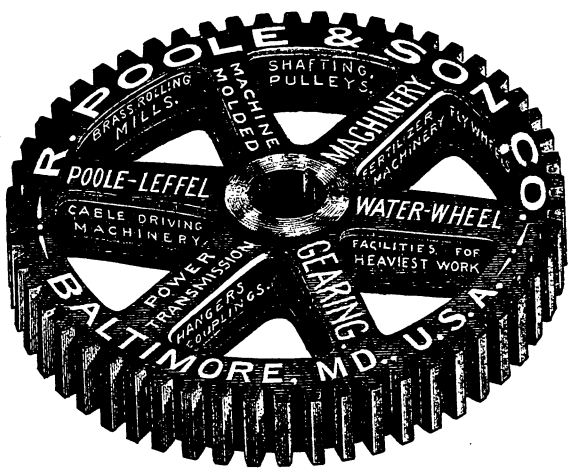
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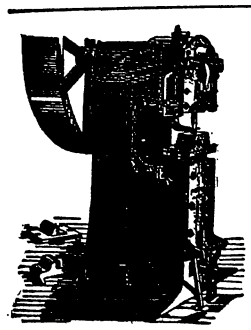
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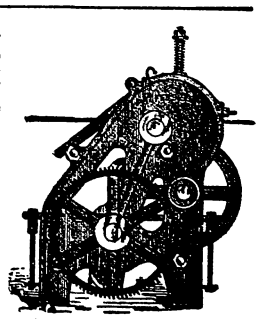
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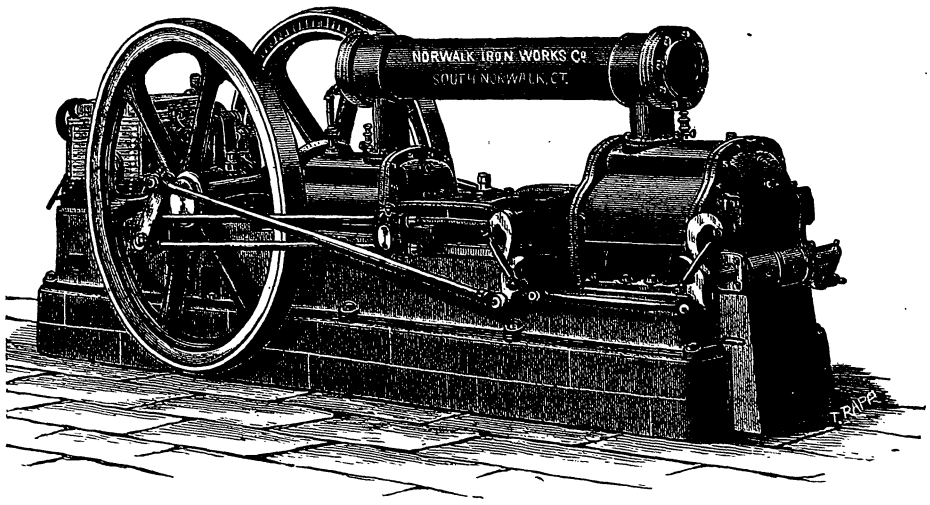
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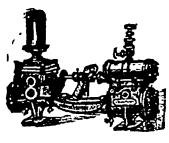
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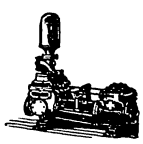
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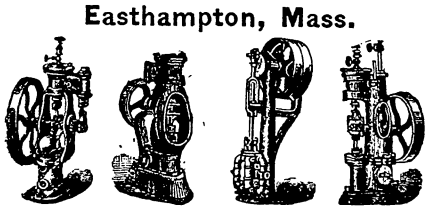
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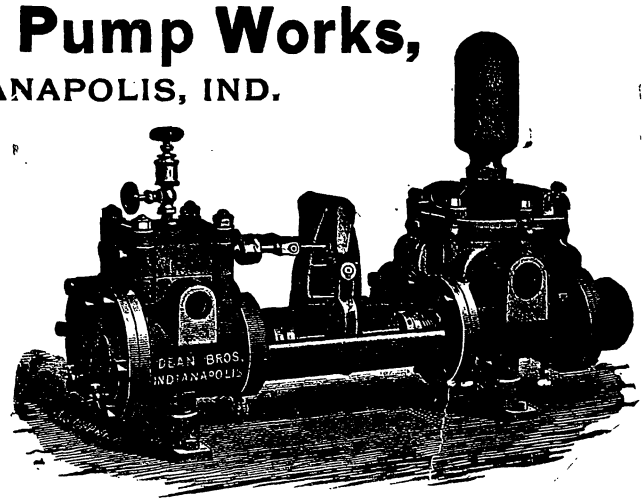
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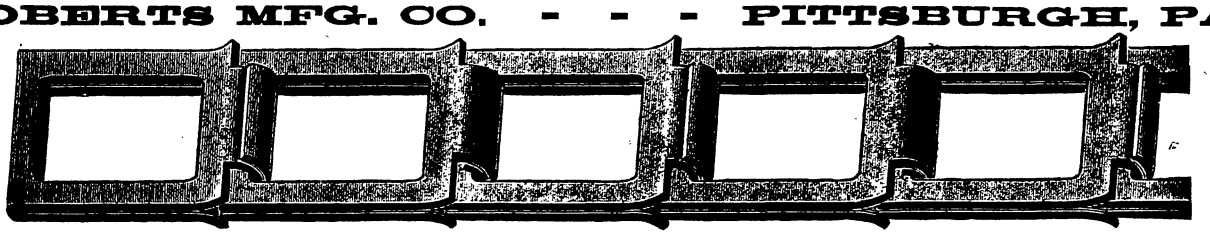
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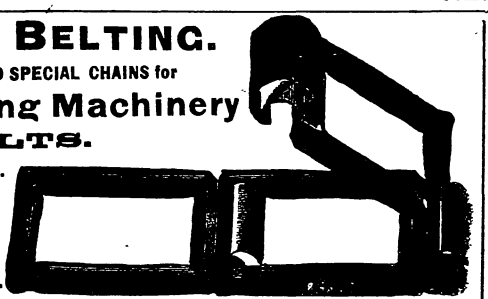
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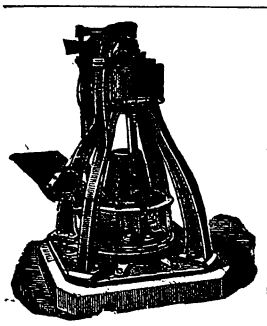
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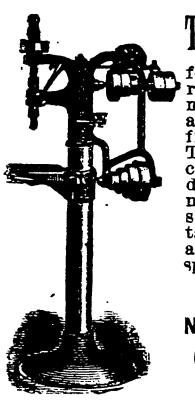


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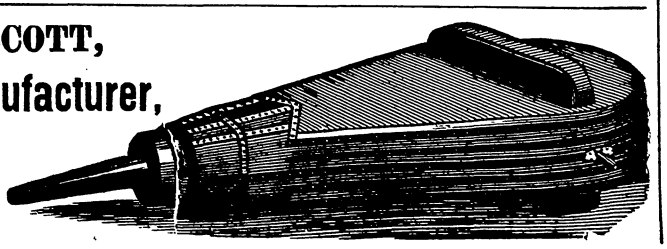
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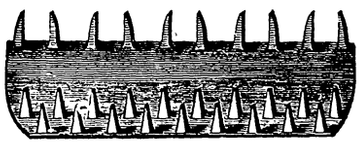
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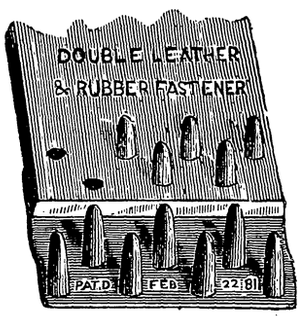
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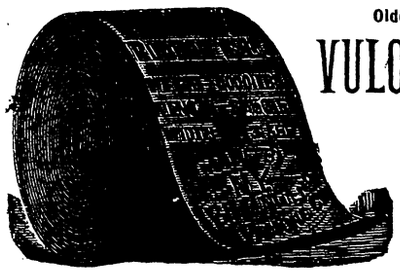
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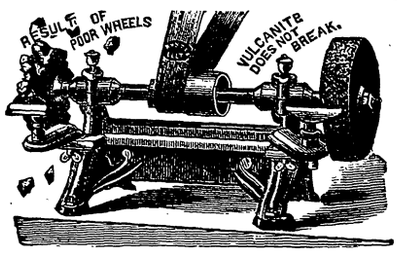
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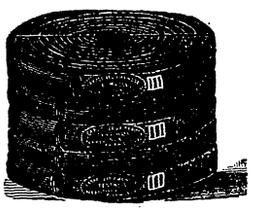
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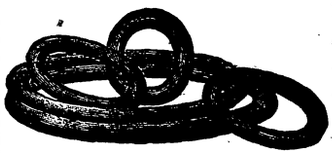
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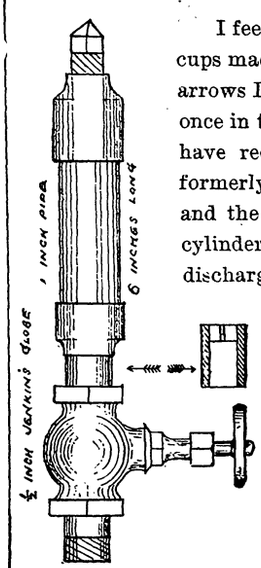
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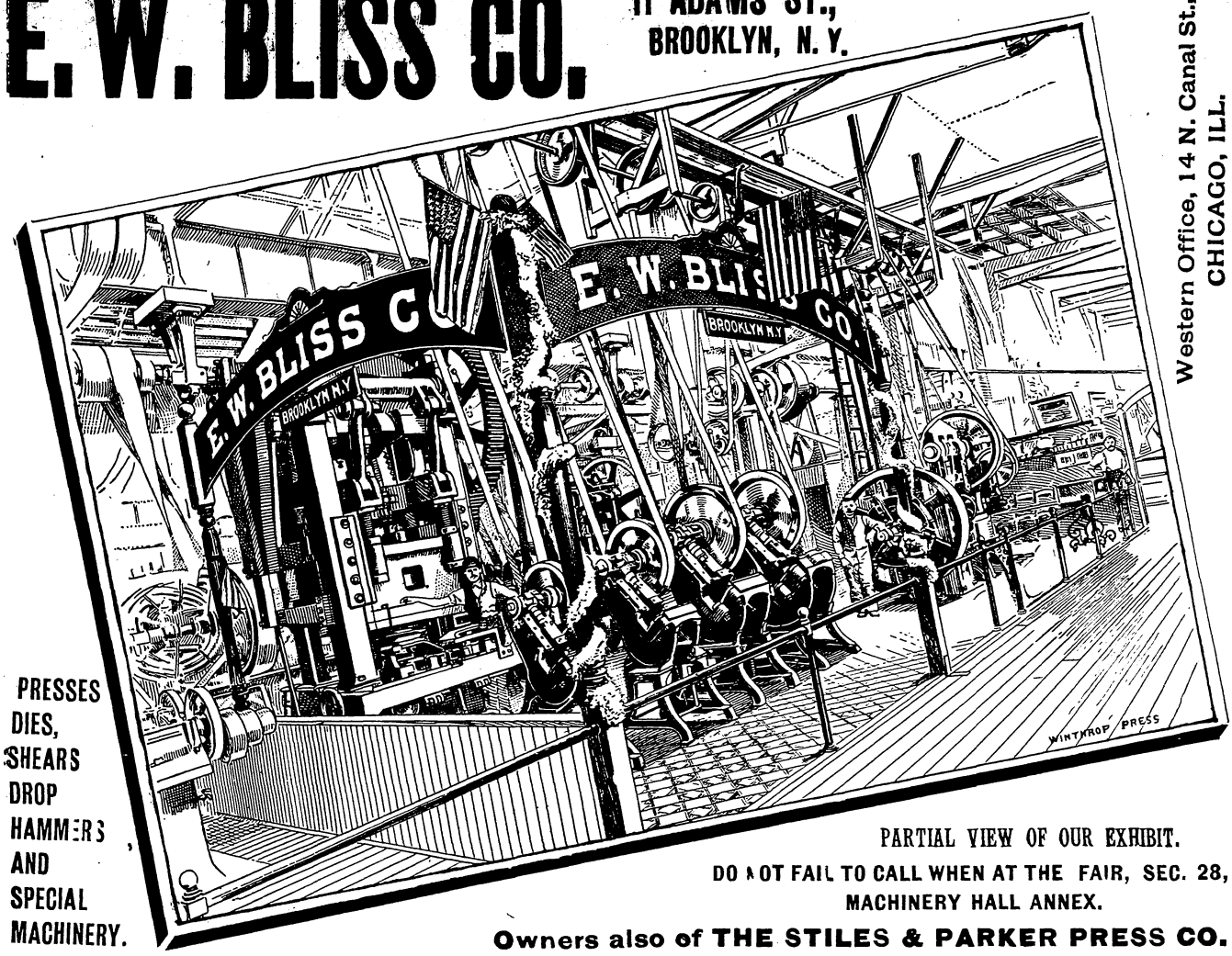
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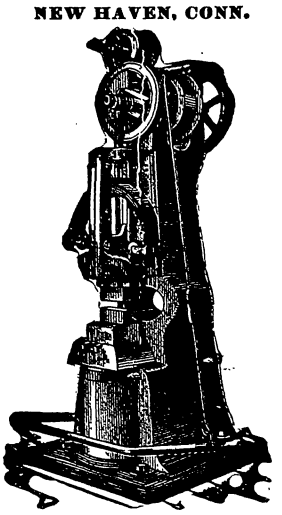
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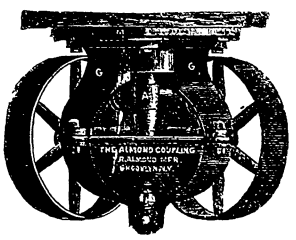
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Chicago Office, 65 South Canal Street.



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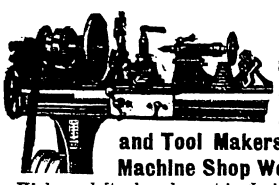
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To Replace Mule Pulleys and Bevel Gears.

It is a noiseless quarter-turn countershaft, self-contained, perfectly lubricated, and gives no trouble. Send for particulars.

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For Electrical and Experimental work. For Gunsmiths and Tool Makers. For General Machine Shop Work.

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THE VALLENTINE TOOL CO.,

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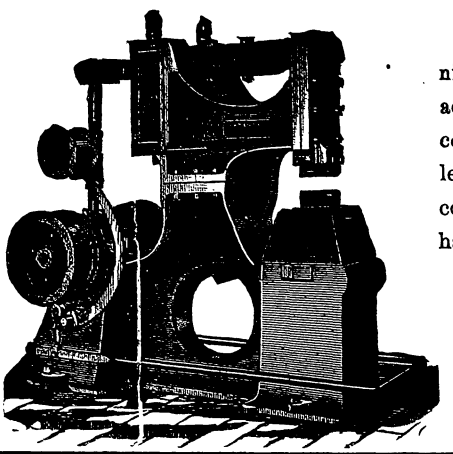
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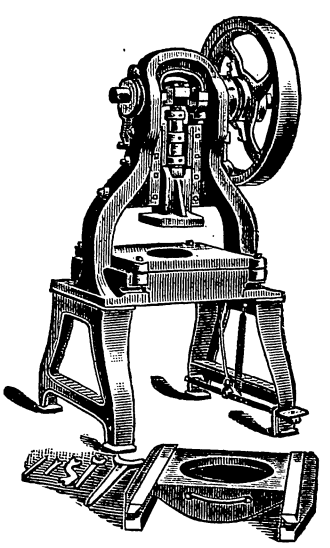
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For all purposes, from Bicycles to the heaviest class of machinery. Write to us for prices and samples, also for information when in doubt about the proper application of balls to heavy bearings.

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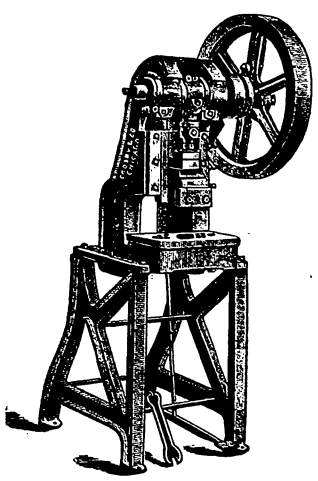
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Write for Catalogue showing the most complete line of 1-8 inch to 16 inch for hand, belt, engine and with electric motor attachment.

We can furnish Bolt Threading Attachment for this Machine.

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LARGEST LINE IN THE MARKET



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We are the largest manufacturers and originators in the West, and can make and furnish you anything in the way of

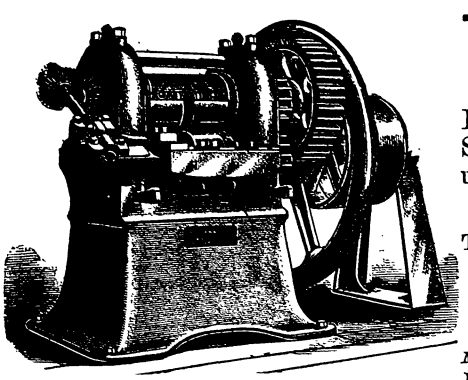
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For making Pieced Tinware, Lard Pails, Paint Pails, Cans for Oysters, Fish, Fruit, Vegetables, Meat, Syrup, Oil, Stove Polish, Varnish and all other Sheet Metal Packages.

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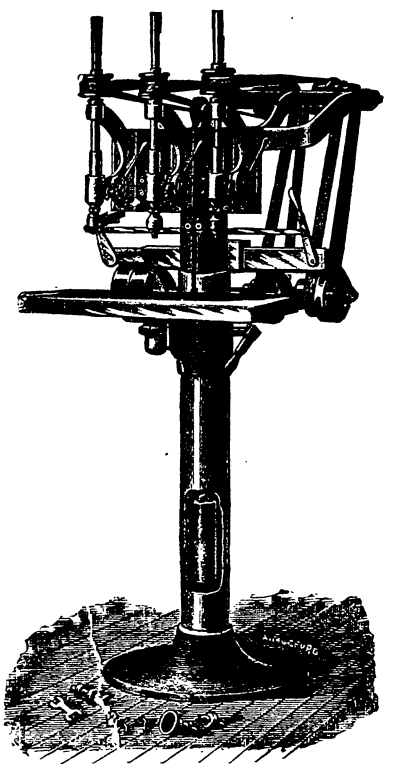


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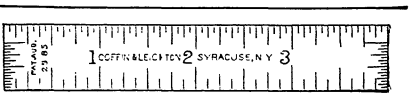
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Counter-balanced Spindles and Tables. Vertical range of table, 30 inches, and it will swing to right or left.

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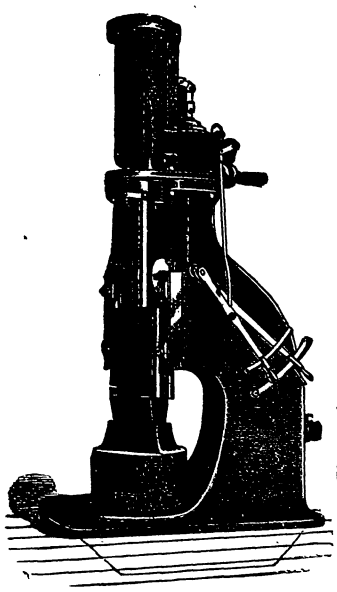
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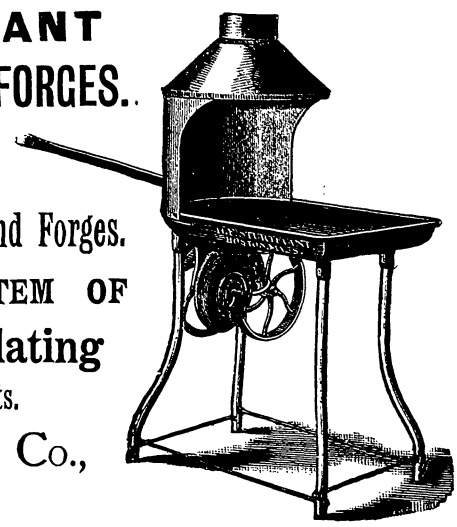
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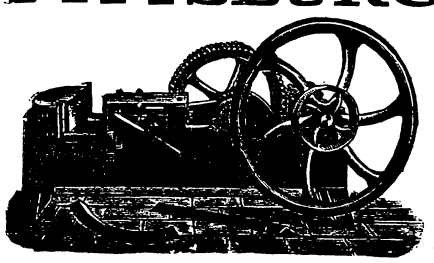
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NAIL MACHINERY.

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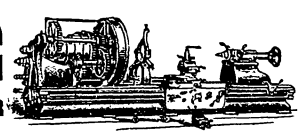
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FITCHBURG MACHINE WORKS,

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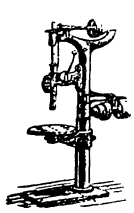
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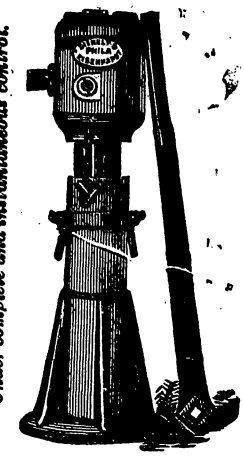
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SUPERIOR TO ANY JACK NOW MADE.
Absolute in its actions in any position.
Under complete and instantaneous control.



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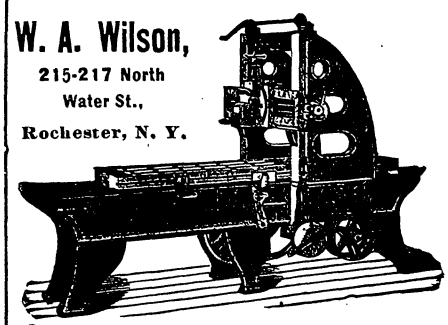
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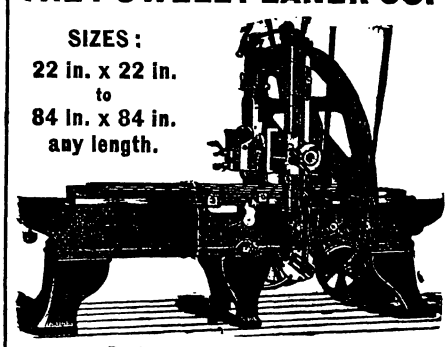
Rochester, N. Y.



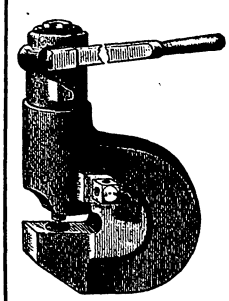
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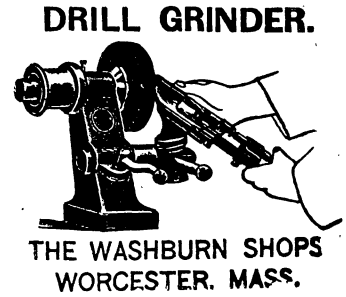
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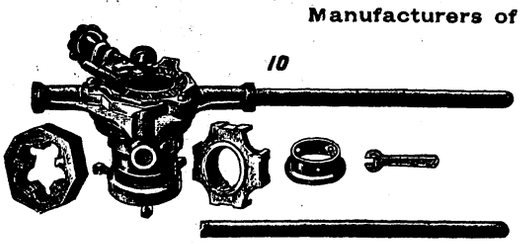


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FOR **LARGE PIPE.** These stocks have *CUTTING OFF ATTACHMENT,* and both Vises and Stocks are Malleable Iron. Light, strong and of superior design and finish; also *PIPE THREADING MACHINES* ¼" to 16", Tapping Machines, &c.

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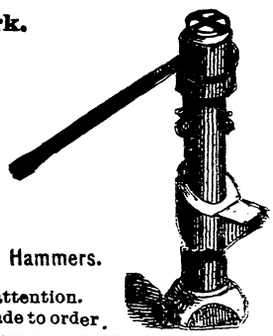
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AND
Punches.



Roller Tube Expanders and Direct-Acting Steam Hammers.

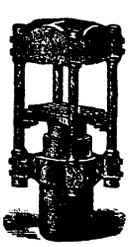
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Jacks for pressing on Car Wheels or Crank Pins made to order.

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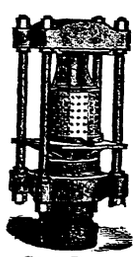
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Baling Presses,
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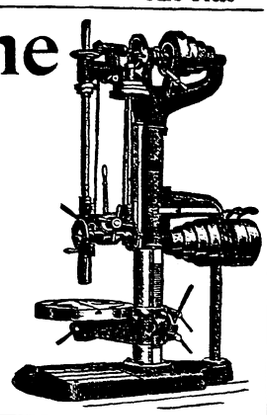
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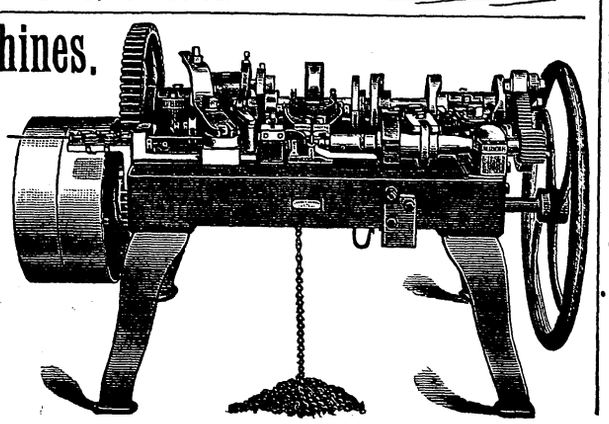
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FOR BOTH DOUBLE AND SINGLE LINKS.

Entirely automatic, taking the wire directly from the coil and completing chain at the rate of 120 links per minute.

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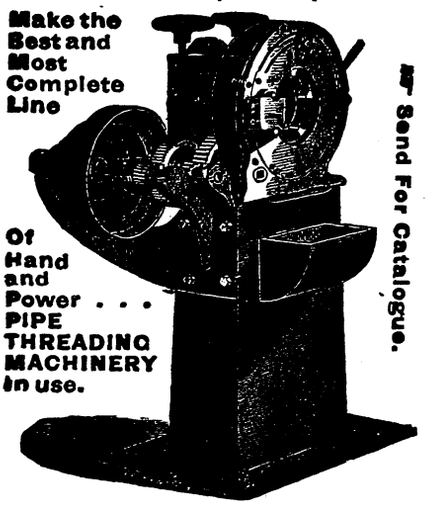


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Waterbury, Conn.

The Merrill Manufacturing Co.,

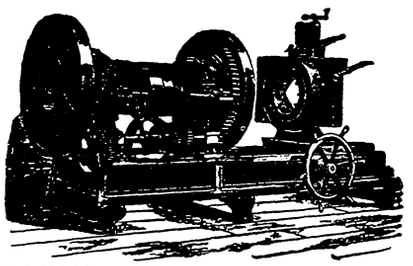
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Of Hand and Power . . . PIPE THREADING MACHINERY in use.

Send For Catalogue.

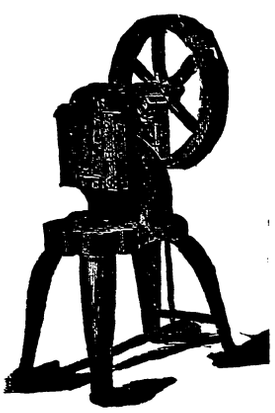


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Our Prices are Low and our Goods are the Best.



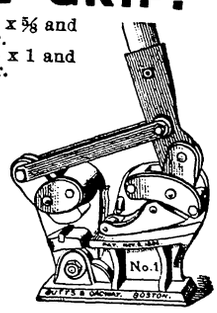
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PRESSES.

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SURE GRIP.

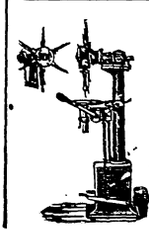
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Every machine is tested and warranted to give satisfaction. We confidently offer this Upsetter as the best to be had.
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Six Spindle.

Drills from 1-32 to ½ hole. Speed from 250 to 2000 rev.

Suitable for a large variety of work and is operated with ease and rapidity.

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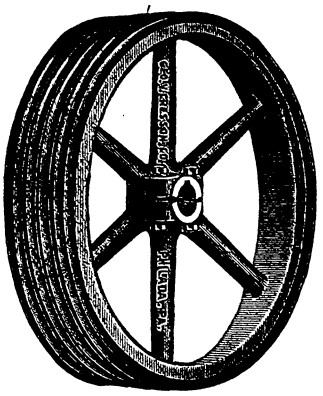
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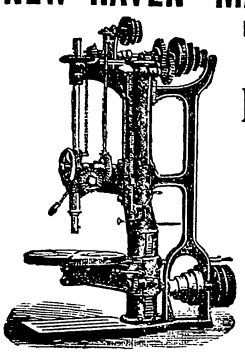
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All Diameters and Number of Grooves, for Manilla, Hemp, Cotton, or Leather Ropes.

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Manufacturers of

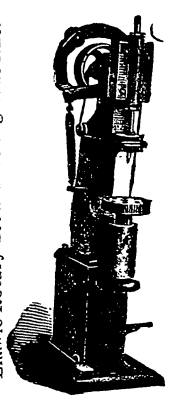
Lathes,
Planers,
Shapers,
Slotters,
Etc.

JOHN ADT & SON,

New Haven, Conn.,

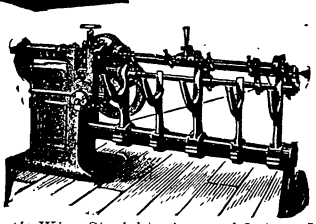
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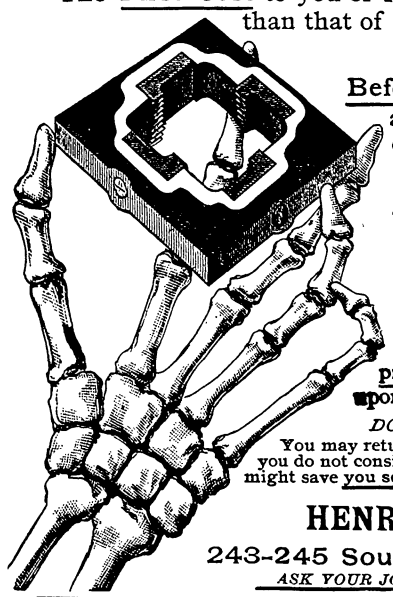
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Maule's "Skeleton" Pipe Die

Two "Points" about it—only 2 (There are plenty more, but we only mention these two here.)

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The First Cost to you of MAULE'S "SKELETON" PIPE DIE is less than that of any other Pipe-Threading Die—and



2

Before it becomes dull from use it will cut as many perfect threads as the best solid die extant, and when it is dull, you don't throw it away and buy a new one—Oh, no! You simply sharpen the cutters on a common grindstone, and so make it practically as good as it was at first, and this sharpening process may be repeated a number of times.

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You may return such sample to us, at our expense, if, after seeing it, you do not consider it worth the price. Don't the above sound as if it might save you some money—if TRUE?

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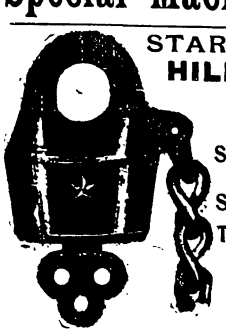
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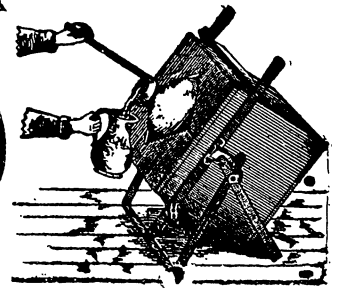
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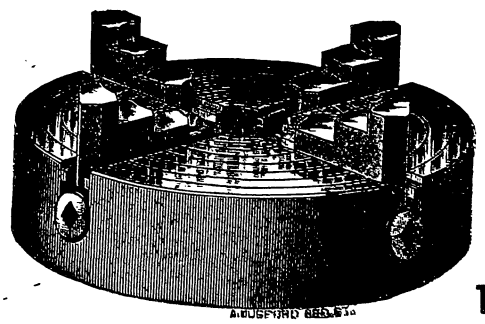
Independent 4 Jaw Chucks from 4 to 26 Inch.
Patent 4 Jaw Lathe Chucks from 4 to 26 Inch.
Reversible Face-Plate Jaws for Use on Lathes from 30 to 72 Inch.
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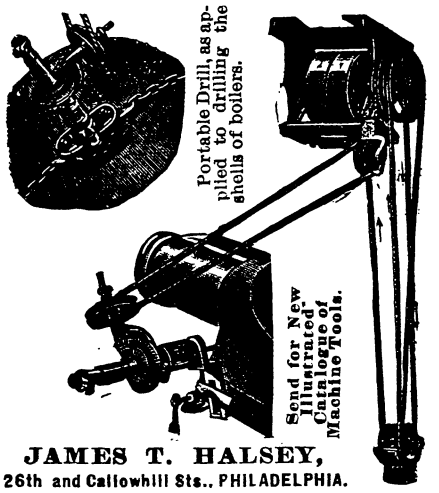
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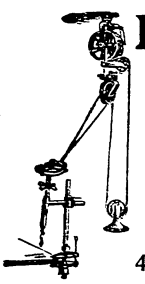
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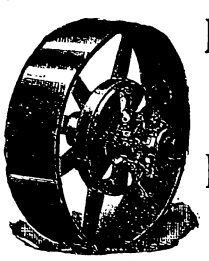
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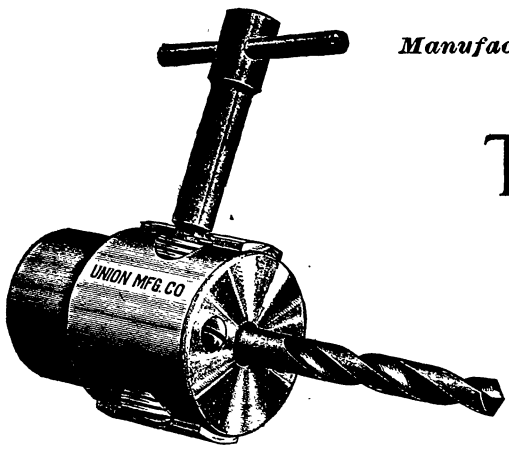
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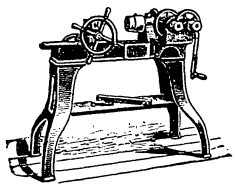


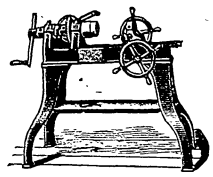
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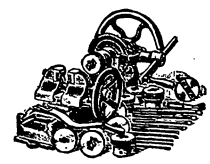
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NUMBER.	DIAMETER.	HOLDING.	LIST.
000	1¼ inches.	0 to ¼ inch.	$7.00
100	2¼ "	0 to ½ inch.	8.00
101	2¾ "	0 to ¾ inch.	9.00
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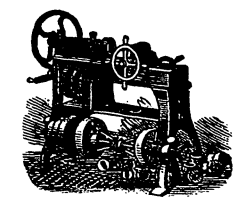
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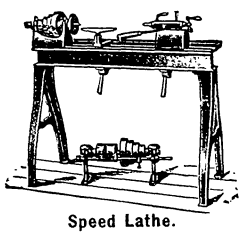

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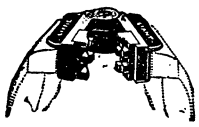

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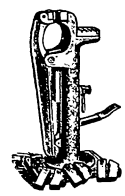

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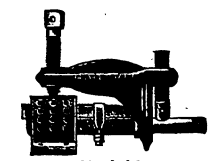

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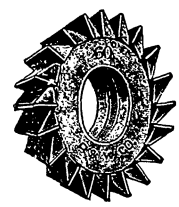
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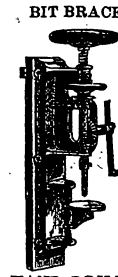
Hartford, Conn., U. S. A.,

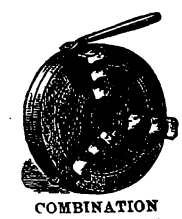


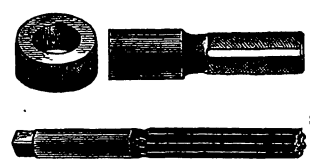

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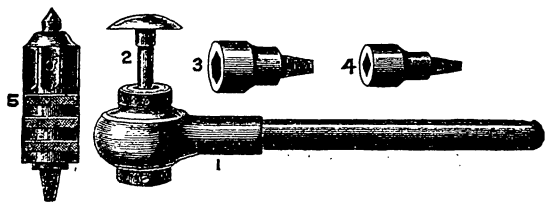

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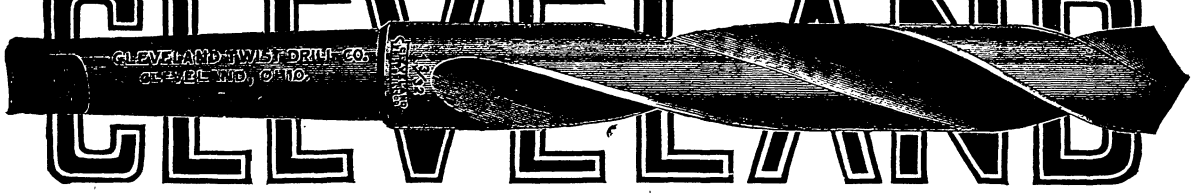
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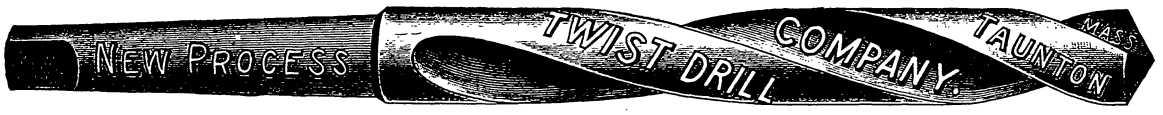
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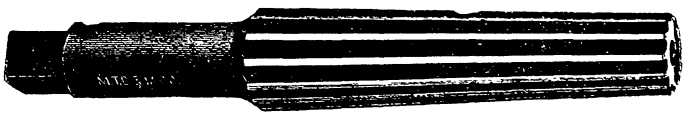
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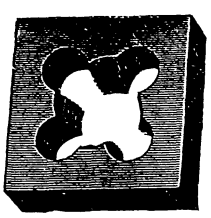


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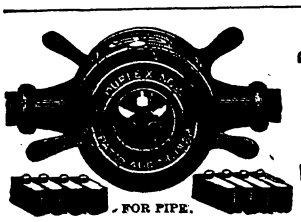




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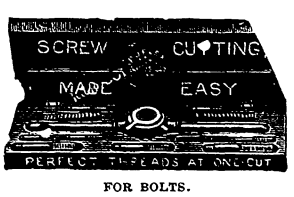
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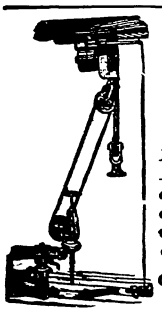
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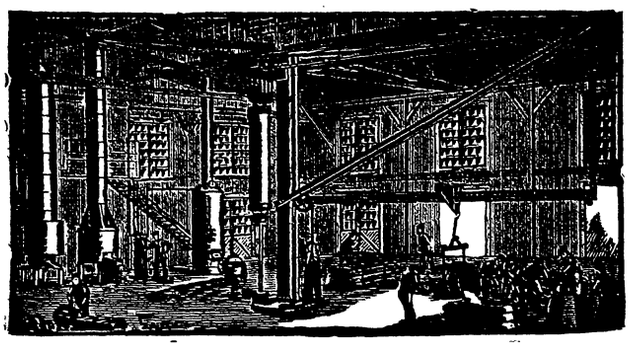
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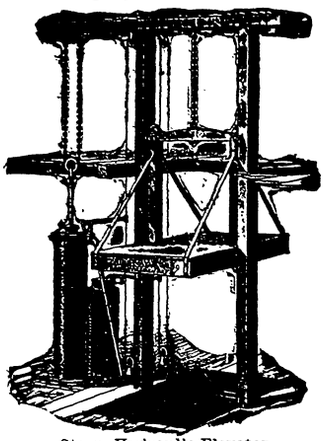
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THE BENJ. ATHA & ILLINGWORTH CO.
Manufacturers of Steel.

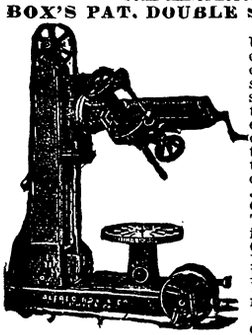
NEWARK, N. J., April 6th, 1893.

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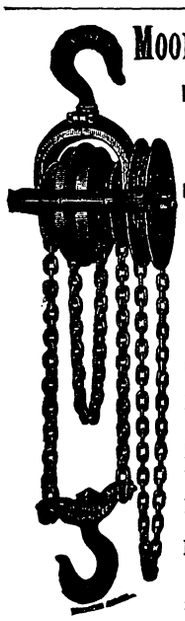
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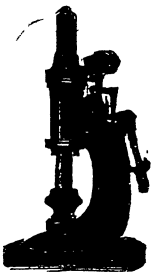
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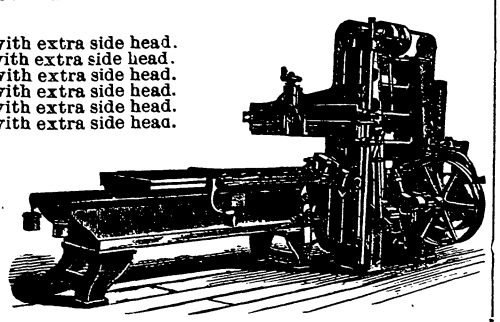
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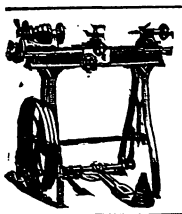
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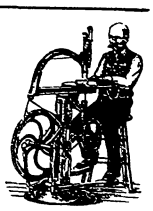
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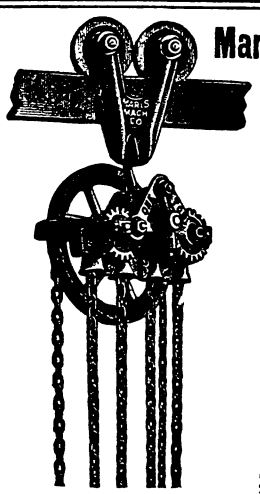
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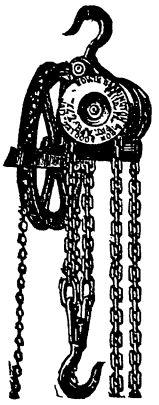
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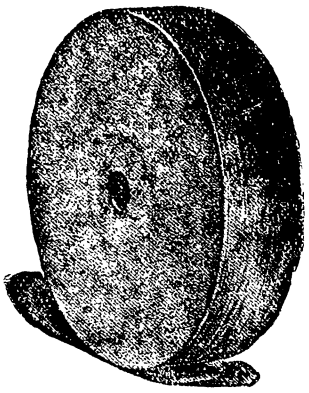
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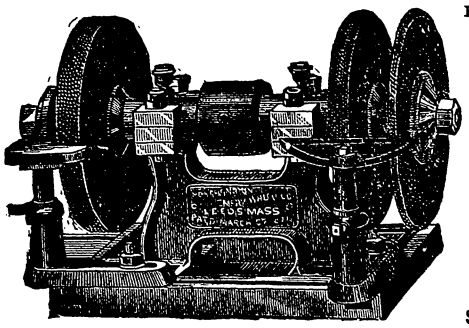
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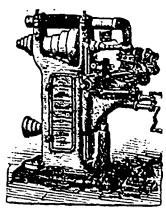
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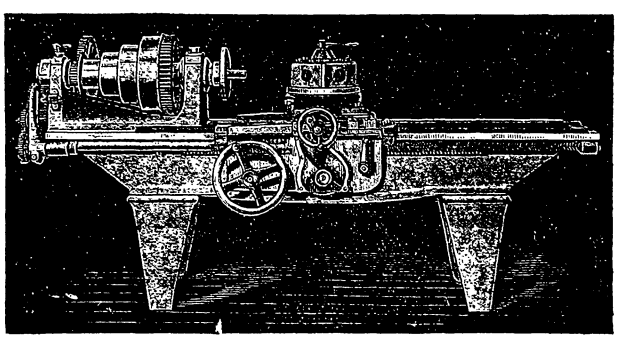


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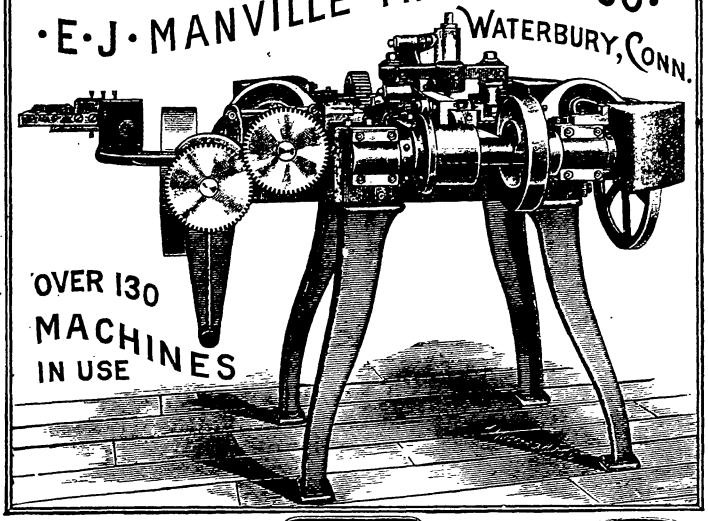
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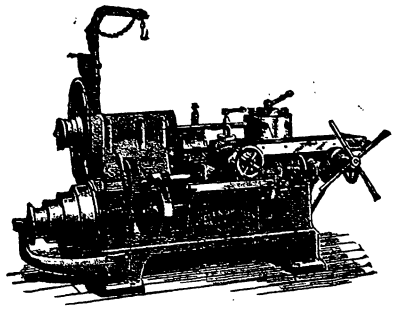
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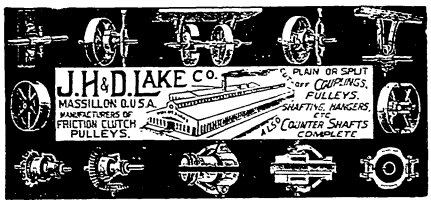


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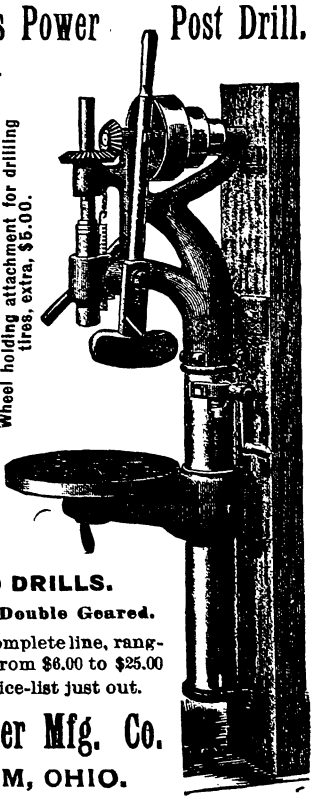
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For Sale, Very Low for Cash.

500 tons Relaying Steel Street Rails, side bearing, 35 to 47 lb. sections. Also 65-lb. Steel T's.

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2 Stokes & Parrish 7 in. x 9 in. Hoisting Engines.
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1 Worthington Duplex Pump, 10 x 6 x 10 in.
Lot 30 and 36 in. Plain Cylinder Boilers.
Lot I Beams, Stacks, &c.

At Merion Furnaces, West Conshohocken, Pa. Apply for particulars to

POULTERER & COMPANY,
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1 Engine Lathe, 24 in. swing x 25 ft. bed. Modern. First-class condition.
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1 3 in. Cutting-off Machine. Nearly new.
1 No. 1, No. 2 and No. 6 Root's Blower. Prices very reasonable.

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19½ in. x 48 in. Beam Engine, with Knowles Condenser.

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MACHINERY.

One American Tool Co.'s No. 2 Cabinet Turret Lathe, with slide rest; in fine order.
One Pratt & Whitney 36-in. Gap Chucking Lathe.
One Pratt & Whitney No. 3 Lincoln Milling Machine.
One Iron Planer, 52 in. wide, 44 in. high, 12 ft. long, with two heads.
One Springfield Universal Grinding Machine No. 3, swing 18½ in. over the ways and take 6 ft. between centers. Has been used but a very few times and is practically new.
One L. W. Pond Gear Cutter, to cut gears 36 in. diameter, 5 in. face, also arranged for cutting beveled gears.

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WE ARE OFFERING

BARGAINS

from the equipment of the United Electric Traction Company's Works of Marion, N. J., comprising:

Engine Lathes, from 14 in. to 48 in. swing.
Hand Lathes, from 10 in. to 20 in. swing.
Planers, from 24 in. x 5 ft. to 42 in. x 12 ft.
Shapers, from 15 in. to 20 in. stroke.
Drill Presses, all sizes up to 24 in. swing.
Milling Machines, Plain and Universal.
Brown & Sharpe Screw Machines.
1 Large Newton Slotting Machine.
1 Large Pond Mach. Tool Co.'s Radial Drill Press.
8 Gould & Eberhardt Automatic Gear Cutters, 36 in., 48 in. and 60 in.
1 Betts Machine Co. Large Horizontal Boring Mill.
2 Large Bliss Power Presses.
1 10 H.-P. Baxter Engine, with 15 H.-P. Boiler, complete. As good as new.
Also Tool Grinders, Die Sinkers, Tapping Machines, Bolt Cutters and Large Pattern and Blacksmith Shop Equipments.

These tools are in good order and of the very best makes in this country. They will be sold at remarkably low prices.

Call at our salesroom and inspect them, or write for complete descriptive circular and price-list.

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J. F. CLARKE,
31 Pine St., New York.

Rails FOR Relaying

40 tons 60 pound Steel T's. Fine.
10 tons 70 pound Steel T's. "
40 tons 40 pound Iron T's "
800 tons 35 pound Iron T's. "
150 tons 30 pound Iron T's. "

LOCOMOTIVES.

Three 36 tons Standard Gauge.
Two 7½ tons 36 in. Gauge Saddle Tanks.
Two 17 tons 36 in. Gauge Saddle Tanks.
One 7 tons 39 in. Gauge Saddle Tank.
Write for details and prices.

THOS. P. CONARD,
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FOR SALE.

9 in. Potter & McDougall Steam Hammer.
500 ton Bushnell Knuckle Joint Press.
30 in. Inlet Sturtevant Blower and smaller.
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ELECTRIC LIGHT PLANT (used 6 months).
1000 light Mather Dynamo.
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2 13 in. x 5 ft. Ames special feature Lathes.
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1 16 in. x 6 ft. Young Lathe.
1 16 in. x 6 ft. Perkins Lathe.
2 16 in. x 6 ft. Blaisdell Lathes.
1 16 in. x 6 ft. Flather Lathe.
1 18 in. x 8 ft. New Haven Lathe.
1 18 in. x 8 ft. Dustin Lathe.
2 20 in. x 6 ft. Bullard Lathes.
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2 20 in. x 8 ft. Bullard.
1 20 in. x 10 ft. Bullard.
1 26 in. x 13 ft. New Haven
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1 Bullard Turret Lathe.
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2 Brainard No. 7 Lincoln Plain Millers.
1 B. & S. No. 1 Universal
1 Brainard Heavy No. 6 Lincoln Pattern Miller.
1 Garvin No. 2 Miller and Screw Slotter.
1 No. 3 Garvin Plain Miller.
1 38 x 18 ft. N. Y. S. E. Lathe.
1 Garvin No. 4 Rack Feed Miller.
1 Brainard No. 15 Universal Miller.
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1 Garvin No. 2 Plain Screw Machine.
1 Garvin Small Gear Cutter.
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1 Diamond Polishing Head.
1 Bullard 15 in. stroke Shaper.
1 16 in. Smith & Mills Shaper.
1 24 in. x 24 in. x 6 ft. New Haven Planer.
1 10 ft. Boring Mill.
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2 10 x 14 " "
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5 10 H.-P. " "
1 8 x 12 D. C. Hoisting Engine.
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1 Corliss Band Wheel, 12 ft. x 24 in., in halves.
A Variety of Machinery, Such as Boilers, Engines, Pumps, Crushers, &c., very cheap.
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1 5 in. hole in Turret Screw Machine and Counter, $25.
2½ Hendey Cutting-off Machine. New.
1 3-Spindle Garvin Drill Press, used 1 month.
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2 50 H.-P. Woodbury Boilers. Good order.
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Also variety of Engines, Boiler Pumps, &c.
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G. W. SCHULTZ & CO.,
No. 308 Walnut St., - Philadelphia, Pa.

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SALE OF VALUABLE PROPERTY of the corporation known heretofore as The Albany Stove Company. Whereas, by order of the Supreme Court of the State of New York, granted in the City of Albany, N. Y., on the 10th day of October, 1893, the undersigned, receiver of the assets and effects of the corporation known heretofore as The Albany Stove Company, was directed to offer for sale the following described property, viz.: The real estate and buildings owned by the said corporation "The Albany Stove Company," situated on Tivoli street, in the City of Albany, N. Y., being the same premises used by the said corporation in carrying on its business of manufacturing stoves and iron castings, and is the same real estate conveyed by Eugene Van Rensselaer and others, as executors, etc., to The Capital Co-operative Foundry Company, by deed dated October 15, 1869, recorded in Albany County Clerk's office, December 15, 1869, in Book No 228 of Deeds, on page 241, and by Van Rensselaer Land Company to Albany Stove Company by deed dated January 10, 1890, recorded January 14, 1890, in Book No. 412 of Deeds, on page 318, together with the machinery, tools and implements used in carrying on the business above referred to.

Now, therefore, in pursuance of said order, the undersigned offers for sale to the highest bidder the property above described.

All bids to be sealed, and must be distinctly marked on the envelope in which they are enclosed, "Bids for property of the Albany Stove Company," and addressed and delivered to the undersigned at No. 82 State street, Albany, New York, on or before the 17th day of November, 1893. The right to reject any and all bids is hereby reserved, and sale can only be completed upon order of the court.

Bids will be opened by the receiver at the office of Francis H. Woods, No. 116 State street, Albany, New York, on Saturday, November 18, 1893, at 10 A.M. Terms, purchase price to be paid within twenty days after notification of acceptance of bid.

Dated October 11, 1893.

JOHN GUTMANN,
Receiver of The Albany Stove Company.

SALE OF VALUABLE PROPERTY of the corporation known heretofore as The Albany Stove Company. Whereas, by order of the Supreme Court, granted in the city of Albany, N. Y., on the 10th day of October, 1893, the undersigned, receiver of the assets and effects of the corporation known heretofore as The Albany Stove Company, was directed to offer for sale the following described property, viz.: The patterns, shop rights and flasks owned by the said corporation, and being the patterns, shop rights and flasks for the "Home Yale" parlor and range, "Yale" cook, "White Oak," "Art Yale Range," "Rose" range, "Oneida," and for other castings, formerly manufactured by the said corporation, a more particular description of which will be given on application to the undersigned.

Now, therefore, in pursuance of said order, the undersigned offers for sale to the highest bidder the property above described.

All bids to be sealed and must be distinctly marked on the envelope in which they are inclosed, "Bids for property of The Albany Stove Company," and addressed and delivered to the undersigned, at No. 82 State street, Albany, N. Y., on or before the 17th day of November, 1893.

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Terms: Purchase price to be paid within twenty days after notification of acceptance of bid.

Dated October 11th, 1893.

JOHN GUTMANN,
Receiver of The Albany Stove Company.

FOR SALE, CHEAP.

400 tons of 60-pound, 200 tons 52-pound and 400 tons of 30-pound second-hand Steel Rails, suitable for relaying. For prices, etc., address

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STOCK OF IRON AND STEEL,

Consisting of Bar, Band, Hoop and Scroll Iron and Spring and Plow Steel, at

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Receiver's Sale.

Notice is hereby given that the undersigned, Receiver of The Vienna Enamel & Stamping Company, will sell the assets of said corporation at private sale to the highest bidder. Bids will be received on and after November 10th and up to November 20th, 1893. The plant is situated at Porter, Porter County, Indiana; all the main buildings are made of brick and have been recently erected and the machinery is new. It is located on two and one-half blocks of ground; there are three railroads within a few rods of it; and it is about forty miles from Chicago. There is also a large amount of manufactured product and of raw material on hand. In fact, there is everything ready to start up with the business.

Terms of Sale: The plant with tools and fixtures will be offered together for one third cash and the balance in equal payments of twelve and eighteen months; the purchaser to give his notes with mortgage on the premises to secure the same, with interest at six per cent. payable annually, and he must keep the property insured in good companies to an amount sufficient to cover loss by fire, payable to the receiver. The manufactured and the raw material will each be offered separately, and the whole will be sold for all cash or one-half cash and the balance in six months; the purchaser giving his note with approved security for the deferred payments, with interest at six per cent.

All bids on the plant, fixtures and tools must be accompanied by a deposit of two thousand dollars cash, conditioned that the bidder will make good his bid if accepted; and all bids on the personal property must be accompanied by a like deposit of two thousand dollars.

EDWARD ECKL,
Receiver of the Vienna Enamel and Stamping Company.

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To close estate of John R. Smith, late of Springfield, Mass., the executors offer for sale the old established business of the Springfield Iron works, including real estate, stock and machinery.

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RALPH W. ELLIS, Atty.,
Springfield, Mass.

The WALLACE & GRAVES MCH. & FOUNDRY CO.,
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FOR SALE BY ABOVE FIRM:

1 40 x 12 Atlas Ltd. Tubular Boiler.
1 11 x 16 " Automatic Engine.
1 No. 8 Sturtevant Cupola Blower, with Shaft.
1 No. 8 " " " with Adjustable Bed and Countershaft,
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1500 ft. Rails 30 lb. per yard.

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A Rolling Mill, not far from Chicago; Cheap Fuel, Cheap Scrap; Good Machinery, comprising 9 in., 12 in. and 18 in. trains, in first-class condition. Can show a profit of $7 to $10 per ton on all iron made since mill has been in operation. Don't apply unless you mean business. Other engagements reason for selling. Address

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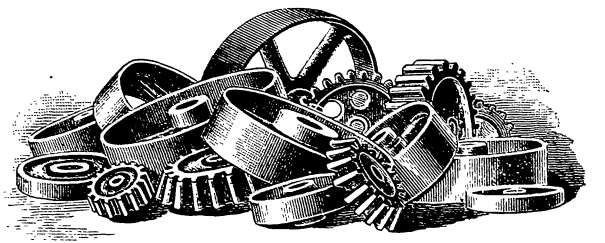
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GEAR AND PULLEY CASTINGS,
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SITUATIONS WANTED.

Undisplayed Advertisements for Situations Wanted not exceeding fifty words Fifty Cents each insertion. Additional words one cent each.

HARDWARE AGENCY.—Manufacturers of hardware and hardware specialties who desire to place an agency in St. Louis will please address "ROOM 10," 523 Chestnut St., St. Louis, Mo.

BY AN EXPERIENCED Superintendent and Manager, position to take charge of light manufacturing business or shop; specialty: goods pertaining to the requirements of the steam and gas pipe trade; understands designing and constructing metal patterns, steam and hot water heating, cast and malleable iron foundry work. Address "R.," office of *The Iron Age*, 220 So. 4th St., Philadelphia, Pa.

BY A FOREMAN PATTERN MAKER in the architectural or machinery line; have had charge of pattern shop for over ten years with large manufacturing company, near New York; 35 years old, sober, reliable, industrious, and know how to handle men to the best advantage; first-class references. Address R. MUDD, 1759 South 18th St., St. Louis, Mo.

BY A YOUNG MAN with 14 years' experience in the rolling business, having filled every position connected with the clerical work of a mill and five years as manager; although not practical, have a good theoretical knowledge of the manufacturing of iron, also thoroughly experienced in the scrap iron department; would solicit correspondence. Address "THEORETICAL," office of *The Iron Age*, 96-102 Reade St., New York.

AN EXPERT Accountant and man of executive ability, at present holding reponsible position with a large manufacturing company, desires making a change; can furnish bond and references from present employers. Address "MANUFACTURER," Box 1026, office of *The Iron Age*, 96-102 Reade St., New York.

BY A YOUNG MAN of ability, to look after the exhibit of a house dealing in iron working machinery, engines, etc., at the Midwinter International Exposition at San Francisco. Address "EXHIBIT," office of *The Iron Age*, 96-102 Reade St., New York.

AS FOREMAN of iron foundry; 14 years' experience as foreman; light or heavy castings in green or dry sand; best of references. Address "LIGHT OR HEAVY," office of *The Iron Age*, 96-102 Reade St., New York.

BY A FOUNDRY FOREMAN of long experience, where ability and faithful services will be appreciated; good record; distance no object. Address "F. F.," Box 1026, office of *The Iron Age*, 96-102 Reade St., New York.

AS FOREMAN of iron foundry, by a competent and reliable man; best of references. Address "GEO. B. F.," office of *The Iron Age*, 96-102 Reade St., New York.

AS MECHANICAL ENGINEER or Superintendent; has made a specialty of design and construction of heavy hydraulic machinery; has designed and superintended the erection of some of the largest hydraulic forging plants in this country; also familiar with modern bridge plants and their machinery; the very best of references. "ENGINEER OR SUPT.," office of *The Iron Age*, 96-102 Reade St., N. Y.

GENTLEMAN seeks chief-clerkship or similar position with mercantile house; six years' experience with two first-class houses in iron and steel trade; also experienced telegraph operator and stenographer; best references. "C. C.," Box 1026, office of *The Iron Age*, 96-102 Reade St., New York.

SITUATION wanted by a traveling salesman having extensive acquaintance with jobbers of hardware and with carriage manufacturers in 23 States. Thoroughly familiar with all kinds of carriage material, and some line of such goods preferred, but would handle another line. Reference past employers. Address "CARRIAGE HARDWARE," office of *The Iron Age*, 96-102 Reade St., New York.

IRON WORK FOREMAN OF CONSTRUCTION.—A thoroughly practical man of experience and push, temperate and reliable, at present in charge of a large job, will be open for position about November 1st; is accustomed to plans, and can handle men to advantage; has good recommendations Address "ANGLE," office of *The Iron Age*, 96-102 Reade St., N, Y.

AS TRAVELING SALESMAN in the iron, steel or accessory trades, by a man of 17 years' experience; has traveled largely in most States east of Rocky Mountains, but particularly in New England and Middle States; can furnish best references. Address "W. H. S.," 813 North 25th St., Philadelphia, Pa.

BY A DRAFTSMAN, experienced in boiler, engine and general machine work; A1 references furnished. Address "A1 DRAFTSMAN," office of *The Iron Age*, 96-102 Reade St., N. Y.

BY SUCCESSFUL Stamping Works Superintendent, thorough machinist, die maker; large experience laying out plans, starting and running new works, designing, building, labor saving tools and machinery; A1 manager of men, factory or machine shop; controls stamped article, pays good profit to manufacturer; best reference. Address "STAMPING," office of *The Iron Age*, 96-102 Reade St., New York.

AMERICAN, 33, intending shortly to go to France, would like to hear of some firm, preferably manufacturing, desiring a permanent representative there; advertiser speaks French fluently and is well connected in France; easy terms will be made with a first-class house; no others need answer. Address "Z. X. Y.," office of *The Iron Age*, 96-102 Reade St., N.Y.

A YOUNG MAN, 25, will change position; eight years with well known and one of largest concerns manufacturing builders' hardware (four as bookkeeper and assistant manager); quick, accurate accountant; experienced in able and economical management, all operating prices and complete data; thoroughly familiar with labor, costs, supplies, etc.; hard worker; can superintend; highest references; satisfactory reasons. "BUSINESS," No. 1019, office of *The Iron Age*, 96-102 Reade St., N. Y.

WOULD LIKE A POSITION with some Western party starting a copper or brass rolling and seamless tube factory, giving improved plans in factory and arranging machinery, with improved methods in casting and working metal. Address "COPPER OR BRASS," office of *The Iron Age*, 96-102 Reade St., N. Y.

SUPERINTENDENT or Chief Engineer, by a mechanical engineer of 15 years' experience in general engineering, hydraulics, cranes, sheet, plate and structural iron work, &c.; any one who wants an energetic man to look after their interests will answer this ad. "HUSTLER," No. 1019, office of *The Iron Age*, 96-102 Reade St.

BY A MIDDLE AGED married man; has had many years' experience as bookkeeper, special accountant, keeping cost sheets, etc., of the various articles manufactured in machine shop, boiler shop, foundry and wire mill work; thoroughly understands business, clerically, in all details. Address "CLERICAL," office of *The Iron Age*, 59 Dearborn St., Chicago.

BY A MAN who has had 14 years' experience as manager in a large retail hardware and implement house in the Southwest, as salesman or manager in a similar house; would accept a position as traveler, should the trade in territory alloted justify. Address "H. and I.," Box 1012, office of *The Iron Age*, 96-102 Reade St., N Y.

BY A PRACTICAL Rolling Mill Man of experience and ability, as manager; is thoroughly competent and reliable; engaged now with a large concern who are going out of business. Address "MANAGER," No. 1012, office of *The Iron Age*, 96-102 Reade St., New York.

HARDWARE AGENCY.—Gentleman having 20 years' experience and established trade, with large hardware jobbing house and retailers, desires to represent manufacturers of staple lines of hardware and kindred goods with headquarters in Chicago. Address "AGENCY," office of *The Iron Age*, 59 Dearborn St., Chicago.

BY A THOROUGHLY Practical Sheet Mill Manager of many years' experience; good references. Address "CASTLE," office of *The Iron Age*, 96-102 Reade St., New York.

AS MANAGER or foreman of a wire mill; have a thorough and practical knowledge of the wire trade in all its branches; twenty-five years' experience, twelve years as foreman; have charge of a large mill at present; am a good all-round mechanic, understanding the working of wire mill machinery and the building of annealing furnaces, bluing ovens, &c.; am strictly temperate and can furnish the best of recommendations from past and present employers; firms desiring a man that knows how to practice economy and run a mill on business principles will find it to their advantage to correspond with me. Address "TEMPERED STEEL WIRE," office of *The Iron Age*, 220 So. 4th St., Philadelphia.

RESPONSIBLE POSITION by a graduated chemist and engineer in steel works or furnace plants; reference President Midland Blast Furnace Co. Address C. W. Kolbe, Midland, Mo.

BY A MEMBER of the A. S. M. E., expert in shop management and economical production of machinery, as superintendent or manager; well posted on dynamical, hydraulic and mechanical engineering and inspection of materials. Address "W. O. W.," office of *The Iron Age*, 96-102 Reade St., New York.

BY A MAN, who has had years of experience as superintendent and manager of both iron and steel mills, a position as superintendent or assistant; will work for a moderate salary; best of references; am a good draftsman and can furnish drawings and working plans for new mill; have built several from ground up. Address "NEW MILL," office of *The Iron Age*, 96-102 Reade St., New York.

HELP WANTED.

Undisplayed Advertisements for Help Wanted not exceeding fifty words One Dollar each insertion. Additional words two cents each.

EXPERIENCED OFFICE MAN.—A large manufacturer of machinery near New York City wishes to arrange with a competent man to take charge of his office; applicant must have had extended practical experience and be fully conversant with all details pertaining to production and cost sheets and the general accounts of a large business, as well as fairly up in mechanical correspondence; all applications must state fully as to experience, age, nationality, salary expected and references, and will be held as confidential if desired. Address "OFFICE MAN," office of *The Iron Age*, 96-102 Reade St., New York.

AN EXPERIENCED MAN as Superintendent of manufacturing company, having an established trade on a ready selling article; must have first-class recommendations and be prepared to take stock in company. Address "READY SELLING," office of *The Iron Age*, 96-102 Reade St., New York.

EXPERIENCED MAN to solicit orders for castings for gray iron foundry doing job work exclusively; a good position for the right man. Address "JOBBING," office of *The Iron Age*, 96-102 Reade St., New York.

A MECHANICAL ENGINEER of practical shop experience may avail himself of a splendid business opportunity with a concern within 200 miles of Chicago; must purchase an interest in the business if capable of filling the position of superintendent; satisfactory terms will be given on a portion of the corporation's stock. Address "ENGINEER," Box 26, office of *The Iron Age*, 59 Dearborn St., Chicago.

A SALESMAN, familiar with the hardware and implement trade, to represent a large manufacturing company in Mexico and South American countries; must speak Spanish. Address, with references, stating salary expected, "SALESMAN," No. 1026, office of *The Iron Age*, 96-102 Reade St., New York.

SALESMAN traveling the jobbing and large retail trade in the East, one in the West, and one in the South, to handle line of hardware specialties as side line; salary or commission; the line is too small for manufacturer to travel alone. Address "L.," office of *The Iron Age*, 220 S. Fourth St., Philadelphia.

FOREMAN to take charge of blacksmith shop doing car work and general forging; must be a thoroughly practical blacksmith, capable of handling men to the best advantage; state age, experience, and give references. Address "CAR WORK," office of *The Iron Age*, 96-102 Reade St., New York.

A GOOD SALESMAN calling on mill owners and users of boilers, to introduce a first-class boiler compound on commission. Address THE VEGETABLE BOILER COMPOUND Co., Utica, N.Y.

COMPETENT FOREMAN, in wrought iron and wire factory; must be experienced in all its branches; give references and salary expected. Address "WIRE AND IRON WORKER," office of *The Iron Age*, Bank of Commerce Building, St. Louis.

AN EXPERIENCED Business Manager for an old established iron and steel works, located in one of the Middle States. Address, giving full particulars, "T. J. W.," office of *The Iron Age*, 96-102 Reade St., New York.

SALESMAN drumming the hardware trade to handle as a side line, on commission, Mason's patent door lock and ventilator combined; new and salable. BROOKLYN SPECIALTY Co., 166 Pierrepont St., Brooklyn, N. Y.

THE ROBERT W. HUNT & CO.

Bureau of Inspection, Tests and Consultation.

Rails, Splices and Cars. Analytical and Physical Laboratories. Examination of Iron and Steel Works and advice on Processes.

General Office: The Rookery, Chicago. Branch Offices: Hamilton Building, Pittsburgh; 28 Chestnut St., Philadelphia; 80 Broadway New York.

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CORN KNIVES,
HAY KNIVES, Etc.

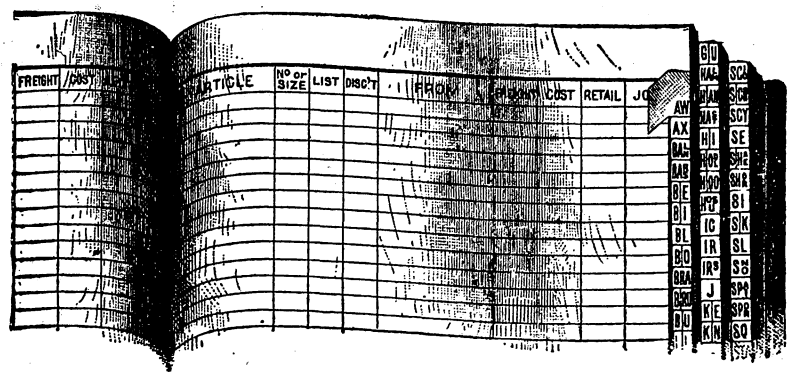
Drop us a line. You will hear from us promptly in an agreeable way. Goods are conceded to be the finest in finish and quality ever offered the trade.

Bruce & Marks Manufacturing Co., GAS CITY, INDIANA.

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The Iron Age Hardware Price Book E.

SECOND EDITION, REVISED AND ENLARGED, WITH MULTIPLE INDEX (Patent Pending).



AD	GU	SC^{I}_{O}
AN^{L}	HA^{L}_{M}	SCR
AU	HAN	SCY
AW	HA^{S}_{T}	SE
AX	HI	SH^{A}_{E}
BAL_{N}	HO^{D}_{L}	SH^{O}_{R}
BAR_{S}	HOO	SI
BE	HO^{S}_{U}	SK

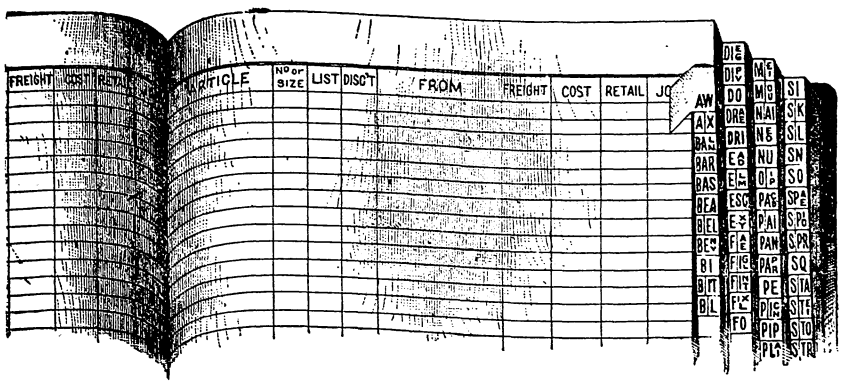
Fac-Simile of Indexing.

SIZE.—The book is 7 x 10 inches (much larger than Price Books A, B, C, or D), 350 pages.
PAPER.—The paper is the celebrated Crane's heavy ledger paper, tough and strong, permitting frequent changes and erasures.
BINDING.—The binding is of the very best quality - flexible seal grained leather.
INDEX.—By means of the arrangement shown in the cut the index applies to every page (except Supplement) and permits reference to any article at a single motion. This greatly facilitates the use of the book, avoiding the troublesome turning from page to page which is necessary in connection with other Price Books. It has been prepared with great care, and it is believed that it provides a place for every article in the Hardware line.
ARRANGEMENT.—The book is arranged to keep a complete record of prices on a single page, the width giving sufficient room.
SUPPLEMENT.—A 40-page Supplement is provided to give room for supplemental quotations, memoranda, tables, &c.

THIS BOOK IS ISSUED IN ONLY ONE EDITION, PRICE, $5.00.

The Iron Age Hardware Price Book F.

WITH MULTIPLE INDEX (Patent Pending).



AD	DI^{E}_{G}	$ME^{}_{I}$	SI
$AN^{}$	DI^{P}_{V}	$MO^{}_{U}$	SK
AU	DO	NAI	SL
AW	DR^{A}_{E}	$NE^{}_{O}$	SN
AX	DRI	NU	SO
BAL_{N}	E^{A}_{D}	O^{I}_{P}	SP^{E}_{A}
BAR	EL_{M}	PA^{C}_{D}	SP^{I}_{O}
BAS	ESC	PAI	SPR

Fac-Simile of Indexing.

SIZE.—The book is 8¼ x 11 inches (much larger than Price Books A, B, C, D or E), 556 pages.
PAPER.—The paper is the celebrated Crane's heavy ledger paper, tough and strong, permitting frequent changes and erasures.
BINDING.—The binding is of the very best quality—flexible seal grained leather.
INDEX.—By means of the arrangement shown in the cut the four rows of index applies to every page (except Supplement) and permits reference to any article at a single motion. This greatly facilitates the use of the book, avoiding the troublesome turning from page to page which is necessary in connection with other Price Books. It has been prepared with great care, and it is believed that it provides a place for every article in the Hardware line, and gives ample space for recording prices.
Sufficient space has been provided for large lines of goods such as Axes, Bits, Springs, etc., by allowing four pages to such indices, instead of two pages, as for lines of goods requiring less space. This is accomplished, as in AX for example, in Book F by having a short tab with the letter A on the tab on the first leaf, and AX on the tab on the second leaf. The A on the first leaf is directly over the A on the lower leaf, so that the index reads AX whether looking at both leaves together, or at the lower one only.
The four rows of index tabs are printed in gold letters on black Russia leather. The tabs are securely fastened on both sides of each page, making a handsome and durable index.
ARRANGEMENT.—The book is arranged to keep a complete record of prices on a single page, the width giving sufficient room.
SUPPLEMENT.—An 80-page Supplement is provided to give room for supplemental quotations, memoranda, tables, &c.

THIS BOOK IS ISSUED IN ONLY ONE EDITION, PRICE, $7.50.

Advantages of Multiple Index Price Book.

A SPECIAL feature of the books is the arrangement of the index characters, which, instead of being alphabetical, are arranged with special reference to the classification of Hardware goods, each index character giving the first two or three letters of the names of Hardware articles as shown above. The ease and convenience with which the books can be used is indicated in the following examples, taken from Book F:

For Augers,	turn to	AU	For Chisels,	turn to	CH^{I}_{U}	For Iron,	turn to	IRO
" Parers, Apple	"	PA^{P}_{R}	" Cutlery,	"	CUT	" Irons,	"	IR'S
" Saws,	"	SAW	" Cartridges,	"	CAR	" Shovels,	"	SH^{O}_{R}
" Pumps,		PU^{M}_{N}	" Rules,	"	RU^{B}_{L}	" Grindstones,	"	GRI
" Bits,	"	BIT	" Locks,	"	LO	" Stones,	"	STO

Special care has been taken to make the classification as indicated in the index correct and comprehensive, making provision for all Hardware articles and giving sufficient space for the keeping and recording of prices. It is thought that every strictly Hardware article has its first two or three letters given, thus permitting immediate reference to it by a single motion.
It is, however, obvious if any articles are not directly designated by the index characters, that the index, being alphabetical in its arrangement, indicates the place where quotations on such articles should be recorded. The supplement, however, may be found useful for quotations on any outside goods which the Hardwareman may desire to keep prices on, while at the same time it may be used if necessary for any overflow of matter from the preceding pages, or to contain list prices or other matter relating to goods.
Hardware Classification.—A pamphlet containing a classification of the leading Hardware articles is furnished with the price books.
Standard Lists.—In connection with these price books a set of *The Iron Age* STANDARD HARDWARE LISTS can be used with great advantage Price 25 cents.
These price books, which have been prepared by R. R. Williams, Hardware Editor of *The Iron Age*, are presented to the attention of Hardware men in the confidence that they will be found a most valuable aid in keeping track of prices.

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DAVID WILLIAMS, Publisher, - 96-102 Reade St., New York.

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Controlling the Adams-Blair Process and other Steel and Iron Patents.

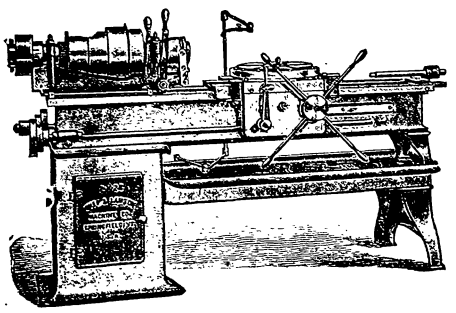
High Grade Open Hearth Steel produced by the Adams-Blair Process at less than the Cost of BESSEMER Steel.

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EASTERN OFFICE: 412 Drexel Building, Philadelphia, Pa.

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FLAT TURRET LATHE ?



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RAPID LATHE WORK.

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SPRINGFIELD. VT., U. S. A.

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All Widths and Meshes Carried in Stock,

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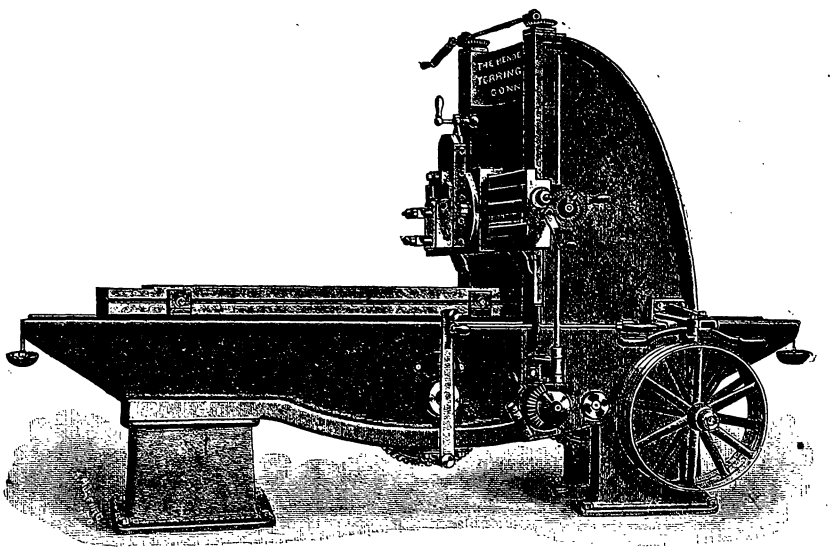
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ALUMINUM SHEET, WIRE, AND CASTINGS.



Iron Planers at Reduced Prices.

We have on hand a few new planers of this pattern, and in order to dispose of them quickly, we would make a good reduction in price of same. The sizes are 16 inch, 22 inch, 24 inch and 27 inch. If you are in need of a good planer write us for prices on these.

The Hendey Machine Co., Torrington, Conn.

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CORRESPOND WITH

THE NEWARK MACHINE TOOL WORKS,

NEWARK, N. J.



The season's records are filled with the feats of Johnson, Rich, Rhodes, Tuttle, Murphy, Knisely and a score of others. On STEARNS wheels they won prizes and places and altered figures on the blackboard day after day. Who can say that this year's winners will be winners next year?

WHAT THEY
CAN DO
YOU CAN
DO, TOO.

E. C. STEARNS & CO., - Syracuse, N. Y.

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ARE YOU HERE TO MAKE MONEY?

IF SO, THE PRICES WE ARE MAKING ON

OIL HEATERS AND GAS STOVES

WILL INTEREST YOU.

B. & B. Stoves are the Leaders.

B. & B. Combination Oil Heaters and Cook Stoves are a great success, as proven by the many testimonials received from all parts of the country.

Every Stove is mounted on rollers, and can easily be moved from room to room. *They can be used in place of a range in the kitchen or in place of a base-burner in the parlor.* They are thoroughly well adapted to fill all requirements, *combining as they do all the qualities of a first-class Oil Heater and an elegant Parlor Cook Stove.*

If you happen to have one of them upstairs, *the tank can easily be removed and taken down to the kitchen to be filled*, and again replaced in the Stove.

Those who have used the old style Stove with tanks fastened in them as tight as if cast in the iron will appreciate this feature. They can be fitted with our 2-hole, 3-hole or 4-hole Extension Tops for regular 8-inch ware. We want your trade, and if you will give us a chance to quote you prices we will have it.



ASK FOR OUR NEW 80-PAGE CATALOGUE.

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The standard by which the merits of a Freezer are gauged is, how near it comes to being as perfect as the

WHITE MOUNTAIN
ICE CREAM FREEZER.

It always has been, and is still, the best. Try them.

Manufactured by **The White Mountain Freezer Co., Nashua, N. H.**



THE OLD RELIABLE STANDARD FREEZER

has the reputation of being the **BEST ICE CREAM FREEZER** ever introduced. **STRENGTH, DURABILITY, NEATNESS AND EFFICIENCY** are prominent points in the manufacture. Full Size Can, **CEDAR TUB**, Detachable Hinged Crossbar, Self-adjusting Vibratory Scraper, etc.

Write for Illustrated Circular, Price-List and Discounts of **STANDARD, GOOD LUCK, MODEL and MACHINE Freezers.**

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WHIPPING AND **BEATING** EGGS.
MIXING BATTERS, DRINKS, SAUCES, ICINGS, POWDERS, ETC.
CREAMING MELLOW FRUITS, BANANAS, PEACHES, BERRIES, BUTTER & SUGAR.

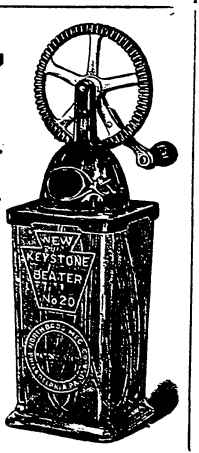
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Complete Machine securely packed in one single package.
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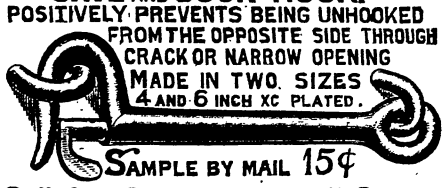
BARGAINS IN BICYCLES. Write for latest list and catalogue free. **Sylphs, Overlands and Rudges** of our own manufacture on favorable terms to the trade; **Western Wheel Works'** Cycles of which we are largest Western jobbers at Bed-Rock prices. Positively 20 to 60% saved on many styles. The low prices and high quality of our goods will surprise you Don't miss it. Write now. Cycles sold on easy payments.

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Manufacturers, oldest and largest jobbers in U. S.

COVERT'S SELF-LOCKING, GATE AND DOOR HOOK.

POSITIVELY PREVENTS BEING UNHOOKED FROM THE OPPOSITE SIDE THROUGH CRACK OR NARROW OPENING

MADE IN TWO SIZES 4 AND 6 INCH XC PLATED.



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Made in all sizes; Round, Loop and Open Eye. **We are headquarters** and the most extensive manufacturers in Saddlery, Coach and General Hardware Specialties.

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FARMER, N. Y., U. S. A.

Electric Toy Making, Dynamo Building and Electric-Motor Construction. By T. O'CONOR SLOANE-A.M., E.M., Ph.D. This work treats of the making at home of electrical toys, electrical apparatus, motors, dynamos, and instruments in general and is designed to bring within the reach of young and old the manufacture of genuine and useful electrical appliances. The work is specially designed for amateurs and young folks. Very fully illustrated..... ..... $1.00

For sale by David Williams, 96-102 Reade St., N. Y.

Hardware Dealers Can Profitably Sell Bicycles.

There is a large trade in Bicycles in all parts of the country and much of that trade naturally belongs to dealers in hardware. Good bicycles meet with a ready sale and pay a fair percentage of profit.

COLUMBIAS

Are the representative high grade machines in America. A Columbia is the easiest machine to sell to the best trade because it is unquestionably the standard wheel of the world.

We want enterprising agents of good standing and solicit correspondence.

Pope Mfg. Co.,
221 Columbus Ave.,
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WILD WESTERN WINDS ON'T BREAK THE

NEW GRAVITY BLIND HINGES of Wrought Steel

MADE BY **THE STANLEY WORKS,** NEW BRITAIN, CONN.

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CLARK'S BEST QUALITY SCREW DRIVERS.



Four Drivers and one Handle; all interchangeable; are hardened and tempered all over; made of best stock, and finished first-class.

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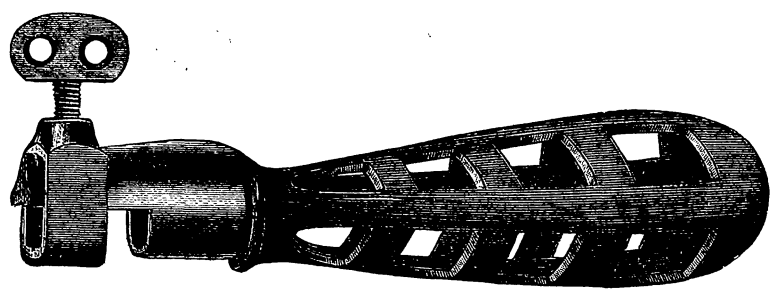


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UNIVERSAL FILE HANDLE.

This malleable iron File Handle is five inches long and has a Japan finish. The Thumb Screw, as seen in the cut, is forged steel. Weight of handle five ounces. It is strong, durable, and will hold perfectly files of all size and shape tangs from a 15 inch mill file to the smallest size in use. It will hold equally well Twist Drills, Gimlets, Screw Drivers, Auger Bits, and all tools with shanks less than ⅛ of an inch square.

It will also answer most of the purposes of a Hand-Vise, and will sell at sight anywhere Price, per dozen, $1.80.

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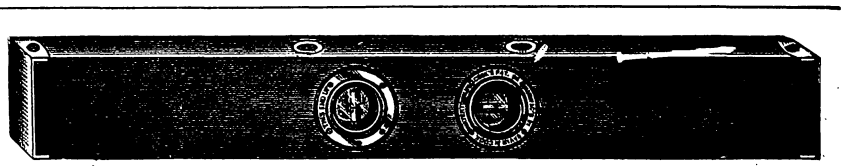
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Always Clean. Indestructible.
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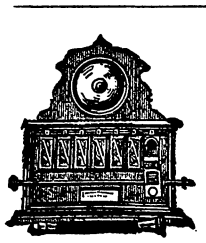
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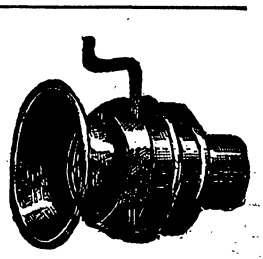
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Manufacturers of

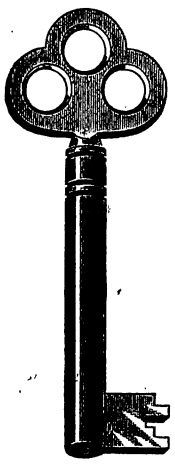
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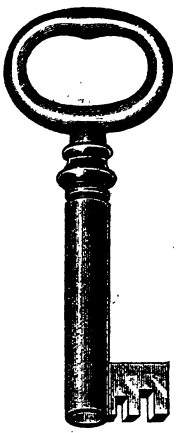
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THE PEOPLE ask for

MAKES FRIENDS and MONEY, and
SAVES TIME and TROUBLE.

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And the people are right.

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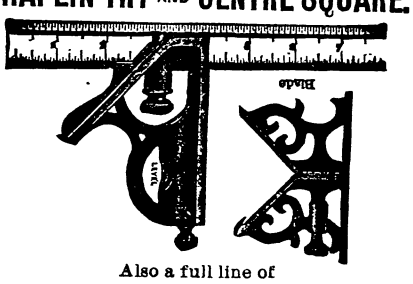
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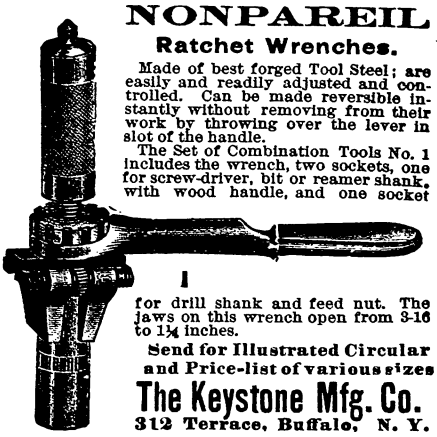
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Ratchet Wrenches.

Made of best forged Tool Steel; are easily and readily adjusted and controlled. Can be made reversible instantly without removing from their work by throwing over the lever in slot of the handle.

The Set of Combination Tools No. 1 includes the wrench, two sockets, one for screw-driver, bit or reamer shank, with wood handle, and one socket



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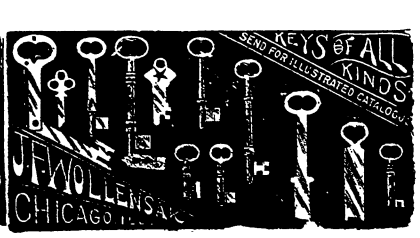
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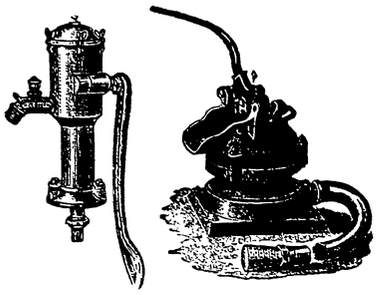
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A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 209. Fig. 381.



or wherever it is desired to raise a large quantity of water by

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The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

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from 3,000 to 4,500 gallons per hour.

These pumps are simple, durable and low priced.

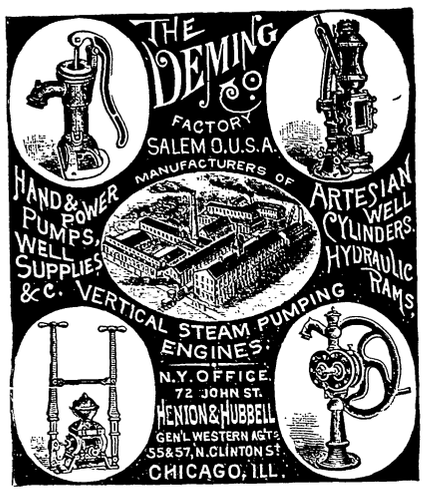
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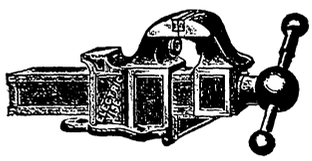
Fig. 145.



C. I. Grindstone Frame.



VISE.

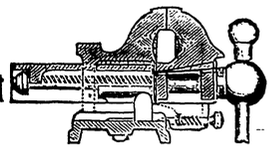


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IT HAS QUALITIES THAT ARE UNDISPUTED.

Rapid, Active, Prompt

One movement in and out, one turn of the hand and the work is secured.



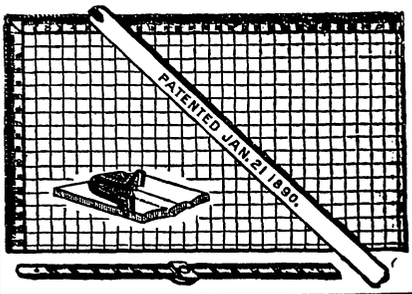
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Unequaled for accuracy and quick work in cutting square or at any angle. Saves breakages, &c.

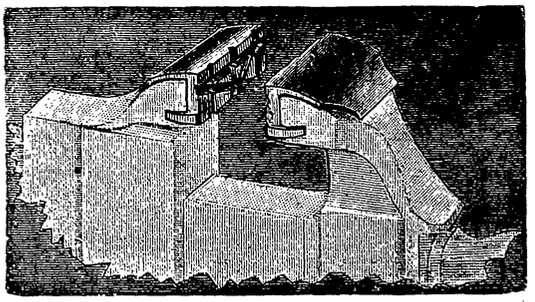
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BINGHAM PATENT VISE JAW CAP

Will Fit any Kind of Vise.

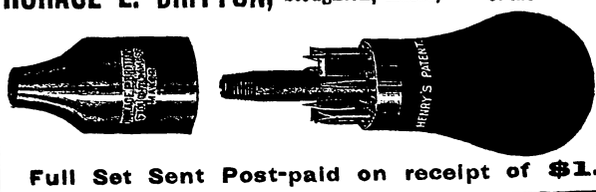
For protecting finished work. Will hold finished rods of any shape without injury.

3½ inch.....per pair, 40 cents.
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4½ " ..... " " 60 "

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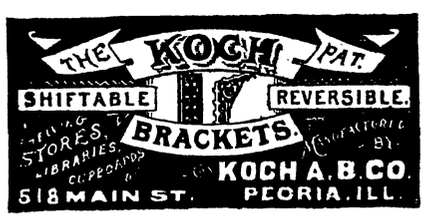
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The Combination Haft contains six Brad-Awls, one Chisel, Screw Driver, Diamond Point Awl, Marking Awl, Tack Puller and Reamer. Send for Circular and Prices.

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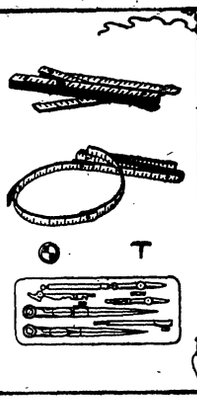
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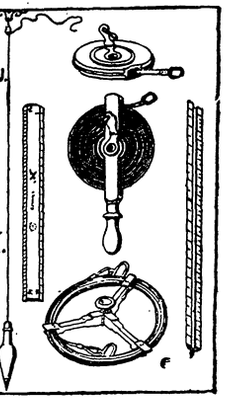
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FLAT & TRIANGULAR BOXWOOD SCALES, BEST MADE.
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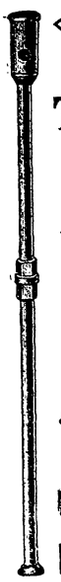
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TUBING and CURB,
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Are Giving Universal Satisfaction,



BECAUSE:

They do not rust and accumulate filth—always clean. Extreme lightness is combined with strength and durability. No freezing. No waste of water by reason of enlarged reservoir at top of tubing. No annoying wheel at bottom. Easy to handle.

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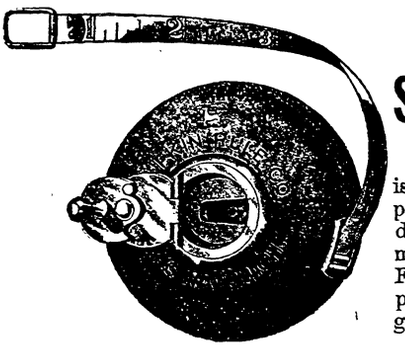
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IRON BENCH LEVEL
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No. 5. 6 in.



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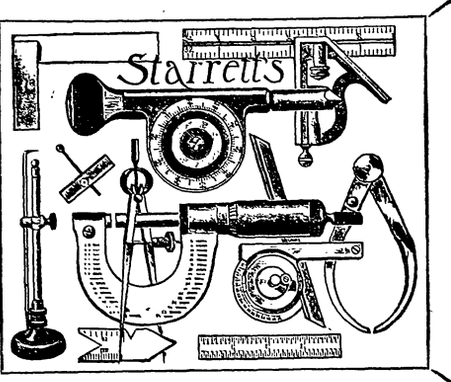
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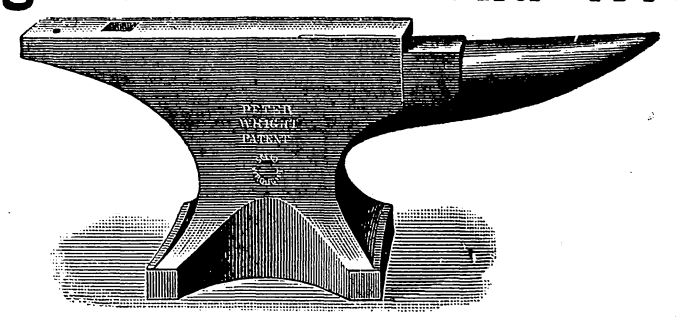
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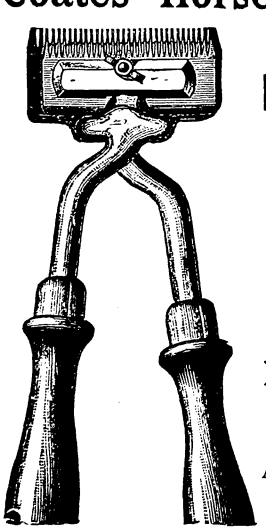
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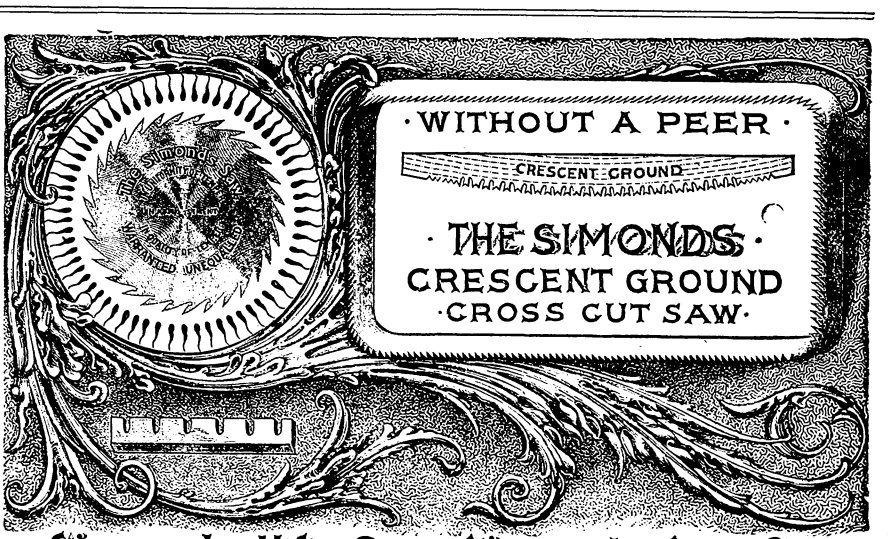
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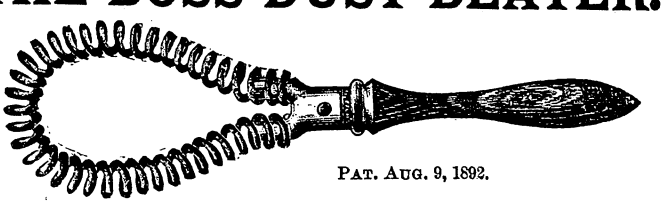
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PAT. AUG. 9, 1892.

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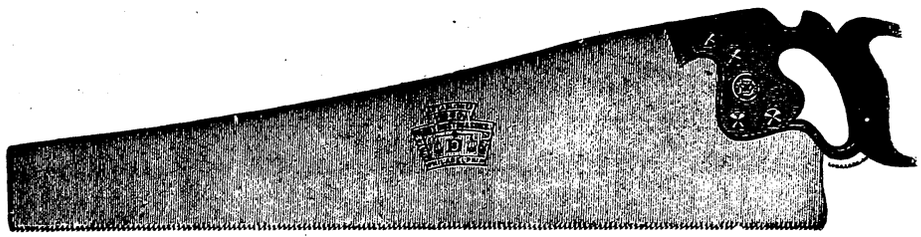
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A man who has made a reputation for his goods knows its value as well as its cost and will maintain it."—HENRY DISSTON.

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"THE SAW;" HOW TO CHOOSE IT, AND HOW TO KEEP IN ORDER, Sent Free on Receipt of Name and Post Office Address.

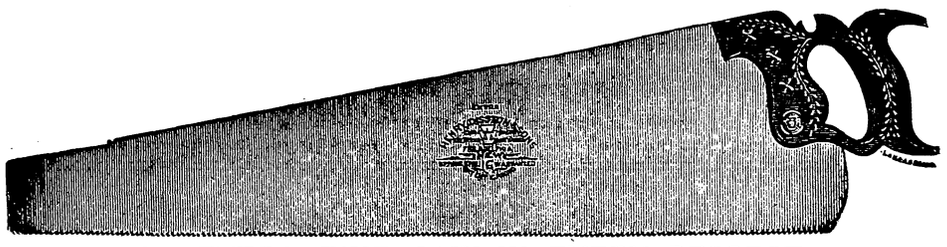
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This Saw combines all the valuable improvements in Hand Saws that have been made by us of late. The first and most important is the hollow or skew back, the success of which can best be attested by the number sold. The peculiar shape of the butt or heel, coupled with the new method of fastening to the handle, give a full stroke of the blade without fear of catching or hooking in the work; and as the handle is put further on the blade you have a full stop on the proper point and a greater command over your Saw, by reason of being two inches nearer the point, which must give more power.

The Saw being let into the handle on a circle, has a perfect bearing, which, with the new screws, makes it stronger and almost impossible to work loose, and avoids the unsightly gap that is seen on the back of the old style handle. All the above features are patented.

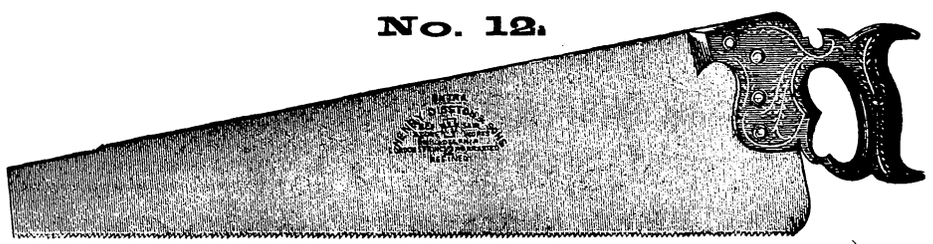
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AN EXTRA FINE SAW IN EVERY RESPECT.

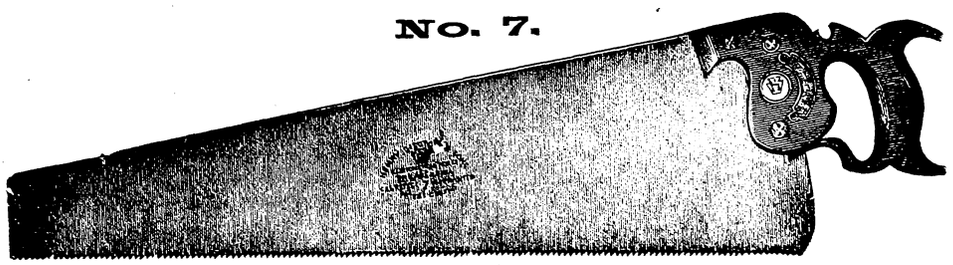
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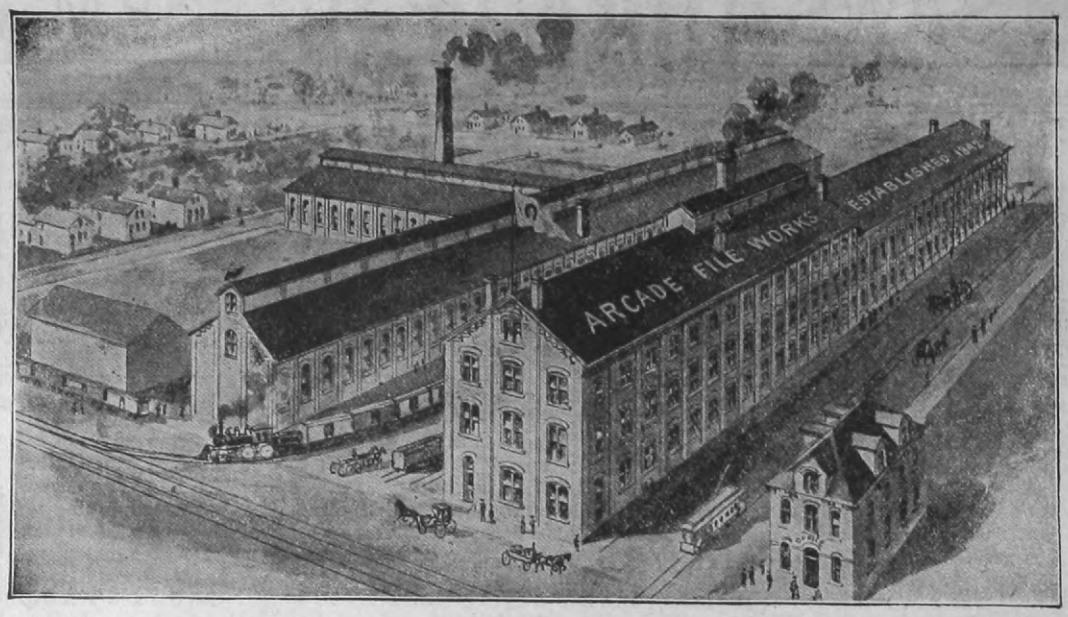
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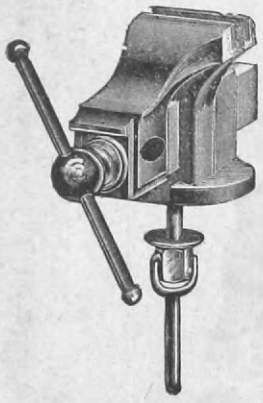
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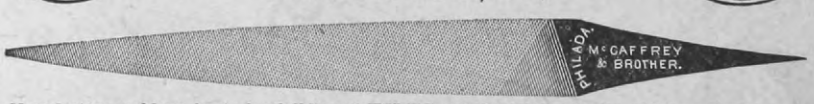
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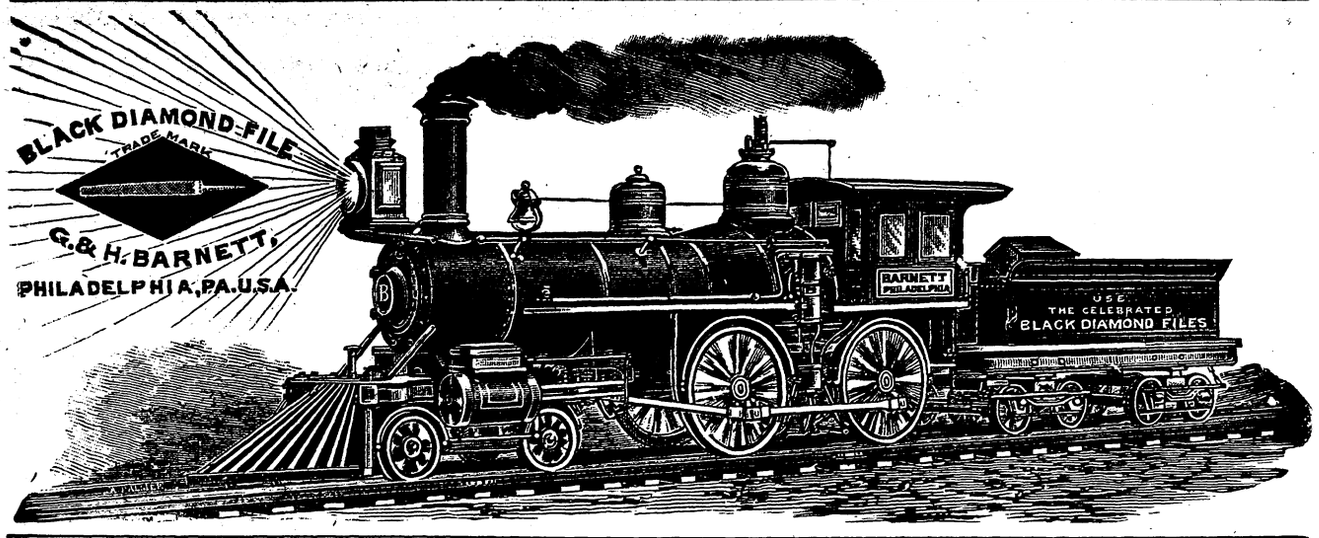
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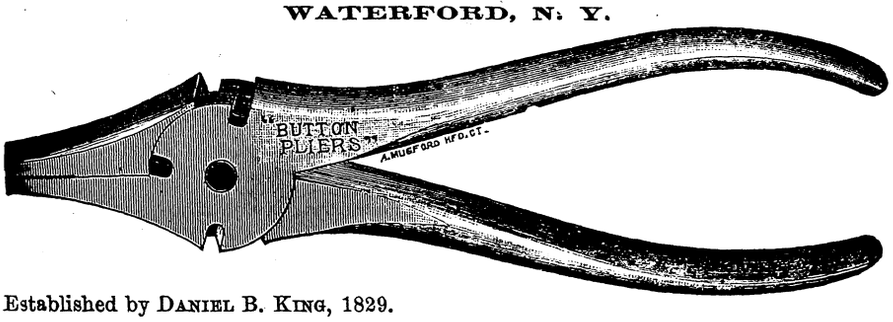
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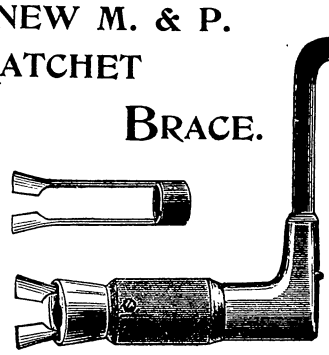
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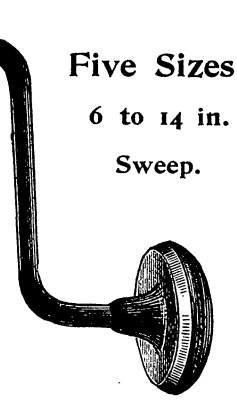
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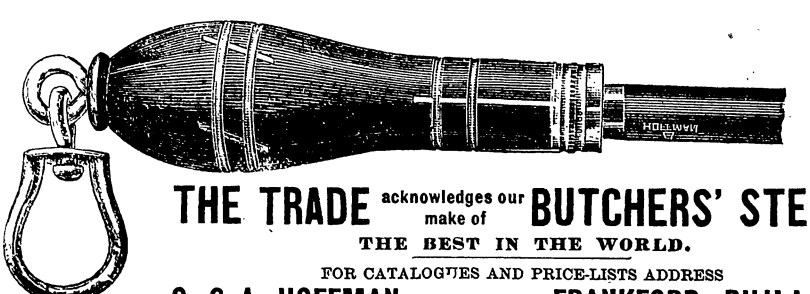
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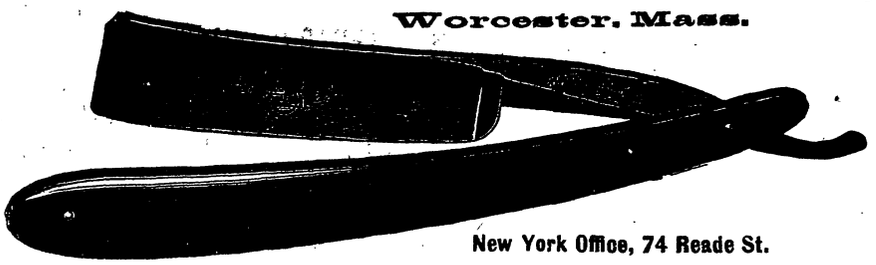
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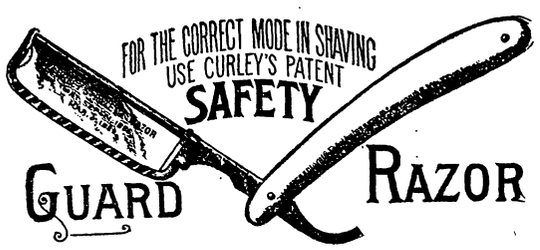


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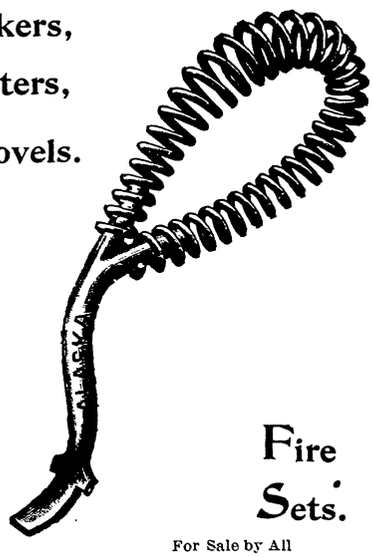
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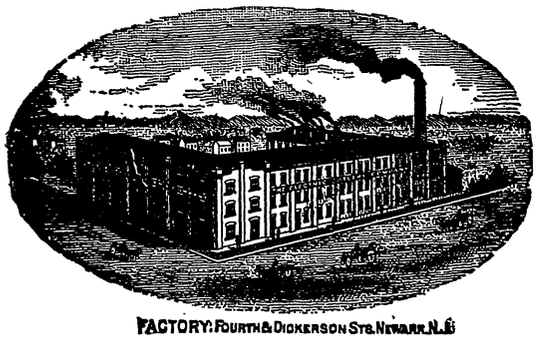
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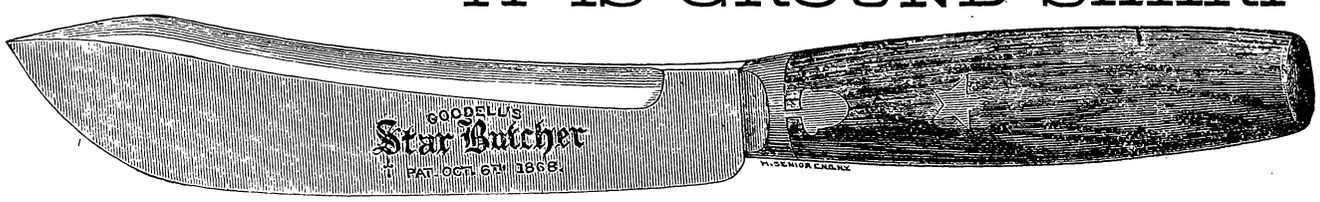
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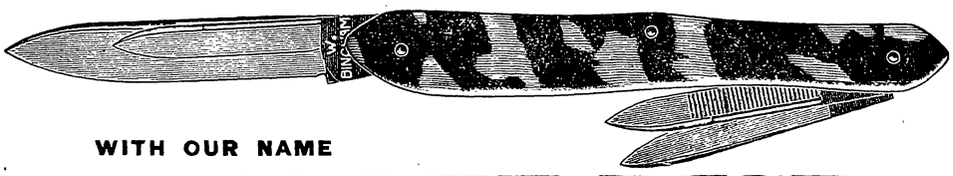
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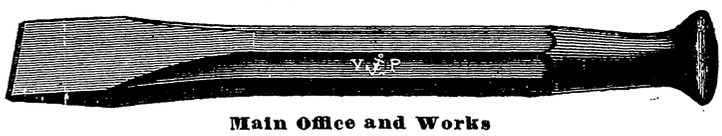
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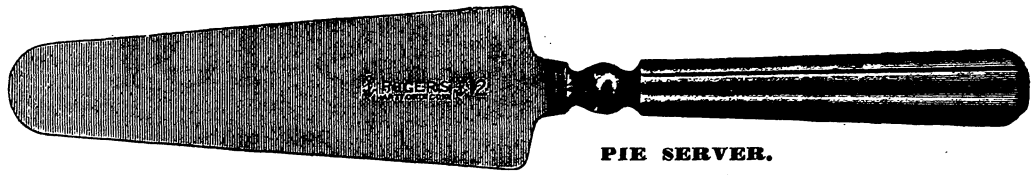
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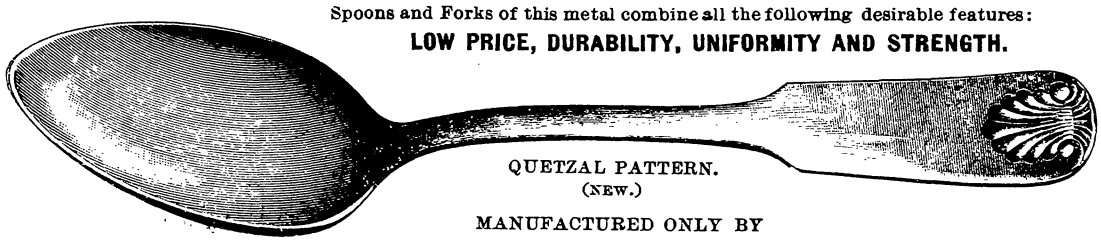
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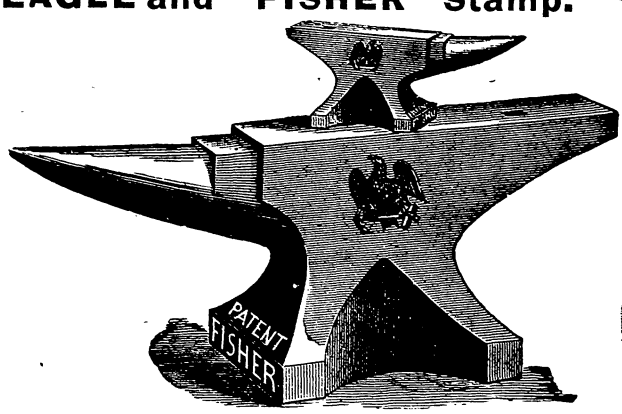
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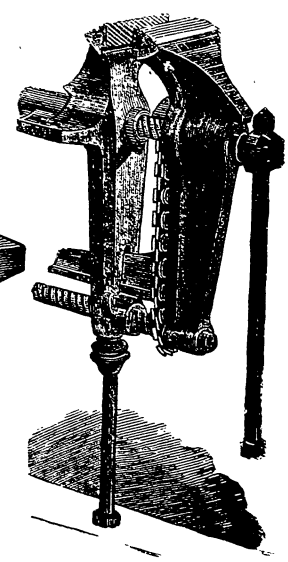
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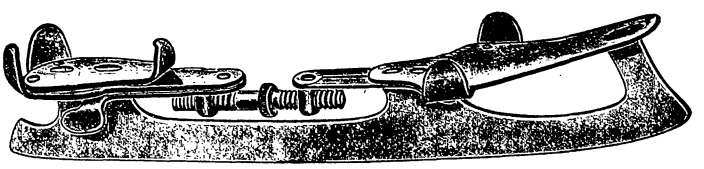
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Just Published.—THIRD REVISED EDITION.

THE IRON AGE STANDARD HARDWARE LISTS

FOR USE IN PRICE BOOKS.

Compiled by R. R. WILLIAMS, Hardware Editor of The Iron Age.

This pamphlet contains the principal standard Hardware price-lists in as clear and compact an arrangement as possible, so as to permit their being advantageously cut out and inserted in the price book. In order to make them adapted to this use they are printed on thin and tough paper of fine quality and on only one side of the paper.

Saucepans and Round Boilers.

	Plain	Turned.	Tin'd or En'd.
Pints.			
1	$0.30	.35	.39
1½	.32	.37	.44
2	.35	.39	.48
3	.42	.47	.56
Quarts.			
2	.50	.56	.63
2½	.53	.59	.68
3	.55	.62	.73
4	.60	.68	.84
5	.65	.75	.96
6	.70	.81	1.11
7	.75	.84	1.21
Gallons.			
2	.85	.96	1.31
2½	1.05	1.18	1.56
3	1.20	1.35	1.70

The success of the effort to give the lists in small space is illustrated in many of the lists, in which a clear and condensed arrangement is secured. For instance, the wrench list occupies but 3 inches by ¼ inch, while the list of Stove Hollow Ware, in very small space, gives the list prices on a large and important line of goods which often occupy several pages in catalogues. In several lists, such as Strap and T Hinges and Butts, a new arrangement is adopted, which is regarded as presenting these lists in a very convenient as well as condensed form.

As is obvious from the lists herewith reproduced, the shape and size of the different lists varies greatly, the aim being to give each list the smallest and most convenient arrangement possible. None of the lists are, however, more than 3½ x 6 inches in size, very few of them being as large as this and most of them very much smaller. In use it is intended that they shall be trimmed closely before they are inserted in price books, when they may be attached either by one edge close to the hinge of the book, as will, perhaps, be most convenient with the larger lists, permitting the use of the entire page for memoranda, or the smaller lists may be pasted on the page in connection with the entries in regard to discounts, freights, &c. Many of the lists are so compact in arrangement as when thus inserted to leave ample room for recording quotations.

Stove Hollow Ware. Ground and Unground.

POTS, KETTLES, ETC. (CAST IRON.)

No.....	6	7	8	9	10	11
Pots.....	$0.65	.75	.85	1.00	1.25	1.75
Kettles.....	.55	.65	.70	.85	1.00	1.40
T Kettles.....	.75	.80	.90	1.00	1.25	....
Spiders.....	.27	.30	.35	.40	.50	.60
Griddles Round	.22	.25	.27	.30	....	....
" Long..	.40	.50	.60	.75	....	....

SCOTCH AND YANKEE BOWLS.

No	1	2	3	4	5	6
Scotch Bowls..	$0.35	.40	.45	.50	.60	.70
Yankee Bowls.	.35	.45	.55	.65	.75	.90

Wrenches. Standard List.

Inches.	6	8	10	12	15	18	21
Black...	$9.00	$10.00	$12.00	$14.00	$24.00	$30.00	$36.00
Bright..	10.00	11.00	14.00	16.00	26.00	32.00	38.00

Some merchants use this pamphlet for reference, checking off invoices, etc., as it gives the leading lists in a more convenient form than they can otherwise be obtained. The lists are, however, intended primarily to be cut out and inserted in price books, and *can be used in connection with any of The Iron Age Hardware Price Books.*

Glue Pots. Tinned or Enameled

No. 4/0....	$4.50	No. 2	$8.40
3/0....	5.00	3	10.26
2/0....	5.50	4	12.42
0	6.00	5	14.58
1	6.75	6	16.94

That the Standard Hardware Price Lists meet a want of the trade is evident from the fact that a Third edition is already called for.

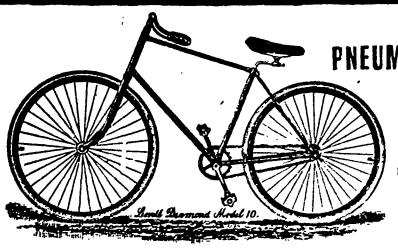
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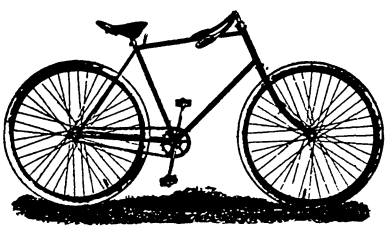
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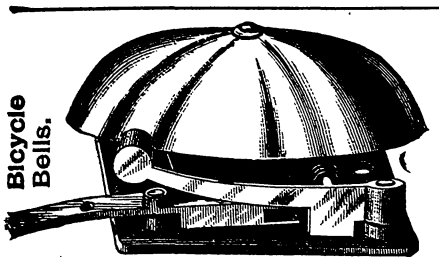
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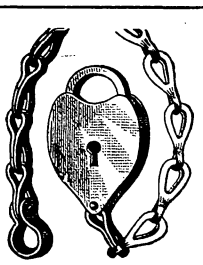
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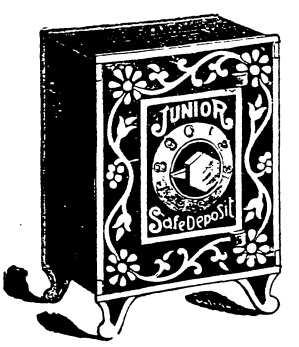


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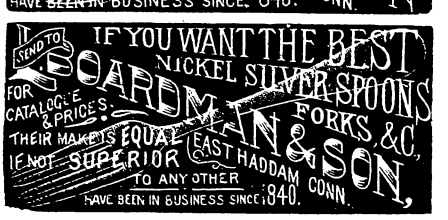
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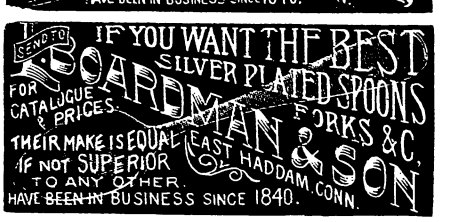
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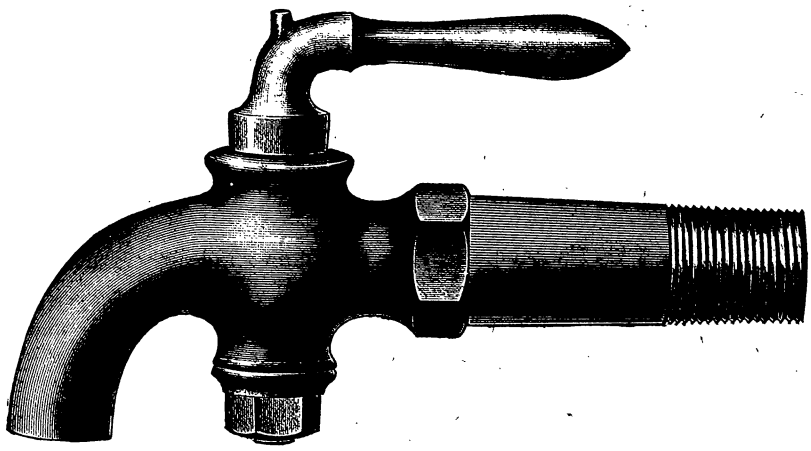






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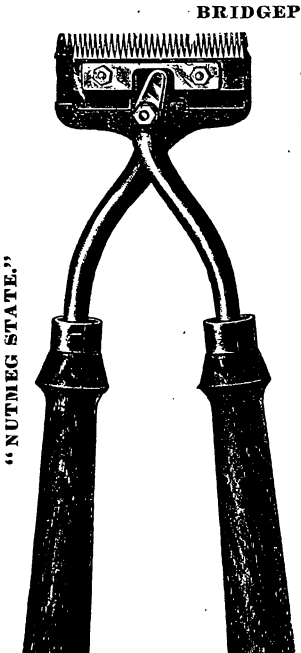
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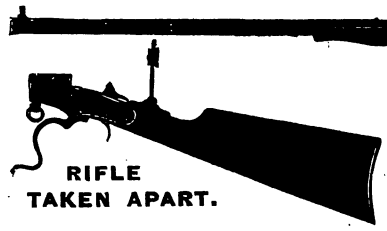
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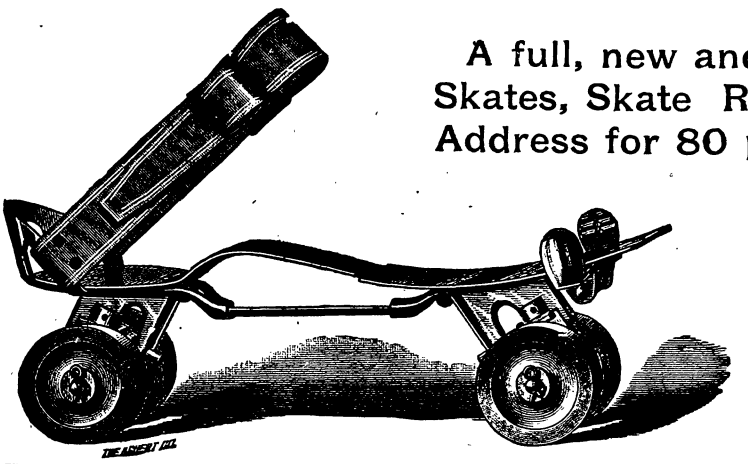
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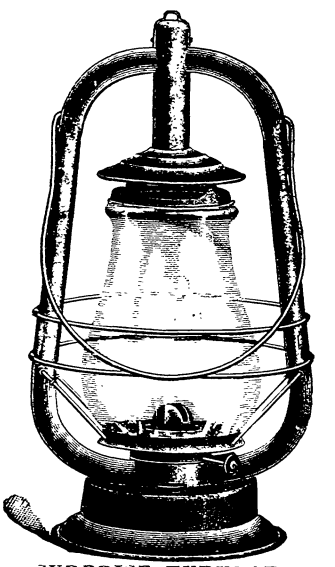
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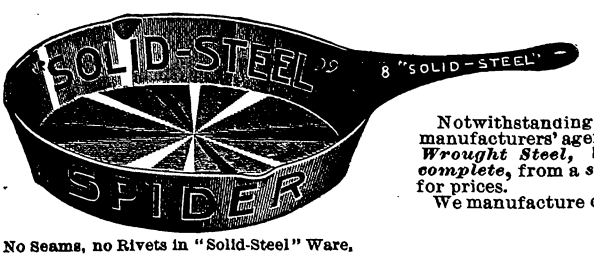
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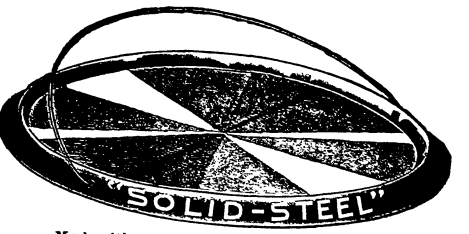
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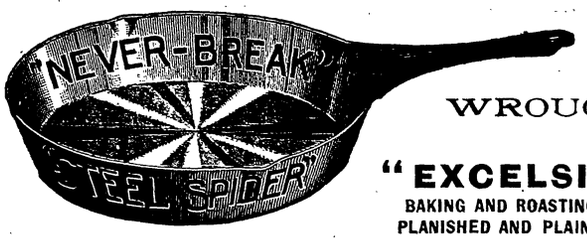


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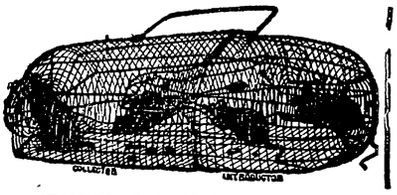
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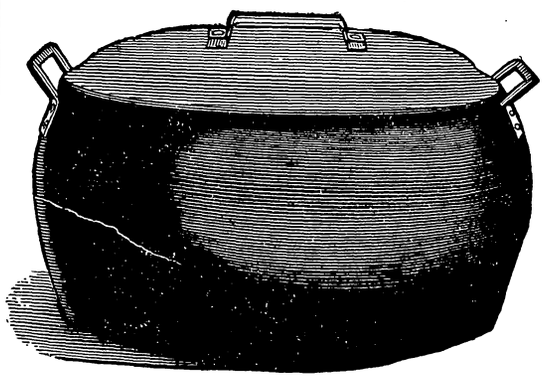
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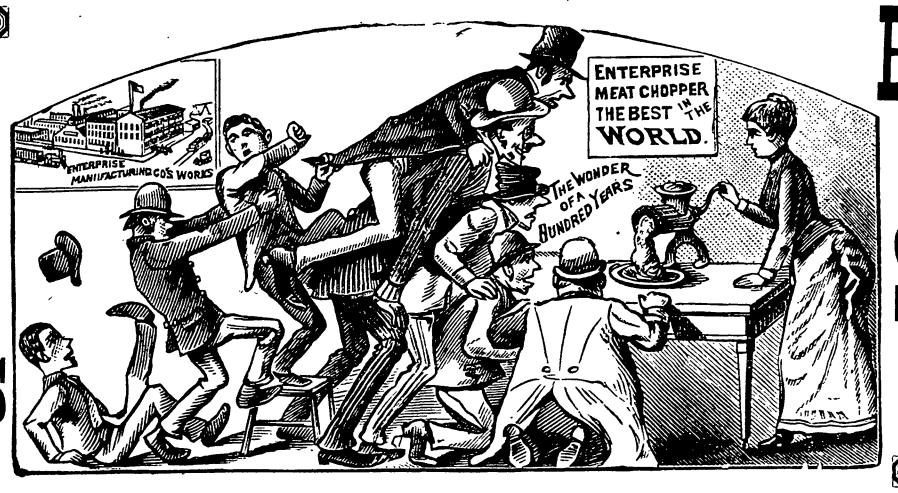
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"THE MONARCH."

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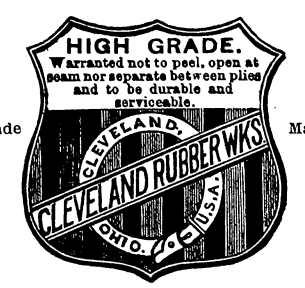
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Witness *our hand and seal.*

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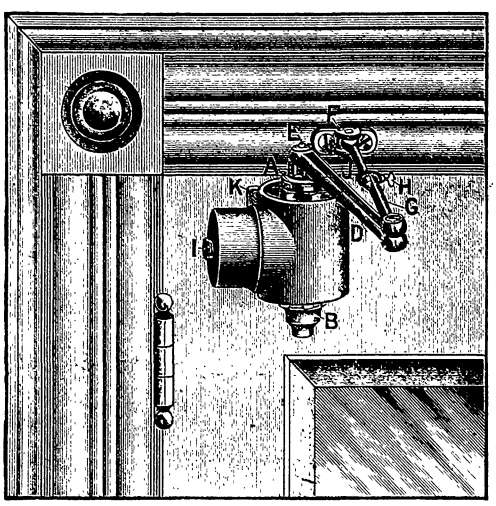
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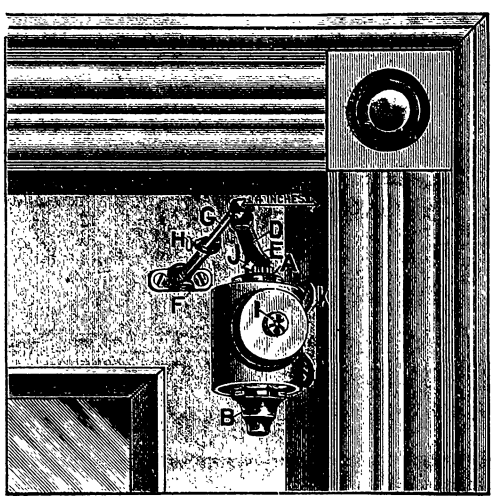
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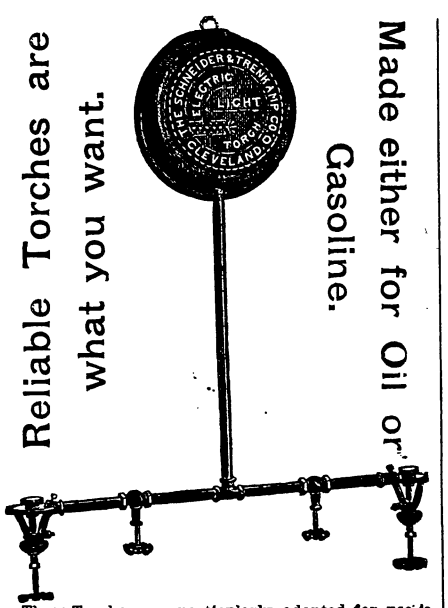
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Made either for Oil or Gasoline.

These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner.

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LIGHT YOUR DARK SHOPS CHEAPLY.

Give your men plenty of Light and they will do double work.



The Wall Torch has been used for several years as a means of illumination in **Mills, Foundries, Machine and Car Shops, Tunnels, Street Stands, Band Stands, Smith Shops,** etc.

While there are many cheap, inferior torches made which injure the sale of a good article, and condemn the **Torch** in general, our "Incandescent" Wall Torches are recognized as the best, and are now in use in the largest manufacturing establishments in the country giving **PERFECT SATISFACTION,** as is evidenced by the **DUPLICATE ORDERS** we receive from year to year.

They burn 150° Coal Oil, or 74° Naphtha, requiring a different burner for each.

In ordering be careful to state which is desired.

Price, for Single Torch, complete, $2 each.

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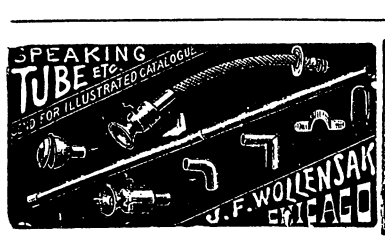
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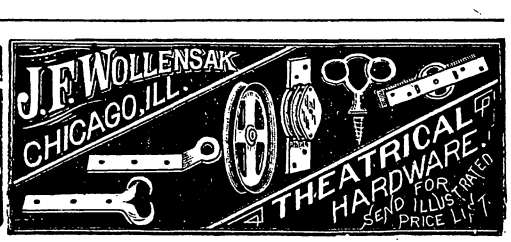
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Burning Brands, Stencils, &c. Send for Illustrated Catalogue.





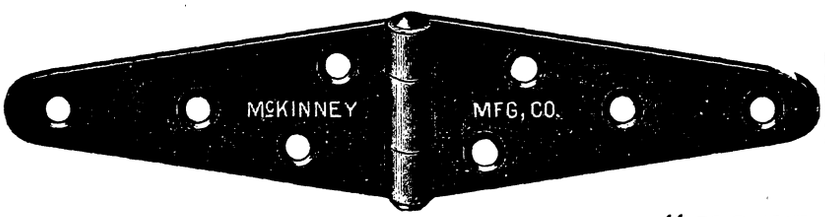


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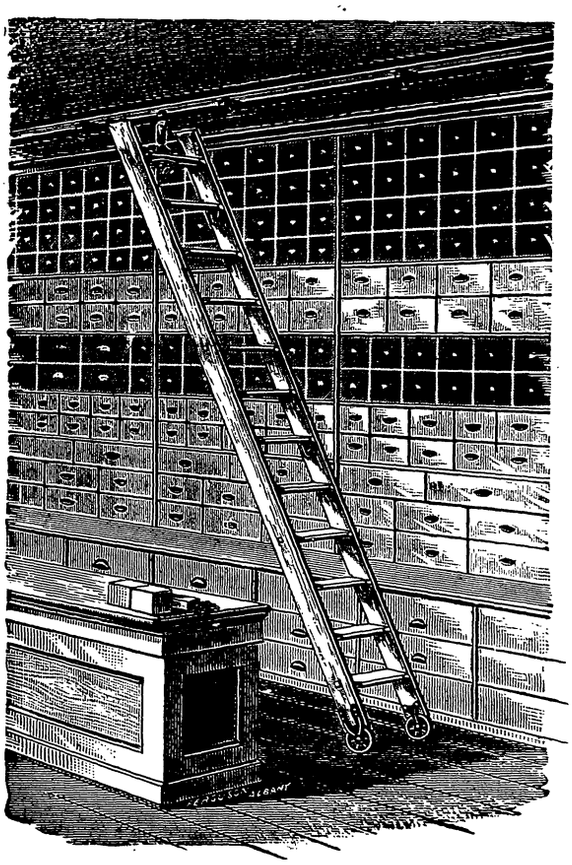
That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

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Steel  Hinges.

SEND FOR LIST. "NONE BETTER."

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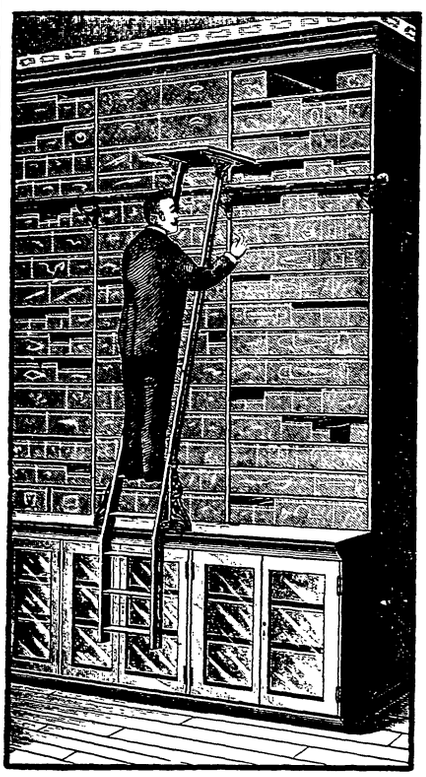


The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by

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THE BICYCLE STEP LADDER

The Newest, Neatest, Simplest, Easiest Operated and Safest Store Ladder made.

Ladders are not *Suspended*, but *Supported* from below on wheels. Move easier with operator on than others when empty. Highly finished, and very handsome. Made in different grades and prices to suit.

Send for illustrated catalogue and prices.

See this space next week for other styles.

The Bicycle Step Ladder Co., 50 State Street, Chicago, Ills.

All Dealers Should Send for Our

OCTOBER 1st PRICE-LIST

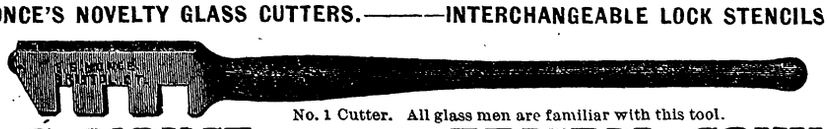
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No. 1 Cutter. All glass men are familiar with this tool.

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CAN RECOMMEND THE

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to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

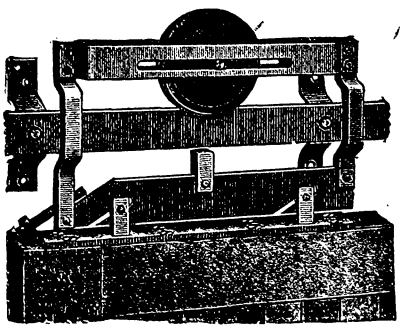
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PARLOR DOOR HANGER.

This Hanger is made of Steel.
The Wheel is also Steel, except the filling or tread.
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The Hanger is Anti-Friction.
More nearly Noiseless than any other.
Ease of adjustment.

Can be erected with half the labor others require.
Track will not swell, shrink or warp out of true.
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ALSO LANE BARN DOOR HANGER AND TRACK. SEND FOR CIRCULARS.

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He had in his possession 55 skeleton keys which the police claim would open any door. —*Chicago Tribune.*

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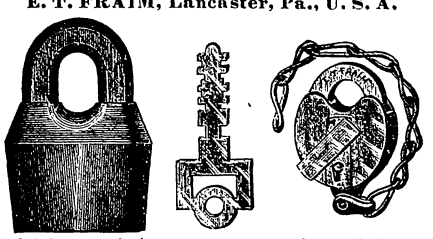
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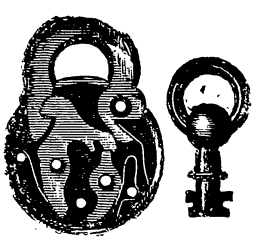
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Originators, designers, patentees and manufacturers of all the leading popular styles of **PADLOCKS**, Key-Locking Scandinavian with our patent Inter-Locking Tumblers; the only reliable lock of this style ever made. **SELF-LOCKING** Scandinavian of the highest type of perfection. Dust Proof Railroad, Freight Car and Switch Padlocks. Brass, Bronze, Steel and Malleable Iron Padlocks for all purposes and in all finishes. 131 different kinds. Write for our new 100-page catalogue.

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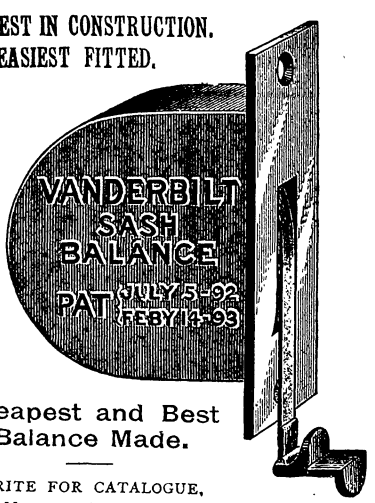
Eight Tumblers. Key Turning Both W

Sizes; ¼ inch to 2½ inches; of cast bronze. De[sig]tion for quality and price. No steel or iron used, can[not] cannot be picked. Also, ½ and ⅝ inch Padlocks, o[f] a common pin, in brass and nickel; for cats and small [dogs]. The best Railroad Switch and Car Lock in the world. Adopted by the United States Treasury for bonded warehouses.

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EASIEST FITTED.



Cheapest and Best Balance Made.

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"Champion" 6-Lever Padlock

Never before Equalled what they attained in 1892.

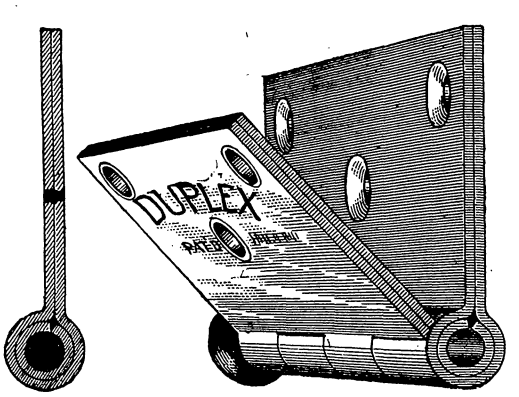
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Sold by best Jobbers everywhere.

Every Dealer should have on File our Catalogue No. 11.

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"DUPLEX"

WROUGHT BRONZE

LOOSE PIN

BUTTS.

Best of the Kind.

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COMMON MOUSE TRAPS
BEST FOR USE!

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Porcelain-Lined Lemon Squeezers, Steak Hammers, Boot Jacks, Magnetic Tack Hammers, Mallets, Bung-Starts, Hand Screws, Beacon Hill Pat. Mouse Traps. Sunny-Side 2 lb. Lap Board.



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Manufacturers of

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Berger's Celebrated Pail Ears, Sauce Pan Handles, Eave Trough Hangers, Pipe Fasteners, Hooks, Straps and Barrel Trucks, &c., &c. Send for Prices and Catalogue.

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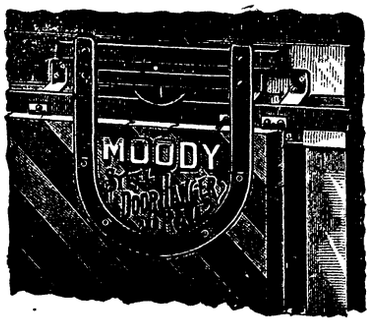
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Improved Adjustable Window Screens.

THE QUEEN ANNE. With box panels; the only screen made and finished alike on both sides.
THE EUREKA. The best cheap extension screen on the market.
SCREEN DOORS. Finished all ready to hang Sticks, Corners, Improved Frames, &c.
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Showing one-half set of hangers attached to door.

STEEL RAIL.



The Only Bracing Bracket Made.

PRICE-LIST.

HANGERS.	Per Doz. prs.
No. 5, to run 6 feet, 3⅛ in. wheel,	$10.00
No. 6, to run 10 feet, 4⅛ in. wheel,	15.00
No. 7, to run 15 feet, 5⅛ in. wheel,	22.00
RAIL, per foot	6½ cents

All Wrought Steel Center Neck Yoke.



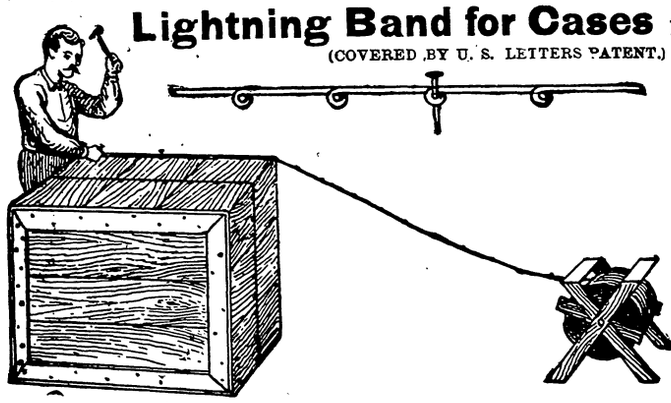
The Strongest, Lightest, Cheapest Yoke on the Market.

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Lightning Band for Cases and Crates.

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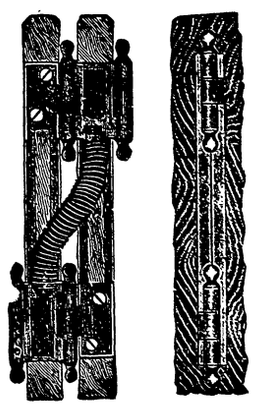
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PRICES:

No. 1, per reel of 2000 ft., $4.50 net.
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Pliers for cutting wire, 50 cents extra.
No. 1 for cases under 300 or 400 pounds, and No. 2 for all heavier cases.

Buffalo Specialty Mfg. Co.
Sole Manufacturers,
Buffalo N. Y. U. S. A.

Chicago Spring Butts

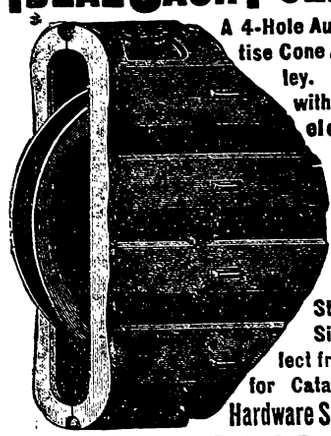


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DOORS.	1 Jap'ed Pair.	21 Nickel Plated Pair.	31 Bronze Plated Pair.	41 Real Bronze Pair.	51 Polished Brass, Pair.
⅞ to 1 in.	$1.20	$3.00	$3.00	$7.25	$7.25
1⅛ to 1¼ in.	1.50	3.75	3.75	8.00	8.00
1⅜ to 1¾ in.	2.50	5.50	5.50	10.75	10.75
1⅞ to 2 in.	4.00	7.50	7.50	18.00	18.00
2 to 2¼ in.	7.00	10.00	10.00	27.00	27.00
2⅜ to 3⅛ in.	10.00	14.00	14.00	36.00	36.00

Write for Catalogue and Prices.

IDEAL SASH PULLEY.

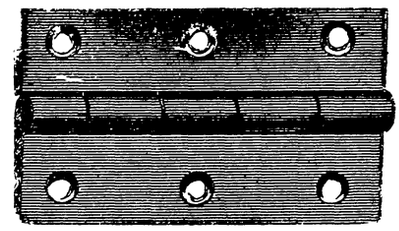


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Cast Brass Butt Hinges

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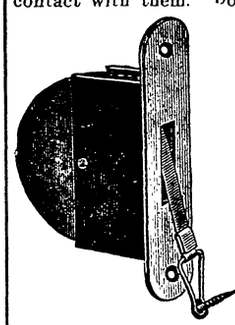
W. & J. TIEBOUT,
Nos. 16 & 18 Chambers Street, New York,
MANUFACTURERS OF
BRASS, GALVANIZED & SHIP CHANDLERY
HARDWARE.

A Well Balanced Sash

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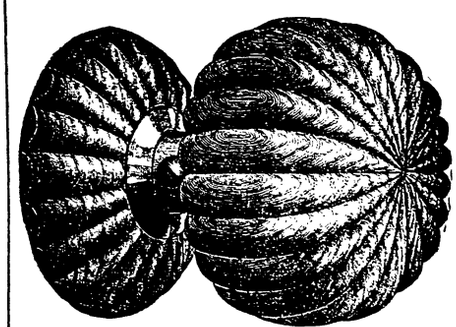
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gives satisfaction to those who are brought in contact with them. Don't be inveigled into buying anything called Sash Balances that have no record. Made from light cast iron. Ask your Hardware dealer for Pullman Steel Frame Sash Balance. Warranted 15 years. Only Steel Frame Sash Balance in the world.



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DOOR SPRINGS AND CHECKS
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NEW GOODS. NEW PRICES.
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FROST'S ANTI-RATTLER

Pat. Jan. 20, 1880.

Cut One-half Size.

Sample pair sent to any hardware or saddlery firm by addressing

The Frost Thill Spring Co,

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THE WILCOX & HOWE COMPANY,

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MANUFACTURERS OF

A Full Line of Carriage Hardware

ALSO SPECIAL FORGINGS.

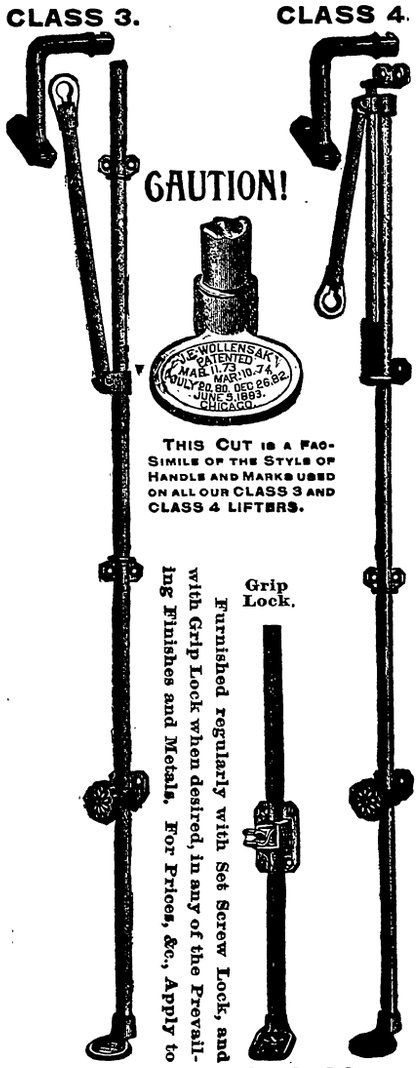
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Transom...Lifters

OLD RELIABLE

J. F. WOLLENSAK'S PATENT.

CLASS 3. CLASS 4.



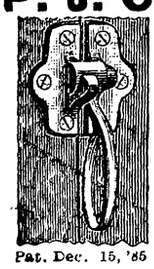
THIS CUT IS A FAC-SIMILE OF THE STYLE OF HANDLE AND MARK USED ON ALL OUR CLASS 3 AND CLASS 4 LIFTERS.

Grip Lock.

Furnished regularly with Set Screw Lock, and with Grip Lock when desired, in any of the Prevailing Finishes and Metals. For Prices, &c., Apply to

J. F. WOLLENSAK, CHICAGO, ILL.

P. J. Conroy & Co.,



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"CONROY"

Refrigerator Door Fasteners

Have rapidly supplanted all others.

Refrigerator Trimmings.



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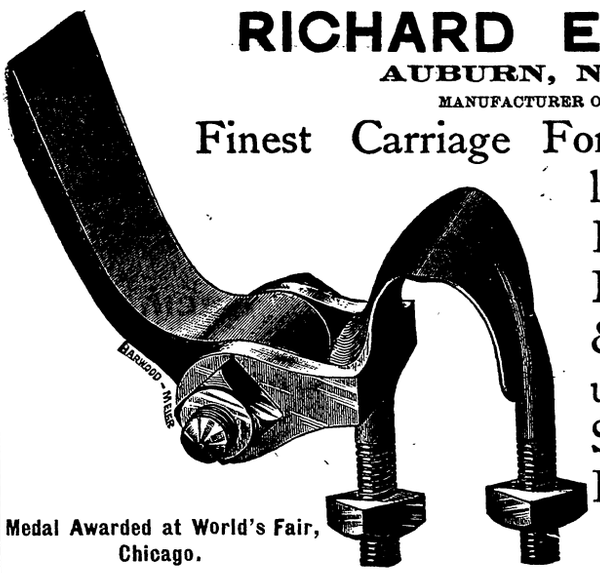
WEST TROY, N. Y.

RICHARD ECCLES,

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MANUFACTURER OF

Finest Carriage Forgings, Couplings, Clips, King Bolts, Fifth Wheels, &c. Manufacture a full line Special Drop Forgings.



Medal Awarded at World's Fair, Chicago.

Send for New Catalogue for Season 1893-94.

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WHEN THE STEEL AND IRON

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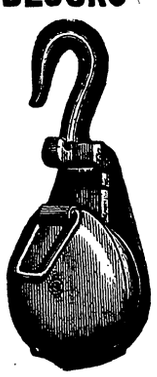
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ARE BETTER IN EVERY WAY.





No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

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WILL PROVE SATISFACTORY TO ☞ USER.

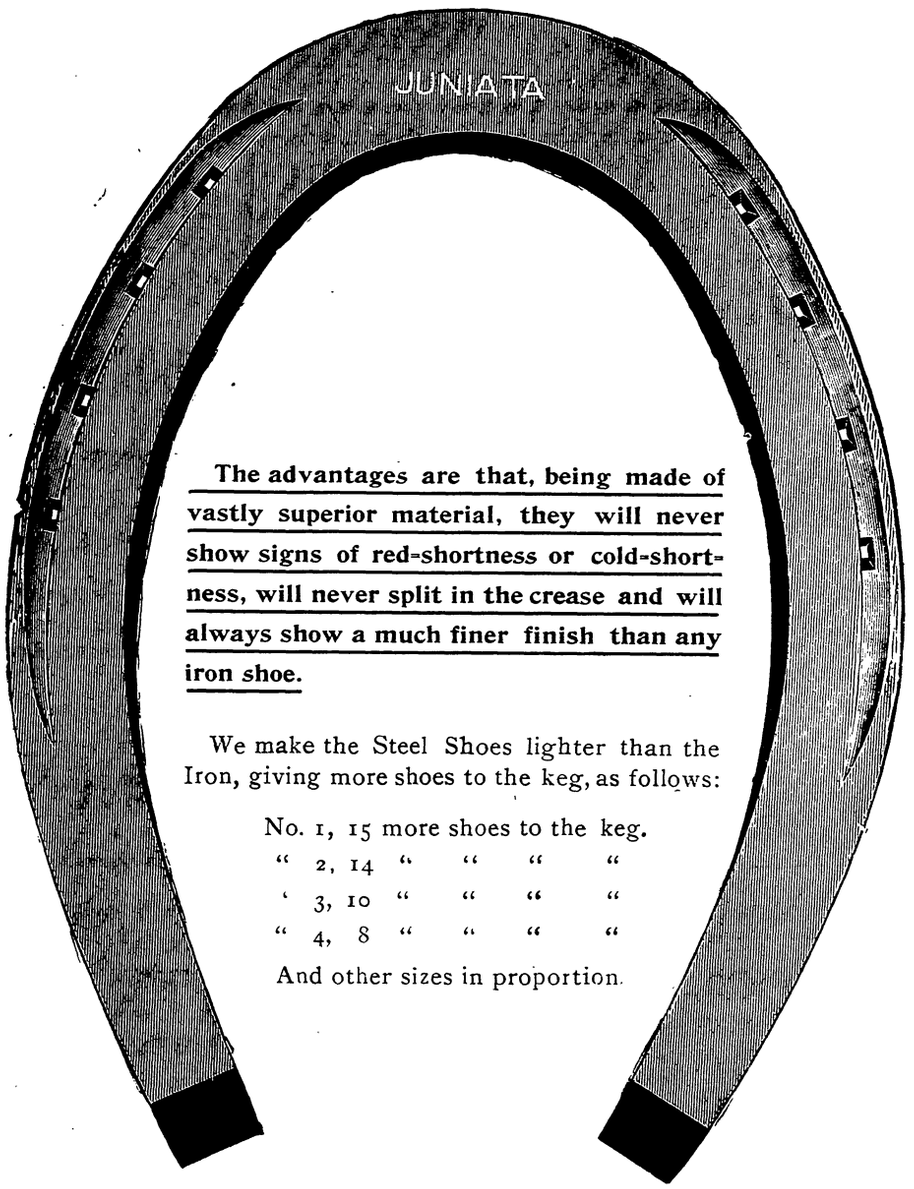
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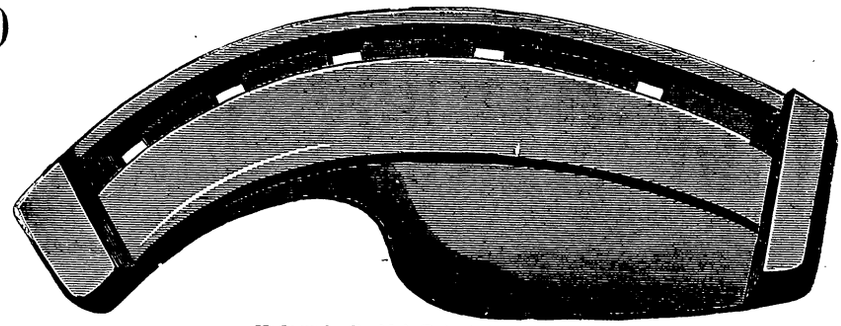
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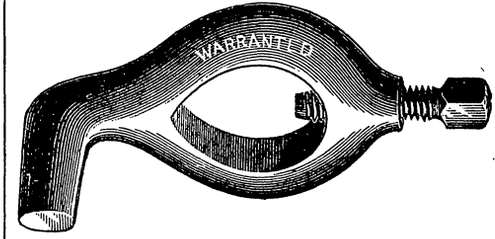
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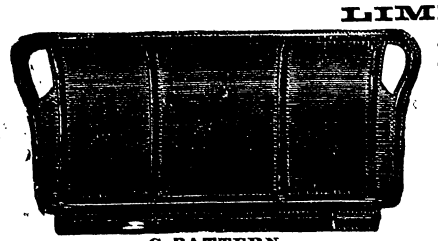
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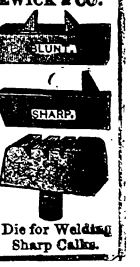


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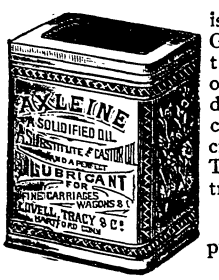
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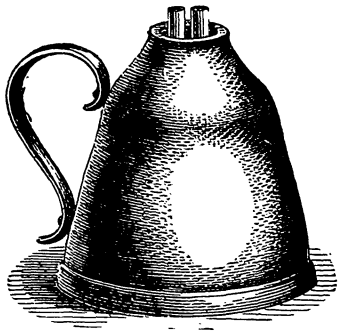
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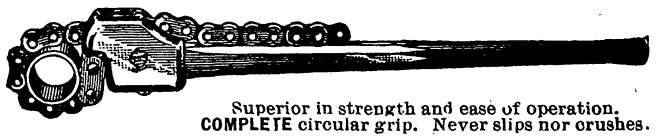
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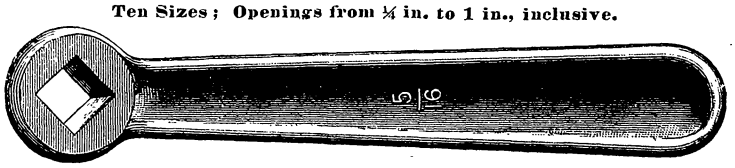
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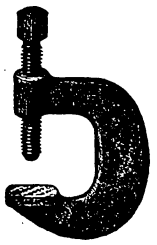
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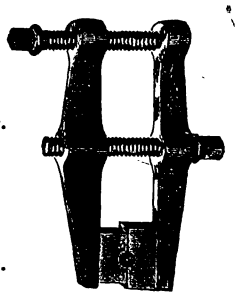
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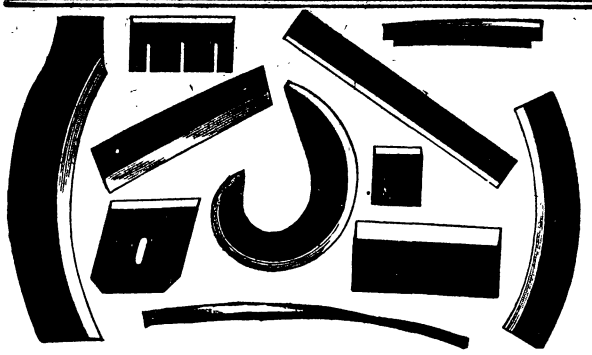
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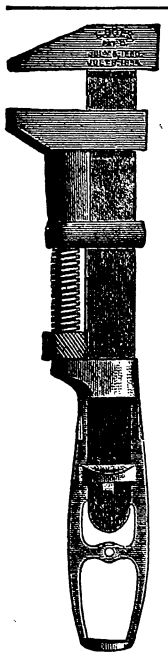
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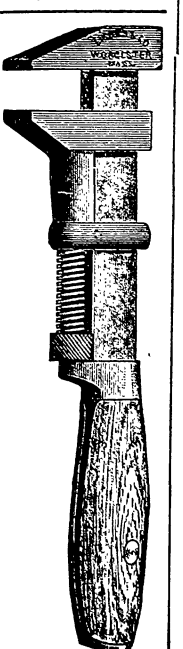
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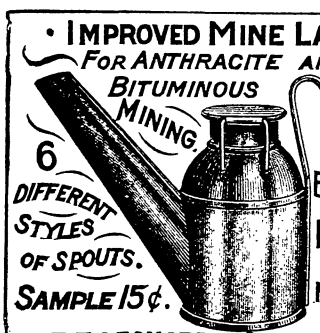
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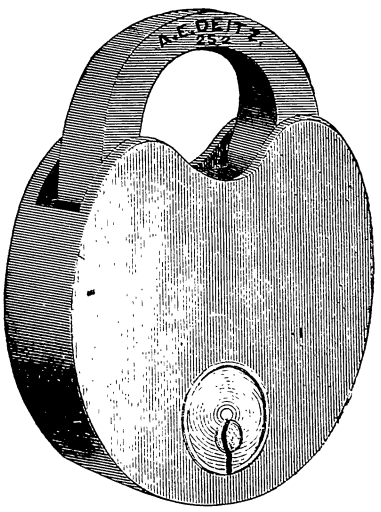
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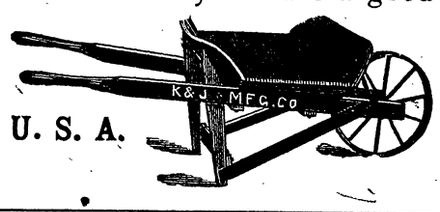
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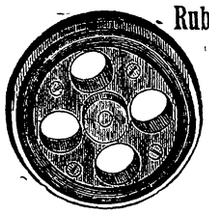
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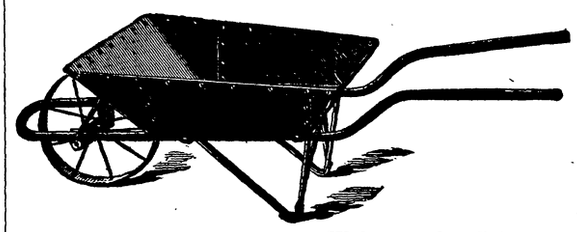
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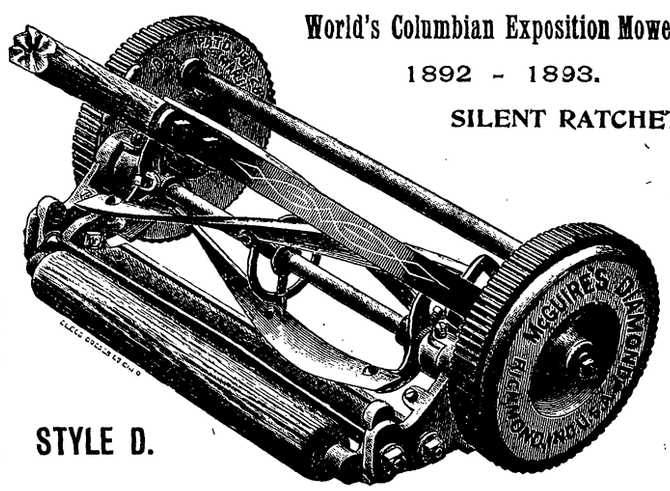
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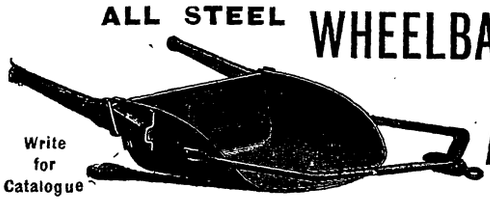
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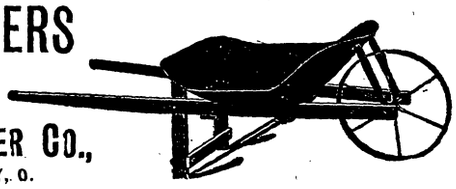


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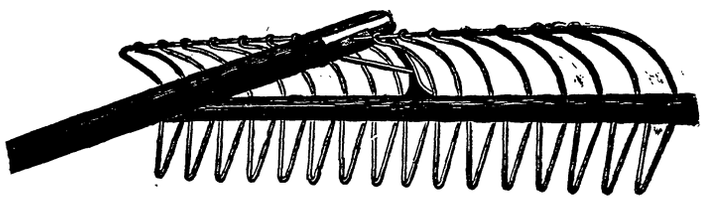


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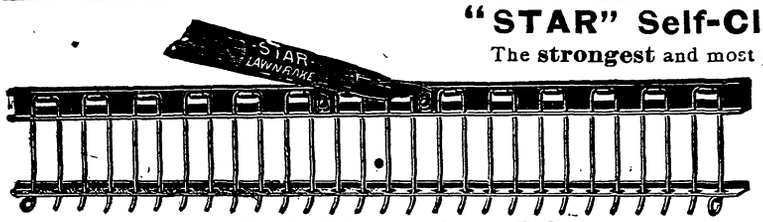
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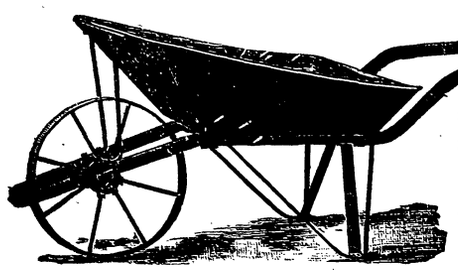
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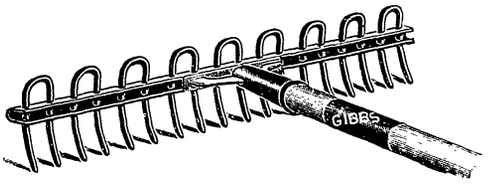
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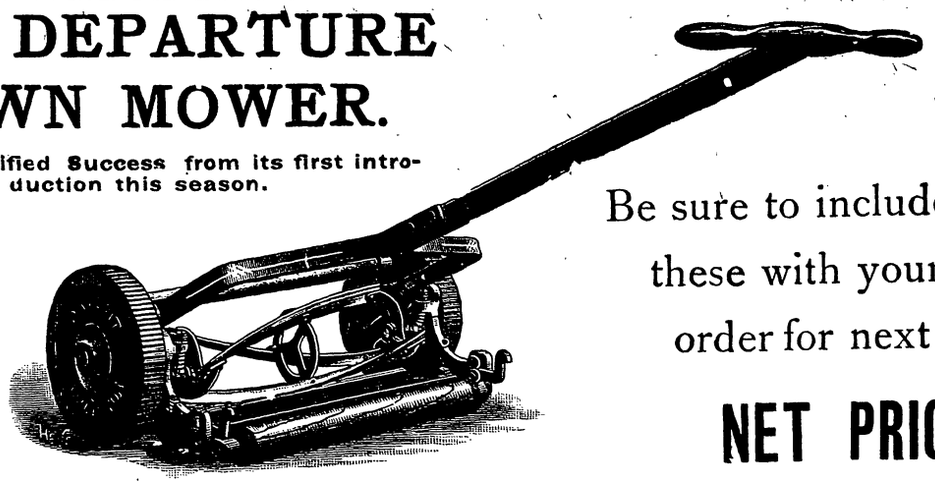
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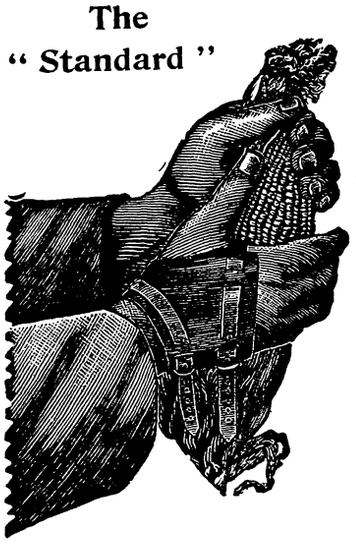
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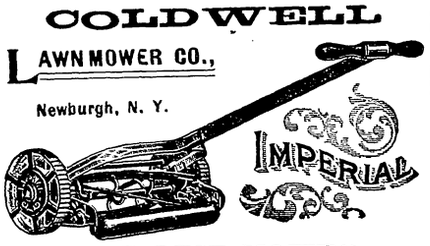
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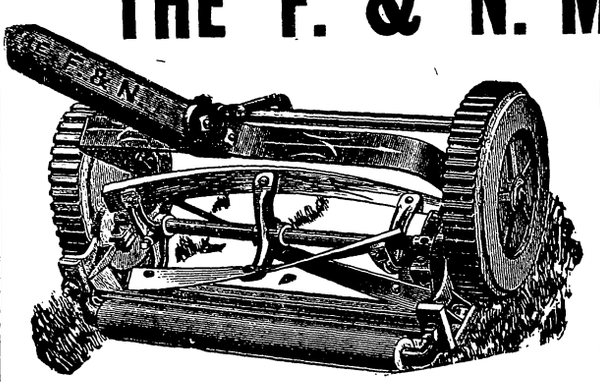
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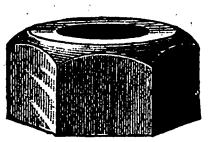
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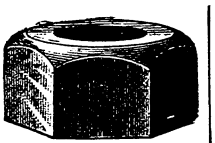
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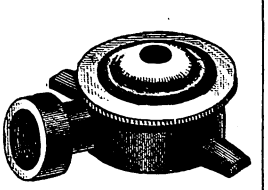


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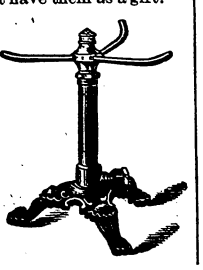


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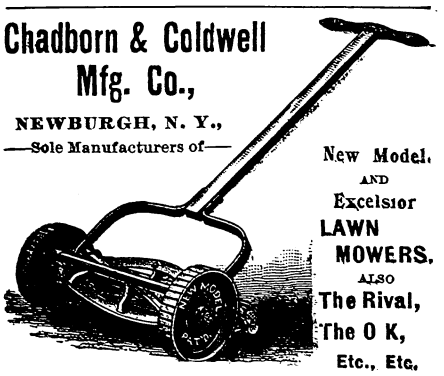
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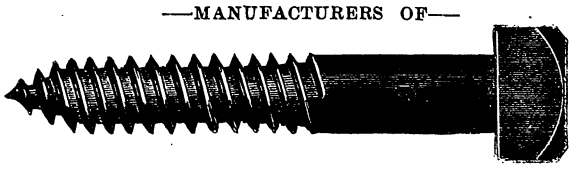
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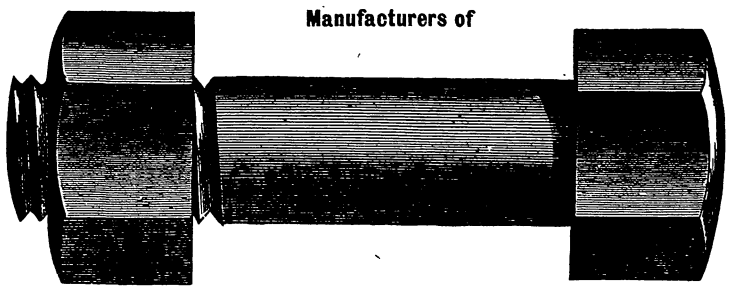
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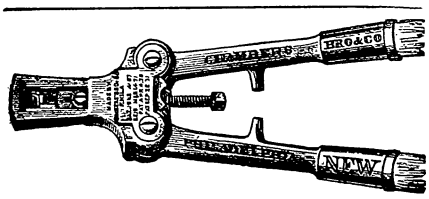


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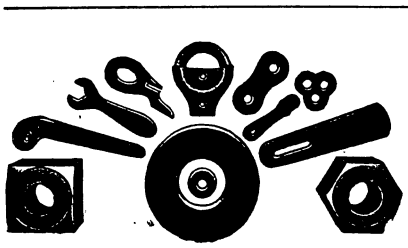
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Standard Steel Casting Co., Thurlow, Pa.
Taylor Iron & Steel Co. High Bridge, N.J.
Totten & Hogg Iron & Steel Fdry Co., Pittsburgh, Pa.
Union Mfg. Co., 103 Chambers St., N.Y.
Wetherill, Robt. & Co., Chester, Pa.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Conn
Link-Belt Engineering Co., Phila. Pa.
McKay, Jas. & Co., Pittsburgh, Pa,

Chimneys.
Phila. Engineering Works., Phila., Pa

Chisels, *Manufacturers of.*
Buck Bros., Millbury, Mass.
White, L. & I. J. Co., Buffalo, N. Y.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Smith & Egge Mfg. Co., Bridgeport.
Union Mfg. Co., 103 Chambers, N. Y.
Whiton, D. E. Mach. Co., New London, Conn.

Clamps.
Hammer & Co., Branford, Conn.
Le Count, C. W., So. Norwalk, Conn.

Clipping Machines.
Hotchkiss, E. S., Bridgeport, Conn.
McCoy, Jos. F. & Co., 26 Warren St.

Coal.
Barns, C. K. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Coke.
Barns, C. K. & Co., Philadelphia, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Rainey, W. J., Cleveland, O.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, Francis, Philadelphia, Pa.

Collections.
Hardware Board of Trade (Limited) 4 and 6 Warren, N. Y.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conveying Machinery.
Brown Hoisting & Conveying Machine, Co., Cleveland, Ohio.
Jeffrey Mfg. Co., Columbus, O.
Link Belt Engineering Co., Phila., Pa.

Copper.
Ames Sword Co., Chicopee, Mass.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
New Haven Copper Co., 294 Pearl, N.Y.
Randolph & Clowes, Waterbury, Conn.
Wister, Francis, Philadelphia, Pa.

Coppersmith.
Emory, P. P. Mfg. Co., Springfield, Mass.

Cordage.
Samson Cordage Works, Boston, Mass.

Cork Screws.
Williamson, C. T. Wire Novelty Co Newark, N. J.

Corn Huskers.
Hall & Ross Husking Glove Co., Chicago, Ill.
Moore & Wickert, Green River, Ohio.

Corrugated Furnaces.
Continental Iron Wks, Brooklyn, N.Y

Corrugated Iron.
Cambridge Roofing Co., Cambridge, O
Cincinnati Corrugating Co., Piqua, O.
Moseley Iron Bridge & Roof Co., 5 Dey N. Y.

Counting Machines.
Durant, W. N., Milwaukee, Wis.
Osborn, G. Edw. & Co., New Haven, Ct

Coupling.
Almond, T. R., Brooklyn, N. Y.

Coverings, Boiler and Pipe.
Johns, H. W. Mfg. Co., 87 Maiden Lane.

Cranes.
Detroit Foundry Equipment Co., Detroit, Mich.
Halsey, W. S. & Co., Birdsboro, Pa.
Maris & Beekley Philadelphia, Pa.
Ridgway, Craig & Sons, Coatesville, P
Sellers, Wm. & Co., Inc., Phila., Pa.
Yale & Towne Mfg. Co., Stamford Conn.

Cupolas, Hot-Blast.
Byram & Co., Detroit, Mich.
Colliau, Victor, Detroit, Mich.
Detroit Fdry. Equipment Co., Detroit Mich.

Cutlery Cases.
Torrey, J. R. & Co., Worcester, Mass.

Cutlery, *Importers of.*
Field, Alfred & Co., 93 Chambers St. New York.
Gurney, Fred B., 116 Chambers St., N. Y.
Sickles, Sweet & Lyon, 35 Barclay, N.Y.

Cutlery, *Manufacturers of.*
Bingham, W. Co., Cleveland, Ohio.
Curley, J. & Bro., 6 Warren St., N. Y.
Dame, Stoddard & Kendall, Boston Mass.
Electric Cutlery Co., 113 Chambers, N Y
Goodell Co., Antrim, N. H.
Northampton Cutlery Co., Northampton, Mass.
Schnactenberg Bros., 98 Chambers Street, N. Y.
Wilson, John, Sheffield, England.

Dies.
Wilson, J. Fred, Worcester, Mass.

Dog Collars.
Chapman Mfg. Co., Meriden, Conn.

Door Bells.
Graham, Jno. H. & Co., 113 Chamber St., N. Y.

Door Checks and Springs.
Corbin, P. & F., New Britain, Conn.

Door Knobs.
Bardsley, J., 149 & 151 Baxter St., N. Y

Drawing Instruments.
Keuffel & Esser Co., 127 Fulton St., N.Y

Drilling Machines.
Bickford Drill & Tool Co., Cinn., Ohio
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower and Forge Co., Lancaster, Pa.
Colburn, A. M., New Haven, Conn.
Dallett, Thos. H. & Co., Philadelphia.
Dwight Slate Machine Co., Hartford Conn.
Halsey, Jas. T., Philadelphia, Pa.
Hamilton Mch. Tool Co., Hamilton, O.
Norton & Jones Machine Tool Wo Plainville, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Quint, A. D., Hartford, Conn
Sellers, Wm. & Co., Inc., Phila., Pa
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O,
Smith Friction Drill & Tool Co., Boston, Mass.

Drop Forgings.
Belden Mach. Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn
Boone, W. C. Mfg. Co., Boonton, N. J
Eccles, Richard, Auburn, N. Y.
Herbrand Co., Fremont, O.
Merrill Bros., Brooklyn, N. Y
Miner & Peck Mfg. Co., New Haven, Ct
Phila. Drop Forge Co., Philadelphia, Pa.
Scranton Forging Co., Scranton, Pa.
Spiers, J. C. & Co., Worcester, Mass.
Williams, J. H. & Co., Brooklyn, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
Wyman & Gordon, Worcester, Mass.

Drop Presses.
Bliss, E. W. Co., Brooklyn, N. Y
Crosby, G. A. & Co., Chicago, Ill.

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Miner & Peck Mfg. Co., New Haven Conn.
Stiles & Parker Press Co., Brooklyn, N. Y.
Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Dumb Waiters.
Storm Mfg. Co., Newark, N. J.

Dust Beaters.
Peabody & Parks, Troy, N. Y,

Dynamite.
New York Powder Co., 62 Liberty St N. Y.

Dynamos.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Lovell Mfg. Co., Ltd., Erie, Pa.
Zucker & Levett Chemical Co., 10 & 14 Grand St., N. Y.

Edge Tools. *Makers of.*
Buck Bros., Millbury, Mass.
Buffalo Edge Tool Wks., Buffalo, N.Y.
Plumb, Fayette R., Philadelphia, Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
North Bros. Mfg. Co., Philadelphia.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St., New York
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines
Colburn Electric Mfg. Co., Fitchburg, Mass.
Eddy Electric Mfg. Co., Windsor. Conn

Electro-Platers.
Boardman, L. & Son, East Haddam Ct.

Elevators. *Makers of.*
Link-Belt Engineering Co., Phila., Pa
Morse, Williams & Co., Phila., Pa.
Salem F'dry & Mch. Co., Salem, Mass.

Emery and Emery Wheels.
Bell, Geo. E , 36 John St. N. Y.
Grant Corundum Wheel Mfg. Co. Worcester, Mass.
N Y. Belting & Packing Co. Ltd., N Y
Northampton Emery Wheel Co
Leeds, Mass.
Norton Emery Wheel Co., Worcester Mass.

Enamels.
Nubian Iron Enamel Co., Cragin, Ill

Engineers and Contractors.
Aiken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amster & Co., Pittsburgh, Pa
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa
Witherow, Jas. P. Co., Pittsburgh; Pa.

Engines, Gas.
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg. N. Y.

Engines, Steam. *Makers of.*
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Erie Engine Works, Erie, Pa.
Harrisburg Fdy. & Machine Works Harrisburg, Pa.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Phoenix Iron Wks. Co. Meadville, Pa.
Shipman Engine Co., Boston, Mass
Southwark Foundry and Machine Co. Phila., Pa.
Ted, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.
Sweester, W. A., Brockton, Mass.

Expansion Bolts.
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O

Faucets, Self-Measuring
Lane Bros., Poughkeepsie, N. Y.

Faucets, Wooden. *Makers of.*
Boston & Lockport Block Co., Boston Mass., and Lockport, N. Y.
John Sommer's Son, Newark, N. J.

Feed-Water Heaters.
Davis, I B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N.Y
Harrison Safety Boiler Wks. Phila, Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hartman Mfg. Co., Ellwood City, Pa.
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire & Iron Wks., Milwaukee

Files. *Importers of*
Moss, F. W., 80 John, N. Y.

Files and Rasps, *Manufacturers of*
Arcade File Works, Anderson, Ind.
Hanker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.

Fire Brick. *Makers of.*
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer B & Sons, foot E. Houston, St
McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro., Woodbridge.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Fishing Tackle.
Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flour Sifters.
Sills, W. H., 83 Lake St., Chicago, Ill.

Flue Cleaners.
Mackey, Jas. T., St. Louis, Mo.

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Foreign Periodicals.
Stechert, G. E., 810 Broadway, N.Y.

Forges, Portable, &c.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Foos Mfg. Co., Springfield, Ohio.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Scranton Forging Co., Scranton, Pa.

Foundry Facings.
Paxson, J. W. & Co., Phila.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.

Foundry Riddles.
Estey, W. S. 65 Fulton, N. Y.

Foundry Supplies.
Colliau, Victor, Detroit, Mich.
Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Paxson, J. W. & Co., Philadelphia.
Smith, J. D. Fdy. Supply Co., Cinn., O

Friction Clutches.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.
Evans Friction Cone Co., Boston, Mass

Fruit Presses.
Enterprise Mfg. Co. Philadelphia, Pa.

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Gas Producers.
Wood, R. D. & Co. Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast, Henry B. & Co., Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
D. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston, Mass.
Poole, Robt. & Son Co., Baltimore, Md.
Shriver, T. & C , 333 E. 56th St., N. Y.

Glass Boards.
Canton Saw Co., Canton, O.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glass Tubes,
Ashcroft Mfg. Co., 111 Liberty St., N.Y.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.
Supplee Hardware Co,, Phila., Pa.

Grass Hooks.
Bruce & Marks Mfg. Co., Gas City, Ind.

Grinding Mills.
Foos Mfg. Co., Springfield, O.

Grinding and Polishing Machines.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grindstone Dressing Machinery
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gunpowder, *Makers of.*
Laflin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich.

Handles.
New York Mallet and Handle Wks. 456 E. Houston St., N. Y.

Hangers, Door.
Chicago Spring Butt Co., Chicago, Ill.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N.Y.

Hardware Manufacturers.
Hotchkiss, E. S. Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Graham, John H. & Co., 113 Chambers,
McCoy, Jos F. Co., 26 Warren St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N. Y,
Underhill, Clinch & Co., 94 Chambers St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co. New Haven, Conn.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Haines & Zimmerman, Phila. Pa.
Hart, H. C Mfg. Co., Detroit, Mich.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Philadelphia, Pa
Peabody & Parks, Troy, N. Y.
Weiland, Chas., 149 Chambers St., N.Y
Wilson, J. Fred, Worcester, Mass.
Underhill, Clinch & Co., 94 Chambers Street, N. Y

Hardware, Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N.Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Bruce & Marks Mfg. Co., Gas City, Ind.
Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co, Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Stuart & Peterson Co., Phila., Pa.

Hollow Ware, Aluminum.
Illinois Pure Aluminum Co. Lemont, Ill

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, *Makers of.*
National Horse Nail Co., Vergennes, Vt,

Horse and Mule Shoes. *Makers of.*
Bryden Horse Shoe Co., Catasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co,, Pittsburgh, Pa.
Standard Horse Shoe Co,, Boston, Mass.

Hose.
Cleveland Rubber Works, Cleveland, O.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N.Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Shavers.
Enterprise Mfg. Co., Philadelphia, Pa.

Injectors.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. Hartford Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y

Iron Commission Brokers.
Corning, Edw, & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron, *Merchants.*
Barnes, C. K. & Co., Philadelphia, Pa
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia
Cotton, Bradley & Co., Philadelphia
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co. 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 35 Elm St. N. Y
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, *Importers.*
Abbott Wheelock & Co. N.Y. and Boston
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet. *Manufacturers of.*
Cambridge Iron & Steel Co., Cambridge Ohio
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladles.
Detroit Fdy. Equipment Co., Detroit, Mich.

Lamps.
Standard Lighting Co., Cleveland, O.

Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.

Lanterns.
Ohio Lantern Co., Tiffin, Ohio.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls N. Y.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mowers.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Coldwell Lawn Mower Co., Newburg, N. Y.
Dille & McGuire Mfg. Co., Richmond, Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Lape, W. E., Syracuse, N. Y.
Mast, Foos & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila. Pa.

Lawn Rakes.
Gibbs Mfg. Co , Canton, Ohio.
Konler, F. E. & Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse N. Y.

Lawn Sprinklers.
Ette & Henger Mfg. Co., St. Louis,
McGowan, John H. Co., Cincinnati, O.

Lawn Sweepers.
Lape, W. E., Syracuse, N. Y.

Lemon Squeezers.
Ripley Mfg. Co., Uonville, Conn.

Letters and Figures, Metallic
White, A. A. & Co., Providence, R. I.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.

Locks & Knobs, *Manufacturers of*
Deitz, A. E., 97 Chambers, N. Y
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg Co. Bridgeport, Conn
Yale & Towne Mfg. Co., Stamford, Conn

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Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N.Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N.Y.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Cruikshank, D. B., Providence, R. I.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila. Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield Vt
Lodge & Shipley Mch. Tool Works Cincinnati, O.
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co. Rochester, N.Y
Manville, E. J. Mch. Co, Waterbury, Conn
Newark Mch. Tool Works, Newark, N.J
New Haven Mfg. Co., New Haven, Conn
New York Mach'y Depot, N. Y.
Niles Tool Wks., 188 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Prentiss Tool & Supply Co., N. Y
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ld., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.
Adt, Jno. & Son, New Haven, Conn.

Machine Knives.
Loring Coes & Co., Worcester, Mass
Loyd, John, 558-562 Water St., N. Y.

Machine Tools.—*See Machinery,*

Machine Work.
Papping, J., 58th St., & 11th Ave., N.Y. City.

Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y
Starrett, L. S., Athol, Mass
Vallentine Tool Co., Hartford, Conn.

Machinists' Tools and Supplies
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.

Mallets.
N. Y. Mallet & Handle Works, N. Y

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St., N.Y.
Lufkin Rule Co., Saginaw, Mich.

Meat Cutters.
Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Instruction.
Correspondence School of Mechanics Scranton, Pa.

Metals.
Fearing, Wm. S., 100 Chambers, N. Y
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
American Metal Co., N. Y.

Metallurgists.
Britton J. Blodgett, Phila.

Milling Machines.
Cin. Milling Mch. Co., Cincinnati, Ohio.

Mincing Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
Darby, Edw. & Sons Phila. Pa.
Leonard, B. E., Scranton, Pa.

Mining Screens.
Harrington & King Perforating Co Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y

Mirrors.
Rice, C. F., Chicago, Ill.

Molding Sand.
Obermayer, S. Co., Cincinnati, O.
Paxson, J. W. & Co., Phila.

Motors, Water and Electric.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington.
Pottstown Iron Co., Pottstown, Pa.
Riverside Iron Wks, Wheeling, W. Va.

Neck Yokes.
Johnson, S. C., Racine, Wis.

Nickel Platers' Supplies.
Colburn Electric Mfg. Co., Fitchburg, Mass.
Eddy Electric Mfg. Co., Windsor, Conn
Zucker & Levett Chemical Company. 10 to 14 Grand St., N. Y

Norway Shapes, *Rollers of.*
Rowland, William & Harvey, Frankford, Philadelphia

Novelty Manufacturers.
Franklin, H. H., Mfg., Syracuse, N. Y.

Nut Machines.
Dunham Nut Mch. Co., Unionville, Ct

Nuts, Bolts, &c., *Makers of.*
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R. I
Blake & Johnson, Waterbury, Conn.
Haskell, Wm. H. Co., Pawtucket, R. I.
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Port Chester Bolt and Nut Co., Port Chester, N. Y.
Russell, Burdsall & Ward, Port Chester
Sternbergh, J. H. & Son, Reading, Pa.
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R. I.

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
Glazier Stove Co., Chelsea, Mich.

Ores.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Morrison, Robt., St. Louis, Mo.
N. Y. Belting & Packing Co. Ltd., N.Y.

Padlocks.
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Miller Lock Co., Philadelphia, Pa.

Paint.
Dixon, Jos. Crucible Co., Jersey City, N.J
Garry Iron & Steel Roofing Co., Cleveland, O.

Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O

Paint Cans.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Patent Solicitors.
Howson & Howson, Phila. & Wash'gton.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co. Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., Boston, Mass.
Halk & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

Pile Drivers.
Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast Henry B. & Co., Philadelphia.
Saunder's Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c., *Makers of.*
McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas, *Makers of.*
Cumberland Nail & Iron Co., Phila, Pa
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W Va.
Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.

Planes, *Manufacturers of.*
Stanley Rule & Level Co., N. Y

Plate Bending Rolls.
Schneekloth, H. A., 530 W. 28th St., N.Y

Plate, Iron and Steel, *Mfrs of*
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa
Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pliers and Nippers.
Healy, C. J., 106 Chambers St., N. Y.

Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.

Polishing Machines.
Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
La Massena, C. E. & Co., Newark, N.J.

Post Hole Diggers.
Wister, L. & R. & Co., Philadelphia, Pa.

Poultry Nettings.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Wks. Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
Laflin & Rand Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y.

Power Hack Saws.
Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Jenkins & Lingle, Bellefonte, Pa.

Presses, Dies, &c.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn

Presses, Power, *Makers of.*
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct,
Merriman, A. H., Meriden
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
Keystone Clutch Mch. Wks., Phila., Pa.
Lake, J. H. & D. Co., Massillon, Ohio,

Pulverizing Mill.
Bradley Fertilizer Co., Boston, Mass,

Pumping Machinery.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Hooker-Colville Steam Pump Co., Chicago, Ill.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa
Valley Pump Wks, Easthampton, Mass
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, *Makers of.*
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Mast, Foos & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Henderer, A. L., Wilmington, Del.
Schneekloth, H. A., 530 W. 28th St. N.Y
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
Perry, W. H. & Co., Providence, R. I.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Estey, W. S. 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.

Razors.
Curley, J. & Bro., 6 Warren St., N. Y.
Electric Cutlery Co., 113 Chambers, N. Y
J. R. Torrey Razor Co., Worcester, Mass

Reels.
Hendryx, A. B. Co., New Haven, Conn

Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.

Rivets.
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Troy, N. Y.
Cobb & Drew, Plymouth, Mass.
Henderson, Jas. S., 165 Greenwich, N. Y.
Plymouth Mills, Plymouth, Mass.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Rock Drills.
Rand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd, Co., Youngstown, O.
Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning F'dry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd, Co., Youngstown, O.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh Pa.

Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Cincinnati Corrugating Co., Piqua, O.
Johns, H. W Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N.Y

Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa.

Rubber Goods.
Canfield, H. O., Bridgeport, Conn.

Rules, *Manufacturers of.*
Keuffel & Esser Co., 127 Fulton St., N.Y
Lufkin Rule Co., Saginaw, Mich.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Pullman Sash Balance Co., Rochester, N. Y.
Vanderbilt Sash Balance Co., Canandaigua, N. Y.

Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.
Cincinnati Corrugating Co., Piqua, O.

Sash Locks.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Portable Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.

Saws, *Makers of.*
Disston, Henry & Sons, Phila., Pa.
Hiles, C. A. & Co., 336-338 Carroll Ave Chicago, Ill.
National Saw Co., 96 Reade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Taintor Mfg. Co., 84-86 Chambers, N

Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N.Y

Scrapers, Road.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.

Screens, Coal and Ore.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Screens, Door and Window.
Queen Anne Screen Co., Burlington, Vt.

Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Capitol Mfg. Co., Chicago, Ill.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.

Screws, *Makers of.*
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
National Screw & Tack Co., Cleveland, Ohio.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls N.Y

Scythe Stones and Whetstones.
Pike Mfg. Co., Pike Stat'n, N. H.
Cleveland Stone Co., Cleveland, O.

Shafting, *Makers of.*
Cresson, Geo. V., Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Fitzsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc. Phila. Pa.
Stow Co. Mfg, Binghamton, N. Y.

Shaped Iron and Steel,—*Manufacturers of.*
Ætna-Standard Iron & Steel Co. Bridgeport, O.

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Allentown Rolling Mill, Allentown, Pa
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phœnix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn
Heinischs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, *Manufacturers of.*
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh, Pierson & Co., 29 Broadway, N. Y.
Reilly, John W., Fort Hunter P.O., Pa.
Singer, Nimick & Co., Ld., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch. A. B. & Co., Peoria, Ill.

Sinks.
Douglas, W. & B., Middletown Conn.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Sickels, Sweet & Lyon, 35 Barclay St., N. Y.
Winslow, Sam'l, Skate Mfg. Co. Worcester, Mass.

Skates, Roller.
Henley, M. C., Richmond, Ind.
Winslow, Saml., Skate Mfg. Co., Worcester, Mass

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.
Clendenin Bros., Baltimore, Md.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.

Speed Indicators.
Church & Sleight, 109 Fulton St., N. Y.

Spelter.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
Rogers & Hamilton Co., Waterbury, Conn.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y

Springs.
American Spiral Spring Co., Pittsburgh, Pa.
Cary, Alanson, 240-242 W. 29th St., N.Y
Dunnar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y
Morgan Spring Co., Worcester, Mass
Nourse, Fred. Co., 315 to 319 E. 22d St., N. Y.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Bardsley, J., 149 & 151 Baxter St., N.Y.
Chicago Spring Butt Co. Chicago, Ill.
Pullman Sash Balance Co., Rochester N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Sprinklers.
Smith, Oliver A., Clarkston, Mich.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St. New York.

Stamping Works.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co. Binghamton N.Y

Steam Gauges.
Ashcroft Mfg. Co., 111 Liberty St., N.Y
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., *Makers of.*
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y
Trethewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Camden, N.J.

Steam Separators.
Goubert Mfg. Co., 32 Cortland St N. Y.
Harrison Safety Boiler Wks. Phila. Pa

Steel Balls.
Grant Anti-Friction Ball Co., Fitchburg, Mass

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.

Steel Figures and Alphabets.
Krogsrud, W., 61 Fulton. N. Y.

Steel Importers.
Abbott. Wheelock & Co.. N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Ætna-Standard Iron & Steel Co., Bridgeport, O
Bethlehem Iron Co., S. Bethlehem, Pa
Boker, Hermnan & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Eiken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburg Pa
Moss, F. W., 83 John N. Y
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Reilly, J. W., Fort Hunter P. O., Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co. High Bridge, N.J
Wordlaw, S. & C., Sheffield, Eng
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn

Steel, *Manufacturers' Agents.*
Barnes, C. K. & Co., Philadelphia, Pa
Corning, Edw, & Co., 29 B'way, N. Y
Frasse Co., 19 Warren St., New York.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, *Manufacturers of.*
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville Pa
Riverside Iron Wks., Wheeling, W. Va

Steel, Tool.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.

Steel Wheels.
Lilienberg, M. N., 150 Broadway, N. Y.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill
Croissant, M., Albany, N. Y.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunder's Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y

Stove Pipe Thimbles.
Cheney, S. & Son Manlius, N. Y

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse N. Y.

Strops.
Electric Cutlery Co. 113 Chambers, N.Y
J. R. Torrey & Co., Worcester, Mass.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co. La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation. Boston, Mass
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland O.
Phillips, E. & Sons, South Hanover.
Plymouth Mills, Plymouth, Mass.
Trafant, W. E., Whitman, Mass.

Taps and Dies.
Butterfield & Co., Derby Line, Vt.
Carpenter. J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila.

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tin Plate Machinery.
Lloyd Booth Co., Youngtown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St.,

Tire Upsetters.
Butts & Ordway, Boston, Mass,

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N.Y.

Tools.
Britton, Horace E., Stoughton, Mass.
Brown. R. H. & Co. New Haven. Conn.
Frasse Co., 19 Warren St., New York.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol. Mass.

Tools, Blacksmith and Wheelwrights.
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R. Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasolene.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
Standard Lighting Co., Cleveland, O.

Transom Lifters.
Wollensak, J. F. Chicago, Ill.

Trucks, *Manufacturers of.*
Berger Bros., Philadelphia, Pa.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co. Lansing Mich.

Tubes, Seamless Drawn Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff. N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.
Leng's John S. Son & Co., 4 Fletcher St., New York.
Mannesmann Tube Co. Ltd., Landore, England.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills. *Makers of.*
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
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Mason Regulator Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vises.
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh. J. H. & Son, Reading, Pa.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Wheelbarrows.
Akron Tool Co., Akron O.
Amer. Steel Scraper Co., Sidney, Ohio
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.

Whips.
American Whip Co., Westfield, Mass,

Window Cord, *Makers of.*
Samson Cordage Works, Boston. Mass

Wire, *Manufacturers of.*
Amer. Spiral Spring Co., Pittsburg, Pa
Consolidated Steel & Wire Co., St. Louis, Mo.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven. Conn.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y
Wright & Colton Wire Cloth Co. Worcester, Mass

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Wks. Milwaukee Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.
Healy, C. J., 106 Chambers St., N. Y.
Higganum Hdw. Co., Higganum, Conn
King, J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.

Wire Door Mats.
Hartman Mfg. Co., Elwood City, Pa.
Horrock, Joshua, 45 Cliff St., N. Y.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods, *Manufacturers of.*
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros, Cortland, N. Y.
Williamson, C. T. Wire Novelty Co. Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester Mass.
Waterbury Mch. Co., Waterbury, Conn

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wire Nails.
Consolidated Steel & Wire Co., St. Louis. Mo.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle Pa.
Phillips, E. & Sons, South Hanover Mass
Phillips, Townsend & Co., Phil., Pa.
Plymouth Mills, Plymouth, Mass.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City

Wire Rods, Steel.
Consolidated Steel & Wire Co., St. Louis, Mo.
New Castle Wire Nail Co., New Castle Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y

Wire Rope, Iron and Steel *Makers.*
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco
Hasard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Wood-Working Machinery.
Seneca Falls Mfg. Co., Seneca Falls, N.Y

Wrenches, *Manufacturers of.*
Bemis & Call Hardware & Tool Co, Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn
Capitol Mfg. Co., Chicago, Ills.
Central Iron & Steel Co., Brasil, Ind.
Coes Wrench Co., Worcester, Mass.
Keystone Mfg. Co., Buffalo, N. Y.
Trimont Mfg. Co., Roxbury, Mass.
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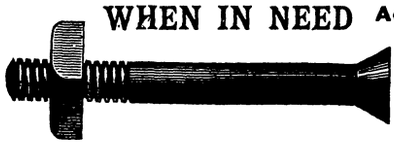
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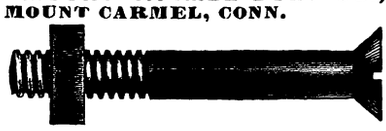
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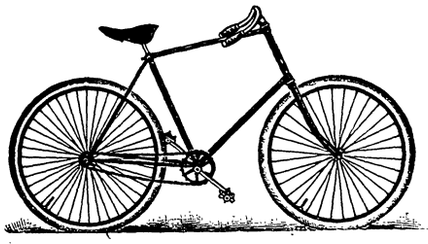
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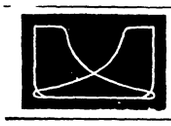
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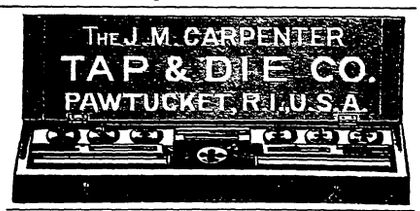
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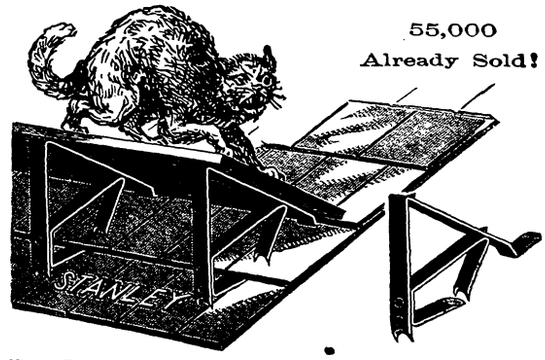
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They are used for the support of fire buckets on summer hotels; and for keeping the snow from falling off winter hotels.

Carpenters use them by day, for shingling and repairing roofs; and cats find them very convenient at night, while making their calls.

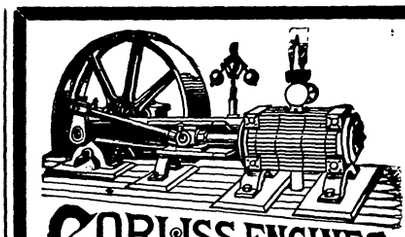
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A Substitute for Steel and Wrought Forgings.
Circulars Sent on Application.

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ROLLING MILL.
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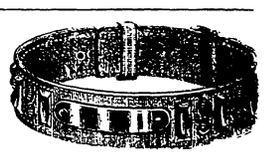
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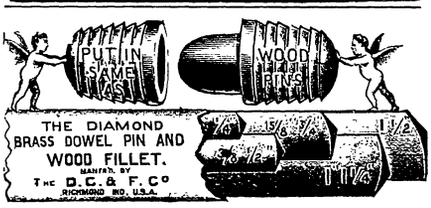
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300 styles and sizes. Over 9500 in use.
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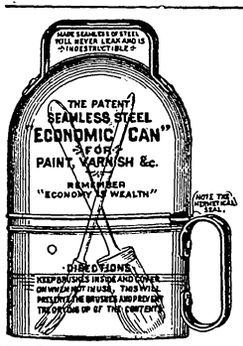
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SATURATED IN INDIA RUBBER THAT LEAVES NO TASTE OR SMELL AND RENDERS THE FAUCET IMPERVIOUS
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Office and Works, Chester, Pa.
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For Paint, Varnish, Shellac, &c.
The hermetical seal preserves the brushes and contents.
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This can commends itself at once to Painters, Pattern and Cabinet Makers, and all who use fine Paints, Varnish, Shellac, etc.
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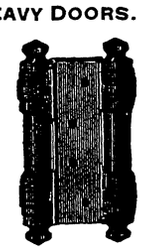
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Single and Double Acting.

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THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

Published every Thursday Morning by David Williams, Nos. 96, 98, 100 & 102 Reade St., New York.

Vol. LII: No. 18. *New York, Thursday, November 2, 1893.* $4.50 a Year, including Postage. Single Copies, Ten Cents.

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Advertising and Subscription Rates " 835

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MANUFACTURERS OF SHULTZ PATENT SABLE RAWHIDE BELTING

"SABLE" BELTS THE EARTH AND MAKES THE MOON SPIN LIKE A TOP

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Manufacturers of
MINING RAILS, SPIKES,
TRACK FASTENINGS.

Every Hardware and Mill Supply Dealer Should Sell Bristol's Patent

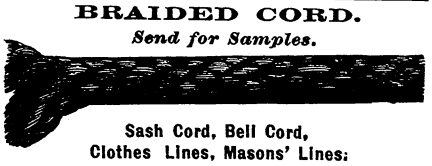


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CLEVELAND, O.

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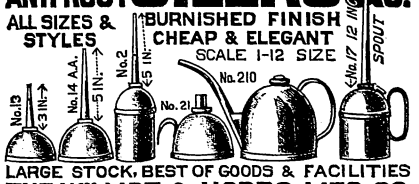
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SCALE 1-12 SIZE



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PAPER SHOT SHELLS.

10, 12 AND 16 GAUGE.

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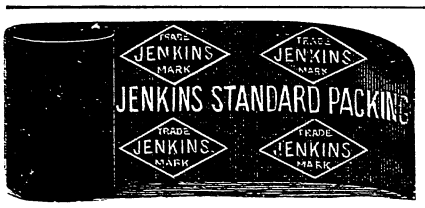
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Hot and Cold Rolled Sheet Copper and Brass of all kinds.

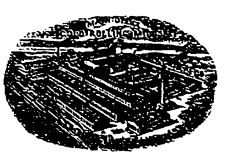


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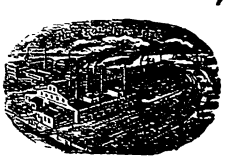
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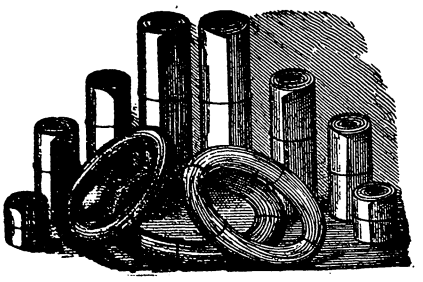
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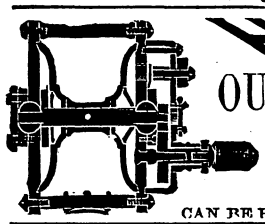
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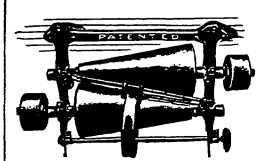


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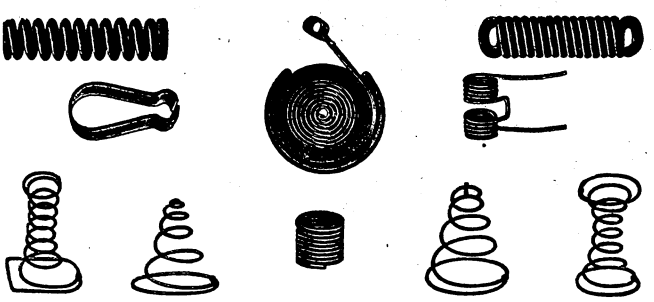
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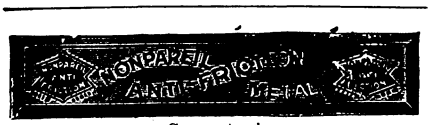
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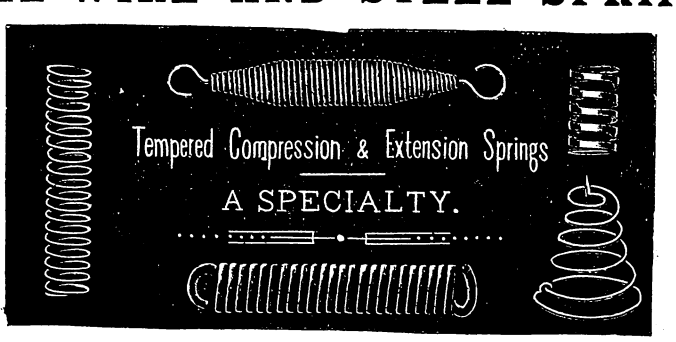
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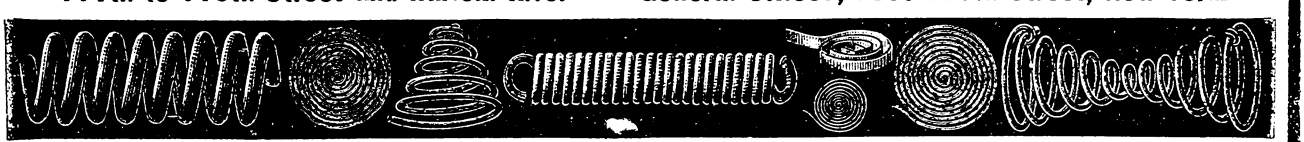
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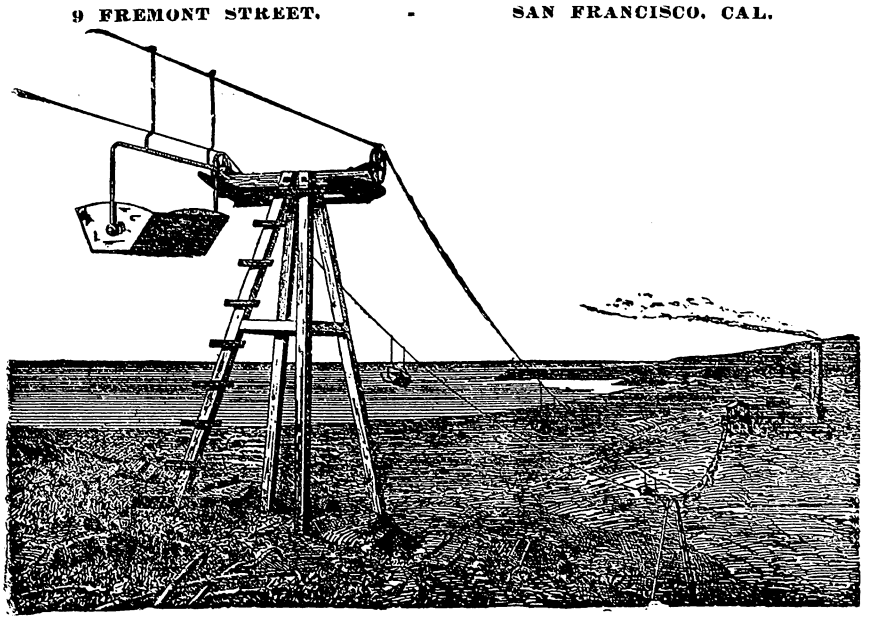
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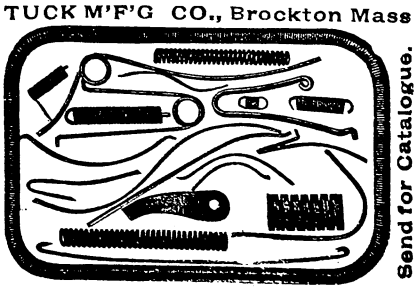
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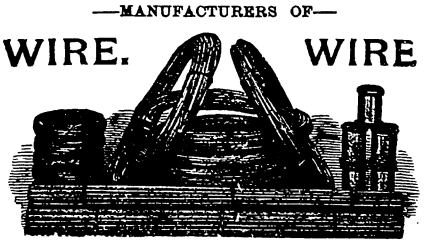
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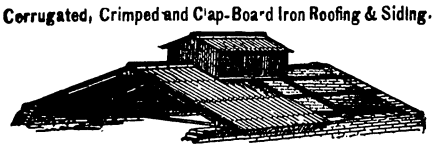
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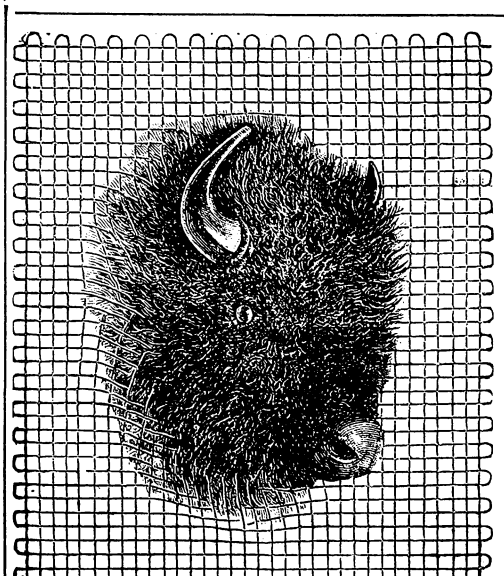
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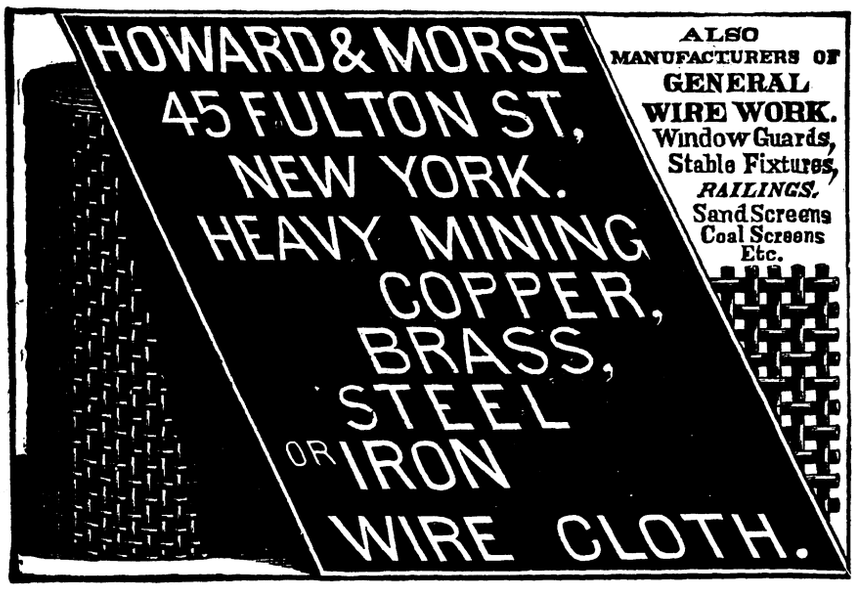
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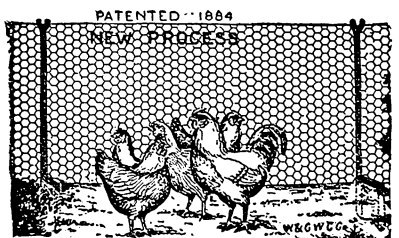
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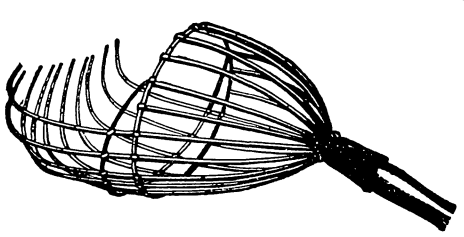
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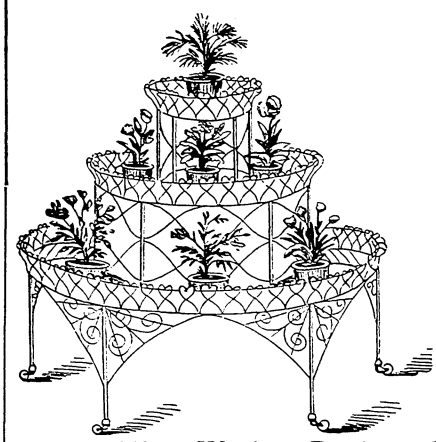
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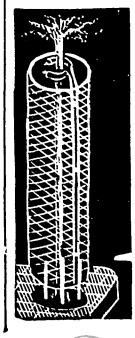
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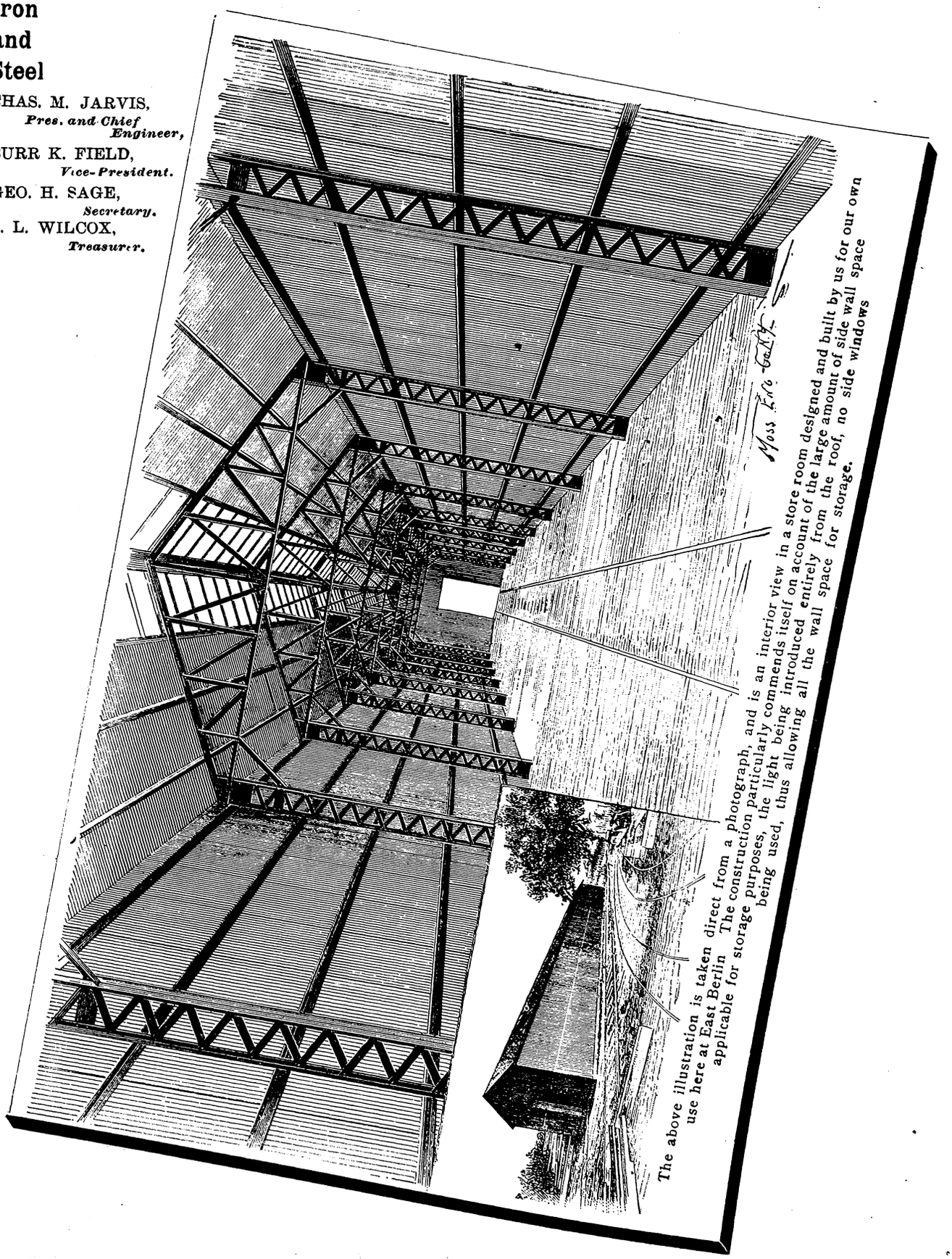
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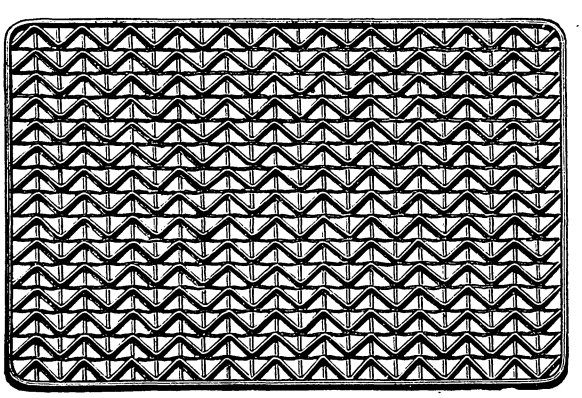
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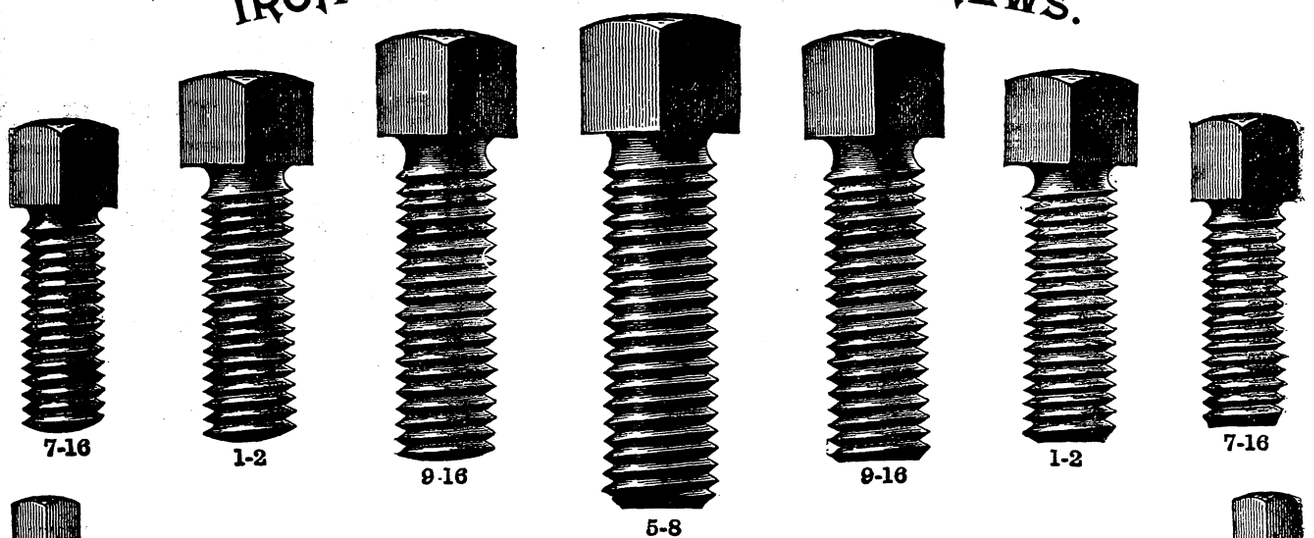
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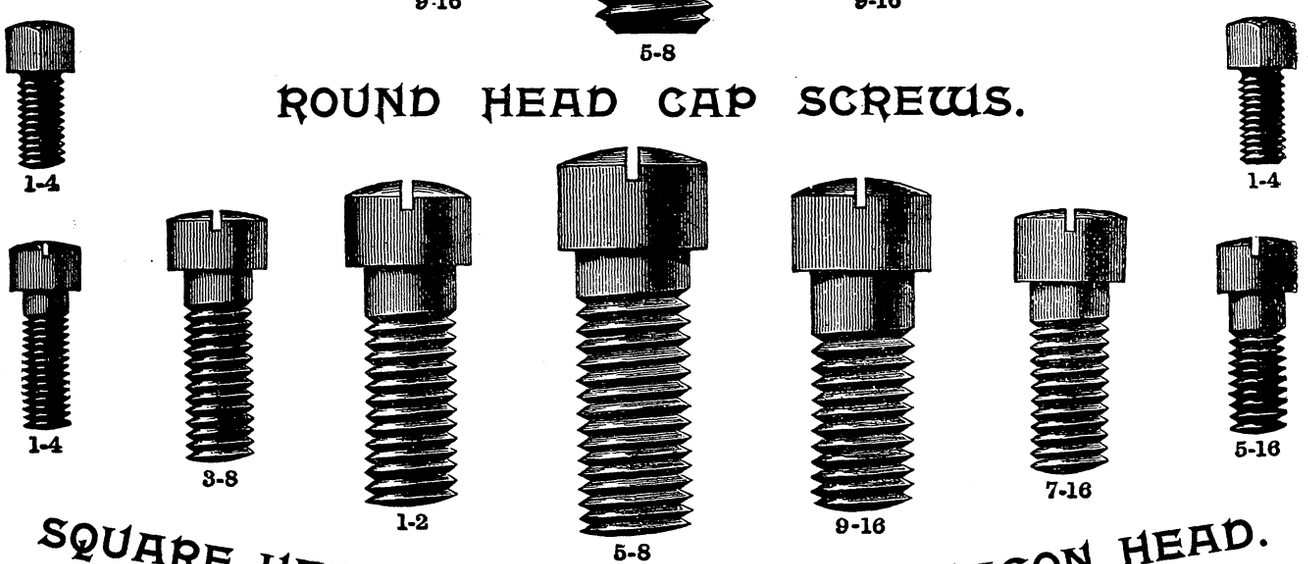
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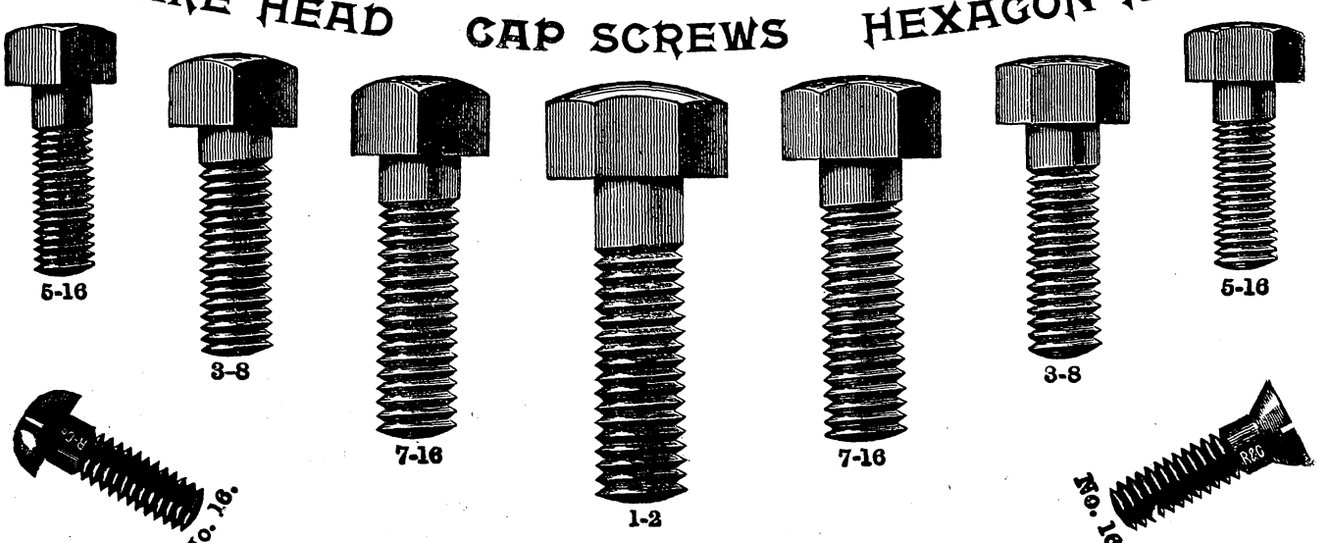
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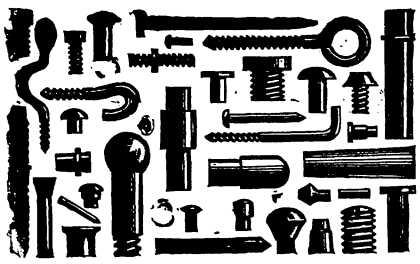


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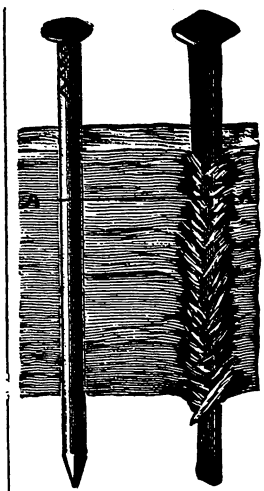
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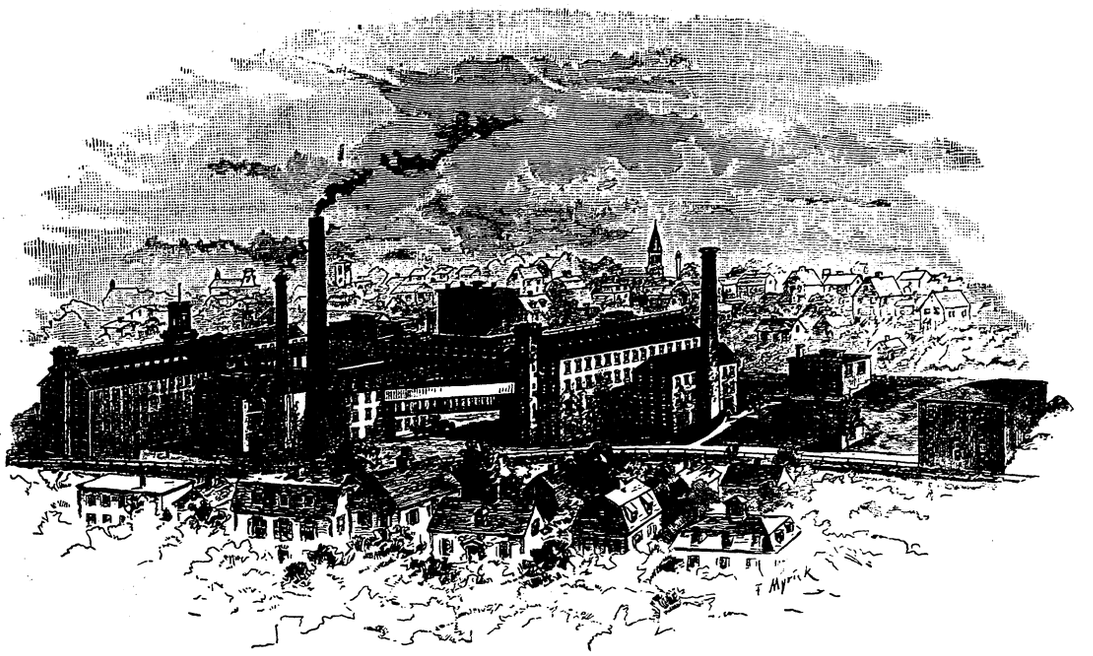
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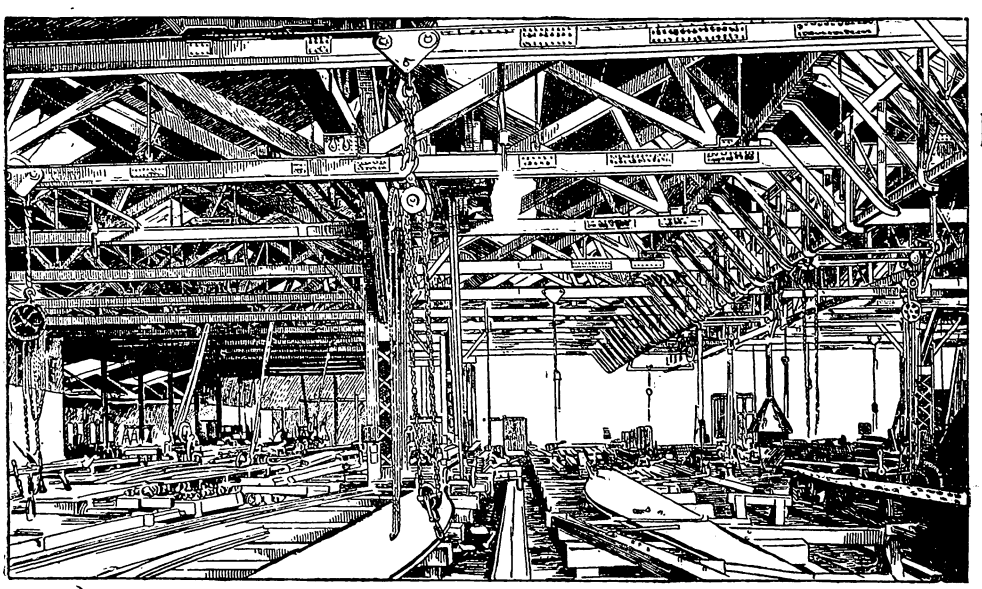
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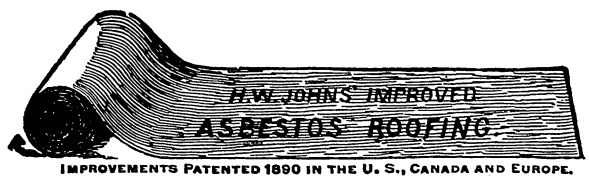
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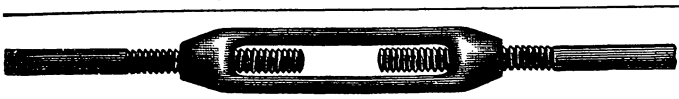
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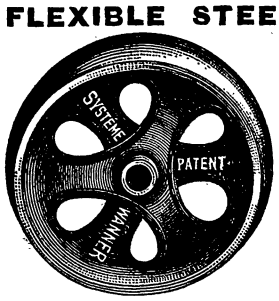
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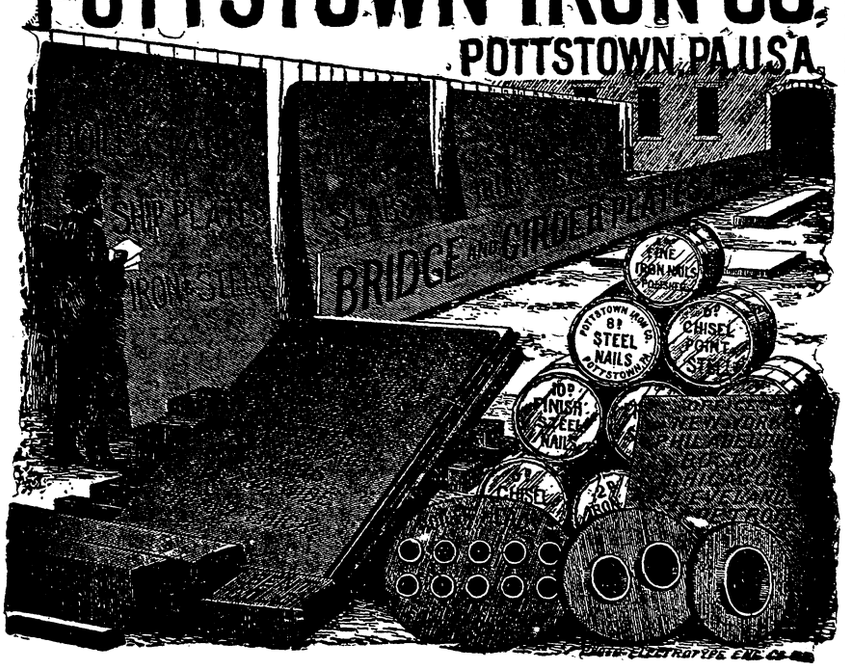
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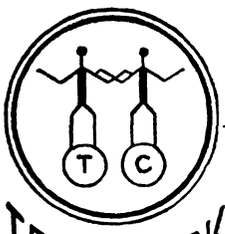
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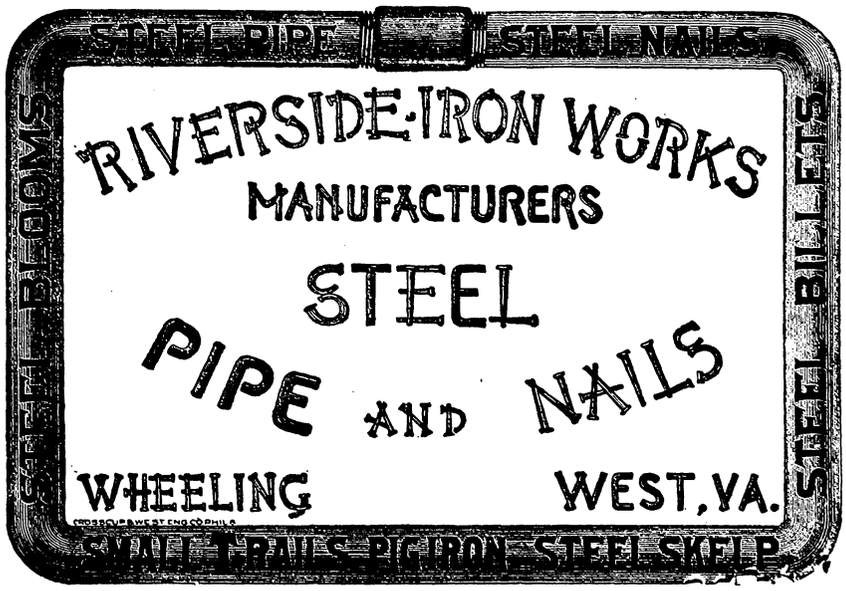
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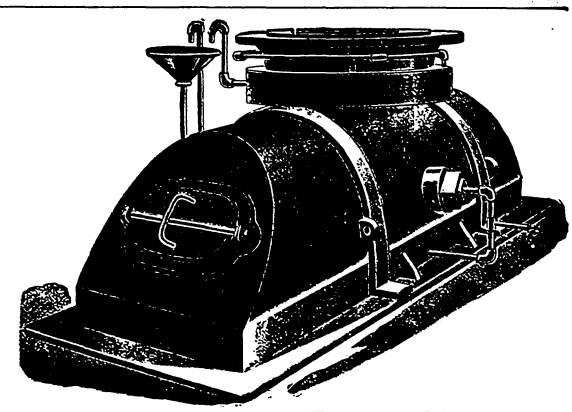
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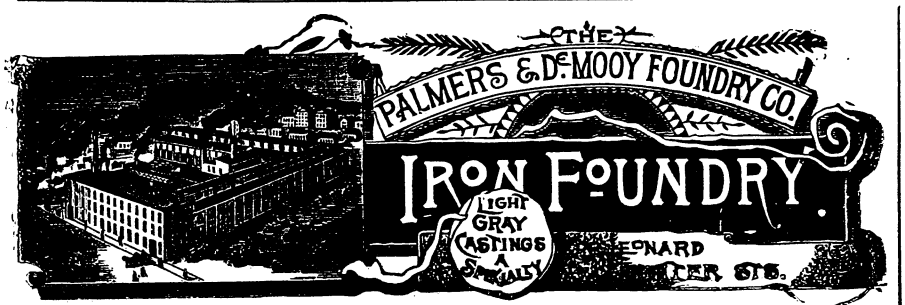
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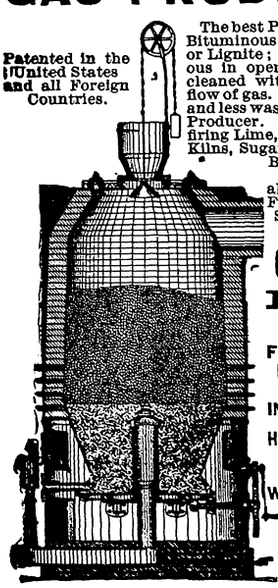
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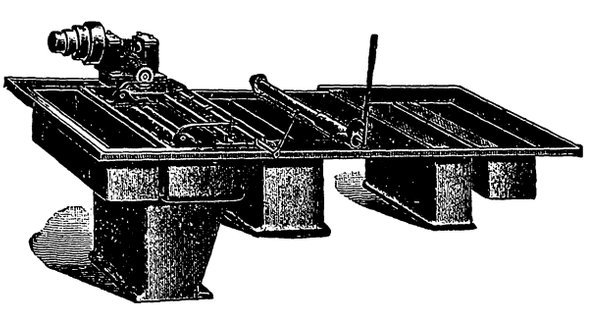
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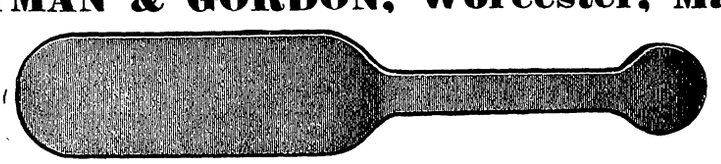
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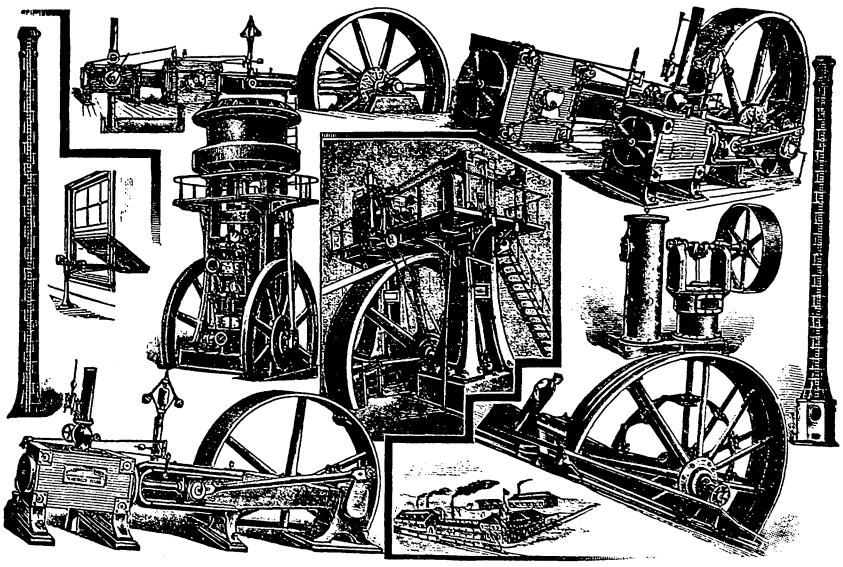
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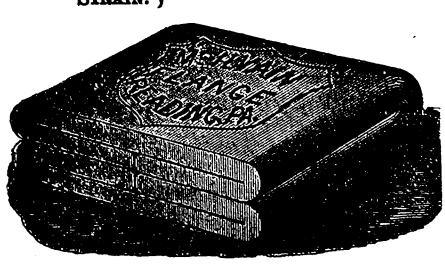
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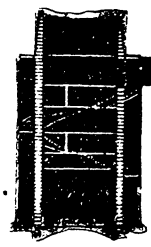
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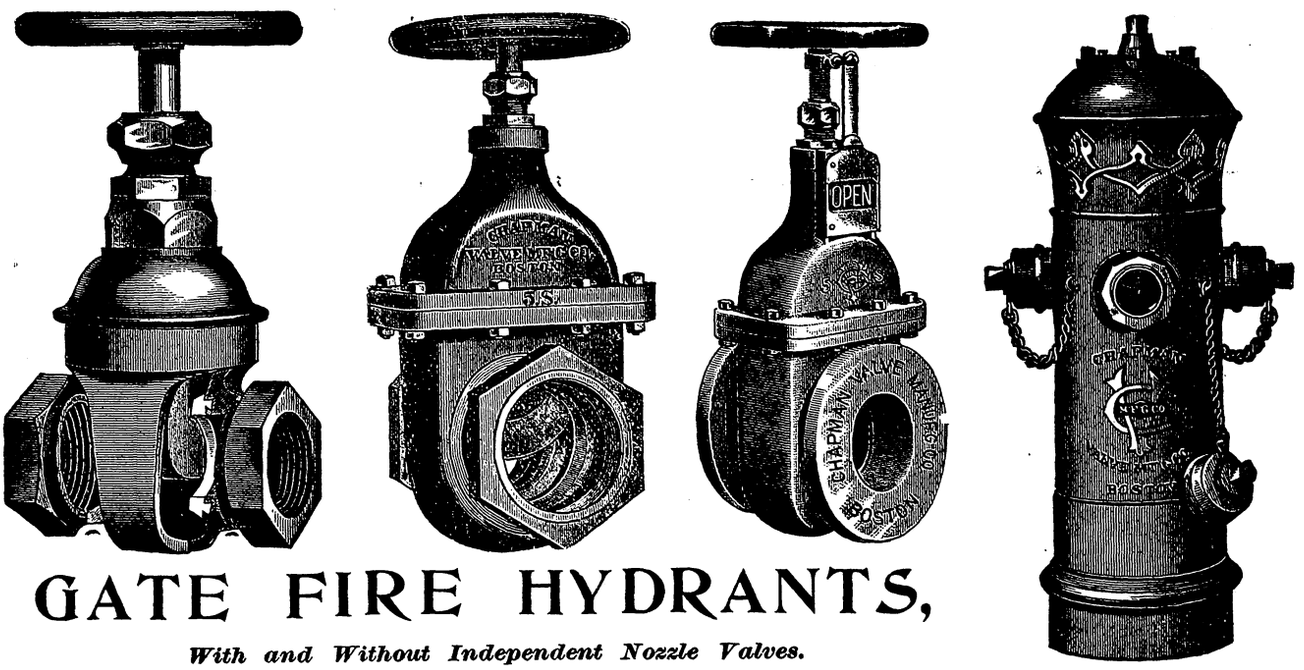
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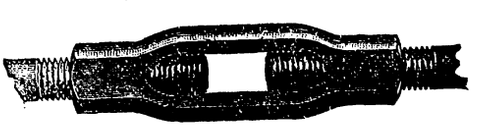
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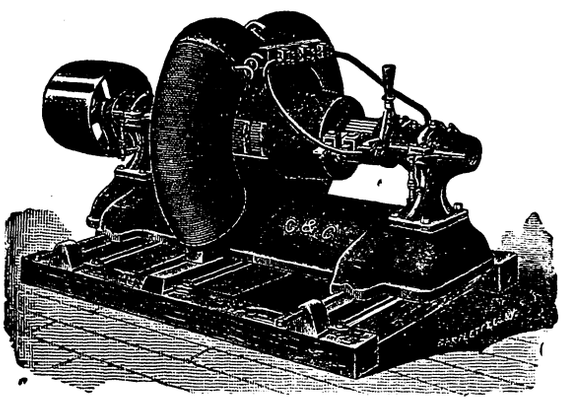
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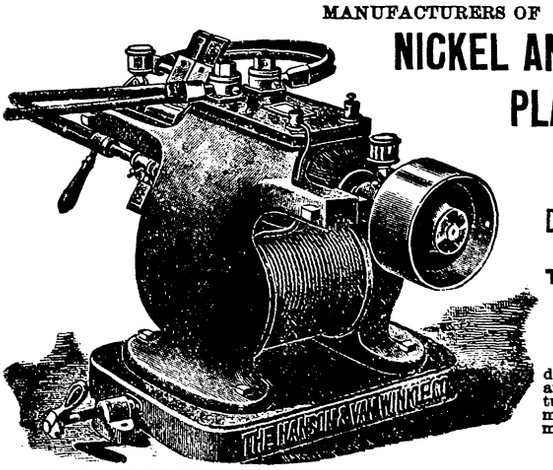
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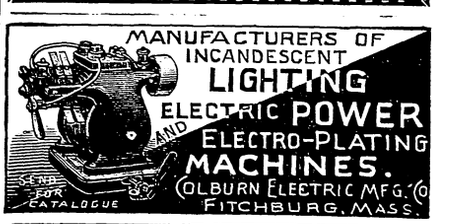
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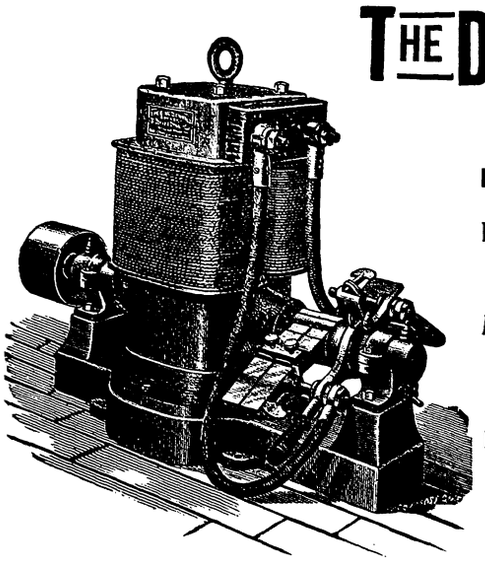
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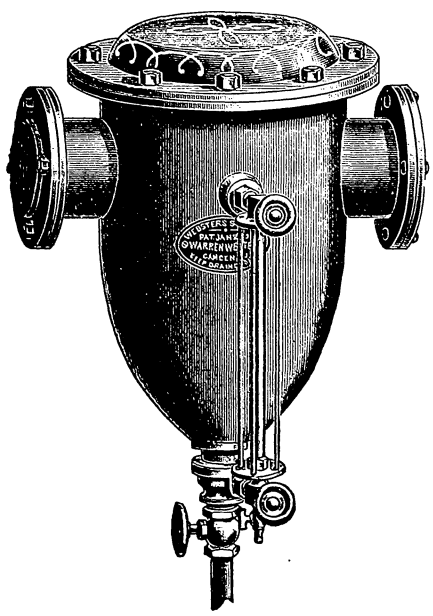
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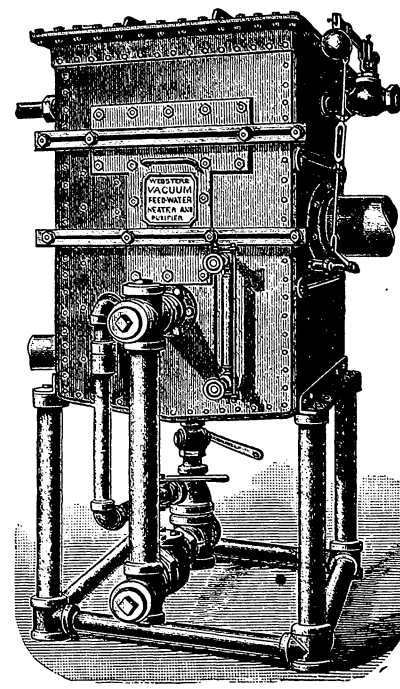
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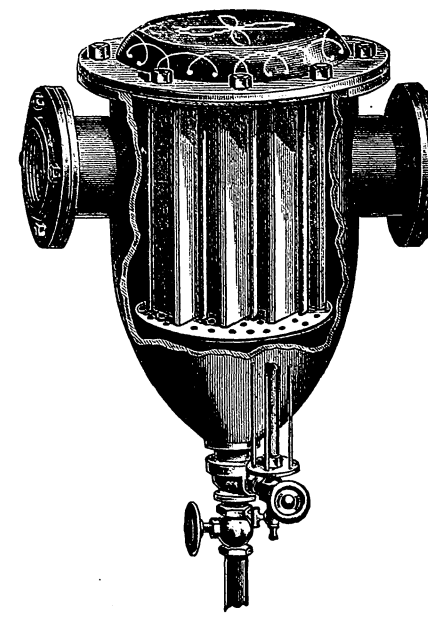
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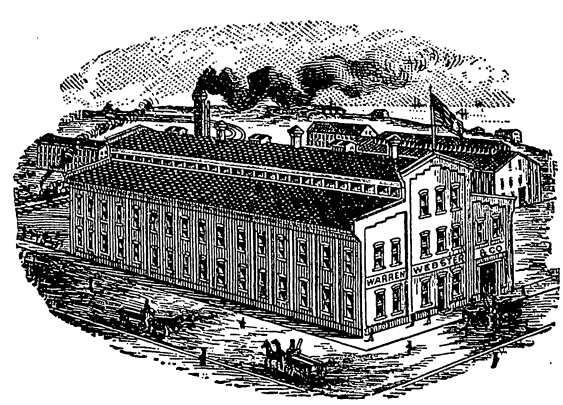
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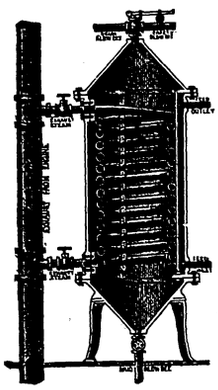
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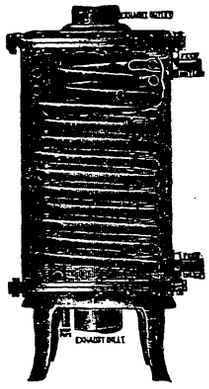
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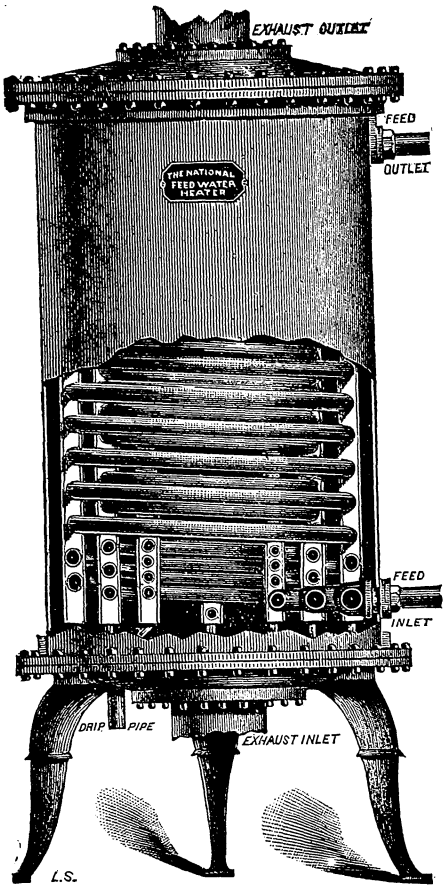
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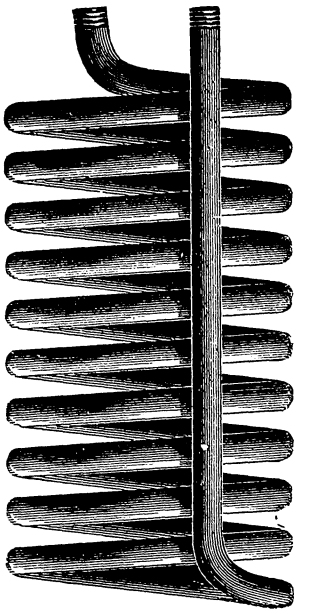
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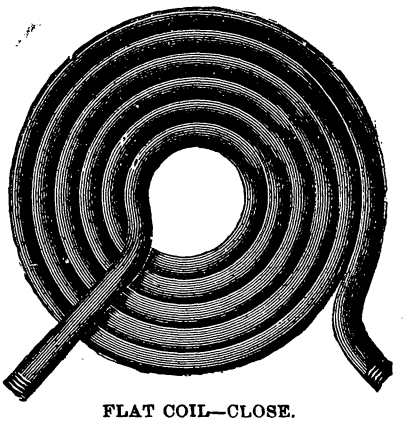
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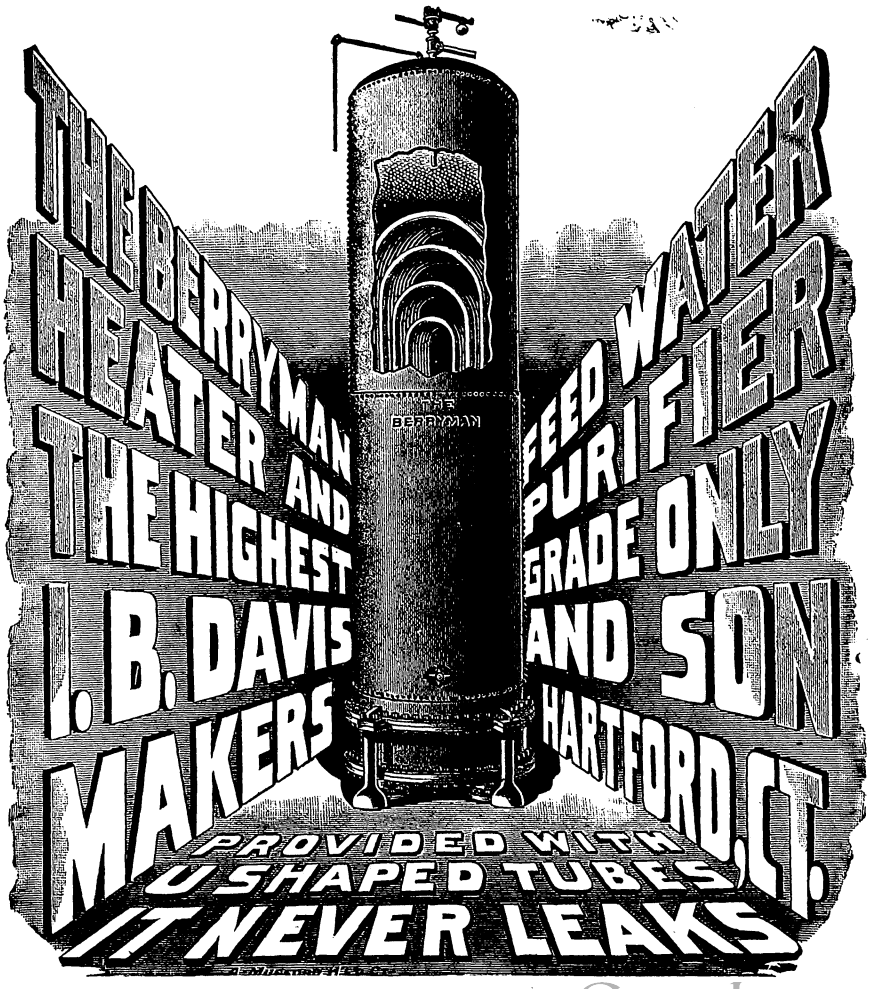
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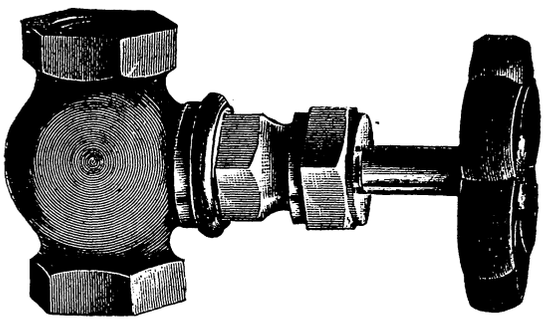
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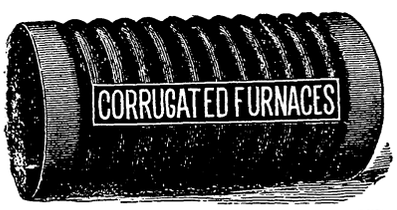
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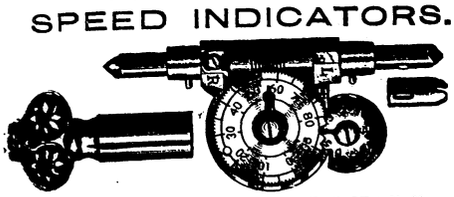


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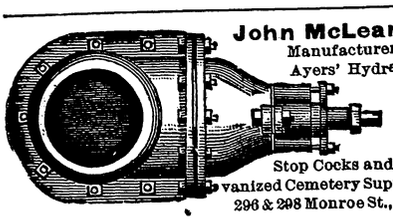
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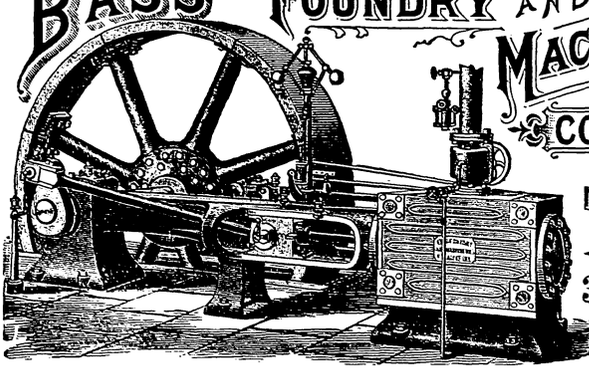


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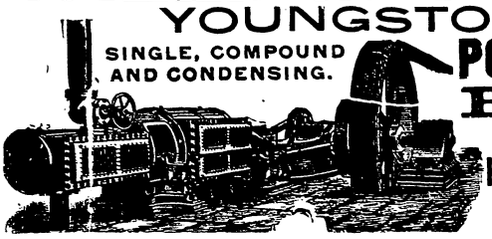
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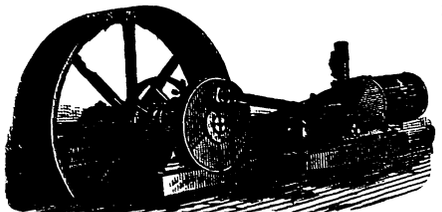


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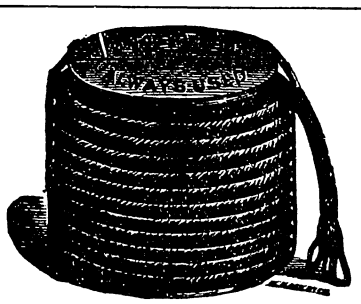
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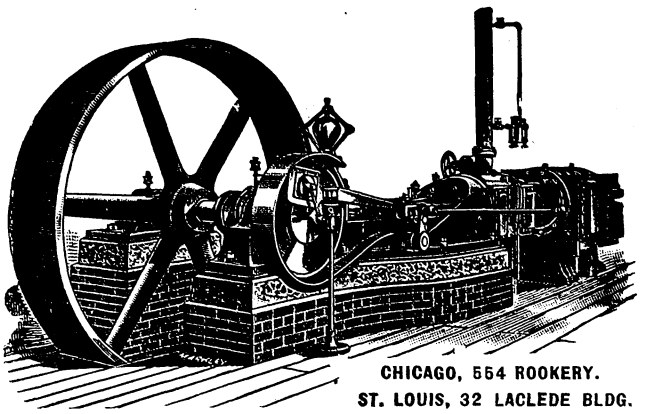


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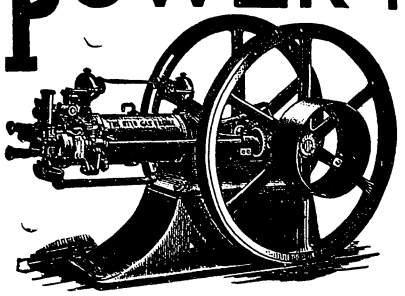
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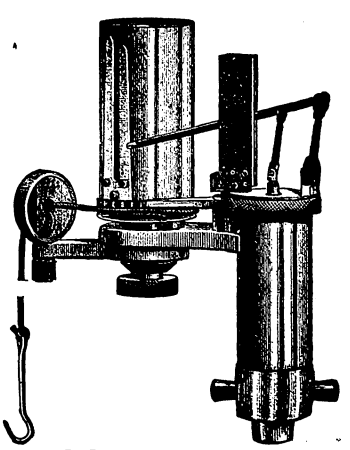
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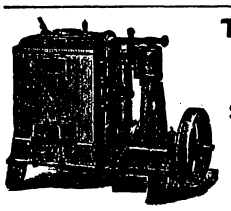
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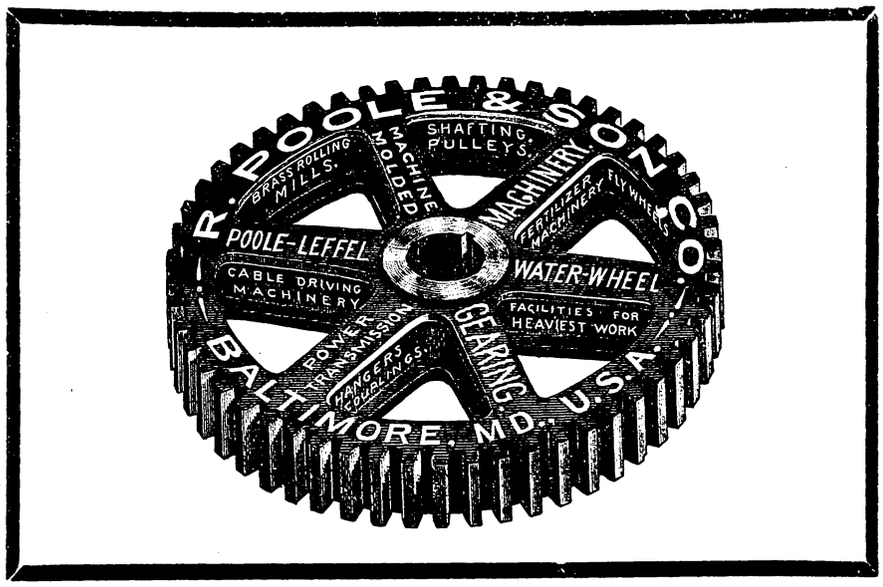


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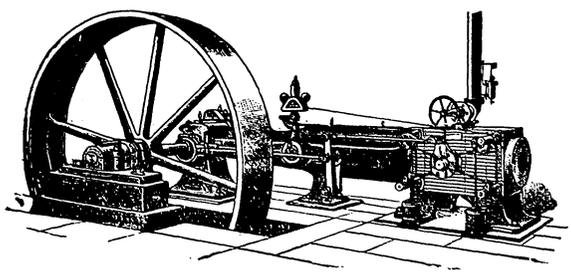
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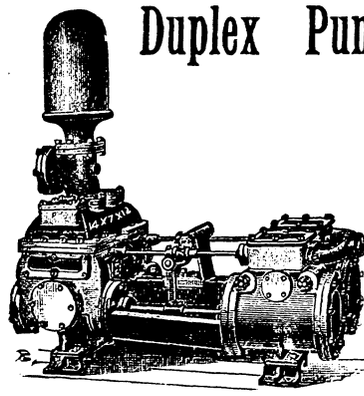
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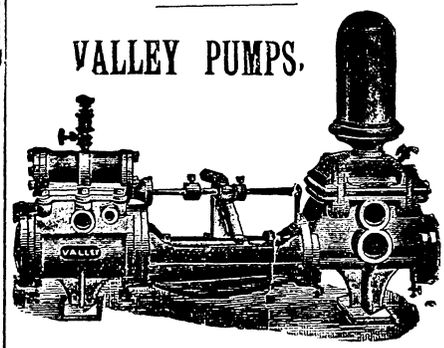
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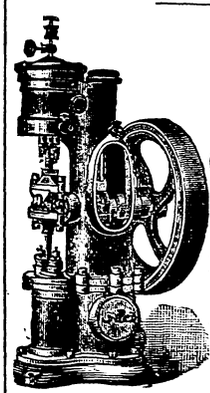
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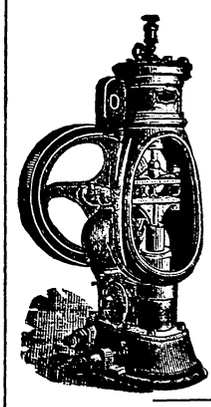




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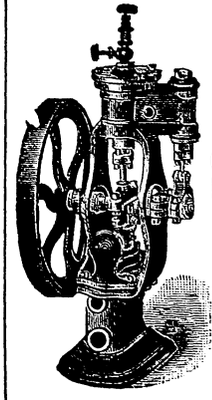
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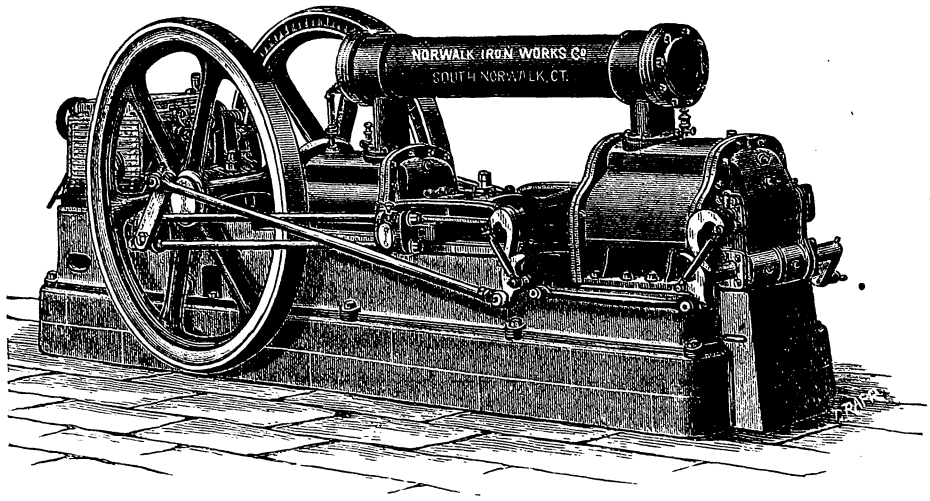
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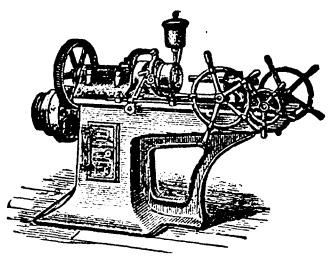
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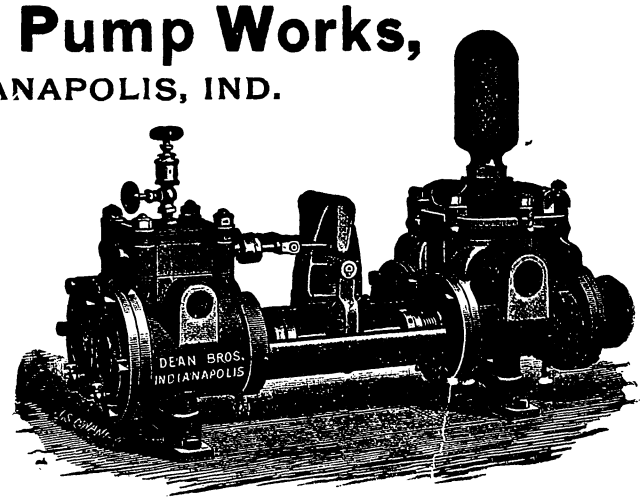
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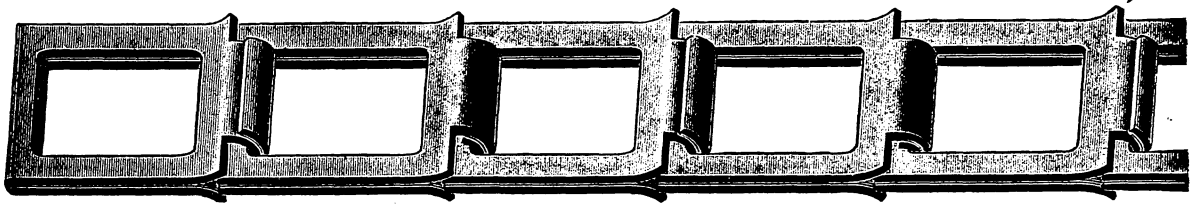
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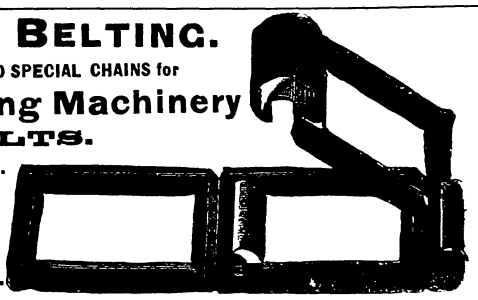
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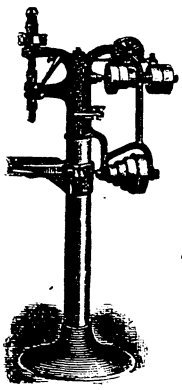
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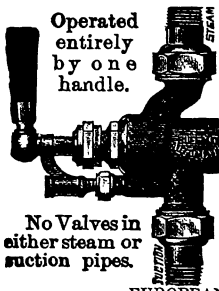
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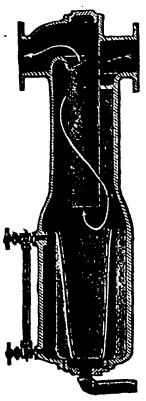
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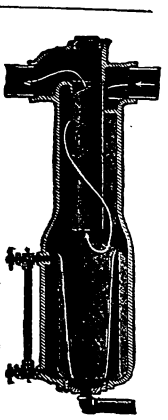
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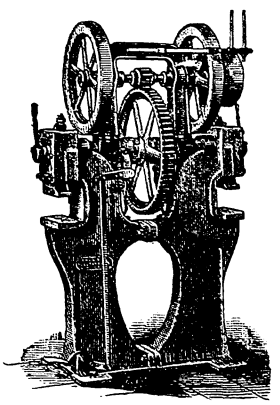
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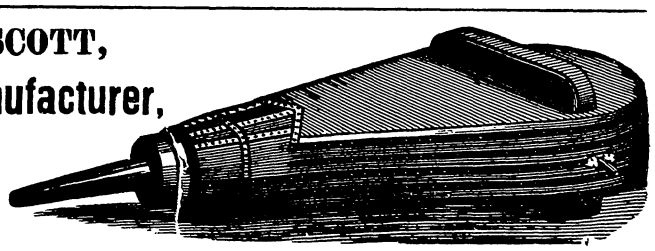
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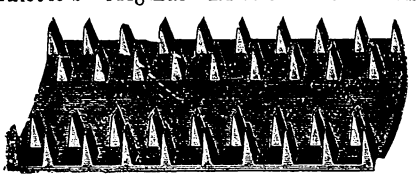
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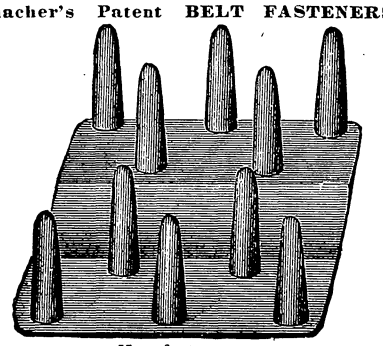
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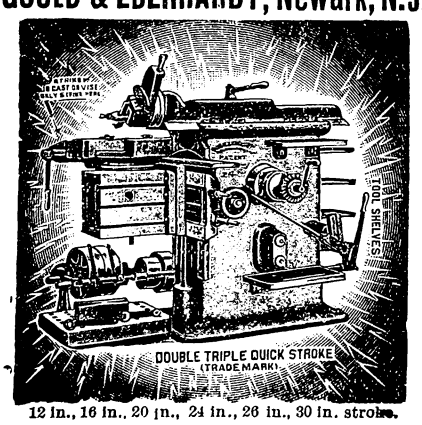
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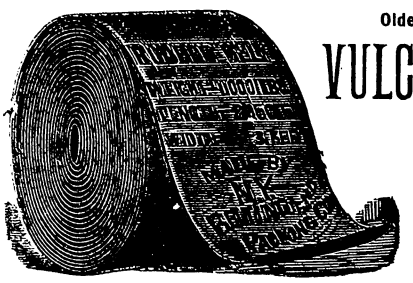
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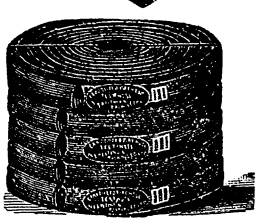
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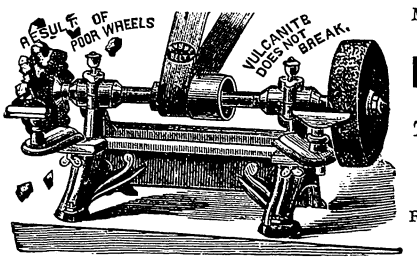


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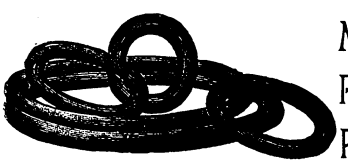
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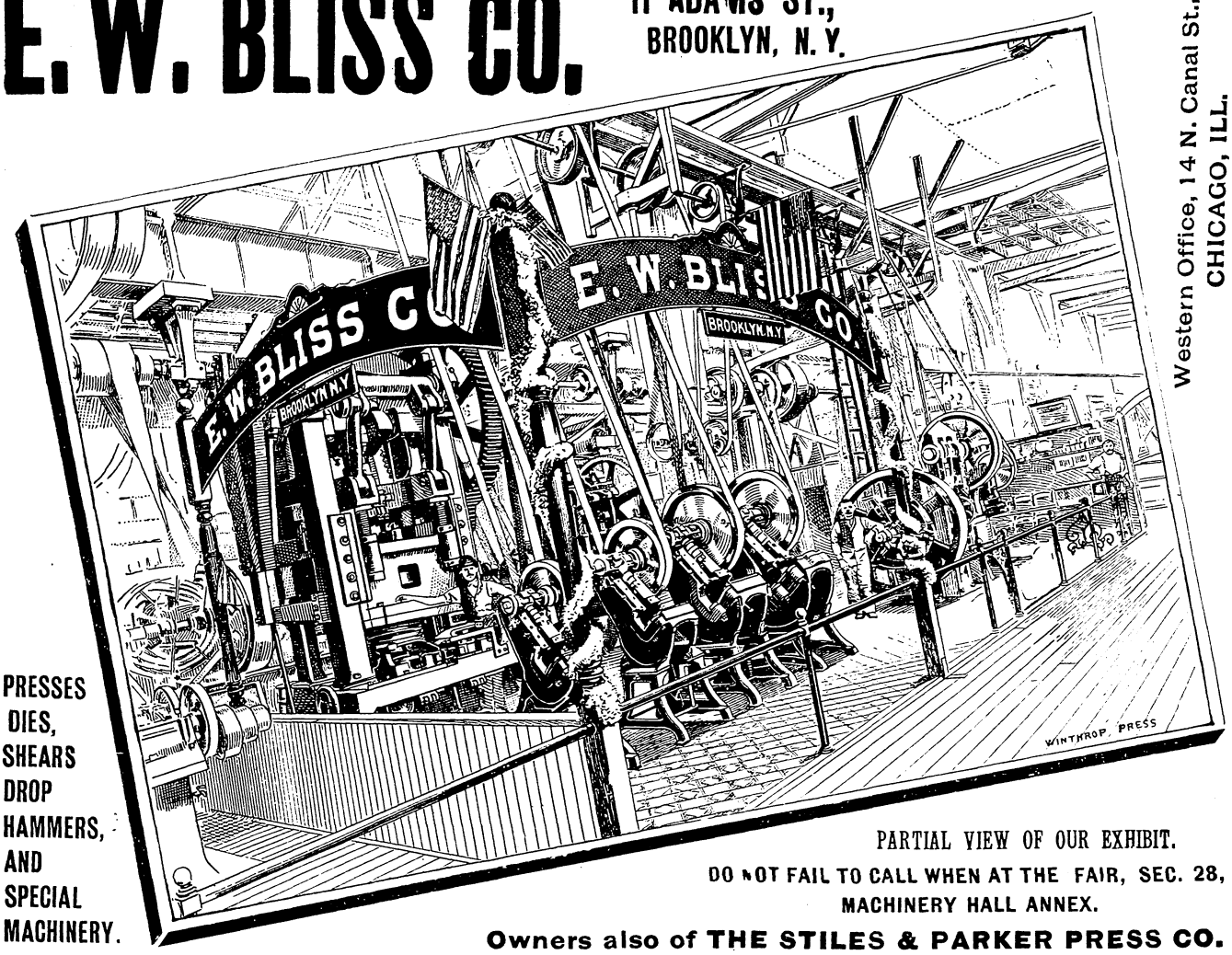
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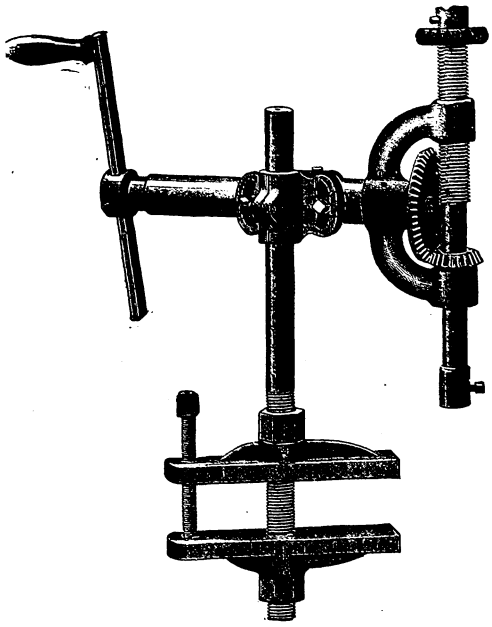
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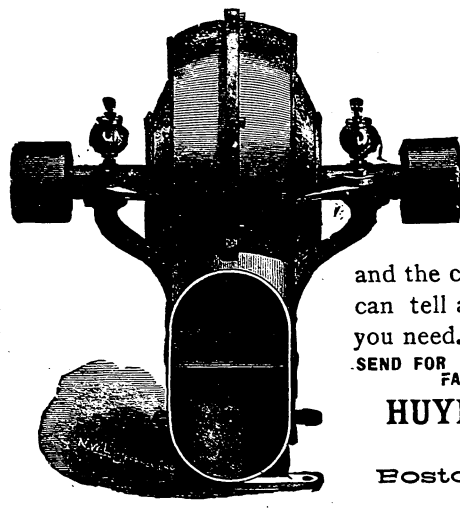
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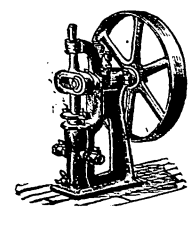
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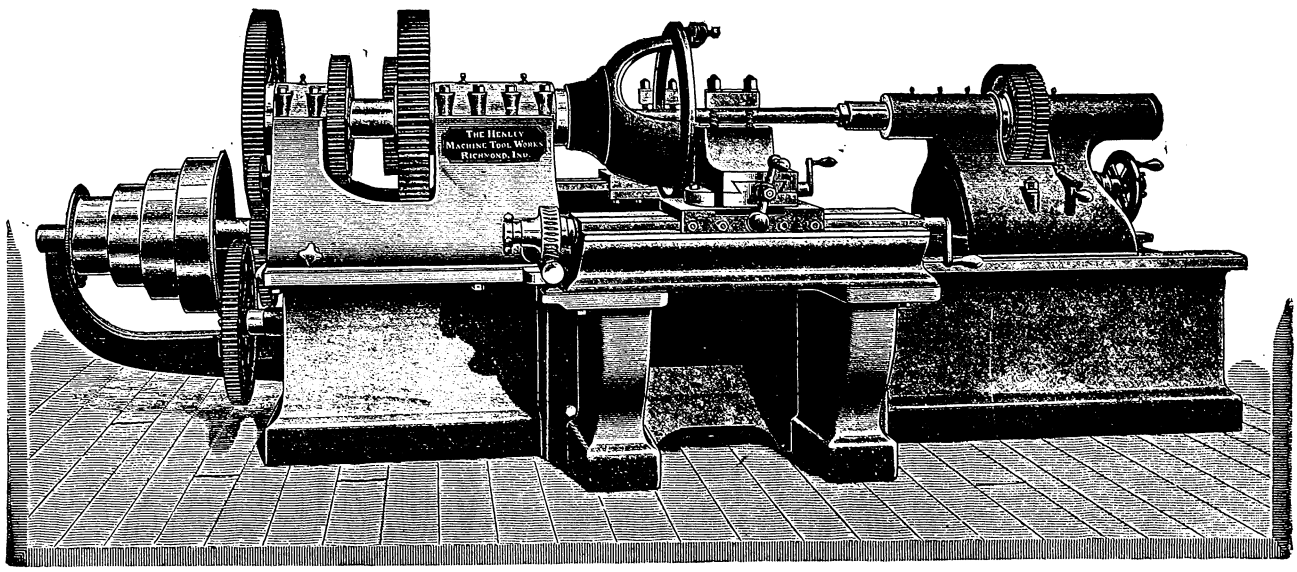
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PULLEY LATHES



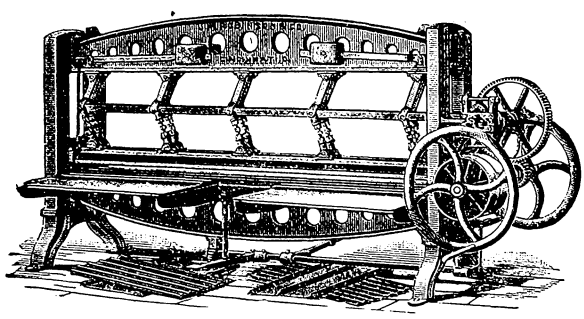
Patented Feb. 17, 1891; June 14, 1887.

This cut represents the 42-inch Lathe. The 60-inch Lathe is of same design, but much heavier throughout. The 30-inch Lathe is of same general construction, with the bed supported on feet at each end.

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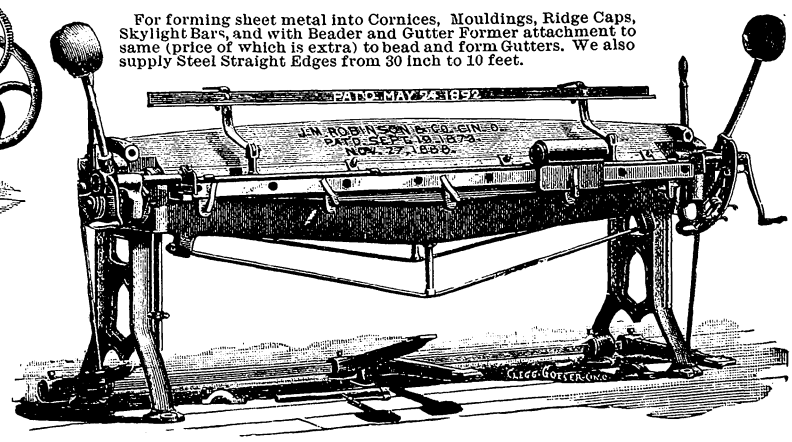
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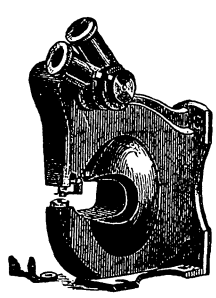
CAMBRIDGE CITY, IND.,



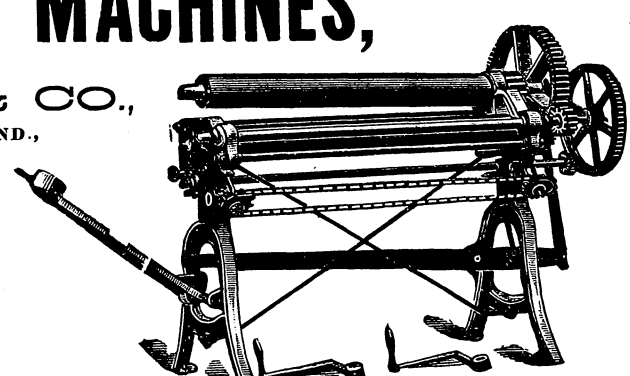
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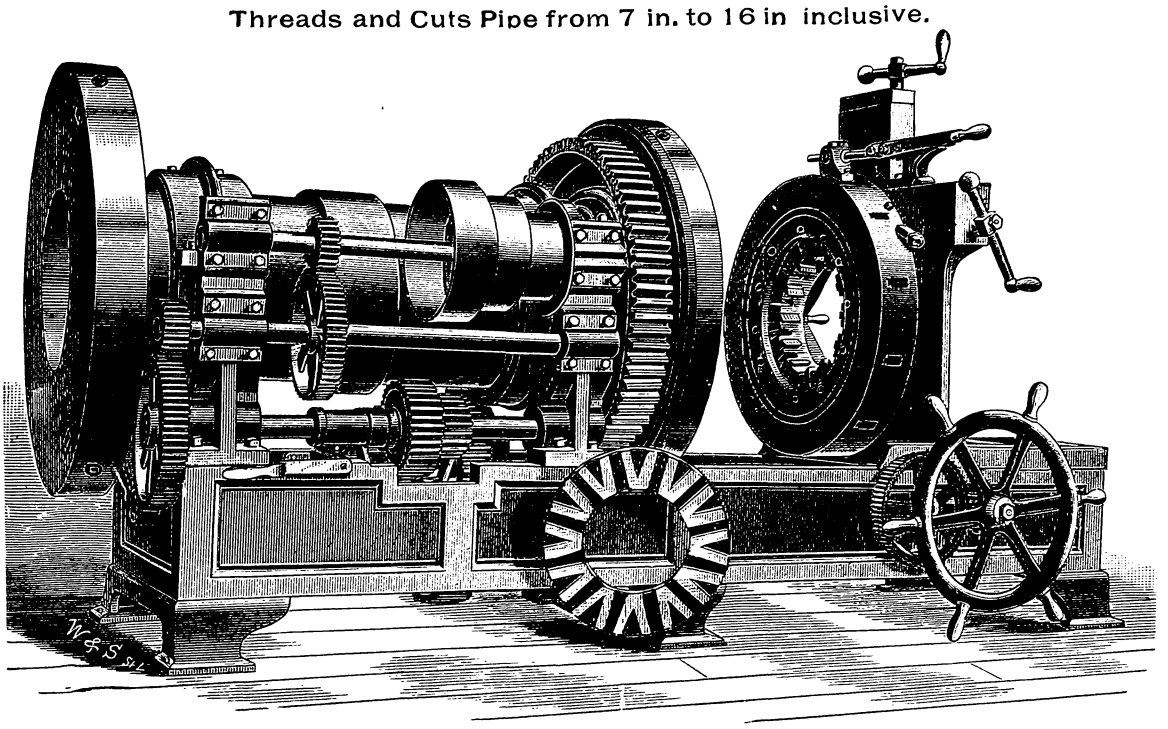


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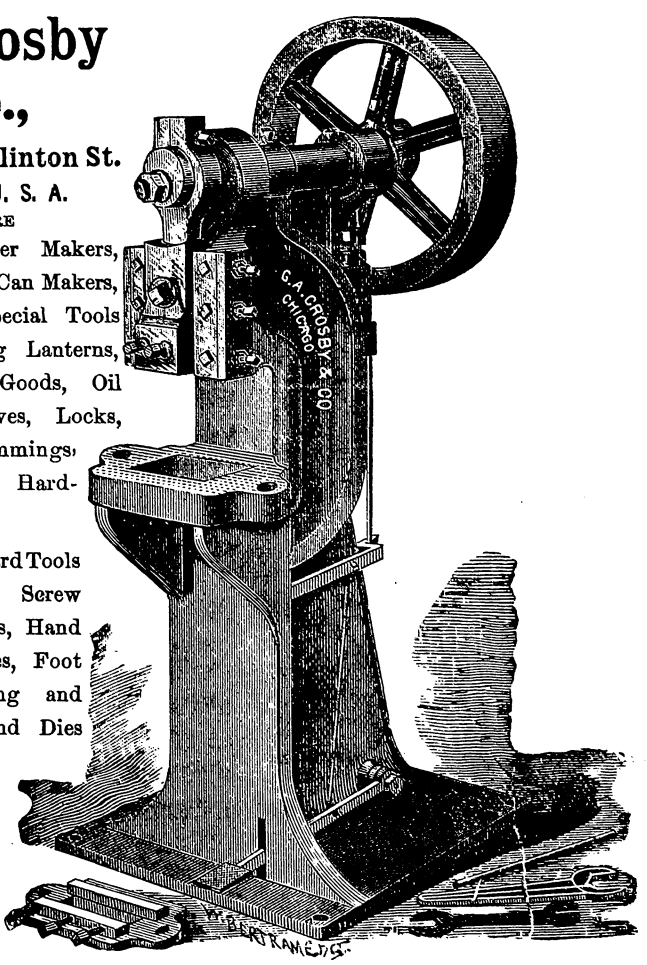
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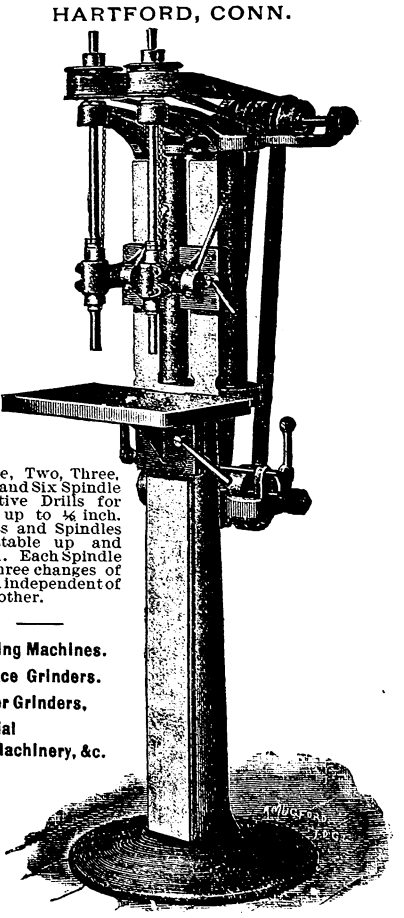
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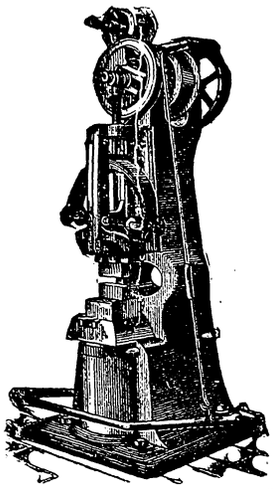
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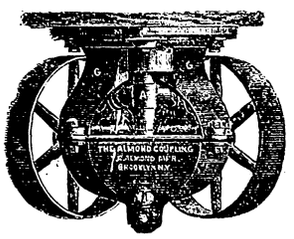
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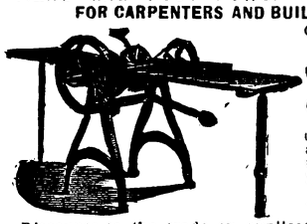
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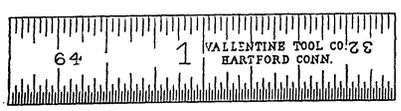
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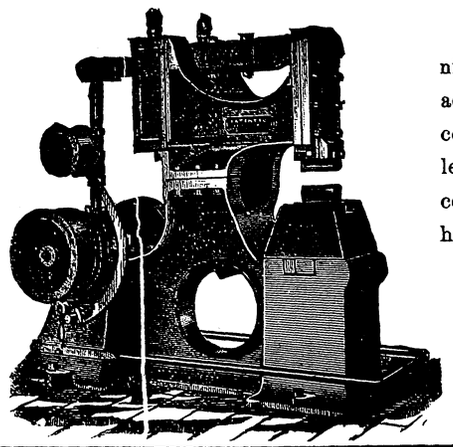
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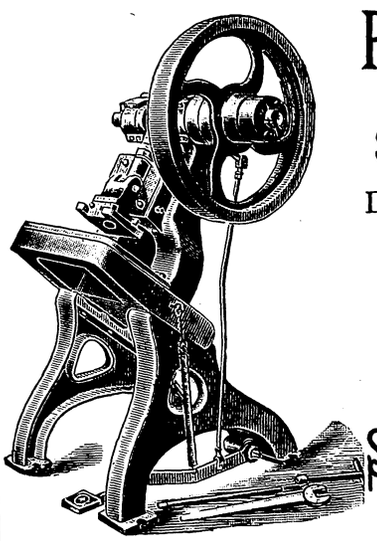
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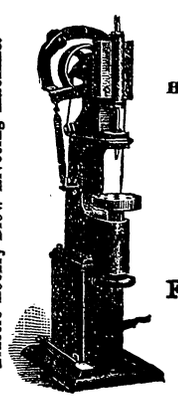
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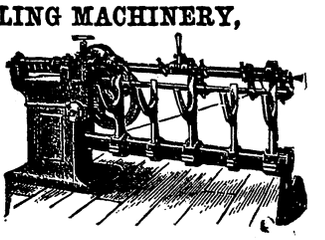
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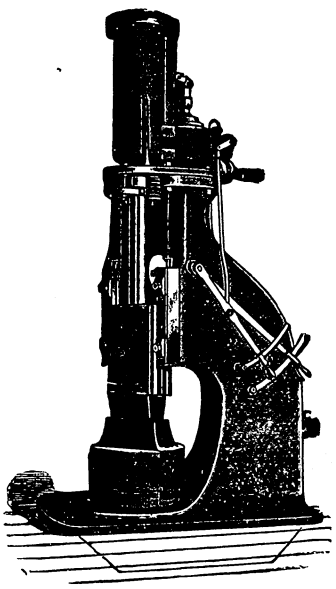
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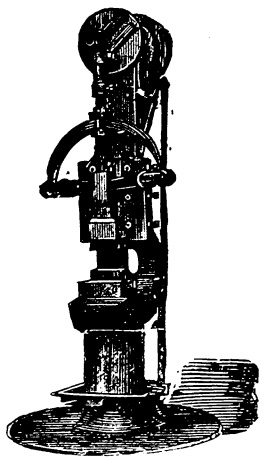
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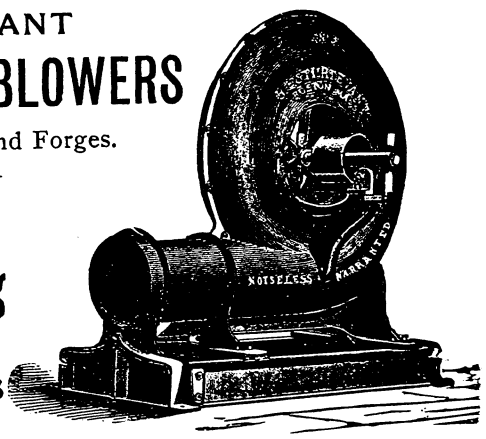
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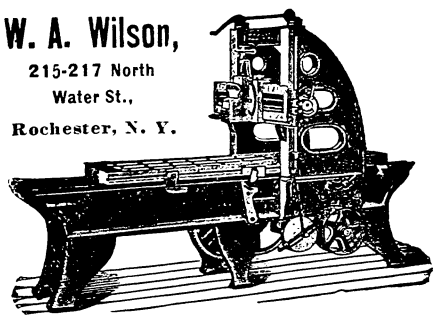
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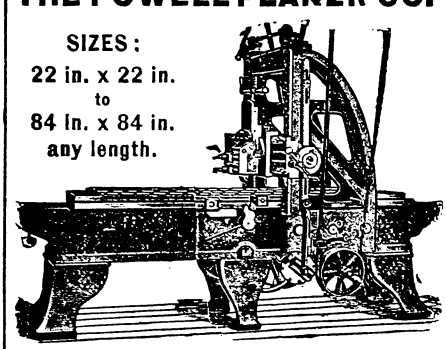
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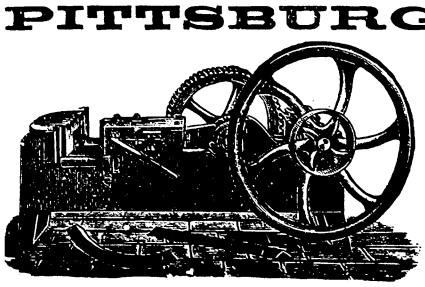
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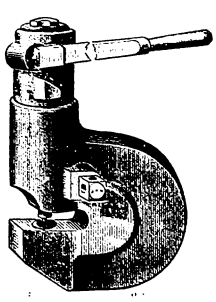


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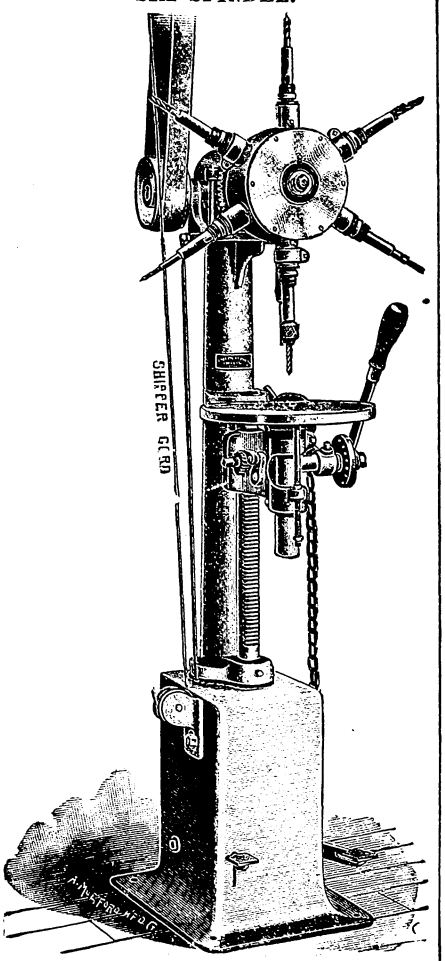
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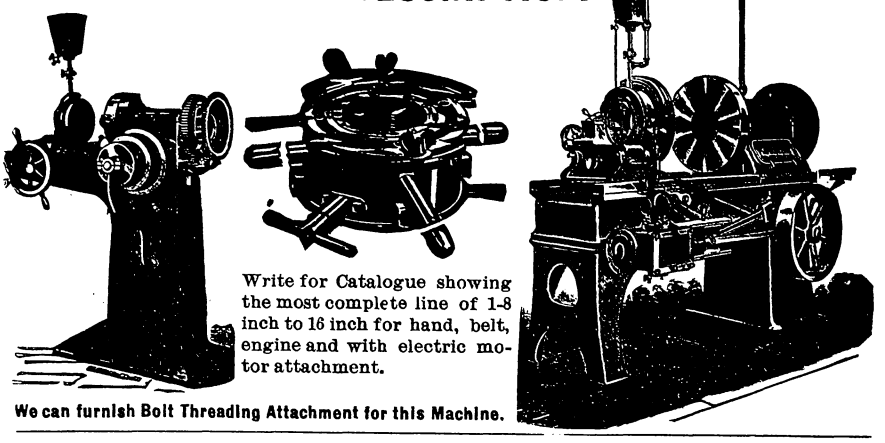
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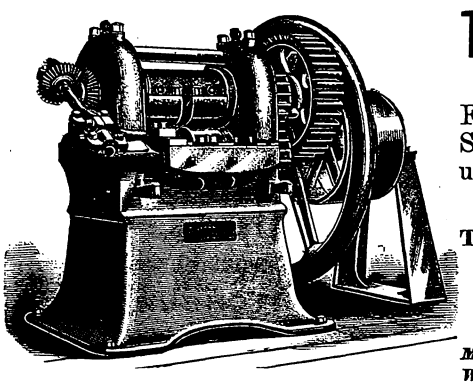
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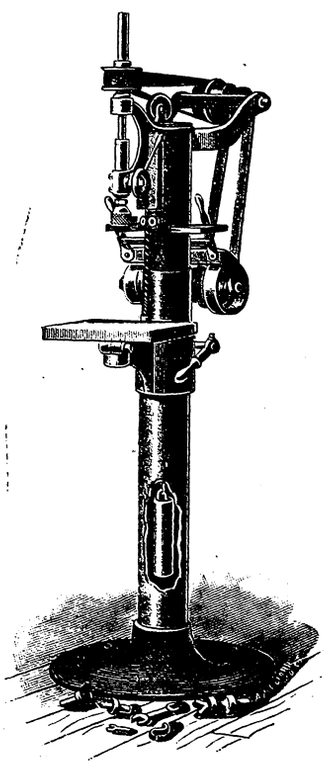
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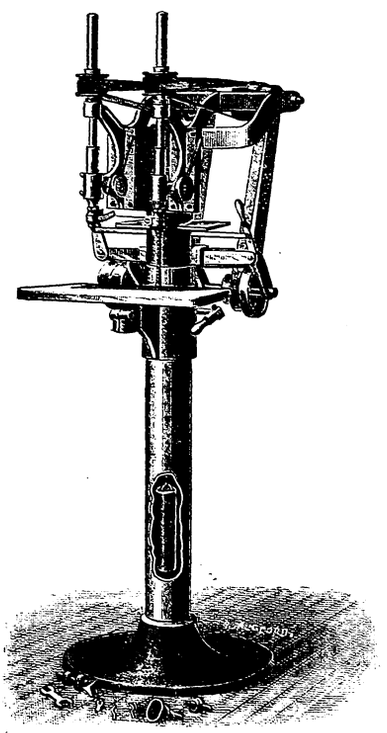
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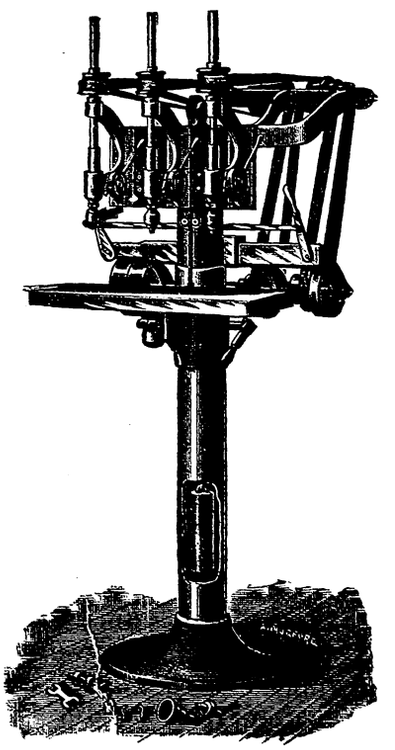
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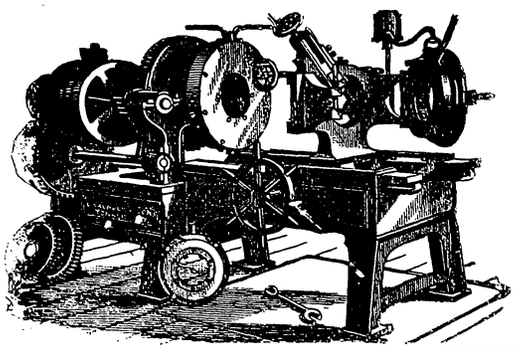
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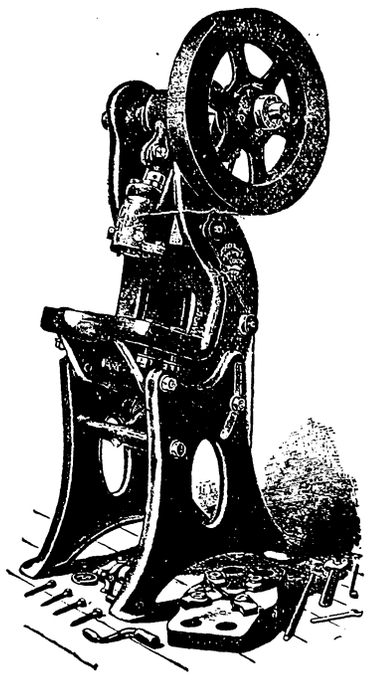
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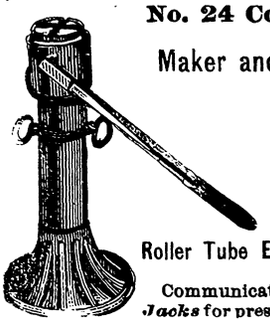
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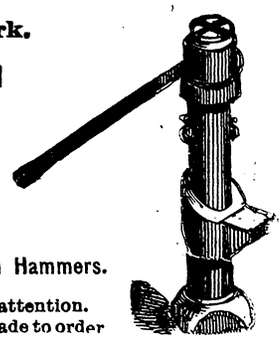
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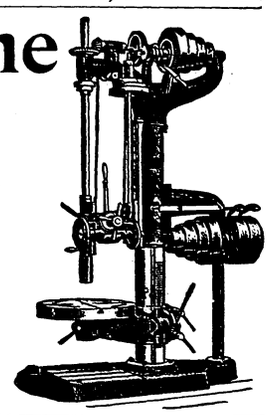
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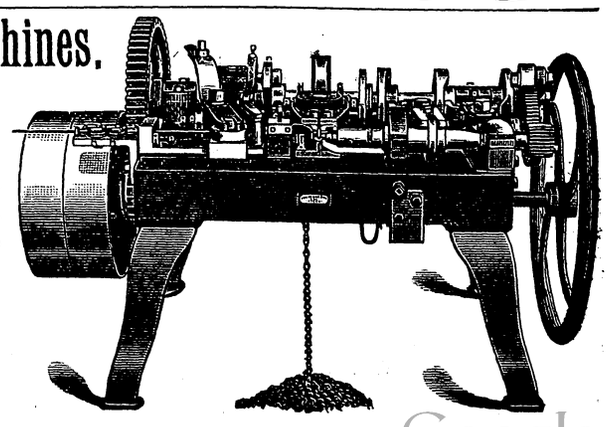
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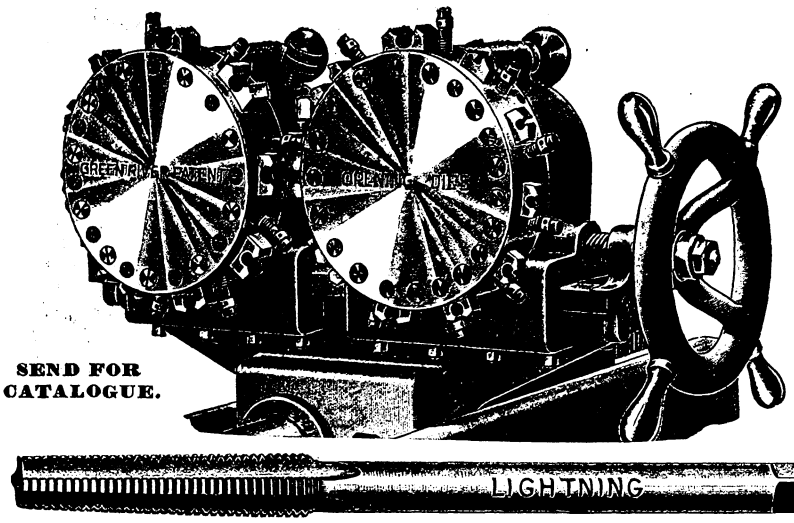


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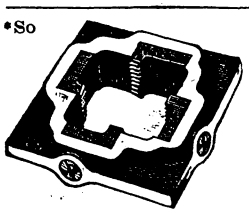
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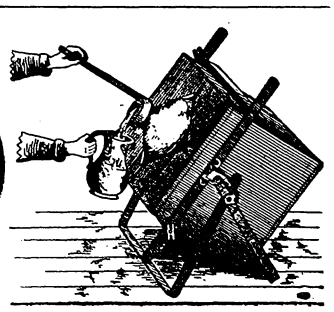
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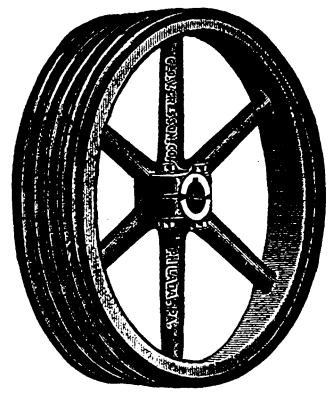




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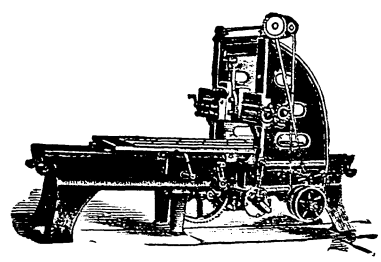
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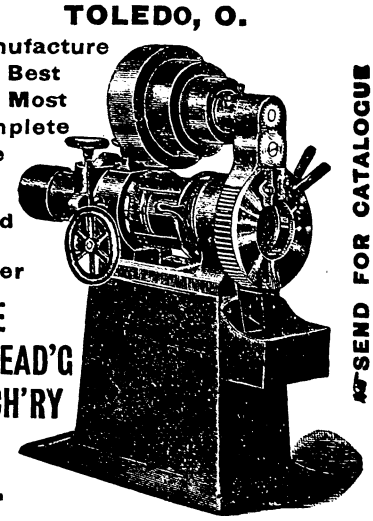
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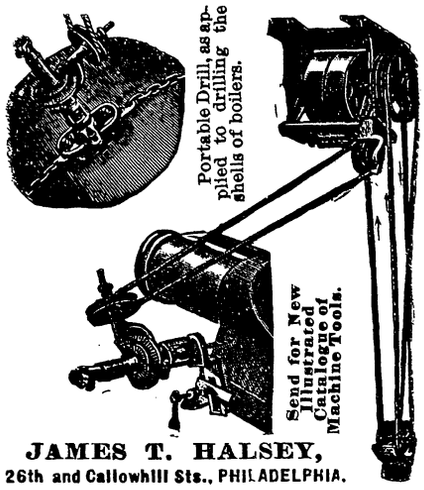
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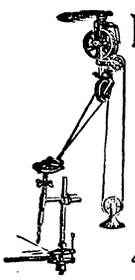


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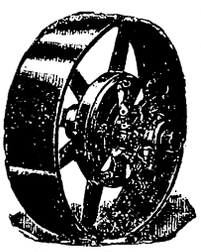


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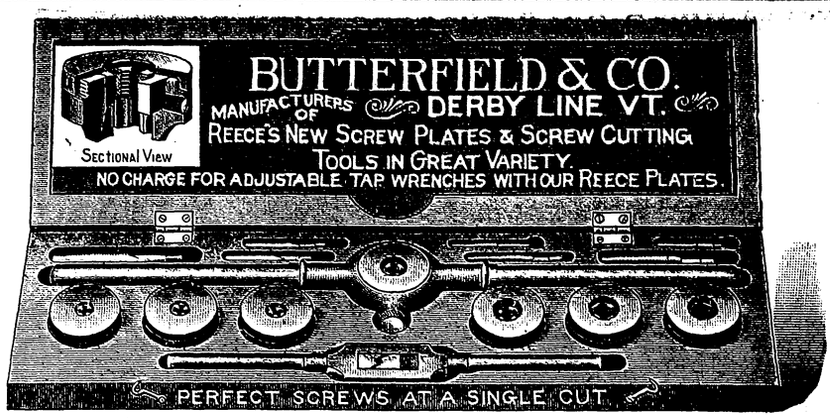
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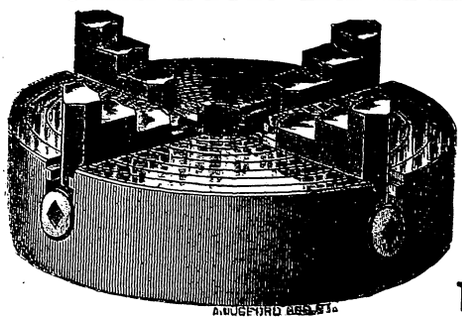
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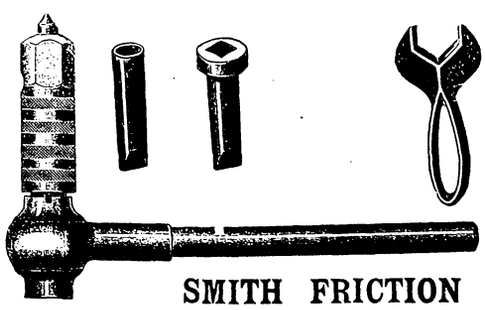
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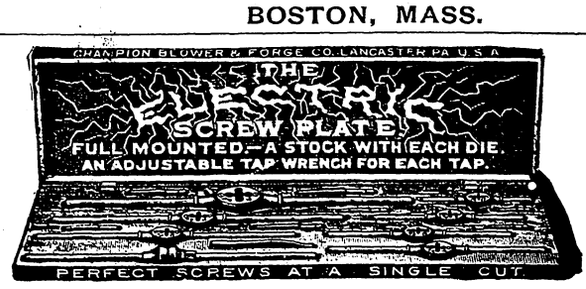
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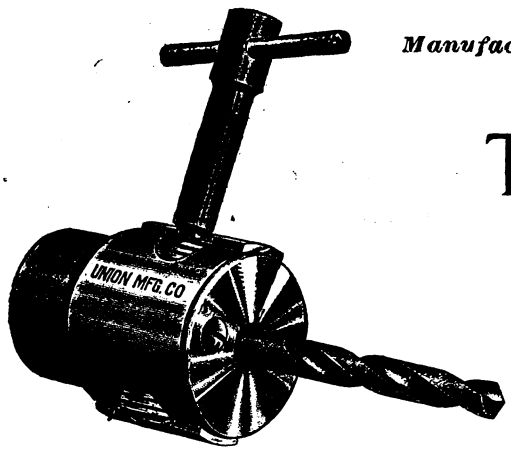
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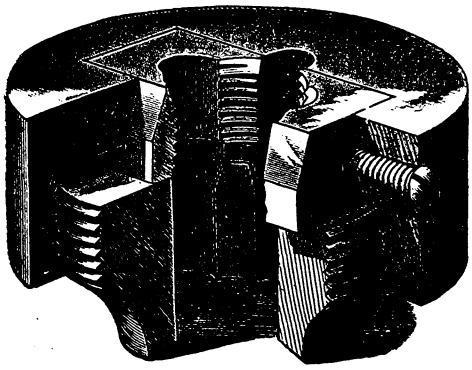


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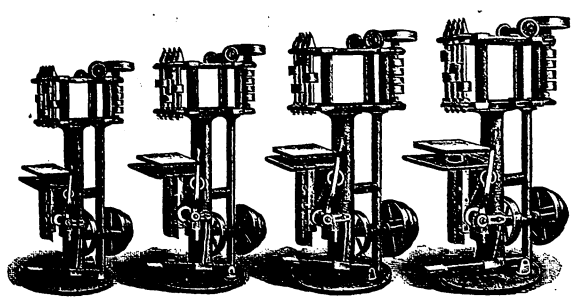


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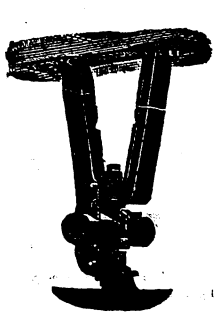
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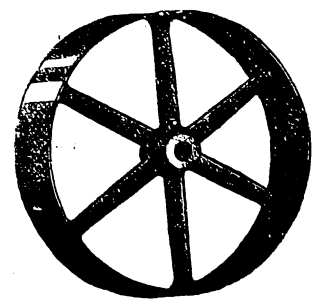
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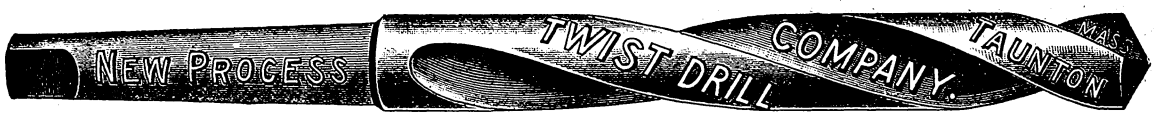
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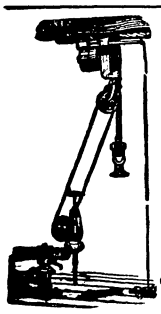
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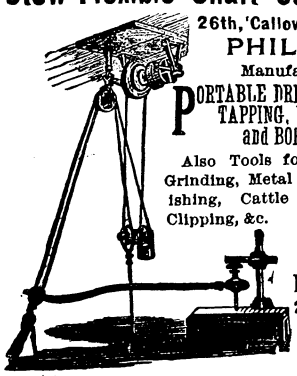
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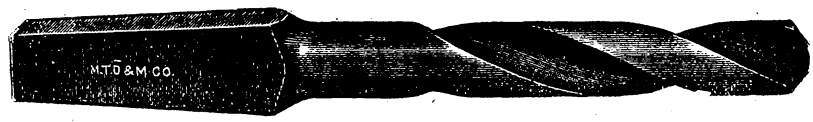
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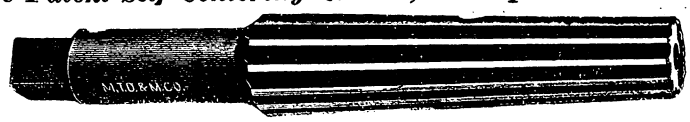
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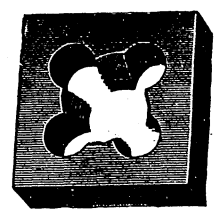


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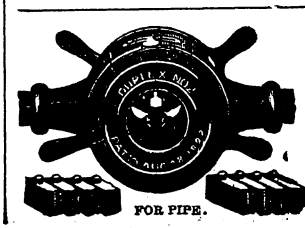




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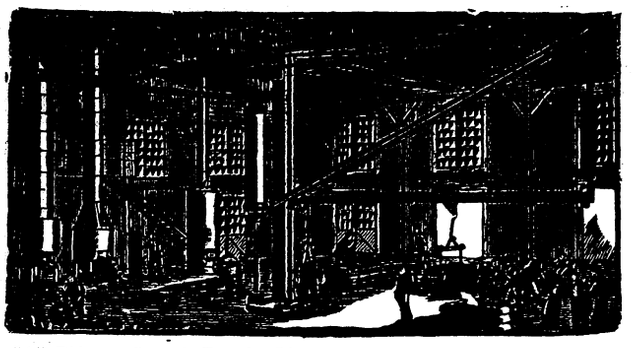
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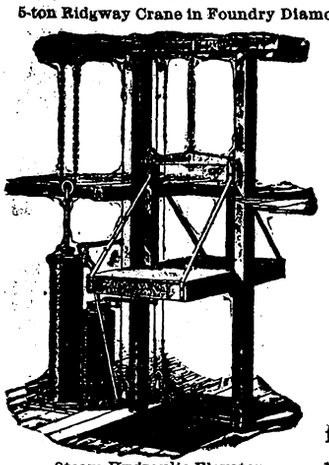


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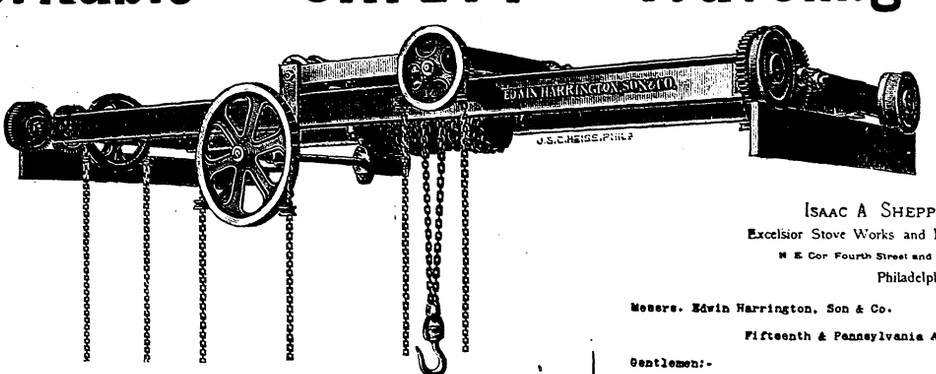
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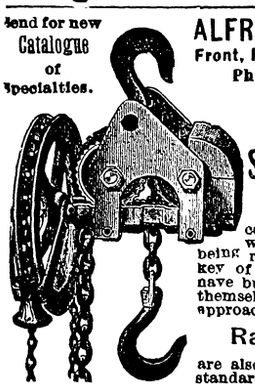
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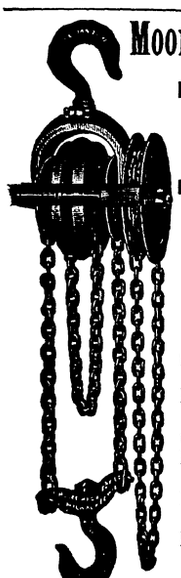
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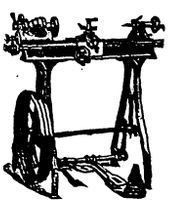
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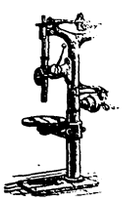
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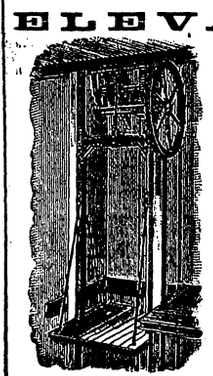
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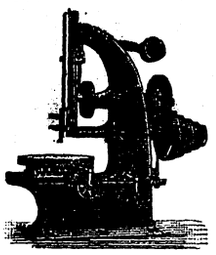


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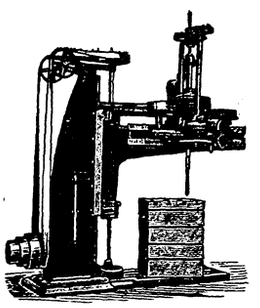
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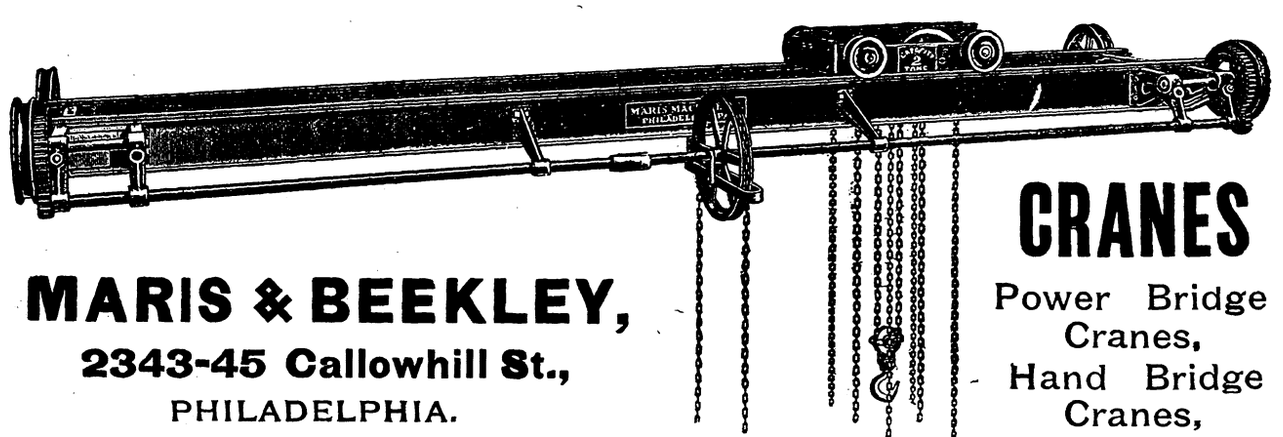
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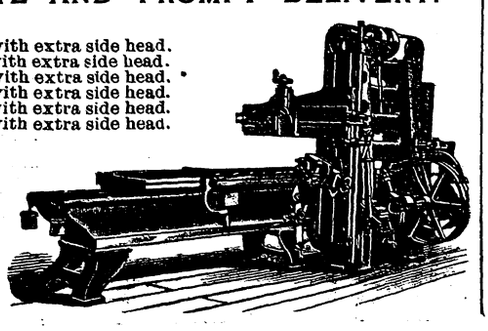
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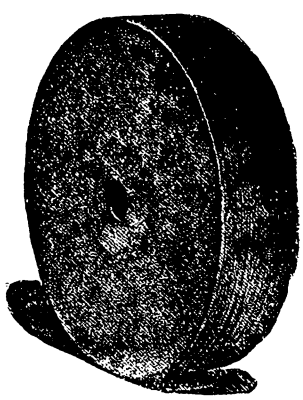
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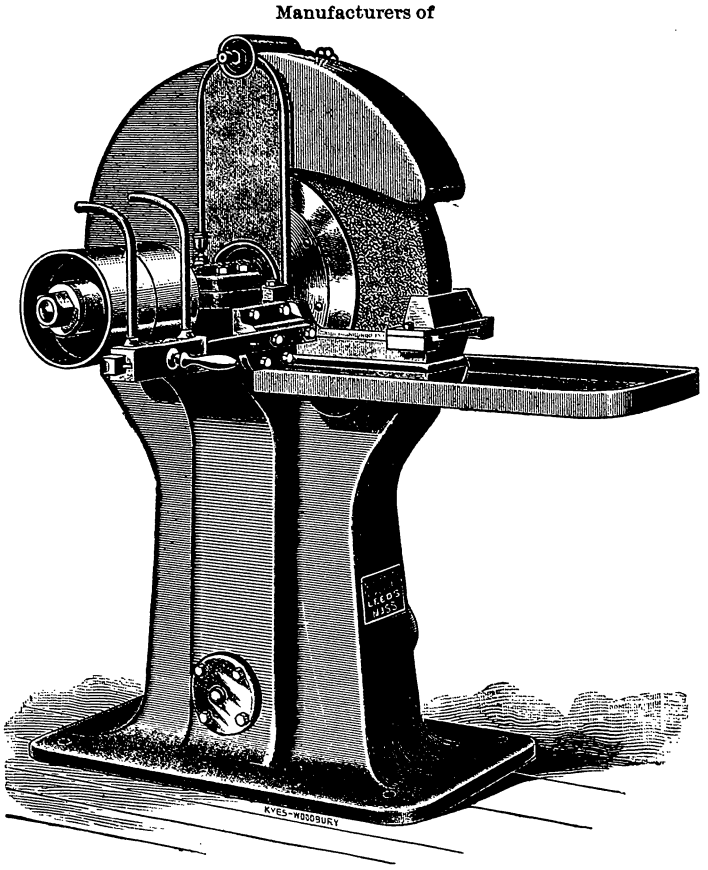


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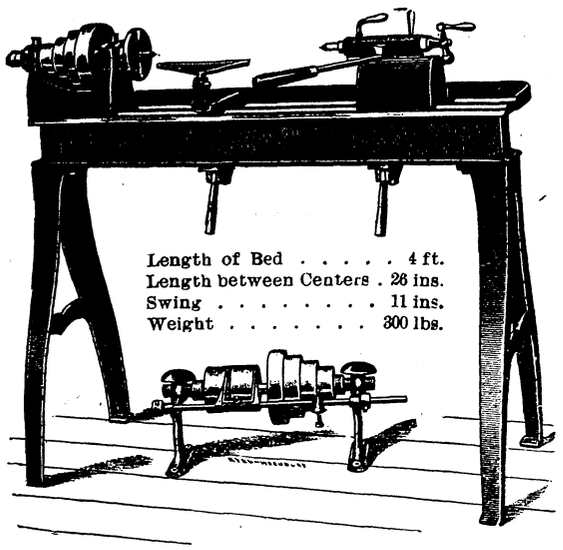
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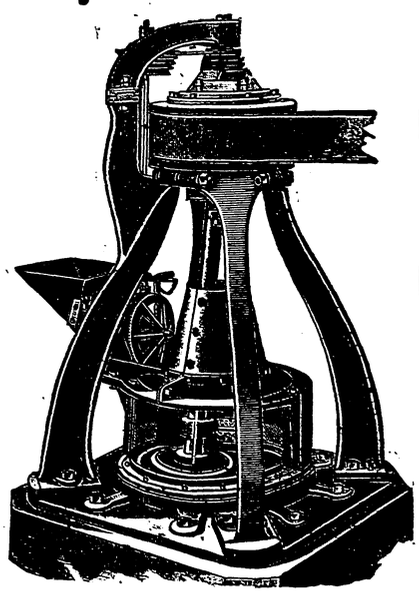
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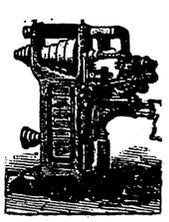
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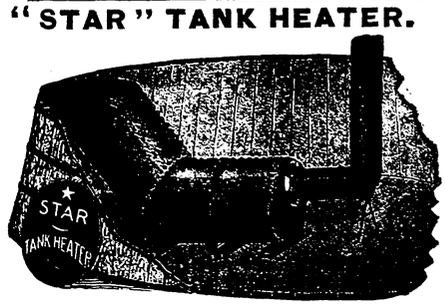
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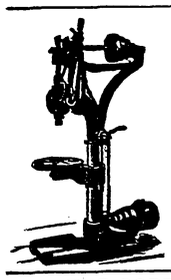
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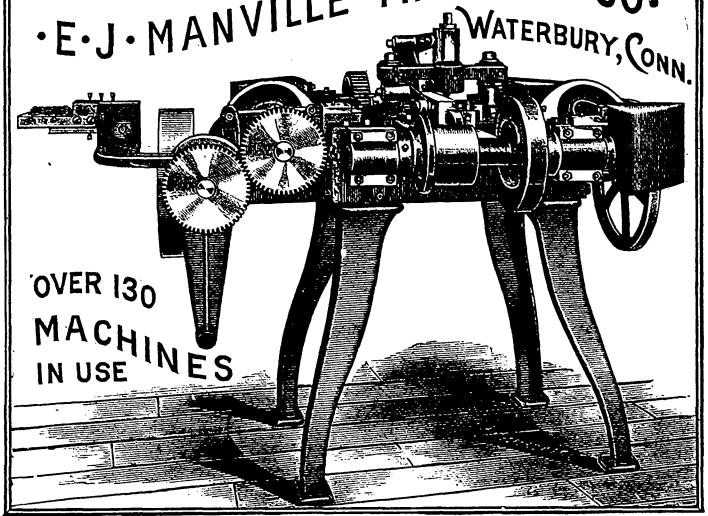
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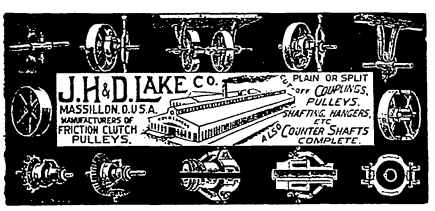
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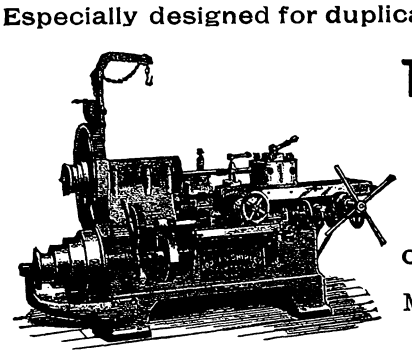
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ASSORTMENT OF STEAM PUMPS, 1000 gl. Duplex Fire Pump also Brennan Crusher, Bogardus Mill, Rock Drill, Burr Stone Mill, Fan Blowers, Platform Scales, Wood Planer, Rendering Tank, Open Tanks, Hoisters, Berryman Heaters, 600-ton Hydraulic Press, Boiler Rolls. Also some Large Steel Boilers, new, below market price. Send for catalogue.

GEO. M. CLAPP,
74 Cortlandt St., New York.

ROLLING MILL OUTFIT.

For Sale, the Following Machinery and Tools, in good order, for immediate or future delivery.

For further particulars apply to the undersigned:

1 Horizontal Low Pressure Engine, 59 in. x 72 in.
2 Fly Wheels, 24 ft. diameter, each weighing 53 tons.
1 Vertical Engine, 7 in. x 16 in.
2 Horizontal Engines, 14 in. x 24 in.
1 2 High 30 in. train, complete,
1 3 High 30 in. train, complete.
The above trains will roll 90 in. plates; also a lot of extra rolls, all made by Garrison & Co.
1 Roll Turning Lathe made by Garrison, will take in 12 ft. roll and turn up to 40 in.
1 Guillotine Shear, Engine attached, made by Morgan, Williams & Co., knife 104 in. long, will cut 1 inch steel plates.
2 Plate Straightening Machines.
1 Adams' Plate Shear, 48 in. throat, 26 in. knife, will cut up to ¾ in. Plate.
2 Heavy Upright Plate Shears, 12 in. throat, 22 in. knife, will cut up to 1¼ in. Plate.
2 Bar Shears.
1 Rotary Shear.
1 Fairbank's Testing Machine, with countershaft, or can be worked by hand power.
4 Large Iron Cranes, improved pattern, each about 25 tons capacity.
8 Small Cranes, also charging Cranes and Portable Cranes on car for handling Ingots.
Blake Pump, 14 in. stream, 16 in. water.
2 Worthington Duplex Pumps.
1 Blake Pump, No. 7.
1 Sturtevant Blower, No. 12.
3 Tubular Boilers, with Fronts and Attachments.
1 No. 7 Brush Light Machine, 15 Double Lamp.
Also Furnaces, Cylinder and Flue Boilers, Buggies, Shafting, Pipe Stacks, etc., etc., and other tools, etc., belonging to above plant.

MATTHEW GILL, Jr.,
308 Walnut St., Philadelphia, Pa.

!!! FOR SALE !!!

BAKER BLOWERS, Nos. 1, 4½, 5, 6 and 7.
ROOT BLOWERS, Nos. 1, 2, 3, 4, 5, 6 and 7.
Sturtevant Blowers, Nos. 4, 5, 6, &c.
1 Corliss Band Wheel, 12 ft. x 24 in., in halves.
A Variety of Machinery, Such as Boilers, Engines, Pumps, Crushers, &c., very cheap.
Do you want to buy or sell Machinery? If so, write
C. R. BIGELOW, Machinery Expert,
45 Dey St., New York City.

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16 INCH FLAT MILL.

For sale cheap. Made by Garrison & Co., Pittsburgh; complete and modern; 3-roll high, flywheel 20 tons, 5 sets Housings, pinions, rolls, bedplates, &c., in perfect condition. Address

C. W. SCHULTZ & CO.,
308 Walnut St., PHILADELPHIA.

FOR QUICK SALE.

One Otis Steam Shovel in good condition.
Two 12 ton 3-ft. Gauge Locomotives.
Two Standard Gauge Saddle Tank Locomotives.
20 Dump Cars, 3-ft. Gauge, 3-yd. Capacity, Side Dump.
3000 tons Mill Cinder, &c.
Also Pig Iron, Muck Bars, Bar Iron and Steel Billets, Scrap, &c. We are always in the market to buy and sell Equipment and Scrap.
G. H. SIBELL & CO.,
62 and 64 Michigan Ave., Chicago, Ill

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SALE OF VALUABLE PROPERTY of the corporation known heretofore as The Albany Stove Company. Whereas, by order of the Supreme Court of the State of New York, granted in the City of Albany, N. Y., on the 10th day of October, 1893, the undersigned, receiver of the assets and effects of the corporation known heretofore as The Albany Stove Company, was directed to offer for sale the following described property, viz.: The real estate and buildings owned by the said corporation "The Albany Stove Company," situated on Tivoli street, in the City of Albany, N. Y., being the same premises used by the said corporation in carrying on its business of manufacturing stoves and iron castings, and is the same real estate conveyed by Eugene Van Rensselaer and others, as executors, etc., to The Capital Co-operative Foundry Company, by deed dated October 15, 1869, recorded in Albany County Clerk's office, December 15, 1869, in Book No. 228 of Deeds, on page 241, and by Van Rensselaer Land Company to Albany Stove Company by deed dated January 10, 1890, recorded January 14, 1890, in Book No. 412 of Deeds, on page 318, together with the machinery, tools and implements used in carrying on the business above referred to.

Now, therefore, in pursuance of said order, the undersigned offers for sale to the highest bidder the property above described.

All bids to be sealed, and must be distinctly marked on the envelope in which they are enclosed, "Bids for property of the Albany Stove Company," and addressed and delivered to the undersigned at No. 82 State street, Albany, New York, on or before the 17th day of November, 1893. The right to reject any and all bids is hereby reserved, and sale can only be completed upon order of the court.

Bids will be opened by the receiver at the office of Francis H. Woods, No. 116 State street, Albany, New York, on Saturday, November 18, 1893, at 10 A.M. Terms, purchase price to be paid within twenty days after notification of acceptance of bid.

Dated October 11, 1893.

JOHN GUTMANN,
Receiver of The Albany Stove Company.

SALE OF VALUABLE PROPERTY of the corporation known heretofore as The Albany Stove Company. Whereas, by order of the Supreme Court, granted in the city of Albany, N. Y., on the 10th day of October, 1893, the undersigned, receiver of the assets and effects of the corporation known heretofore as The Albany Stove Company, was directed to offer for sale the following described property, viz.: The patterns, shop rights and flasks owned by the said corporation, and being the patterns, shop rights and flasks for the "Home Yale" parlor and range, "Yale" cook, "White Oak," "Art Yale Range," "Rose" range, "Oneida," and for other castings, formerly manufactured by the said corporation, a more particular description of which will be given on application to the undersigned.

Now, therefore, in pursuance of said order, the undersigned offers for sale to the highest bidder the property above described.

All bids to be sealed and must be distinctly marked on the envelope in which they are inclosed, "Bids for property of The Albany Stove Company," and addressed and delivered to the undersigned, at No. 82 State street, Albany, N. Y., on or before the 17th day of November, 1893.

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Terms: Purchase price to be paid within twenty days after notification of acceptance of bid.

Dated October 11th, 1893.

JOHN GUTMANN,
Receiver of The Albany Stove Company.

FOR SALE, CHEAP.

400 tons of 60-pound, 200 tons 52-pound and 400 tons of 30-pound second-hand Steel Rails, suitable for relaying. For prices, etc., address

J. H. RICHARDSON & CO.,
Pittsburgh, Pa.

FOR SALE.

2 Double Deck Boilers about 40 H.-P. each, cheap. Hoisting Engine. Cylinder Boilers for Stacks, 30, 40 and 42 in. diameter. Round and Square Iron Tanks. Book Binding Machinery. Smoke Stacks, light and heavy, all sizes. Large lot Cast and Wrought Scrap Iron on hand. Also Dealers in Metals.

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In lots to suit, and ready for delivery.

2000 tons 60 lb. Steel T Rails.
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400 tons 50 lb. Steel T Rails.
550 tons 50 lb. Iron T Rails.
600 tons 45 lb. Iron T Rails.
2000 tons 40 lb. Steel T Rails.
600 tons 30 lb. Iron T Rails.
150 tons 30 lb. Steel T Rails.
200 tons 25 lb. Steel T Rails.
1700 tons Johnson Girder Rails, 38, 48, 52 and 66 lb. Rails.

All selected and in excellent condition for relaying and only slightly worn. For prices and particulars apply to

JOSEPH JEWKES,
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Lathes, 52 in. swing by 41 ft., 54 in. swing by 22 ft., 30 in. swing by 22 ft. One Pit Lathe.
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Engines, 5 new and 7 second-hand, from 100 H.-P down.
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W. A. BOLE, Trustee,
Liberty Ave., cor. 25th St., Pittsburgh, Pa.

WANTED.

Machinery to manufacture.—Machinery built of Wood and Iron, or all Iron only, wanted, same must be of real merit.

J. M. KRAMER & BRO. MACHINE WORKS,
Maria Stein, Ohio.

WANTED.

A second-hand Squeezer in good order and modern construction, with or without Engine. Name lowest price for cash. Address

"H.,"
Office of *The Iron Age*, 220 South 4th St., Philadelphia, Pa.

FOR SALE

Selected Second-hand Rails.

800 tons 35-lb. Tee Iron Rails, 100 tons 30-lb. Tee Iron Rails, all in good condition for relaying, complete with fish plates and spikes. Also several complete switches. Apply to

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Excellent Light, Elevator, Power and Steam Heat.

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CHARLES WEILAND.

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Tools and Second Quality Files a Specialty.
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NEW NOVELTIES TO MANUFACTURE.

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313-315 Broadway, New York.

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STOCK OF IRON AND STEEL,

Consisting of Bar, Band, Hoop and Scroll Iron and Spring and Plow Steel, at

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About 40 tons in all.

List of sizes on application.

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DON'T INVEST in expensive machinery or let a contract until you get our estimate for making novelties or parts. Our work on novelties or fine, difficult and accurate parts astonishes the trade. White metal work a specialty, and our results cannot be duplicated at the same cost. Write us. Sample on application. Inventions perfected. Secrecy and satisfaction guaranteed. THE H. H. FRANKLIN MFG. CO.,
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Located in a prominent Western city and adapted to the manufacture of bicycles of any grade. Capital required, $75,000 to $100,000. For particulars address The R. M. Co., P. O. Box 31, Cincinnati, O.

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Receiver's Sale.

Notice is hereby given that the undersigned Receiver of The Vienna Enamel & Stamping Company, will sell the assets of said corporation at private sale to the highest bidder. Bids will be received on and after November 10th and up to November 20th, 1893. The plant is situated at Porter, Porter County, Indiana; all the main buildings are made of brick and have been recently erected and the machinery is new. It is located on two and one-half blocks of ground; there are three railroads within a few rods of it; and it is about forty miles from Chicago. There is also a large amount of manufactured product and of raw material on hand. In fact, there is everything ready to start up with the business

Terms of Sale: The plant with tools and fixtures will be offered together for one third cash and the balance in equal payments of twelve and eighteen months; the purchaser to give his notes with mortgage on the premises to secure the same, with interest at six per cent. payable annually, and he must keep the property insured in good companies to an amount sufficient to cover loss by fire, payable to the receiver. The manufactured and the raw material will each be offered separately, and the whole will be sold for all cash or one-half cash and the balance in six months: the purchaser giving his note with approved security for the deferred payments, with interest at six per cent,

All bids on the plant, fixtures and tools must be accompanied by a deposit of two thousand dollars cash, conditioned that the bidder will make good his bid if accepted; and all bids on the personal property must be accompanied by a like deposit of two thousand dollars.

EDWARD ECKL,
Receiver of the Vienna Enamel and Stamping Company.

IRON WORKS
FOR SALE.

To close estate of John R. Smith, late of Springfield, Mass., the executors offer for sale the old established business of the Springfield Iron works, including real estate, stock and machinery.

This is a live business in ornamental and building iron, machine and drop forgings, bolts, bridges, iron and steel structural work, fire escapes, etc., with several large contracts at the present time, including a State building at Concord, N. H., to be carried out. Mr. John R. Smith was successor to the bridge business of A. D. Briggs & Co. The business is old and well established. Inquire of

RALPH W. ELLIS, Atty.,
Springfield, Mass.

COAL LAND.

Eight thousand (8000) acres of Coal Land, containing two seams, one of four to six (4 to 6) ft. thick above water level; and one seam seven (7) ft. below water level. Good railroad and river facilities. Titles good. Will be sold cheap for cash. Map can be seen by calling or writing to

RINARD & WILLIAMS,
Box 267, Braddock, Pa.

FOR SALE.

A Rolling Mill, not far from Chicago; Cheap Fuel, Cheap Scrap; Good Machinery, comprising 9 in., 12 in. and 18 in. trains, in first-class condition. Can show a profit of $7 to $10 per ton on all iron made since mill has been in operation. Don't apply unless you mean business. Other engagements reason for selling. Address

"S. F.," No. 1026.
office of *The Iron Age*, 96-102 Reade St., N. Y

AN OLD ESTABLISHED hardware house in New York, whose salesmen cover the entire United States, wants the sole agency of American manufacturers of Chains, Toilet Clippers, Locks, Files, Carpenters' Tools and similar articles. Address

"W. B. G.," No. 105,

office of *The Iron Age*, 96-102 Reade St., New York.

WANTED

Partner to take half interest in established hardware and house furnishing store in Baltimore, Md; $5000 required; want to increase stock is reason for selling. Address "HIRAM," office of *The Iron Age*, 96-102 Reade St., N. Y.

Locations for Factories.

The Industrial Department of the Chicago, Milwaukee & St. Paul Railway has charge of matters pertaining to the development of the territory traversed by the railroad and the directing of manufacturers to points best suited to their particular requirements.

Eight States are traversed by the 6,150 miles of the Chicago, Milwaukee & St. Paul Railway's tracks, namely: Illinois, Wisconsin, Northern Michigan, Iowa, Missouri, Minnesota, South Dakota and North Dakota.

The company is daily in touch with the people in its territory, and from the number and varied nature of the industries locating and springing up on the line, and its acquaintance with the natural resources, has the facilities at hand to promptly furnish manufacturers with reliable information as to locations adapted to particular industries.

LUIS JACKSON,
Industrial Commissioner,
C., M. & St. P. R'y, 160 Adams Street,
Chicago, Ill.

Wanted, Contracts

For building mining, blast furnace, rolling mill and factory machinery, for making castings for cable and electric railroads, or any special line of castings. Address

MAHONING FOUNDRY AND MACHINE SHOP

Danville, Pennsylvania.

BLOWING ENGINE FOR SALE

Vertical pattern, with balanced steam slide valve gear, steam cylinder 14 in. diameter, air cylinder 40 in. diameter, stroke 24 in. 1 to 100 strokes per minute; engine new.

JAMES LEFFEL & CO., Springfield, Ohio

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Successors to
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WHOLESALE
HARDWARE AUCTIONEERS,
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Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

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The "Electric" trains of the **Cincinnati, Hamilton & Dayton R. R** and "**Monon**" **Route** between **Cincinnati and Chicago** are provided with the latest product of the Pullman Co. built expressly for this service. There are 10 compartments in each car, which may be converted at will into complete drawing rooms, most beautifully and harmoniously decorated, lighted by the Pintsch gas system, and are positively the most modernly equipped sleeping cars in the world. This is the only line running Pullman Vestibule and Dining Cars between the cities named. THE World's Fair Route. See that your ticket reads **C., H. & D. and Monon Route.**

D. G. EDWARDS, G. P. & T. Agent,
Cincinnati, O.

FOR SALE.

Good stock of Hardware, invoice $5,000, good store building with living rooms above, valued at $2,500, in a good town in Southwestern Minnesota; only hardware store in the town; good established trade of $15,000 a year. This is a rare chance to go into business. Address

F. A. & A. J. MEACHAM,
Edgerton, Minn.

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Practical Boiler Maker with small capital and business, to take interest in small shop. Fair business established and a good opportunity to an energetic man of ability. Applicants must be well recommended as to mechanical ability and moral character, and other things equal American preferred. Address

"W. B. & S.,"
office of *The Iron Age*, 96-102 Reade St., New York.

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FOR SALE.—A Superior Lot of Cast Iron Plates 2 ft. x 4 ft. They are made to avoid warping and cracking. Will sell in lots to suit.

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308 Walnut St., Philadelphia, Pa.

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To furnish reasonable estimates on specialties in light metal work.

CLARK & COWLES, Plainville, Conn.,
Manufacturers of Clock Trimmings, Rivets, Springs, &c.

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JAS. H. GOLDEY, Treas.

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Largest wholesale house in America for Mirrors of all kinds, Pictures, Mouldings, Frames, Brackets, Easels, Screens and kindred goods. Large illustrated catalogue sent to Dealers upon application.



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A WELL KNOWN and successful Blast Furnace Superintendent or Founder will be open for engagement after Oct. 1st, 1893. Is thoroughly competent as constructor or in the management. Practical, theoretical and in touch with latest improvements in blast furnace practice. First-class record and references. Address "BLAST FURNACE, No. 921," office of *The Iron Age*, 96-102 Reade street, New York.

OPEN FOR ENGAGEMENT for 1894, middle aged experienced traveling salesman in hardware lines, tools or cutlery; not afraid of any good line of goods; A1 references as to character and ability; desires position where ability, energy and character will be appreciated, and fairly paid. Address "ENERGY," office of *The Iron Age*. Rooms 22-24 Pickering Building, Cincinnati, Ohio.

AS FOREMAN in iron or steel foundry; have ten years' experience in iron foundry, three years' in casting draw bars and knuckles in steel foundry; can furnish first-class references. Address "FOREMAN," office of *The Iron Age*, 59 Dearborn St., Chicago.

BY A MASON, steady man, as furnace builder; used to all kinds of furnaces; will go South or West. Address ARTHUR OLDFIELD, Boonton, N. J.

BY A YOUNG MAN, in a retail or wholesale hardware establishment, the latter preferred; ultimate object, a position as traveling salesman; have had five years' experience in shelf goods, builders' materials and glass; can keep books and am not afraid of hard work; best of references given. Address GEO. GONSER, Darlington, Ind.

BY A THOROUGHLY competent man, having had fifteen years' experience in charge of bridge and machine shops, and some experience in shop inspection; can give best of references. Address "BRIDGE," office of *The Iron Age*, 96-102 Reade St., New York.

AN EXPERIENCED SALESMAN, well acquainted with the trade, desires a position with a reponsible firm; eight years' experience; best of references. Address, "EXPERIENCE," office of *The Iron Age*, 220 So. 4th St., Philadelphia, Pa.

BY A FOREMAN in architectural iron works; a practical mechanic, competent and trustworthy, with over fifteen years' experience as shop foreman; is perfectly familiar with the different branches of architectural iron work; can take dimensions and lay out work; understands drawings and handling of help economically; testimonials A1. Address "TEE," office of *The Iron Age*, 96-102 Reade St., New York.

AN EXPERIENCED OFFICE MAN, who can furnish references of a high order, now on his tenth year with an agricultural implement manufacturing concern, desires to better his condition. Address "KANUCK," office of *The Iron Age*, 96-102 Reade St., New York.

AS MANAGER or foreman of a wire mill; have a thorough and practical knowledge of the wire trade in all its branches; twenty-five years' experience, twelve years as foreman; have charge of a large mill at present; am a good all-round mechanic, understanding the working of wire mill machinery and the building of annealing furnaces, bluing ovens, &c.; am strictly temperate and can furnish the best of recommendations from past and present employers; firms desiring a man that knows how to practice economy and run a mill on business principles will find it to their advantage to correspond with me. Address "TEMPERED STEEL WIRE," office of *The Iron Age*, 220 So. 4th St., Philadelphia.

AS FOREMAN of iron foundry, by a competent and reliable man; best of references. Address "GEO. B. F.," office of *The Iron Age*, 96-102 Reade St., New York.

BY SUCCESSFUL Stamping Works Superintendent, thorough machinist, die maker; large experience laying out plans, starting and running new works, designing, building, labor saving tools and machinery; A1 manager of men, factory or machine shop; controls stamped article, pays good profit to manufacturer; best reference. Address "STAMPING," office of *The Iron Age*, 96-102 Reade St., New York.

A YOUNG MAN, 25, will change position; eight years with well known and one of largest concerns manufacturing builders' hardware (four as bookkeeper and assistant manager); quick, accurate accountant; experienced in able and economical management, all operating prices and complete data; thoroughly familiar with labor, costs, supplies, etc.; hard worker; can superintend; highest references; satisfactory reasons. "BUSINESS," No. 1019, office of *The Iron Age*, 96-102 Reade St., N. Y.

SUPERINTENDENT or Chief Engineer, by a mechanical engineer of 15 years' experience in general engineering, hydraulics, cranes, sheet, plate and structural iron work, &c.; any one who wants an energetic man to look after their interests will answer this ad. "HUSTLER," No. 1019, office of *The Iron Age*, 96-102 Reade St.

BY A MAN who has had 14 years' experience as manager in a large retail hardware and implement house in the Southwest, as salesman or manager in a similar house; would accept a position as traveler, should the trade in territory alloted justify. Address "H. and I.," Box 1012, office of *The Iron Age*, 96-102 Reade St., N Y.

BY A PRACTICAL Rolling Mill Man of experience and ability, as manager; is thoroughly competent and reliable; engaged now with a large concern who are going out of business. Address "MANAGER," No. 1012, office of *The Iron Age*, 96-102 Reade St., New York.

BY A THOROUGHLY Practical Sheet Mill Manager of many years' experience; good references. Address "CASTLE," office of *The Iron Age*, 96-102 Reade St., New York.

RESPONSIBLE POSITION by a graduated chemist and engineer in steel works or furnace plants; reference President Midland Blast Furnace Co. Address C. W. Kolbe, Midland, Mo.

BY A MEMBER of the A. S. M. E., expert in shop management and economical production of machinery, as superintendent or manager; well posted on dynamical, hydraulic and mechanical engineering and inspection of materials. Address "W. O. W.," office of *The Iron Age*, 96-102 Reade St., New York.

BY A MAN, who has had years of experience as superintendent and manager of both iron and steel mills, a position as superintendent or assistant; will work for a moderate salary; best of references; am a good draftsman and can furnish drawings and working plans for new mill; have built several from ground up. Aodress "NEW MILL," office of *The Iron Age*, 96-102 Reade St., New York.

HELP WANTED.

Undisplayed Advertisements for Help Wanted not exceeding fifty words One Dollar each insertion. Additional words two cents each.

SALESMAN with experience and trade in cutlery and hardware in New York State; state salary expected and where last employed. Address "EXPERIENCE AND TRADE," office of *The Iron Age*, 96-102 Reade St., New York.

EXPERIENCED pig iron salesman, one acquainted with the Cincinnati and Western trade; state salary wanted. Address "B.," office of *The Iron Age*, Rooms 22-24 Pickering Building, Cincinnati, Ohio.

TO REPRESENT in Austria American manufacturers of skates and of metal novelties; first class references. Address "EMIL M.," III Adamsgasse 5, Vienna, Austria.

AN EXPERIENCED MAN as Superintendent of manufacturing company, having an established trade on a ready selling article; must have first-class recommendations and be prepared to take stock in company. Address "READY SELLING," office of *The Iron Age*, 96-102 Reade St., New York.

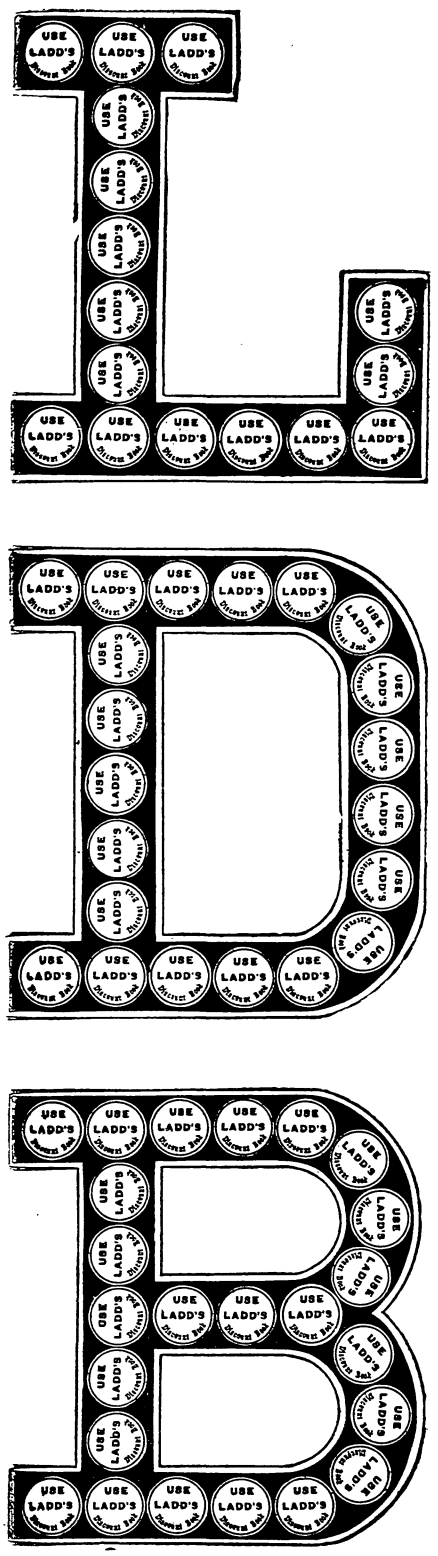
EXPERIENCED MAN to solicit orders for castings for gray iron foundry doing job work exclusively; a good position for the right man. Address "JOBBING," office of *The Iron Age*, 96-102 Reade St., New York.

SALESMAN traveling the jobbing and large retail trade in the East, one in the West, and one in the South, to handle line of hardware specialties as side line; salary or commission; the line is too small for manufacturer to travel alone. Address "L.," office of *The Iron Age*, 220 S. Fourth St., Philadelphia.

A GOOD SALESMAN calling on mill owners and users of boilers, to introduce a first-class boiler compound on commission. Address THE VEGETABLE BOILER COMPOUND Co., Utica, N. Y.

COMPETENT FOREMAN, in wrought iron and wire factory; must be experienced in all its branches; give references and salary expected. Address "WIRE AND IRON WORKER," office of *The Iron Age*, Bank of Commerce Building, St. Louis.

SALESMAN drumming the hardware trade to handle as a side line, on commission, Mason's patent door lock and ventilator combined; new and salable. BROOKLYN SPECIALTY Co., 166 Pierrepont St., Brooklyn, N. Y.



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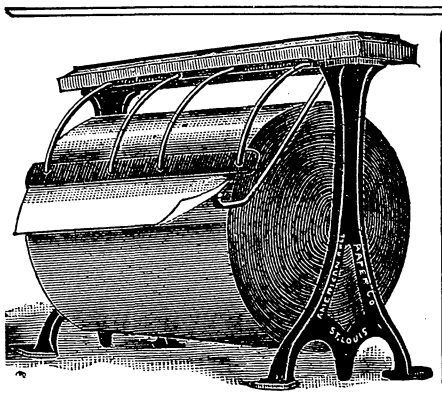
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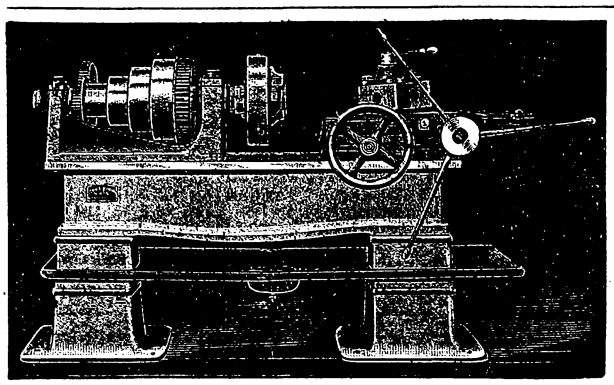
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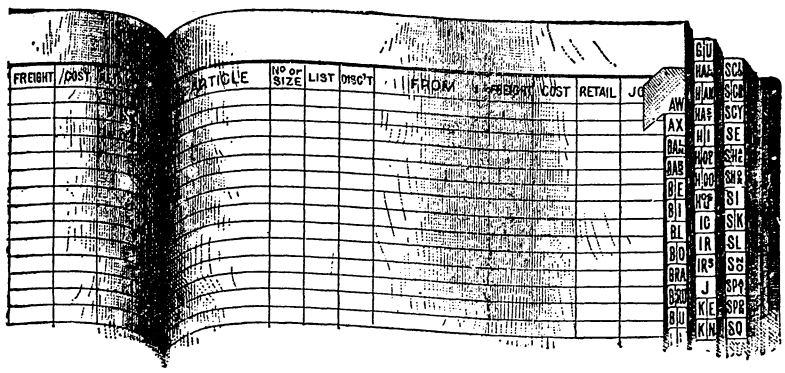
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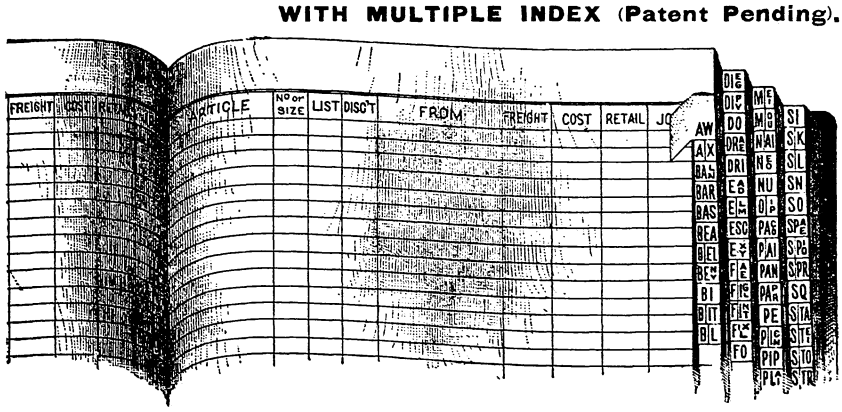
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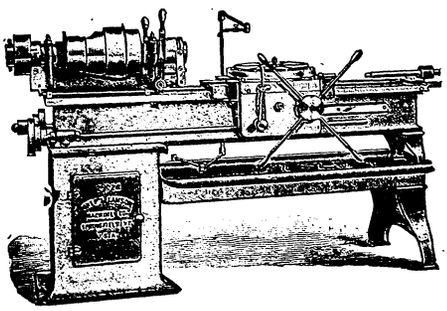
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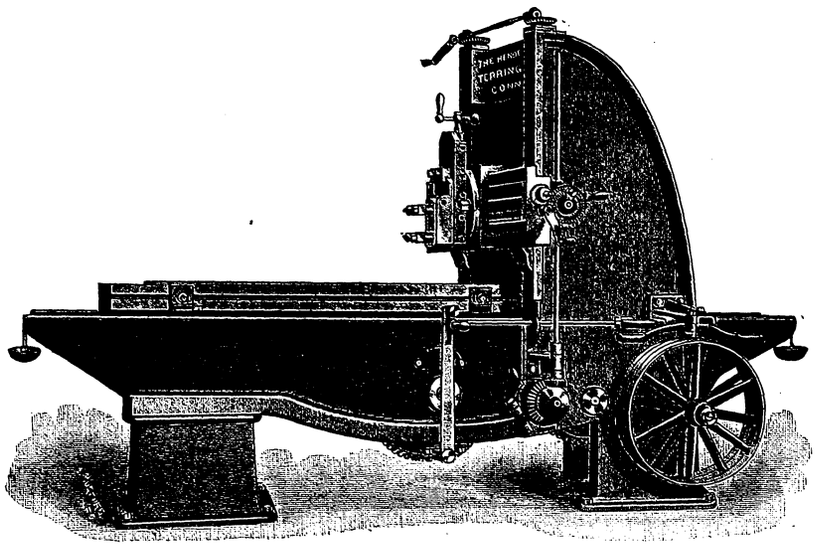
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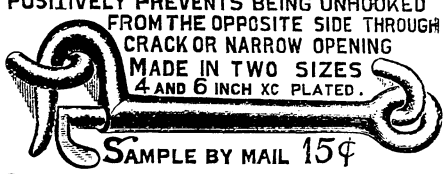


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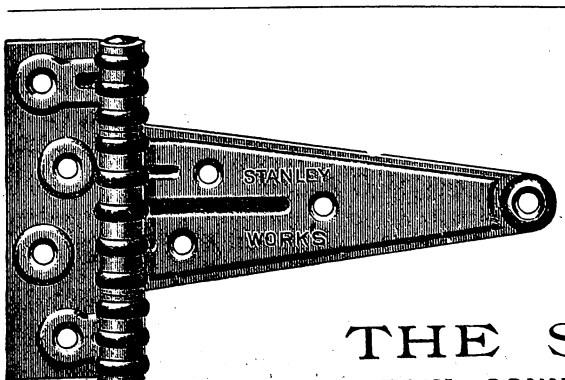
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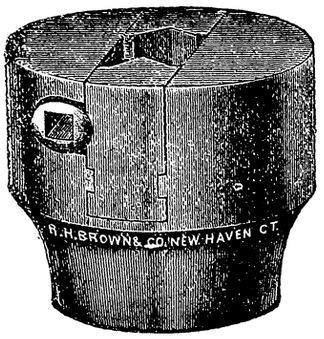
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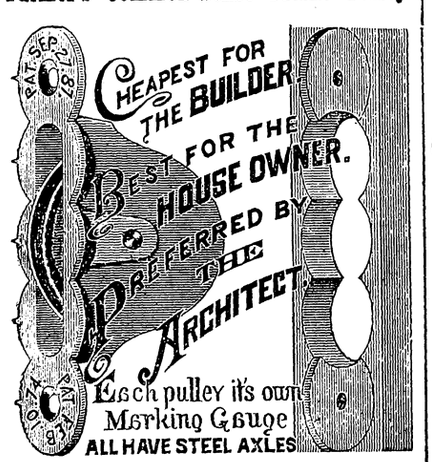
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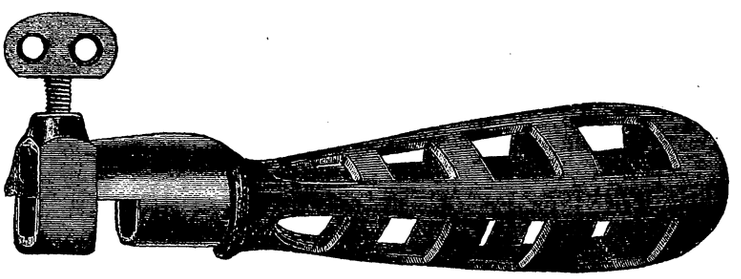
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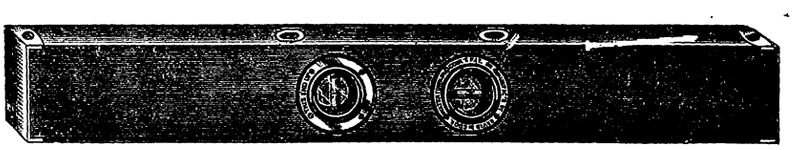


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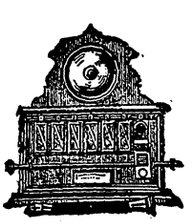
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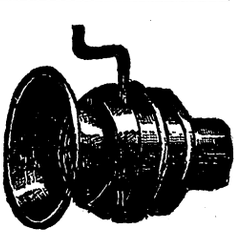
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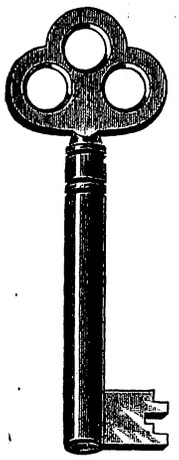
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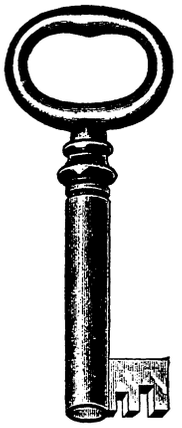
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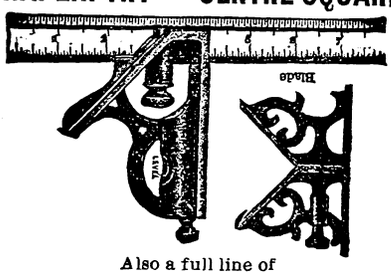
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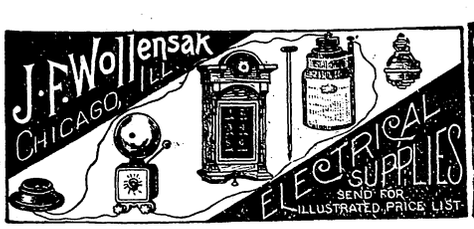
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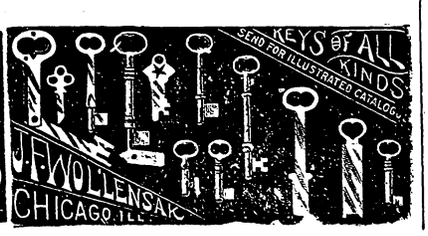
for drill shank and feed nut. The jaws on this wrench open from 3-16 to 1¼ inches.

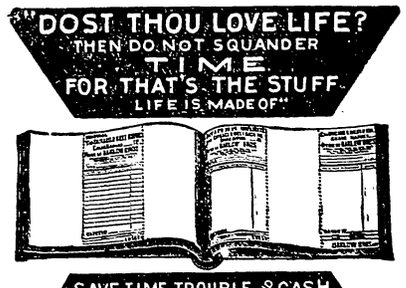
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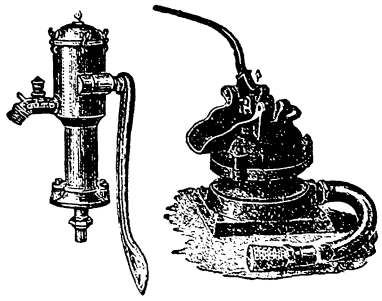
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A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 209. Fig. 381.



or wherever it is desired to raise a large quantity of water by

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The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

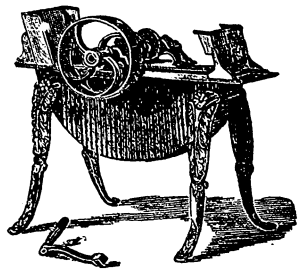
CAPACITY

from 3,000 to 4,500 gallons per hour.

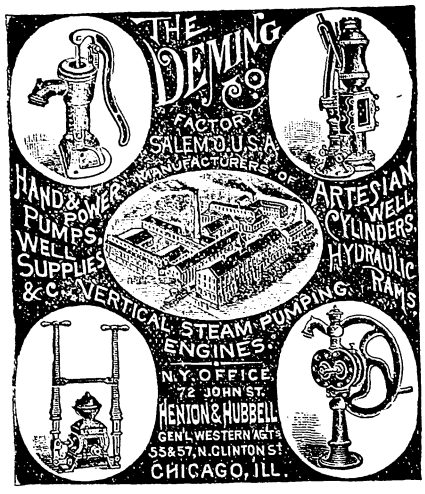
These pumps are simple, durable and low priced.
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Fig. 145.



C. I. Grindstone Frame.



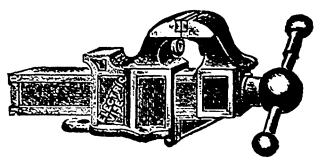
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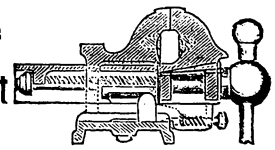


Patented Dec. 27, 1892.

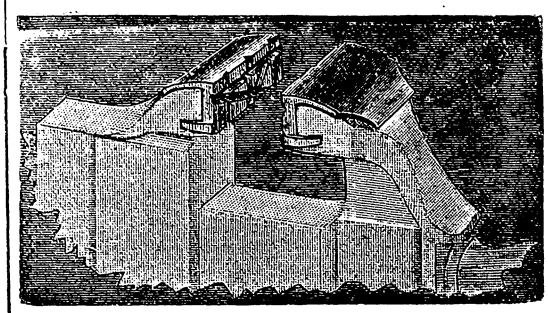
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One movement in and out, one turn of the hand and the work is secured.



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Will Fit any Kind of Vise.

For protecting finished work. Will hold finished rods of any shape without injury.

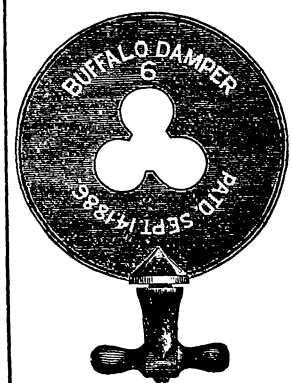
3½ inch.....per pair, 40 cents.
4 " ..... " " 50 "
4½ " ..... " " 60 "

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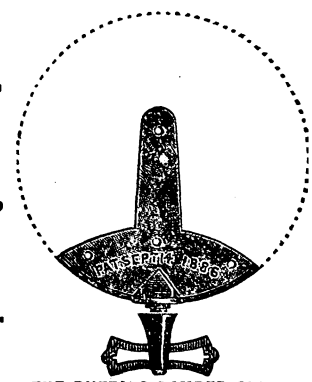
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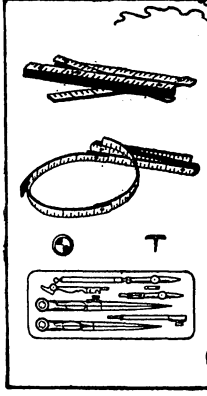
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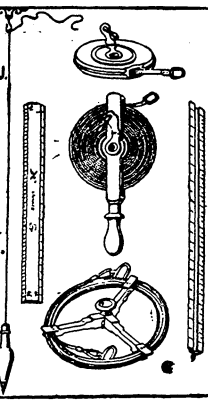
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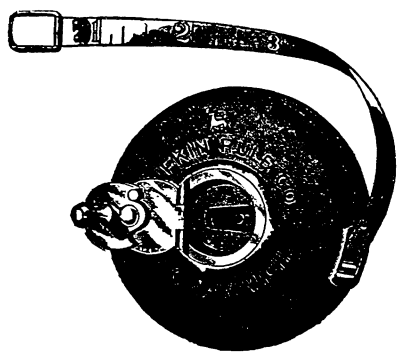
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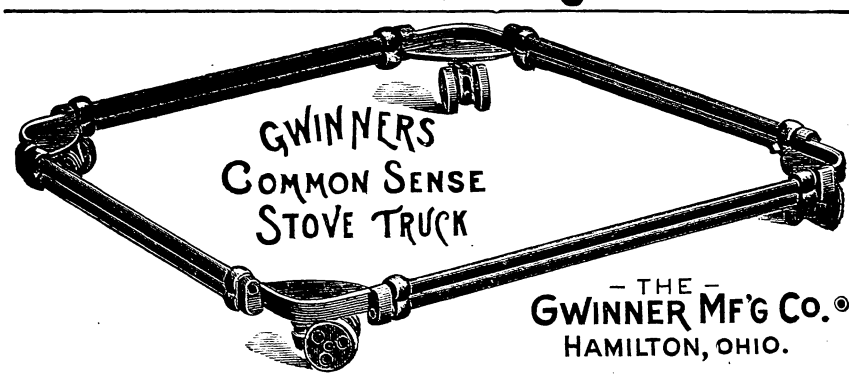


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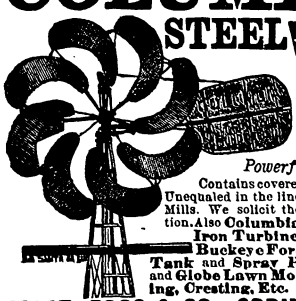
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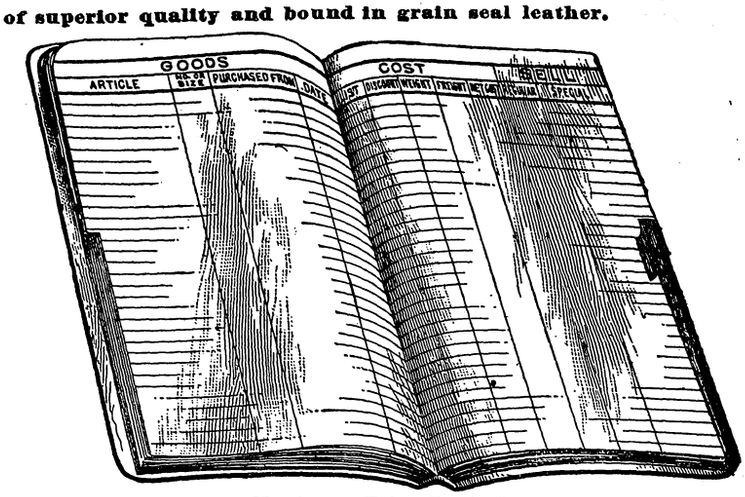
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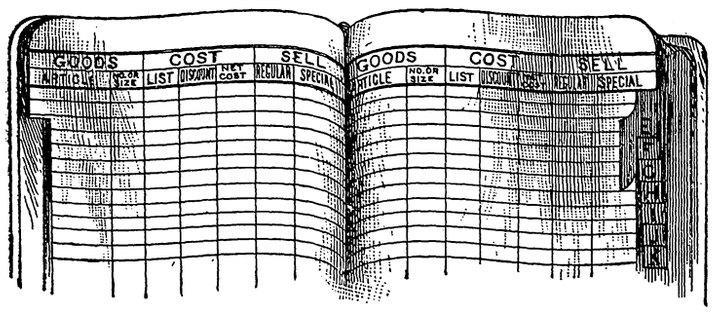
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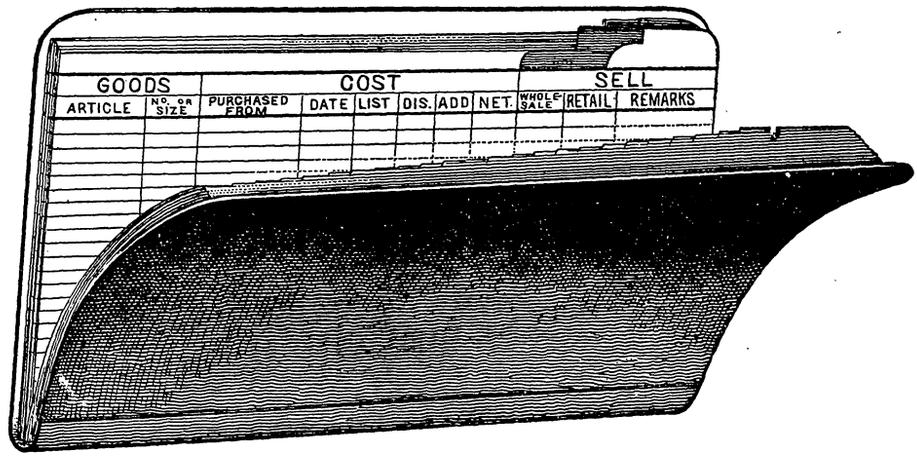
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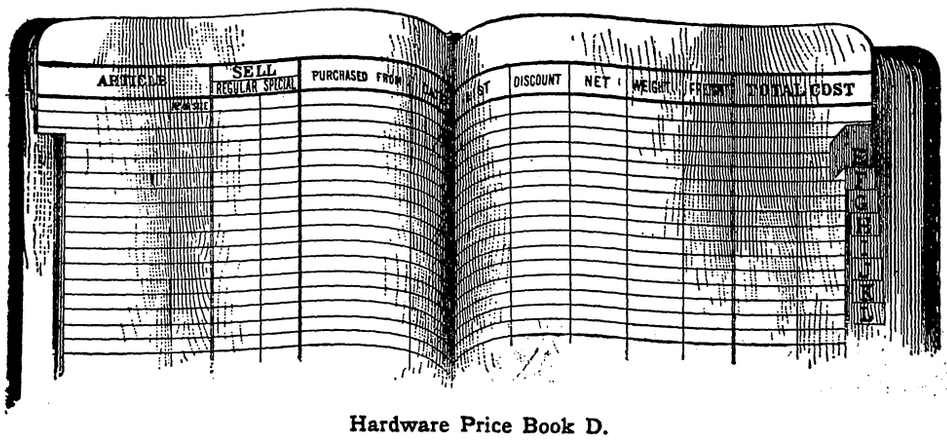
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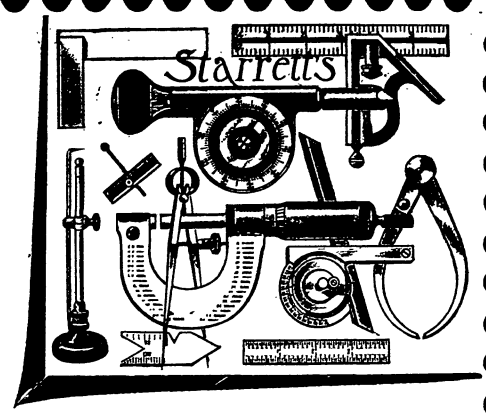
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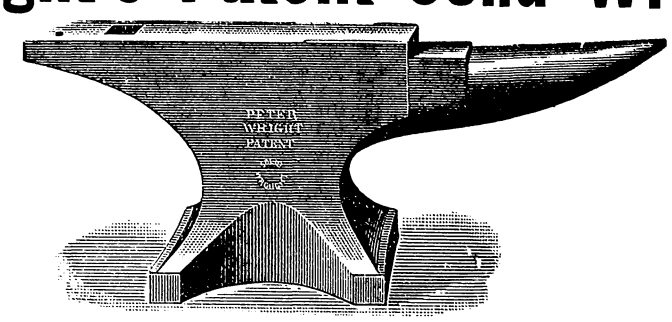
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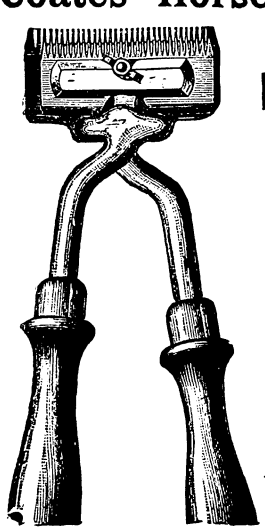
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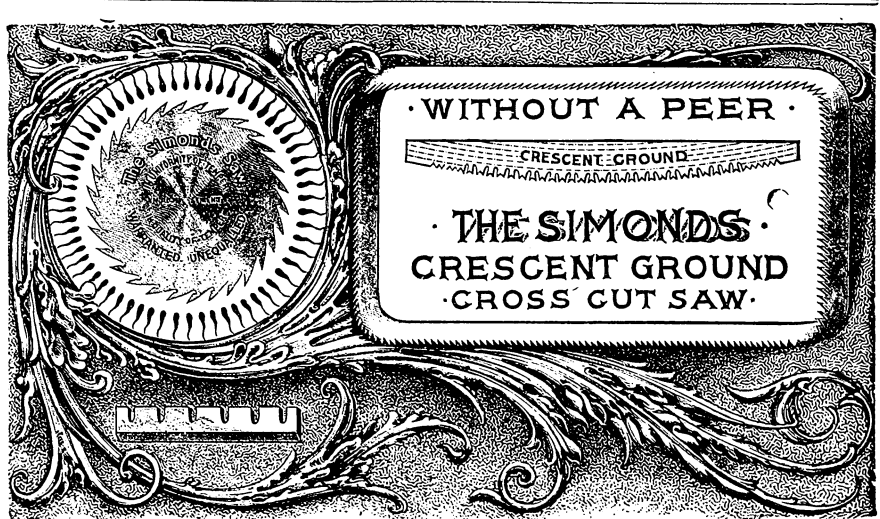
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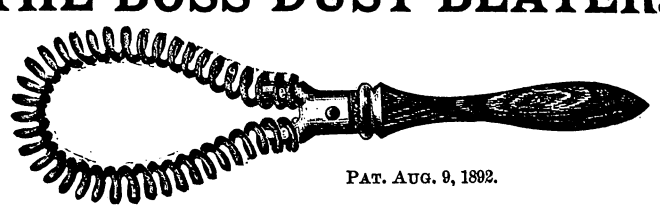
At prices to suit the times.



Simonds Mfg. Co. Simonds Saw Co.

FITCHBURG, MASS. CHICAGO, ILL. SANFRANCISCO CAL. PORTLAND, ORE.

THE BOSS DUST BEATER.



PAT. AUG. 9, 1892.

NEAT, DURABLE, AND DOES THE BUSINESS.

For removing dust and filth from Clothing, Upholstered Furniture, Rugs and Carpets it is just the thing. Will raise the nap and so improve the appearance. Will not, like other Dust Beaters, leave marks, nor tear the fabric. The coil is of steel wire secured in a malleable iron socket and attached to an enameled wooden handle. Just what everybody wants.

Retail Price, 25 Cents. Sent by Mail, 35 Cents.

PEABODY & PARKS,

Manufacturers, TROY, N. Y.

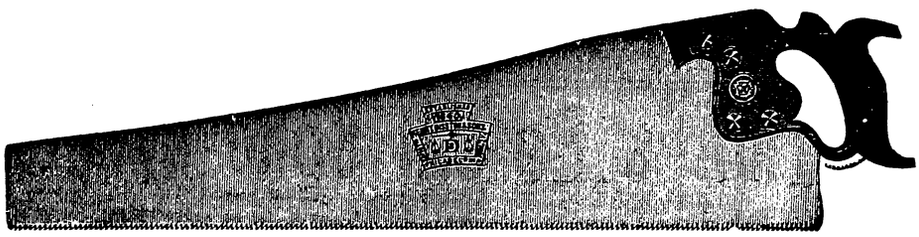
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"If you want a Saw it is best to get one with a name on it which has a reputation.
A man who has made a reputation for his goods knows its value as well as its cost and will maintain it."—HENRY DISSTON.

THE SAWS THAT LEAD THEM ALL

"THE SAW;" HOW TO CHOOSE IT, AND HOW TO KEEP IN ORDER, Sent Free on Receipt of Name and Post Office Address.

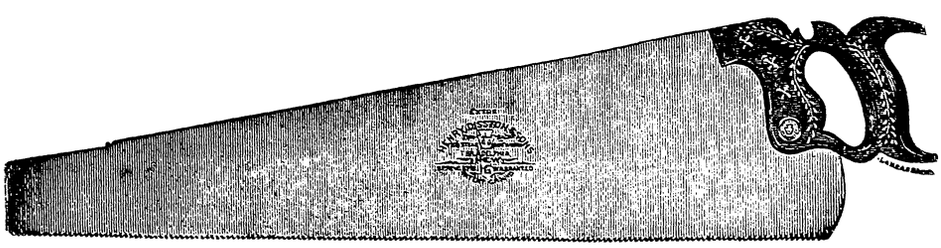
DISSTON & SONS' PATENT D-8 HAND SAW.



This Saw combines all the valuable improvements in Hand Saws that have been made by us of late. The first and most important is the hollow or skew back, the success of which can best be attested by the number sold. The peculiar shape of the butt or heel, coupled with the new method of fastening to the handle, give a full stroke of the blade without fear of catching or hooking in the work ; and as the handle is put further on the blade you have a full stop on the proper point and a greater command over your Saw, by reason of being two inches nearer the point, which must give more power.

The Saw being let into the handle on a circle, has a perfect bearing, which, with the new screws, makes it stronger and almost impossible to work loose, and avoids the unsightly gap that is seen on the back of the old style handle. All the above features are patented.

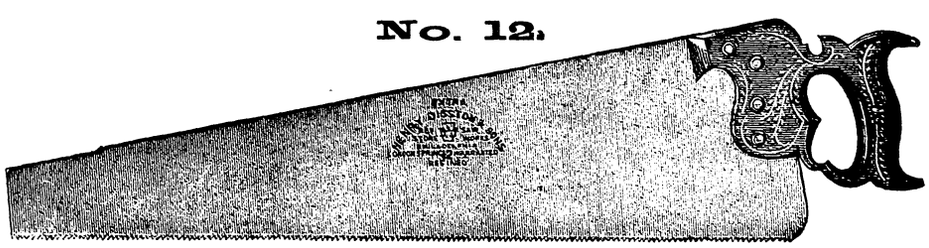
Our New No. 16 Premium Saw.



AN EXTRA FINE SAW IN EVERY RESPECT.

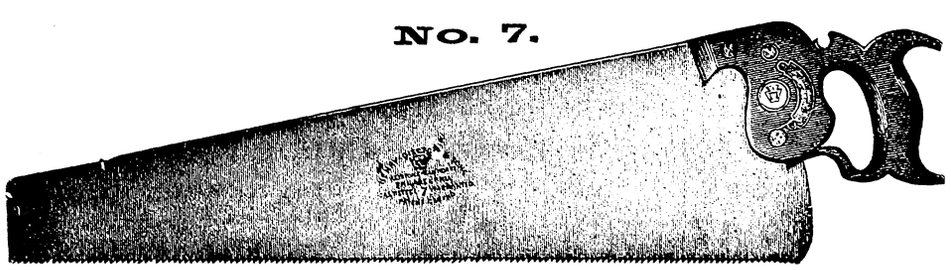
Having the Latest Close up Handle, Spring Steel Blade, Extra Thin Back, Finely Grained, with an Apple Handle and Four Brass Centennial Screws.

No. 12.



DISSTON & SONS' Extra Refined London Spring Steel, Selected and highly Polished Blade, Handle Carved and Polished, 4 Improved Brass Screws, the finest Hand Saw manufactured.

No. 7.



DISSTON & SONS' Cast-Steel, Warranted, Beech Handle, Polished Edge, 4 Improved Screws, Grained Blade.

"POCKET EDITION OF THE SAWYER" and "LUMBERMAN'S HAND BOOK," Sent Free on Receipt of Name and Post Office Address

ASK YOUR DEALER TO ORDER THEM FOR YOU.

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(INCORPORATED),

Keystone Saw, Tool, Steel and File Works, Philadelphia, Pa.

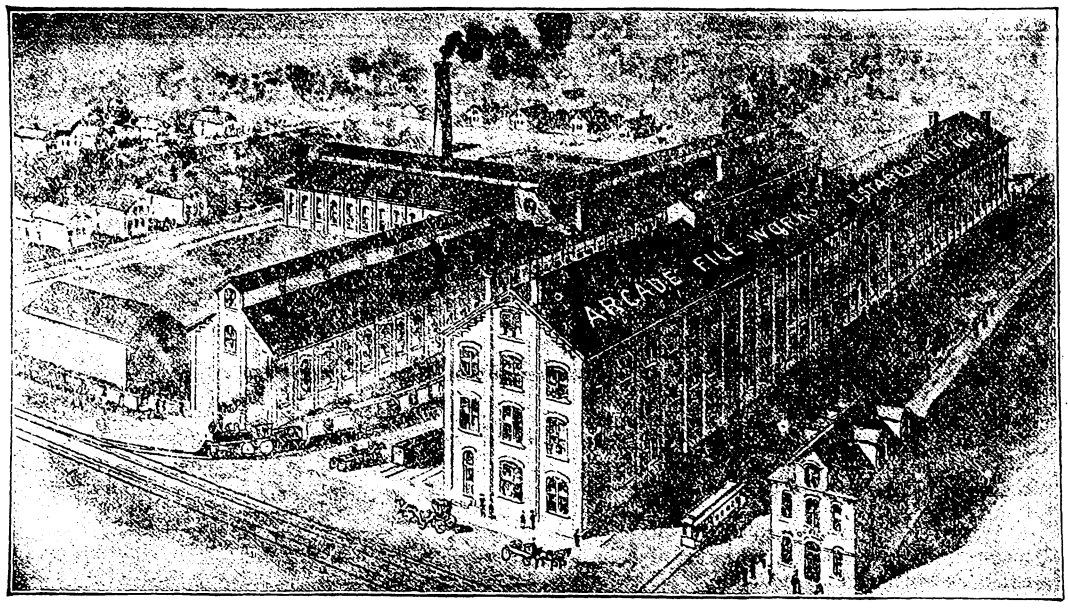
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Samuel W. Allerton, Pres. Courtlandt C. Clarke, Sec. and Treas. Alfred Weed, Vice-Pres. & Gen. Manager.

ARCADE FILE WORKS.

ESTABLISHED 1842.

Eastern Office and Warehouse, 83 READE STREET, NEW YORK CITY.



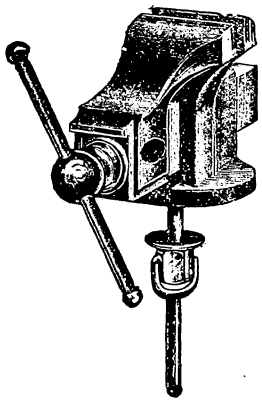
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Works: ANDERSON, IND.

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THE BEST EQUIPPED FILE WORKS IN THE WORLD.

The fact that we alone use the improved File Machinery recently invented by Alfred Weed, and the even heat of natural gas, enables us to produce a file that will cut faster and wear longer than any on the market



HOLLANDS' OFFSET JAW VISE.

Specially adapted for drill press work where chucks cannot be used and equally good for special or regular bench work.

Hollands Mfg. Co.
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Manufacturers all styles VISES.



BUY BRADLEY RACKETS!!!

Your Customers will like them. They are made of steel and are not brittle. They are light, strong and artistic. They can be put up with nail and hammer. Write for prices.

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ATLAS MFG. CO.,
New Haven, - - Conn

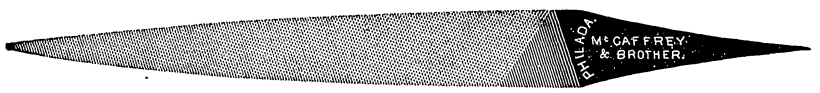
IT PAYS. Nothing about a Hardware Store looks so well as clean shelves and the goods neatly boxed with a fresh sample on the front. Customers are attracted by such a display of care, and notice and buy things that would ordinarily go without notice. The Boxes are inexpensive save the goods, make a big show for a small investment and help the salesmen. Send to JESSE JONES & CO., 615 and 617 Commerce St., Phila., Pa., for Catalogue of prices, styles and references.

Philadelphia, 1876. For Superiority.



McCaffrey File Co.,
FIFTH and BERKS STS.,
PHILADELPHIA, PA.





Manufacture and keep in stock a full line of FILES and RASPS only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.

BEST CRUCIBLE STEEL. "TROJAN" HORSE RASPS. LOWEST IN PRICE.



STRONGEST TOOTH. BANKER & WHITE, TROY, N. Y. (Troy File Works.) LET US QUOTE.

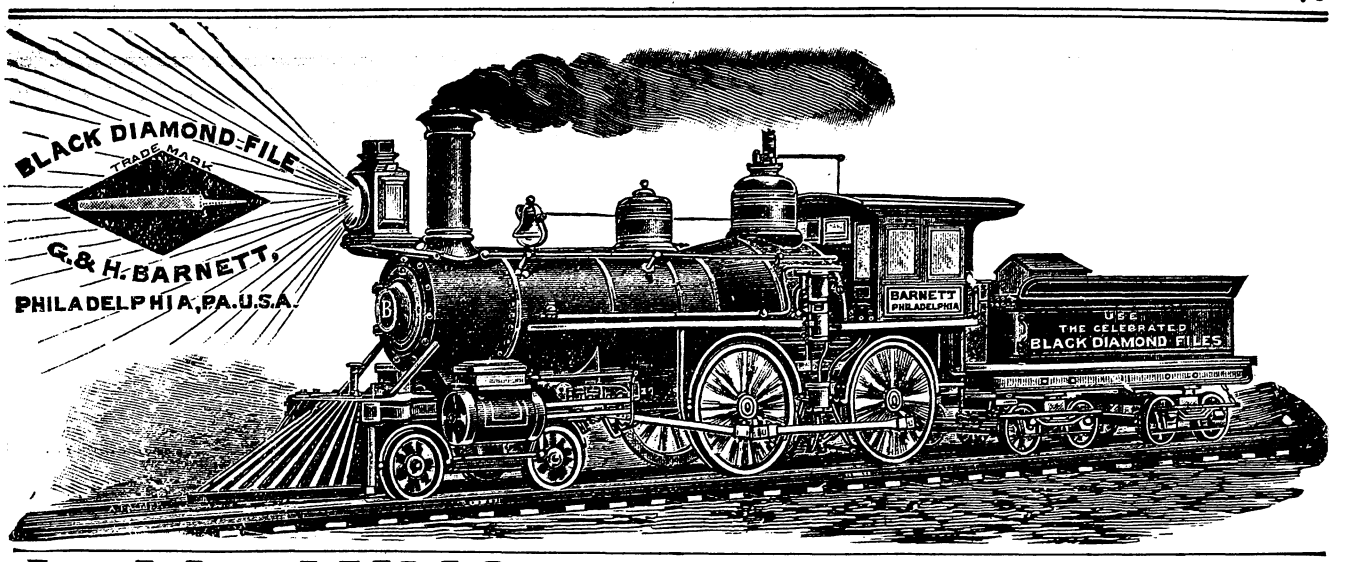
The Taintor Positive Saw Set.

Mechanics are now inquiring for this tool, and Hardware Dealers should have them in stock, or at least have a sample.

For Prices and Discounts, address

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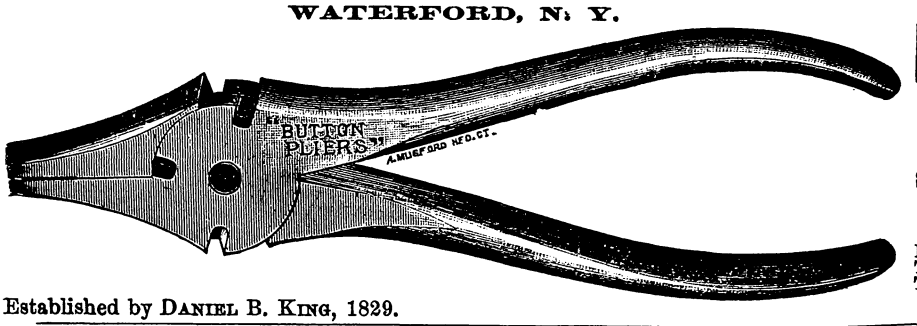
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Specially Adapted for Use on Wire Fence.



Also Manufacturers of BLACKSMITHS' and MACHINISTS' STOCKS and DIES, PLUG and TAPER TAPS, HAND, NUT and SCREW TAPS, PIPE TAPS and REAMERS.

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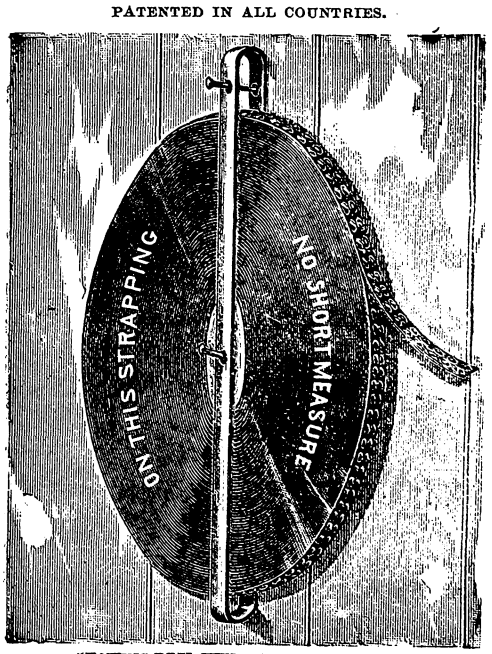
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A SUBSTITUTE FOR

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—FOR—

Binding Packing Cases, Crates, etc.



SHOWING REEL HUNG UP READY FOR USE.

Put up in Coils of 300 Feet in Length and Packed in Cases Containing 20 Reels Each.

Made in different widths of a Soft Steel through which nails can be readily driven without the necessity of first punching holes for same.

SAVES TIME AND WASTE.

CARY MANUFACTURING CO.,

5 to 9 Elm Street, NEW YORK.

THE MALIN & CO.

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Manufacturers and Dealers in Steel, Copper and Brass Wire of all kinds.

Patent Spooled Wire

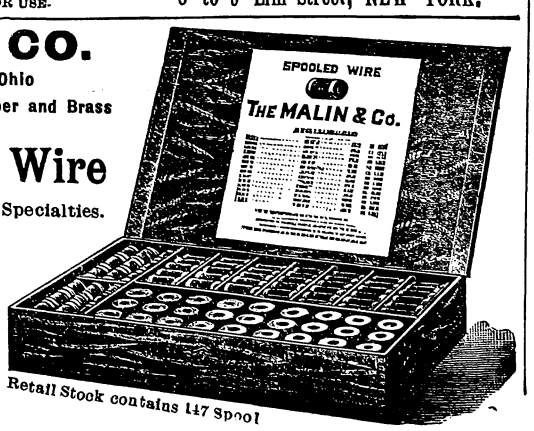
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Special Wires Spooled for manufacturing purposes. Send for illustrated Catalogue and prices. Sold by all Hardware Dealers.

BOSTON OFFICE,

JOHN WALES & CO., No. 5 Winthrop Sq



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THE LARGEST AND MOST COMPLETE FILE WORKS IN THE WORLD.

3000 VARIETIES FILES

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Skinning, Sticking, Farriers' & Shoe Knives,

Have established and maintained their reputation, for superiority, against all Competitors, from

THE YEAR SEVENTEEN HUNDRED & FIFTY,

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DETERMINATION OF THE HOUSE TO SEND OUT NOTHING BUT WHAT IS OF THE HIGHEST POSSIBLE QUALITY.

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—MANUFACTURERS OF—

Pocket and Table Cutlery, Scissors, Razors, Erasers, &c., &c.

These goods have fully maintained their reputation as the best cutlery in the world for over

ONE HUNDRED AND FIFTY YEARS.

Any Infringements of our Name and Corporate Mark will be promptly prosecuted.

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Established 1836.

ALFRED FIELD & CO.,

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HARDWARE, CUTLERY, GUNS, ANVILS, CHAINS, FILES.

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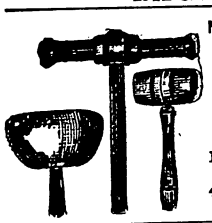
Joseph Rodgers & Sons, Best Cutlery in the world; W. K. & C. Peace, unrivaled Grass Hooks Straw Knives and Scythes; Joseph Elliot & Sons, Celebrated Razors; Peugeot Frères, "French Toilet" and other Clippers; L. Hugoniot Tissot Fine Steel Plyers, &c.; Eley Bros., Caps, Wads Cartridge Cases, &c.; Webster & Horsfall, Stee Wire of every description.

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N. Y. MALLET AND HANDLE WORKS.

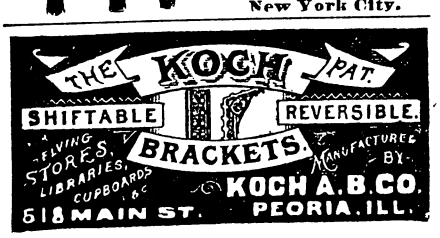
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Also Cotton and Bale Hooks.

Patented Feb. 13, 1877, a new combination of Hooks.

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POINTS:

Fewest parts of any.
No pins to cut.
The finest finish.
Oil tempered Jaws.
Will hold twist drills.
Double the strength.
Strain equalized.
Steel clad head.
Steel and babbitt bearings.

A BEAUTY.

Five Sizes.
6 to 14 in.
Sweep.

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American Screw Co.'s Screws, Bolts, Rivets, &c.
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(Yale & Towne Mfg. Co., Lessee.)

GENERAL HARDWARE.



THE TRADE acknowledges our make of **BUTCHERS' STEELS**

THE BEST IN THE WORLD.

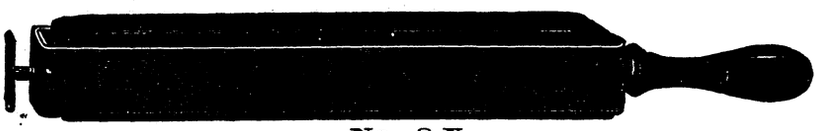
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No. 8 X.

The TORREY RAZOR STROPS are known the world over as the standard for excellence in setting a fine edge. We manufacture and carry in stock more than 150 styles.

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BUCK BROTHERS EXTRA.



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The Most Complete Assortment in the U. S. of

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Buyers are cautioned against any parties who claim a recent connection (or any connection for over 20 years) with Buck Bros., or who represent goods as our make not stamped with the **BUCK'S HEAD** or **BUCK BROS.** in full.

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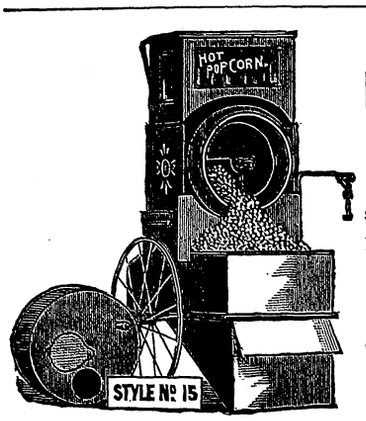


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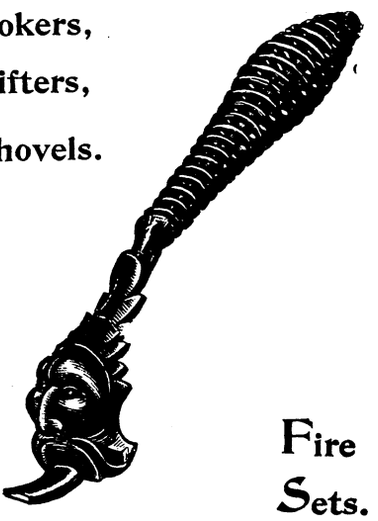
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Knives OR Razors,

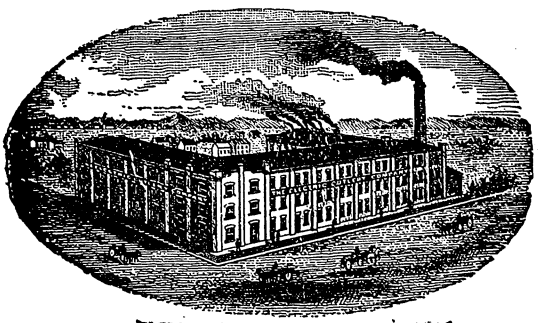
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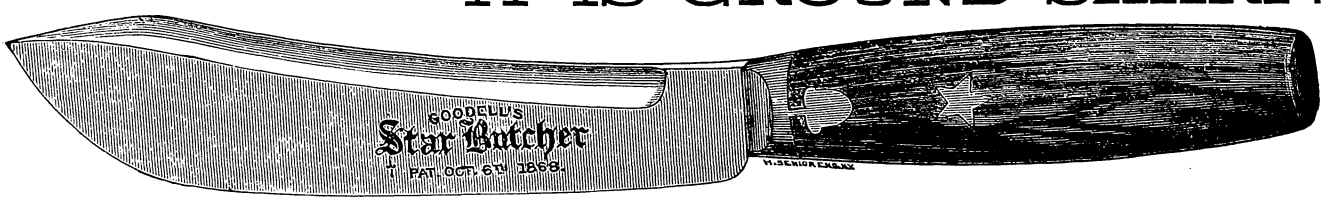
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—OUR CLAIMS ARE:—

EXTRA QUALITY OF STEEL IN BLADES. SUPERIORITY IN GRINDING AND FINISH. STRENGTH AND DURABILITY

Made in Plain Steel or Heavily Plated Blades, Hand Burnished.

THERE IS NOTHING NEW
TO SAY ABOUT THIS KNIFE EXCEPT
IT IS GROUND SHARP.



WE DON'T KNOW HOW TO IMPROVE IT.

Blade is made of steel especially prepared for the purpose, and it is made just right; finish excellent; shape unsurpassed; the handle just fits the hand.

GENERAL APPEARANCE IRREPROACHABLE.

Made in sizes from 5 inch to 8 inch; a strictly first-class butcher knife at a moderate price.

WE HAVE OTHER BUTCHER KNIVES,

4½ to 14 inch blade, that will cut as well, for less money. Also Table Knives and Forks, Carvers, Butcher Steels, Bread Knives, Cheese Knives, Butter Spades, Apple, Kitchen, Putty, Cigar, Shoe Knives, &c., &c., in great variety. We aim to make the best and sell at reasonable prices.

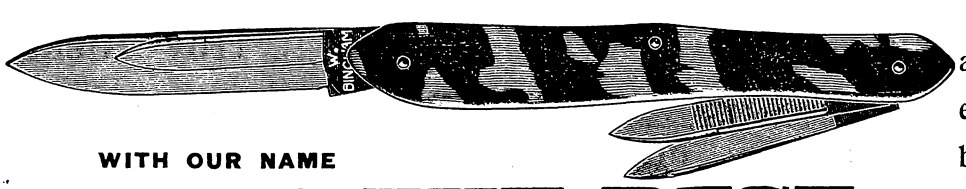
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Knife,
Razor,
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That money and 50 years experience can buy.

IS THE BEST
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Drills for Wood & Metal, Countersinks, Screw Drivers, Chucks, &c., for sale by the trade.

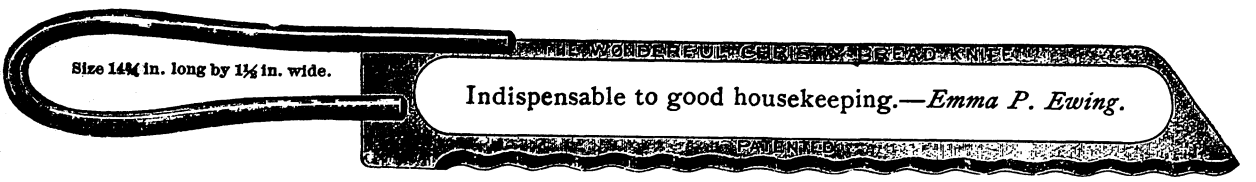
Syracuse Twist Drill Company,
SYRACUSE, N. Y.



Every tool fully Guaranteed. Beware of imitations.

TRADE SYRACUSE T.D.CO. MARK.

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Ever experience the delight of be ng able to cut Bread just out of the oven as easily as that which is two or three days old? Ever see Cake sliced like cheese, icing and all, without a crumb being wasted? Ever own a Carver that never got dull, and that made CARVING A LUXURY? or a Parer that it was simply a delight to use? In other words, did you ever see a set of CHRISTY KNIVES?

Ask your wholesale dealer for prices on Christy Knives.

There are imitations and counterfeits with cast iron handles—cheap but not good.

You will find it profitable to be posted on Christy Knives.

The Christy Knife Co.,

FREMONT, OHIO.

NICHOLS BROTHERS, Greenfield, Mass., U. S. A.

BUTCHER KNIVES, CLEAVERS, STEELS, ETC.

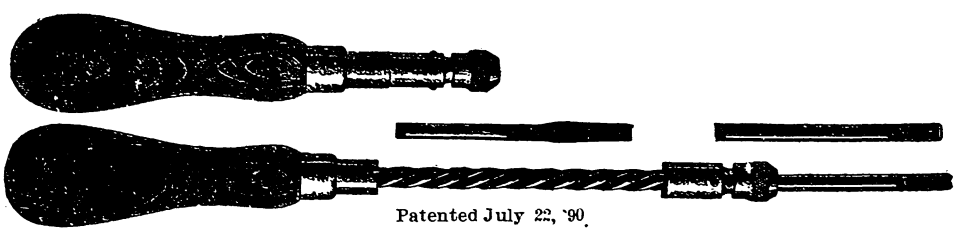
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An Automatic, Ratchet and Plain Screw Driver all in one.



The acknowledged STANDARD.

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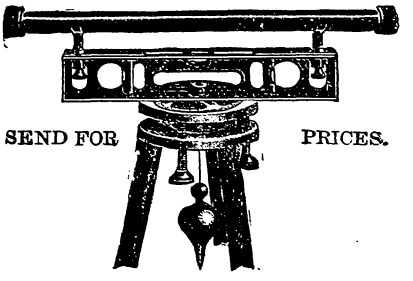
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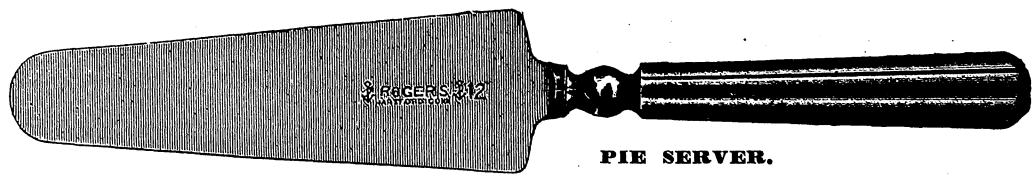
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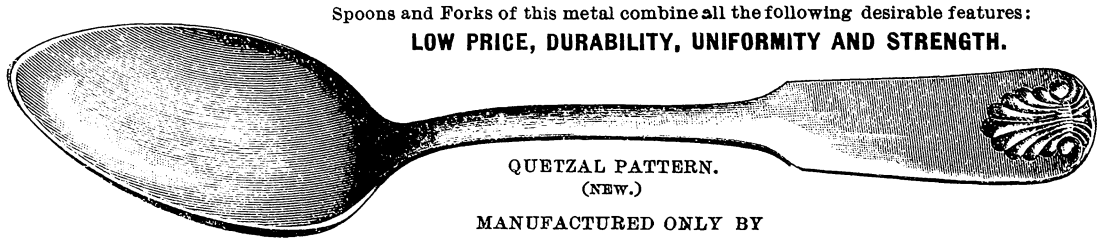
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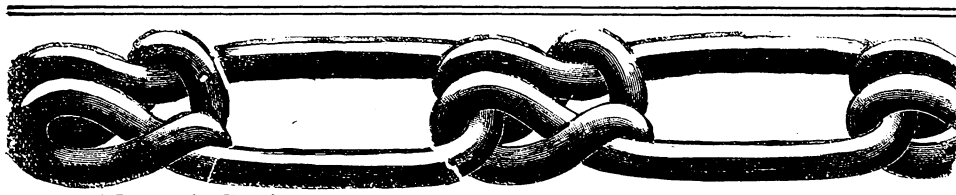


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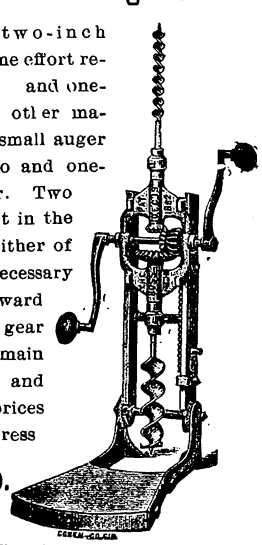
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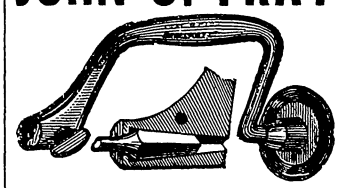
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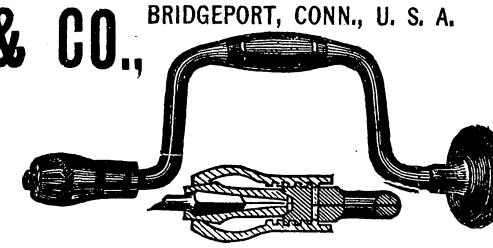
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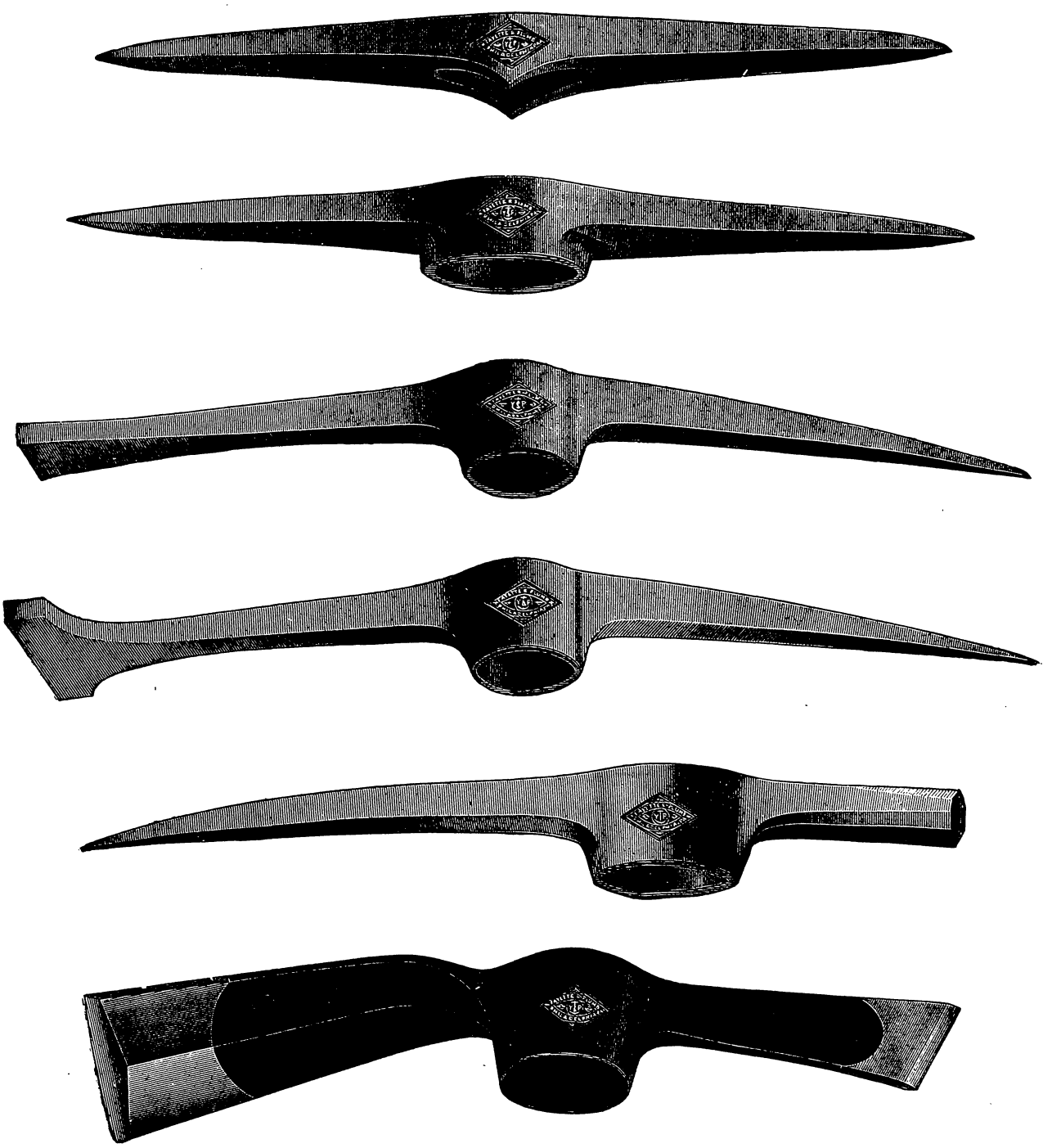
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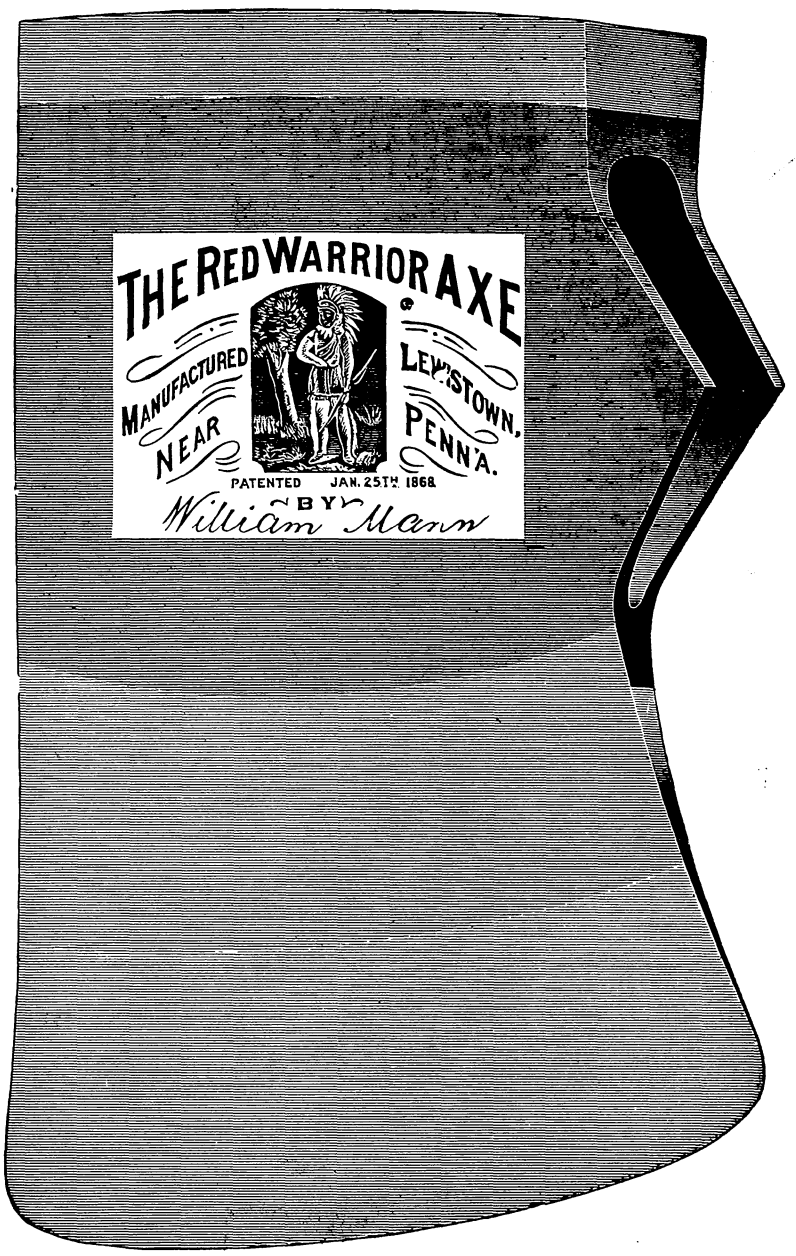
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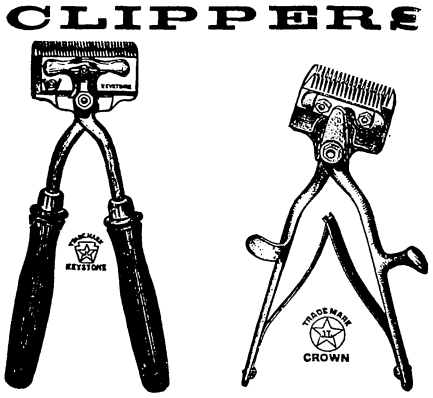
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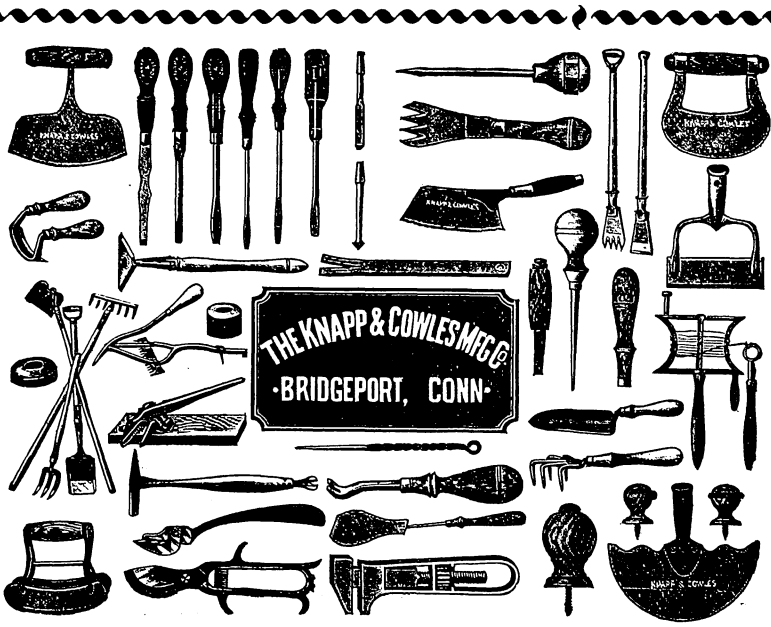
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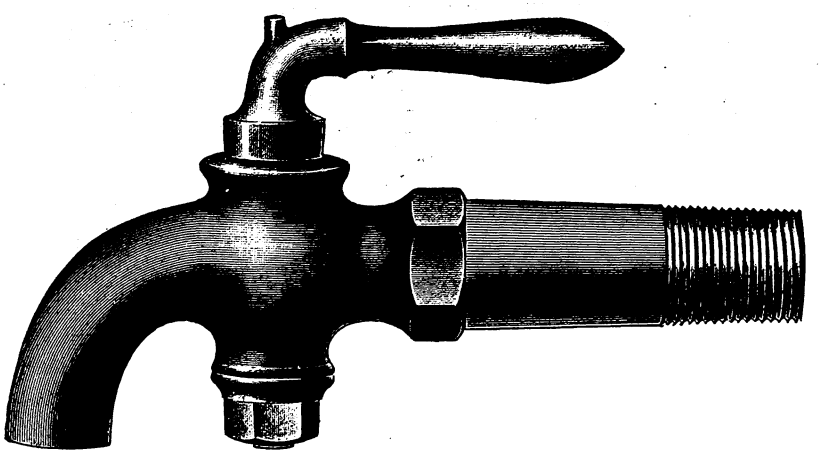
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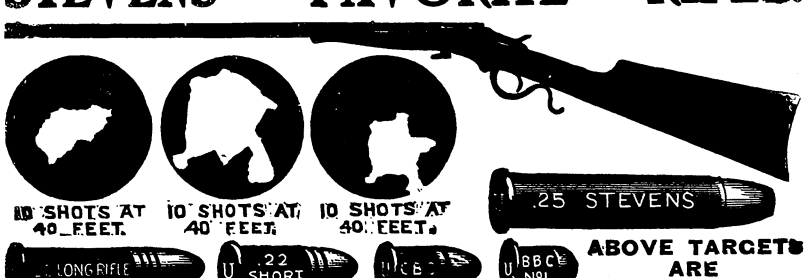
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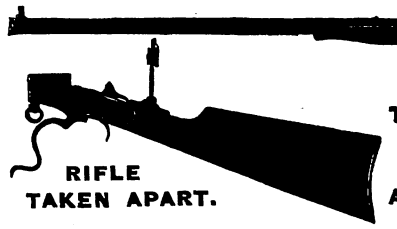
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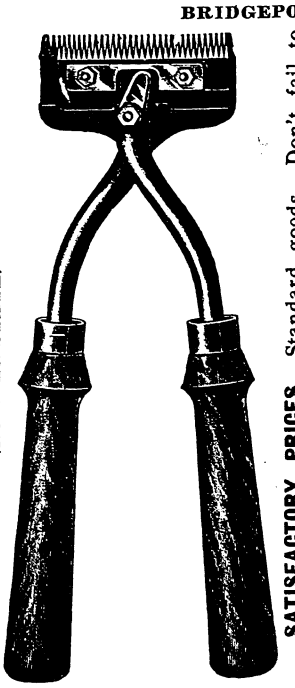
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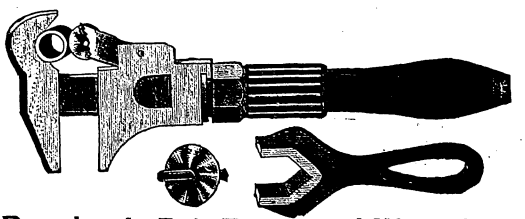
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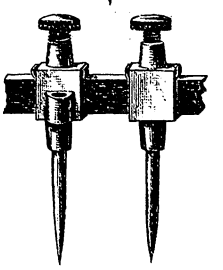
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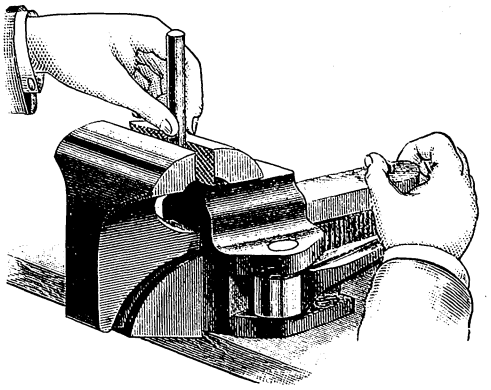




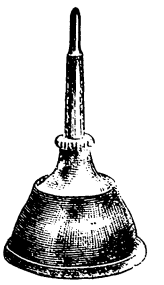
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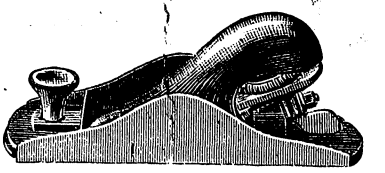


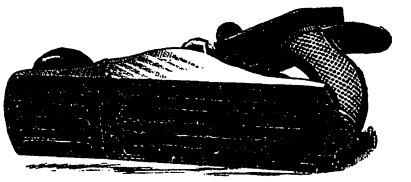




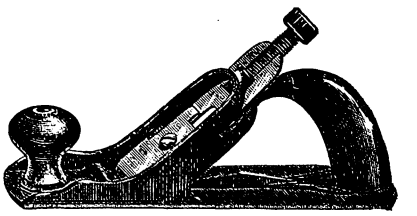
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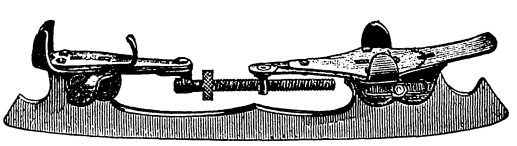
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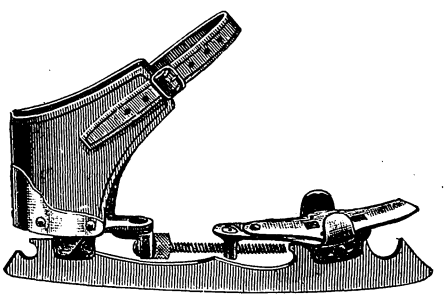
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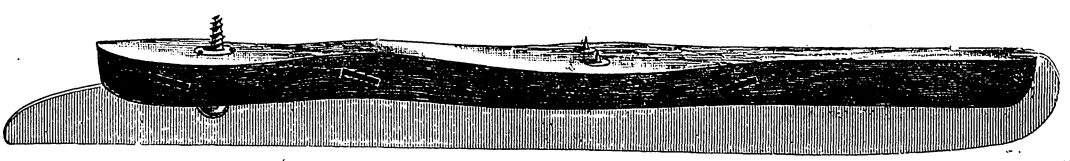
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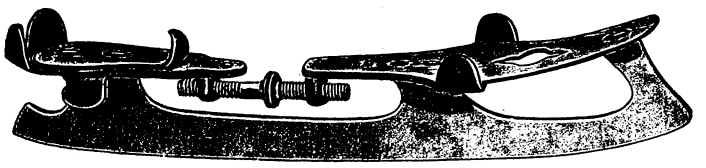
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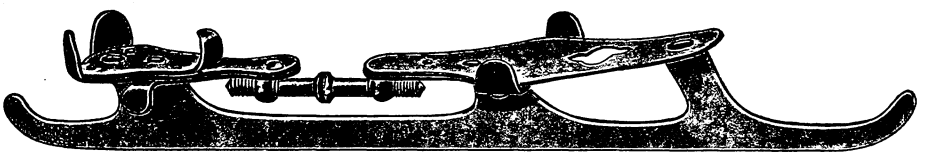
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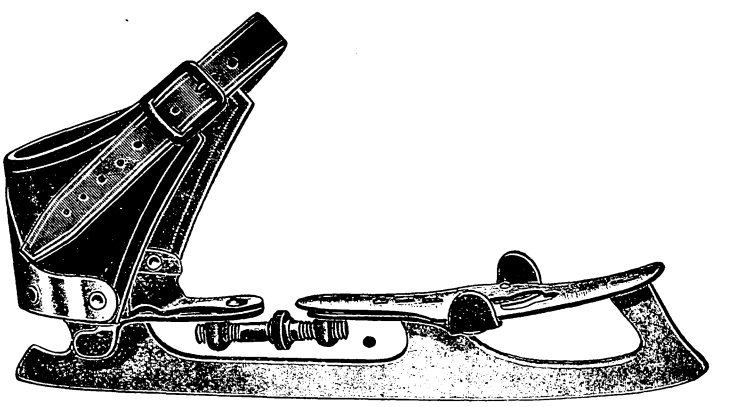


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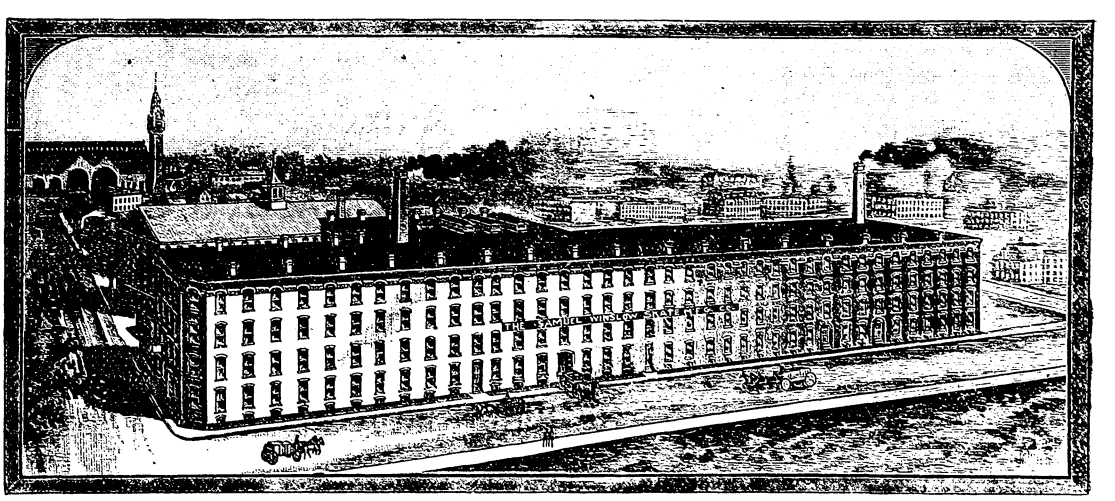


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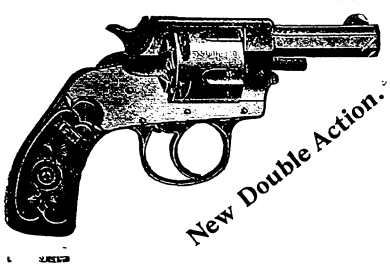
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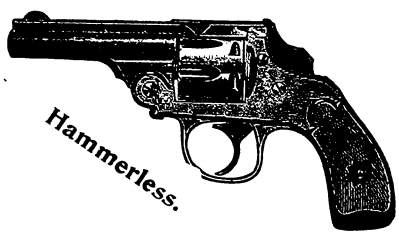
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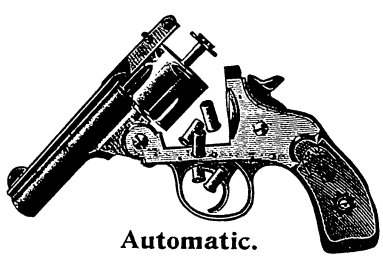
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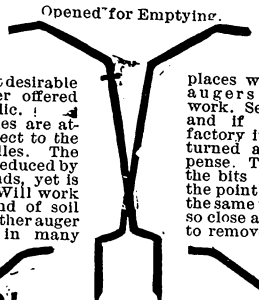
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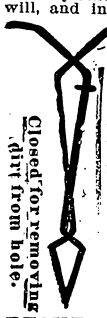
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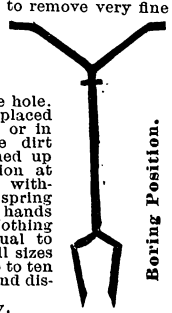
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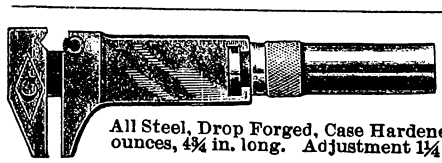
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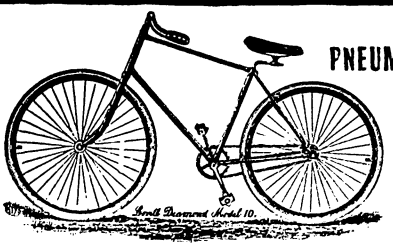
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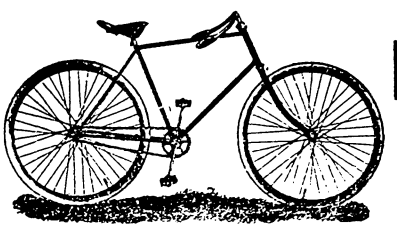
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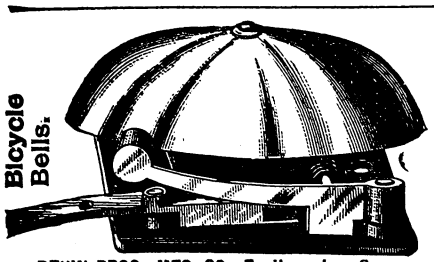
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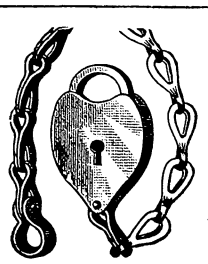
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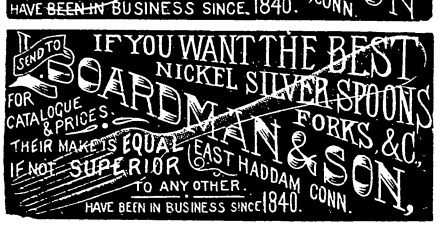


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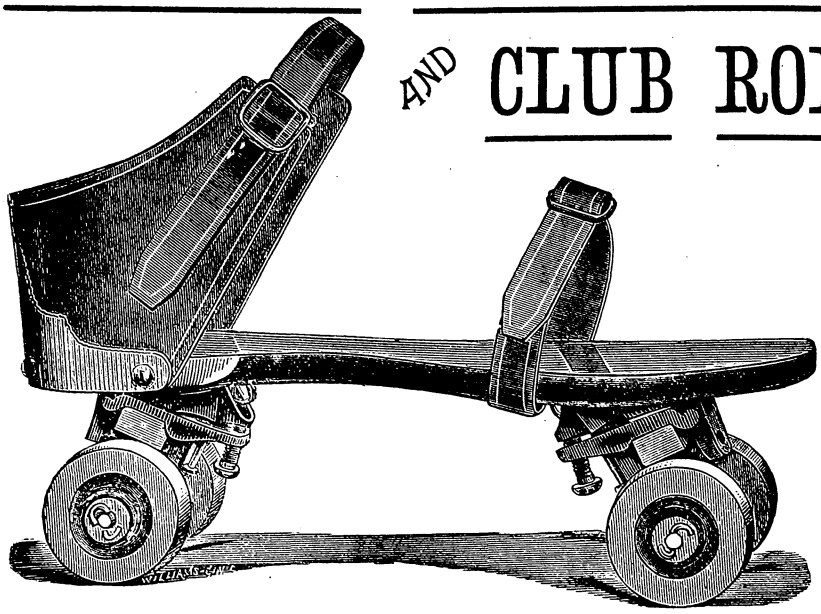






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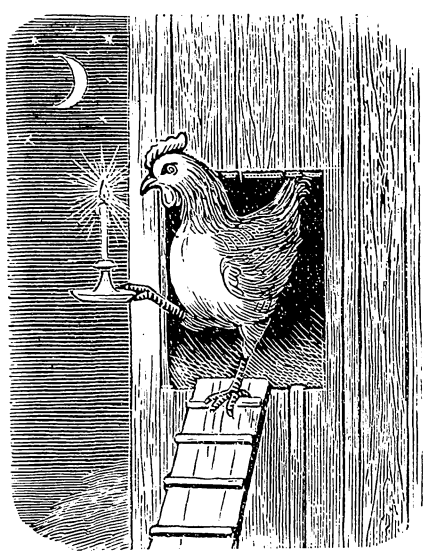
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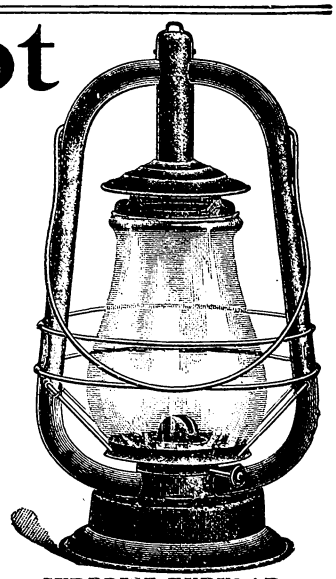
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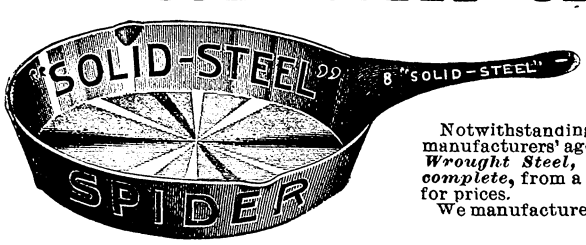
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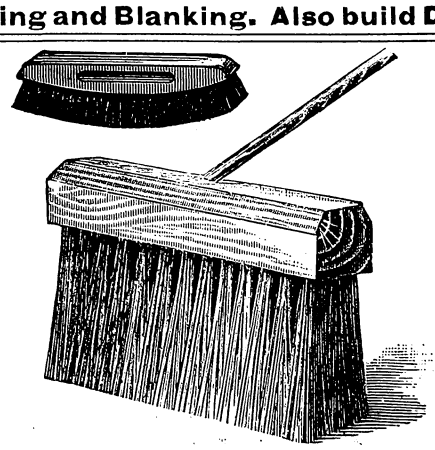
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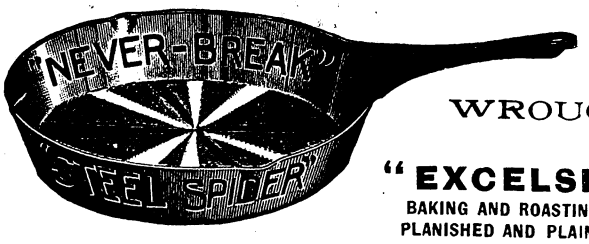
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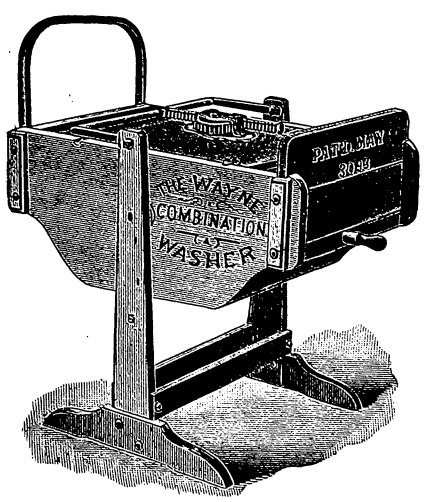
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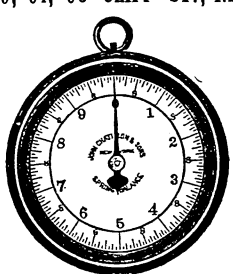
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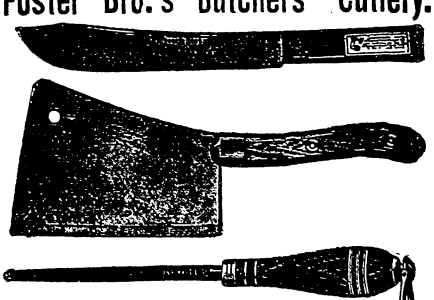


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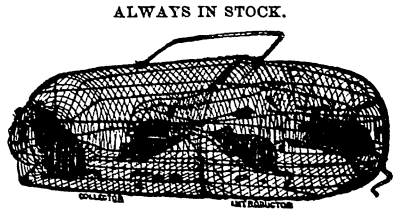
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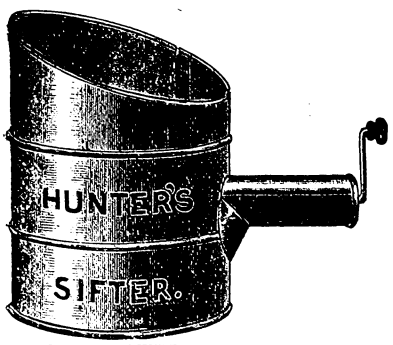
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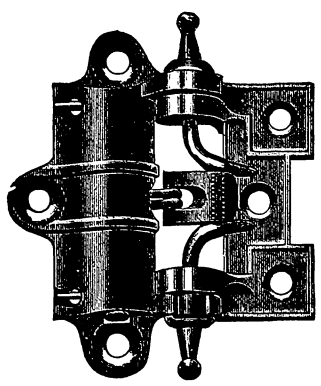
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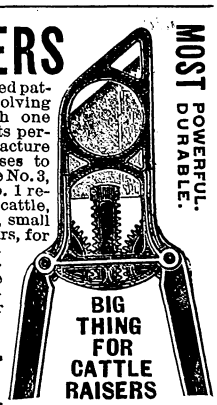
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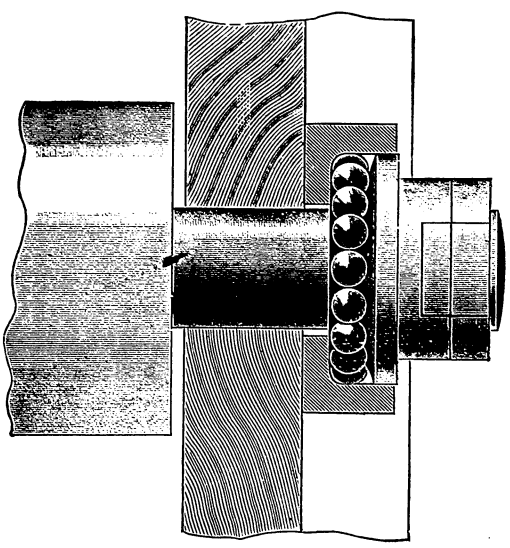
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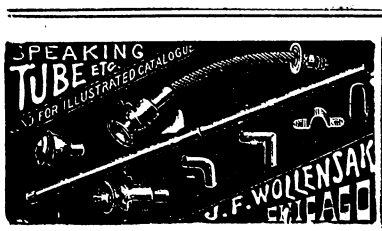
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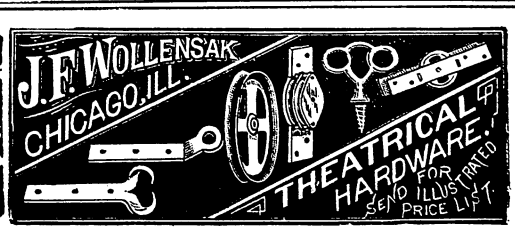
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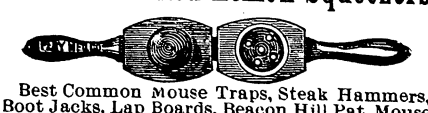
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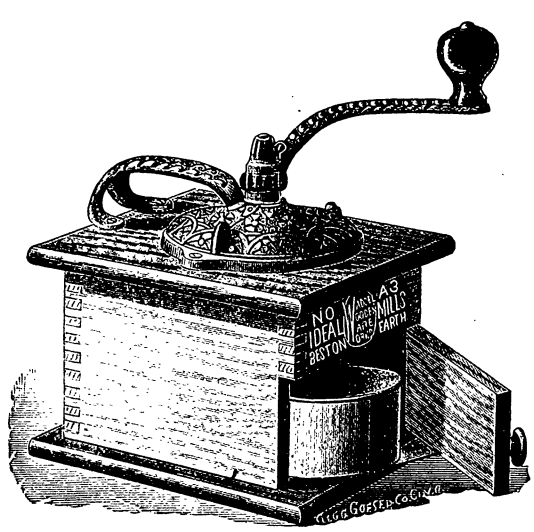
The = Perfection = Washer

is the best on earth. Crowned with laurels wherever introduced. Do you want a Washer for your own use, or do you want to handle the best Washer in the world? If you do, get the best.

It is conceded to be the best by thousands of families who are using them to their entire satisfaction. So simple and easy to operate, a child ten years old can wash with it. Yet more durable than any washer in the market. It has a Steel Bottom, Metal Catches to hang the rubber on, Rubber Packing between the bottom and sides, which relieves the strain on the bottom by the contraction and expansion of the sides. It is handsomely painted, perfect and complete in every particular. The above statements are facts, and a glance at the Washer will convince any one. For further particulars, call on or address

W. H. NEFF, Manufacturer.

"BIG W. W. W. FOUR."



A certain company are claiming to be "sole manufacturers of Waddel's Coffee Mills," ("If you see it in the sun its so"). The statement is designed to mislead the trade. The old line of Waddel's Coffee Mills, which have been on the market the past five years, are not manufactured by *us*. We are making a new line of Coffee Mills which are guaranteed to grind twice as fast as similar goods, and each mill is labeled under a trade-mark "Ideal Coffee Mills manufactured by Waddel Wooden Ware Works; best on earth." Specify the new goods and order "Ideal Mills," and our word for it, you will not make a mistake. Address plainly

Waddel Wooden Ware Works or "4 W.,"

Greenfield, Ohio,

MANUFACTURERS OF

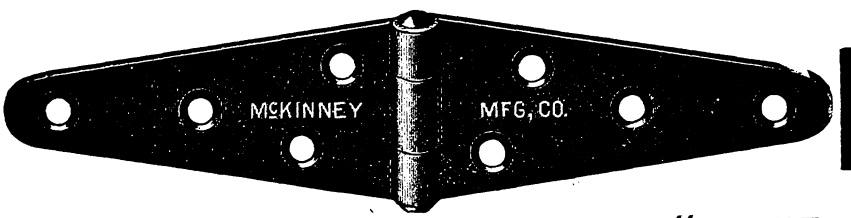
CASH REGISTERS, MONEY DRAWERS, COFFEE MILLS, RAT TRAPS and NOVELTIES.

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WE CLAIM

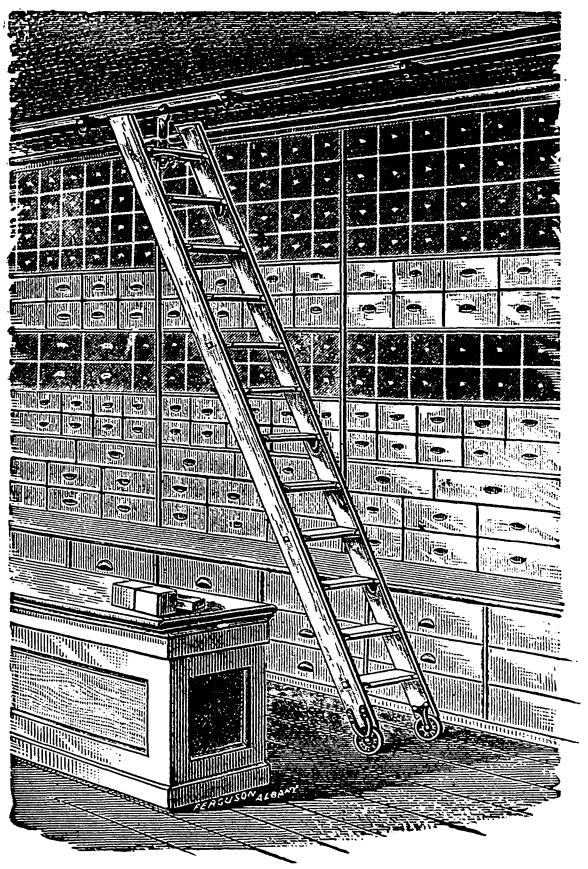
That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

McKINNEY MFG. CO., ALLEGHENY, PA.

Steel  Hinges.

SEND FOR LIST. "NONE BETTER."

THE "NOISELESS" STORE LADDER.



The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by

M. CROISSANT,

ALBANY, N. Y.

All Dealers Should Send for Our

OCTOBER 1st PRICE-LIST

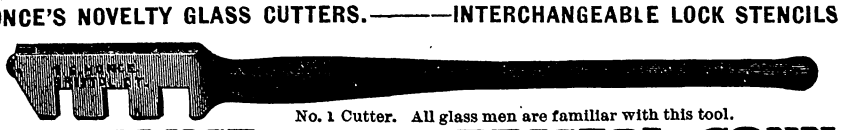
——: AND :——

NEW DISCOUNTS.

COLBY WRINGER CO.,

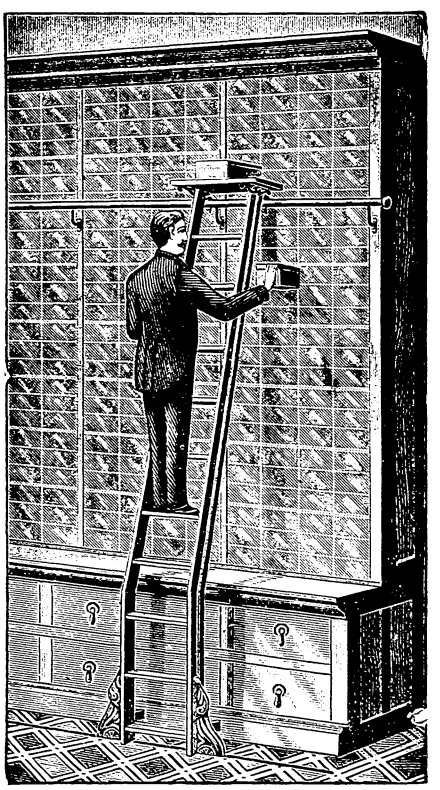
MONTPELIER, VT.

MONCE'S NOVELTY GLASS CUTTERS.——INTERCHANGEABLE LOCK STENCILS



No. 1 Cutter. All glass men are familiar with this tool.

S. G. MONCE, - - BRISTOL, CONN.



FLOOR TRACK BICYCLE LADDER.

No other Ladder Service can approach the "Bicycle" in ease and convenience of operation. Compared with others they work like a bicycle beside a lumber wagon.

Can be applied to any kind of shelving made.
See this space next week for other styles.
Send for Illustrated Catalogue and prices to

THE BICYCLE STEP LADDER CO.,
50 State street, Chicago, Ill.

HARDWARE DEALERS

CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

MANUFACTURED ONLY BY

"THOMAS MORTON,"

65 Elizabeth Street,

Write for Prices. NEW YORK.

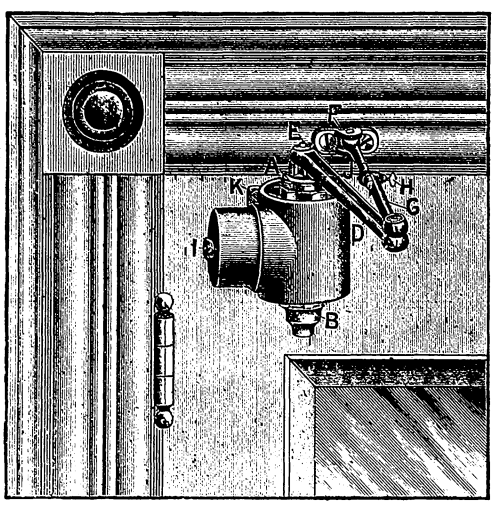
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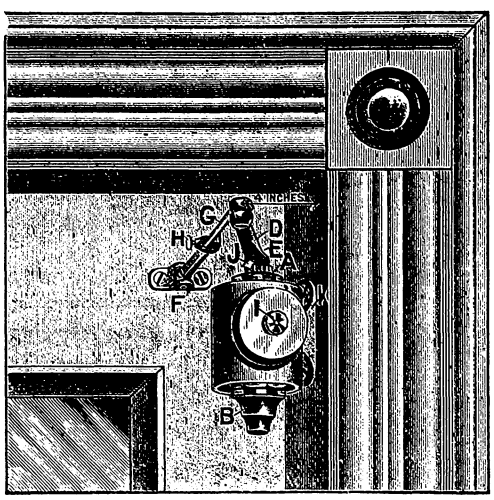
P. & F. CORBIN,

New Britain, Conn. New York. Philadelphia. Chicago.

——) MANUFACTURERS OF (——

Easily Adjusted and Adapted for all Requirements.





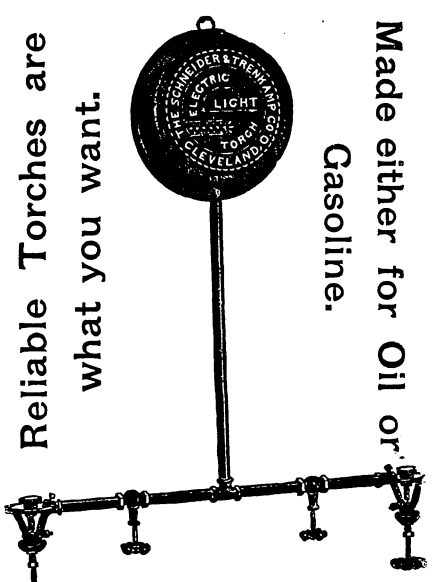
Looks Well, Acts Well, Wears Well.

LIQUID DOOR CHECKS AND SPRINGS,

Fine Builders' Hardware. Wood AND Machine Screws.

Catalogues and Prices Furnished on Application.

Reliable Torches are what you want.



Made either for Oil or Gasoline.

These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner.

Write us for prices. A liberal discount given to the trade. Manufactured by;

THE SCHNEIDER & TRENKAMP CO.,
Nos. 479 to 497 Case Ave., Cleveland, Ohio

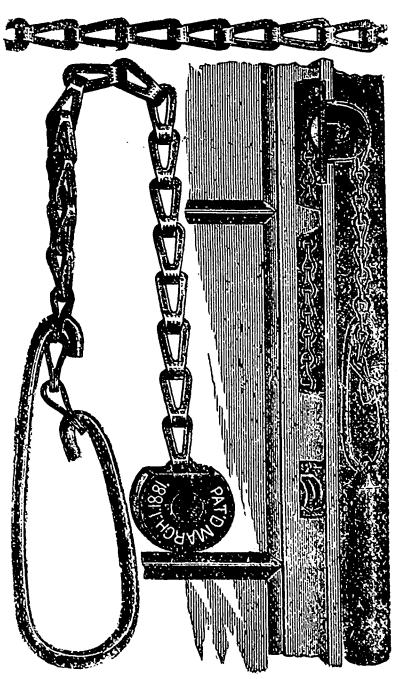


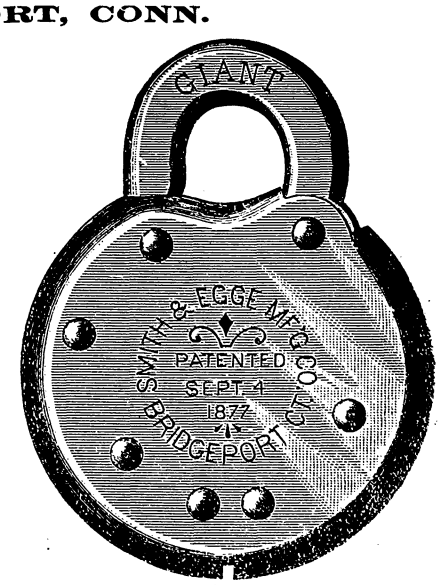
WM. KROGSRUD,
Engraver and Die Sinker,
61 Fulton St., N. Y.
Manufacturer of
STEEL STAMPS
For Every Purpose.
Steel Letters and Figures.
Burning Brands, Stencils. &c. Send for Illustrated Catalogue.



THE SMITH & EGGE MFG. CO.,

BRIDGEPORT, CONN.





THE GIANT PADLOCK.

Centennial Award "Superior in Every Respect."

This is one of the best selling locks in the market, and affords the dealer a large profit. It is thoroughly and strongly made—of the best material—very handsome in appearance, and every Lock is warranted. Orders solicited.

THE GIANT METAL SASH CHAIN

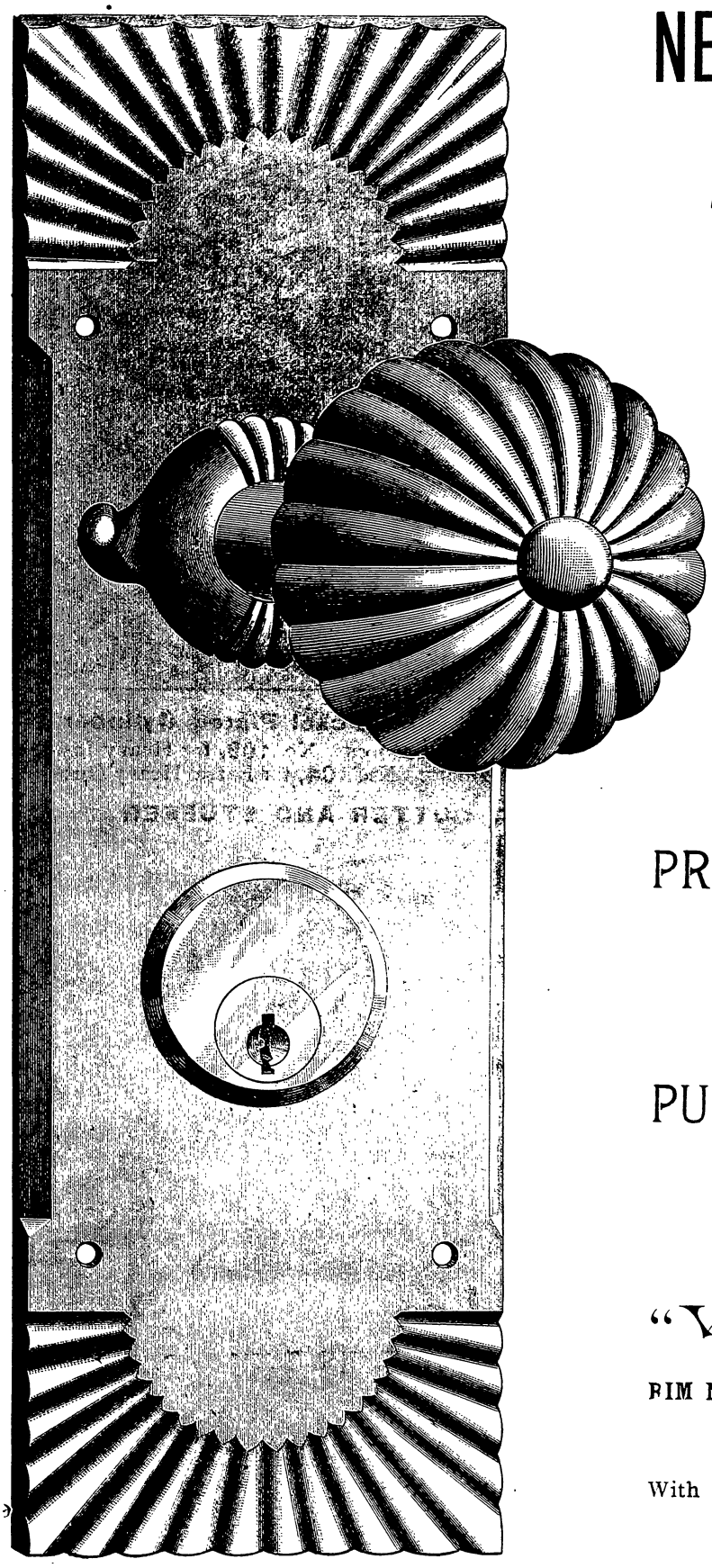
is a substitute for cord in hanging weights to windows. It is manufactured by us only, and by automatic machinery, patented and owned exclusively by ourselves, and whereby we secure uniformity of construction and quality. We have been to great expense in producing a metal having all the qualities and conditions requisite for making suitable chain for this purpose, and to prevent other chain of the same pattern of link and of the same general appearance, but made from an inferior metal, being offered as the same thing, we patented the word "Giant" as a Trade-Mark, as applied to either metal or chain. Trade-Mark Registered April 16, 1878, and October 22, 1878, and our metal is therefore known in the market as "Giant Metal," and our chain as "Giant Metal Sash Chain."

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SAFEST AND BEST.

"VASSAR" LOCKS

"VASSAR" LOCKS



NEW ARTISTIC DESIGNS

—IN—

FINE BRONZE GOODS

—FOR—

PRIVATE RESIDENCES

—AND—

PUBLIC BUILDINGS.

"VASSAR"

RIM NIGHT LATCHES.

RIM DEAD LOCKS.

With Patent Self-Adjusting Connecting Spindle.

—) MANUFACTURED BY (—

READING HARDWARE CO., Reading, Pa.

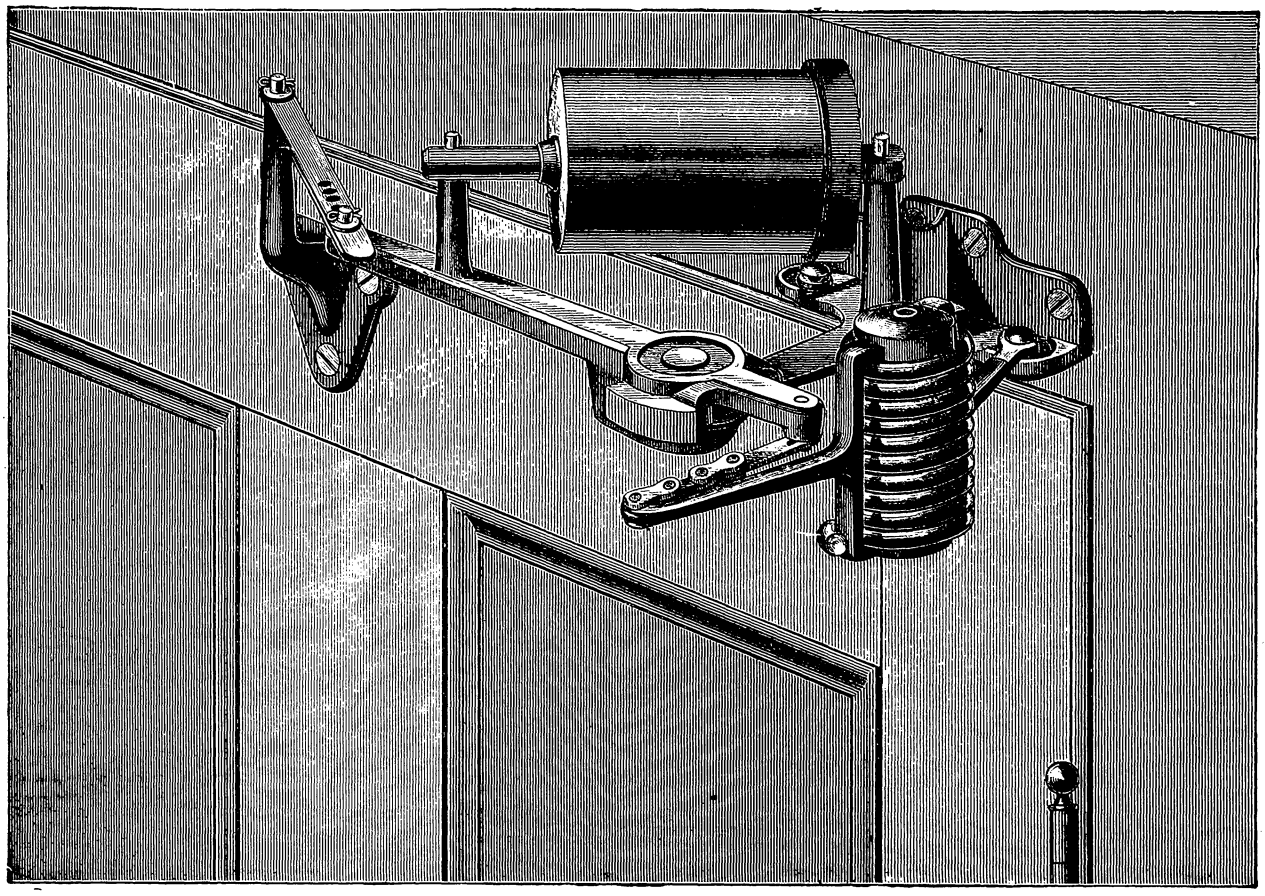
NEW YORK. PHILADELPHIA. CHICAGO.

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TEMPORA MUTANTUR ET NOS MUTAMUR IN ILLIS.

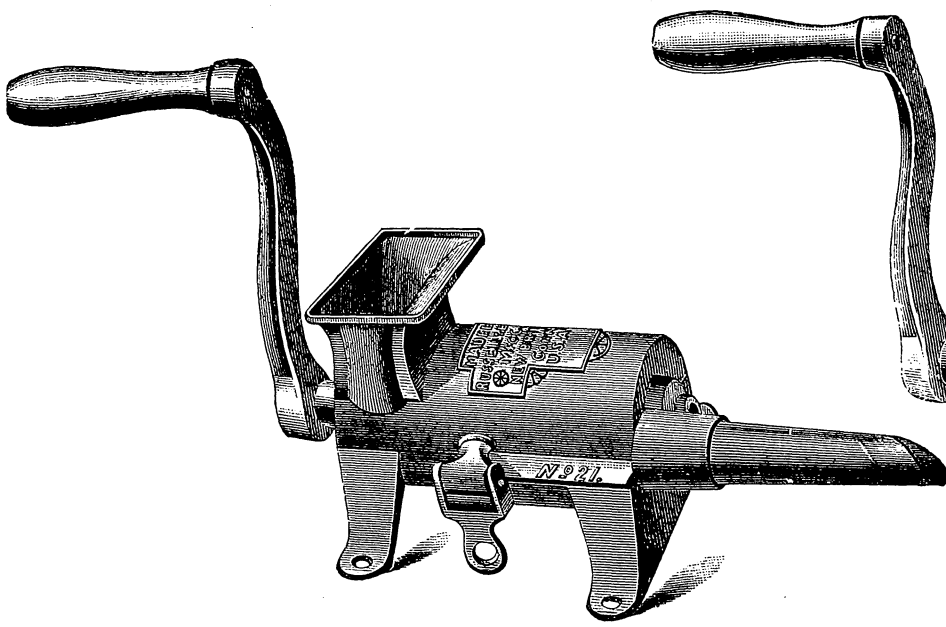
"HOME" DOOR CHECK AND SPRING COMBINED.



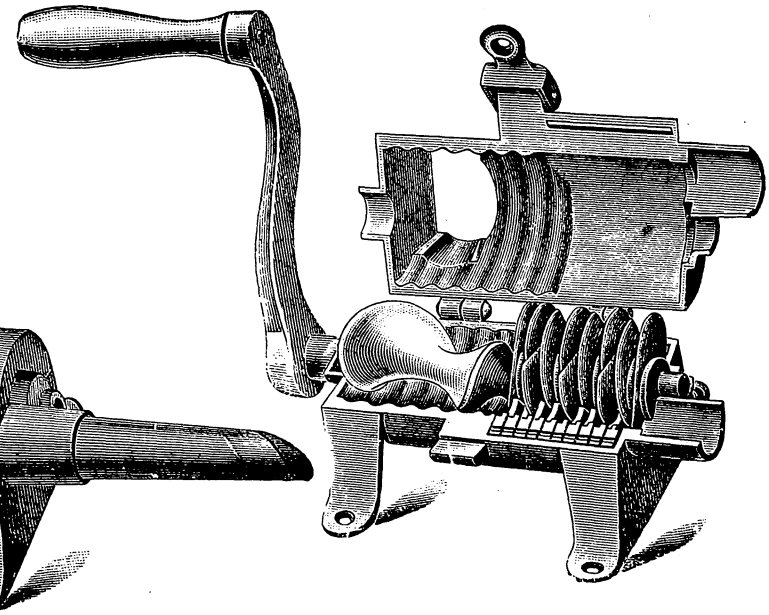
"KAHALA" BRONZE, with Nickel Plated Cylinder.

No. **100,** for Screen Doors. No. **101,** for Light Inside Doors No. **102,** for Heavy Inside and Light Outside Doors. No. **103,** for Heavy Outside Doors. No. **104,** for Extra Heavy Outside Doors

"HOME" MEAT CUTTER AND STUFFER.



No. 21.



Nos. 1 and 21. Open.

PATENTED.

WILL CUT THREE POUNDS OF MEAT PER MINUTE.

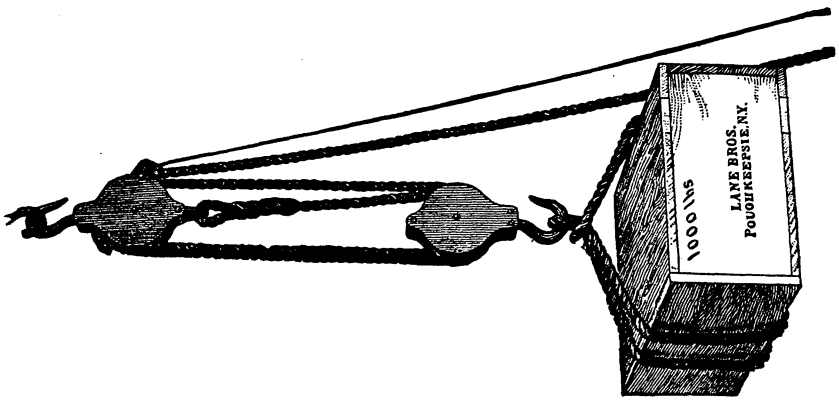
No. **1,** Japanned, 6 inch Cylinder. No. **2,** Japanned, 6 inch Cylinder. No. **21,** Galvanized, 6 inch Cylinder.

This Meat Cutter will CUT meat more rapidly, and is easier cleaned than any meat cutter made, and is the only one that will cut satisfactorily both raw and cooked meat.

RUSSELL & ERWIN MANUFACTURING CO., SOLE MAKERS,

New Britain, Conn.; New York, Philadelphia, Baltimore, London.

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LANE'S SELF-LOCKING

TACKLE BLOCKS,

Anti-Friction Steel Bushings,

Holds the load at any point, and always sure.

SEND FOR CIRCULAR.

For sale by the Hardware trade.

—MANUFACTURED BY—

LANE BROS.

POUGHKEEPSIE, N. Y.

He had in his possession 55 skeleton keys which the police claim would open any door. —*Chicago Tribune.*

You are selling that kind of a lock every day and your customers think you are selling the best the market affords.

ARE YOU SELLING the best the market affords?

The Craig Locks are guaranteed Sneak Thief Proof.

Send for Catalogue. KEYLESS LOCK CO., I. A. 197 So. Canal St., Chicago, Ill.

PATENT PERFECTION PADLOCK



Eight Tumblers. Key Turning Both Ways.

Sizes; ¼ inch to 2½ inches; of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, an cannot be picked. Also, ½ and ⅝ inch Padlocks, opened with a common pin, in brass and nickel; for cats and small dogs. The best Railroad Switch and Car Lock in the world. Adopted by the United States Treasury for bonded warehouses.

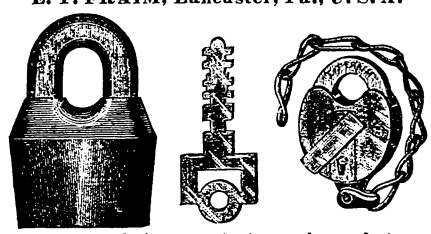
AMES SWORD CO., Chicopee, Mass.

Send for Price Lists and Circulars.

ESTABLISHED 1879.

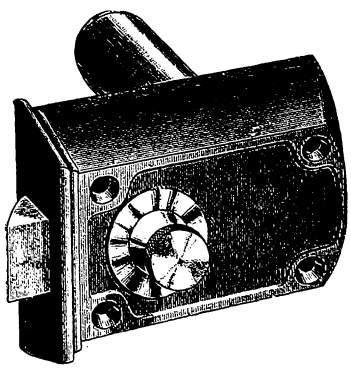
KEYSTONE LOCK WORKS,

E. T. FRAIM, Lancaster, Pa., U. S. A.

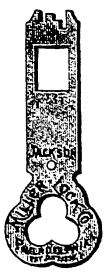


Originators, designers, patentees and manufacturers of all the leading popular styles of **PADLOCKS,** Key-Locking Scandinavian with our patent Inter-Locking Tumblers; the only reliable lock of this style ever made. **SELF-LOCKING** Scandinavian of the highest type of perfection. Dust Proof Railroad, Freight Car and Switch Padlocks. Brass, Bronze, Steel and Malleable Iron Padlocks for all purposes and in all finishes. 131 different kinds. Write for our new 100-page catalogue.

SURPLESS, DUNN & ALDER, General Agents,
97 Chambers St., NEW YORK.



"JACKSON" NON-PICKABLE ALL BRONZE NIGHT LATCH.



Made also of JAPANNED IRON with BRONZE BOLT and ESCUTCHEON.

Reversible. Adjustable. 3 Plated Steel Keys. No springs, except the bolt spring. **Awarded Best Prize** at World's Fair, Chicago. Undoubtedly the best latch extant. All are fully guaranteed. We employ no travelers, and no agents. Ask your **Jobber** for our goods. Let us know if our **Cat. No. 11** is not on your file.

MILLER LOCK CO.,

4515 Tacony Street, PHILADELPHIA, PA

SIMPLEST IN CONSTRUCTION. EASIEST FITTED.



Cheapest and Best Balance Made.

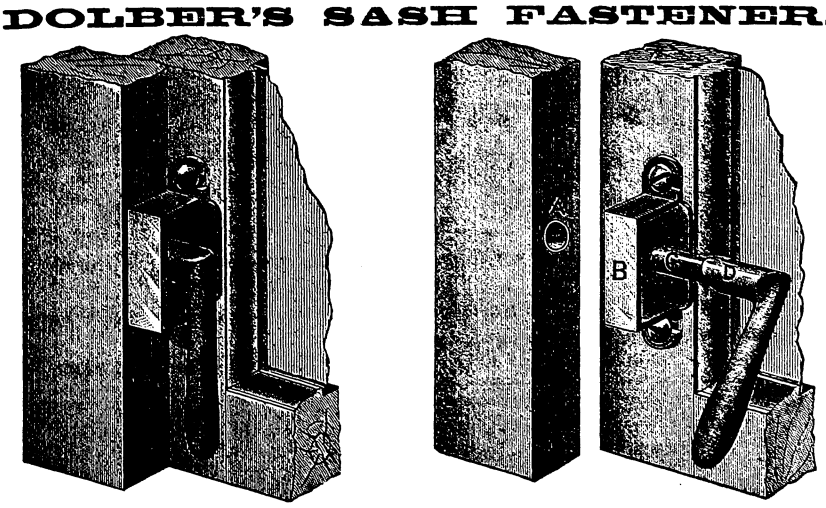
WRITE FOR CATALOGUE.

The Vanderbilt Sash Balance Co.,

CANANDAIGUA, N. Y.

General Agents, Harmon & Dixon, 118 Chambers St. New York.

DOLBER'S SASH FASTENER.



Patented August 1, 1893.

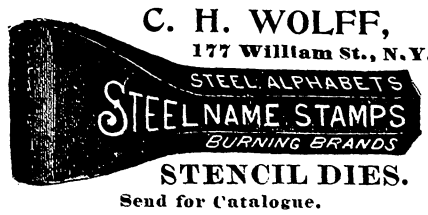
The best device ever invented for fastening outside, storm or double windows, and all similar purposes.

Saves Time, Labor and Expense.

F. V. WOOSTER, Manufacturer, - - - 66 Beverly St., BOSTON

C. H. WOLFF,

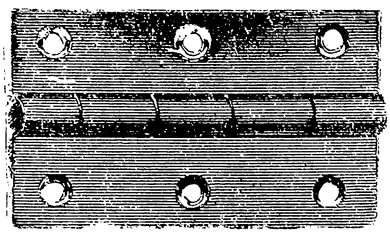
177 William St., N.Y.



STENCIL DIES.

Send for Catalogue.

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Cast Brass Butt Hinges

IN STOCK AND FOR SALE BY

W. & J. TIEBOUT,

Nos. 16 & 18 Chambers Street, New York,

MANUFACTURERS OF

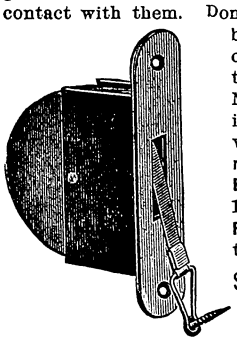
BRASS, GALVANIZED & SHIP CHANDLERY HARDWARE.

A Well Balanced Sash

IS LIKE

A Well Balanced Business Man,

gives satisfaction to those who are brought in contact with them. Don't be inveigled into buying anything called Sash Balances that have no record. Made from light cast iron. Ask your Hardware dealer for Pullman Steel Frame Sash Balance. Warranted 15 years. Only Steel Frame Sash Balance in the world.

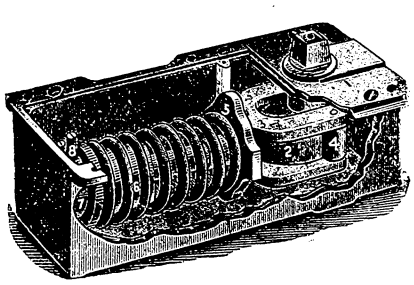


SIMPLE, CHEAP AND DURABLE.

PULLMAN SASH BALANCE CO., Rochester, N. Y.

New York Office, 142 Chambers St.

Chicago Office, 235 Lake St.



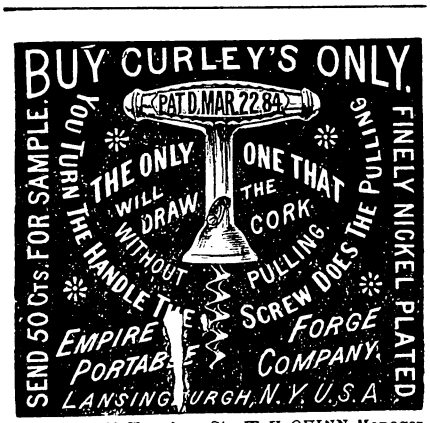
CHECKING SPRING HINGES

FOR SWING DOORS.

Applied in floor under door. They close the door gently, without noise or violence and stop it at once at the centre. Doors cannot sag, springs do not break or set.

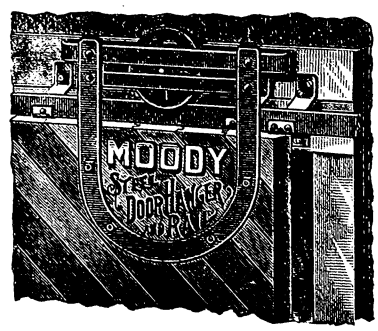
J. BARDSLEY, 149 & 151 Baxter St., New York

Illustrated Price-List on Application.



N. Y. Office, 103 Chambers St., W. H. QUINN, Manager.

VICTOR MFG. CO., Newburyport, Mass.



Showing one-half set of hangers attached to door.

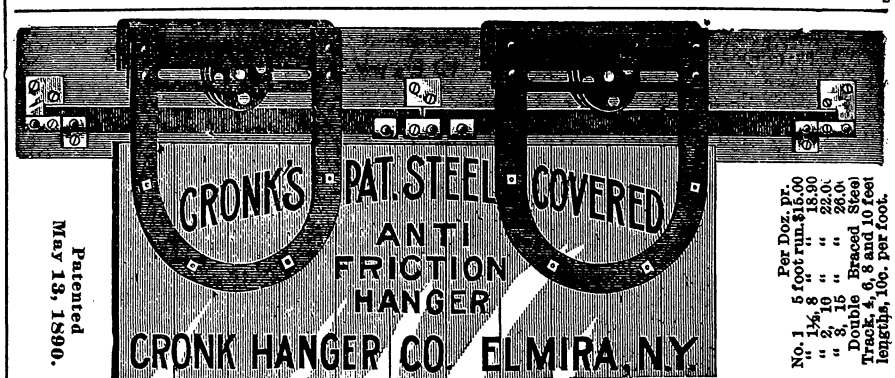
STEEL RAIL.



The Only Bracing Bracket Made.

PRICE-LIST.

HANGERS.	Per Doz. prs.
No. 5, to run 6 feet, 3½ in. wheel,	$10.00
No. 6, to run 10 feet, 4½ in. wheel,	15.00
No. 7, to run 15 feet, 5½ in. wheel,	22.00
RAIL, per foot	6½ cents



Per Doz. pr.
No. 1 5 foot run $15.00
" 2 8 " " 18.00
" 3 10 " " 22.00
Double Braced Steel Track, 4, 6, 8 and 10 feet lengths, 10c. per foot.

We are the original makers of steel covered hangers and all others are imitations. Beware of infringements, as we shall protect our rights.

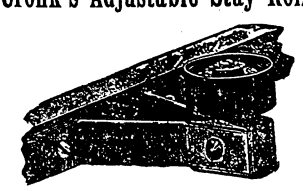
In our Steel Covered Hangers we have all the desirable features of the Best Hangers in the market, and with that we combine the cover for wheels SO NO ICE OR SNOW can reach the wheels, and making this cover as we do, we stiffen it so it is the strongest Hanger in the market, and we believe it is just perfect. Would be glad to have you try a small order and satisfy yourself.

Double-Braced  Steel Rail.

PATENTED JUNE 12, 1888.

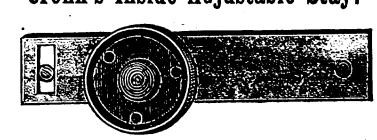
This rail being double-braced and double-riveted is the strongest rail in the market. Being braced both ways it will not sag. The joint is made so it is perfectly solid. It comes complete and ready for use, requiring only screws and screw driver for any man or boy to put it up in short order. It can be used for any grooved wheel Hanger, and a heavy door will not make it spring or tremble. Guaranteed to hold a door weighing 2,000 pounds, and used in connection with our Anti-Friction Hanger will work perfectly on large or small doors.

Cronk's Adjustable Stay Roller.



Made of wrought steel strap; cast block with slot adjusted by loosening bolt.

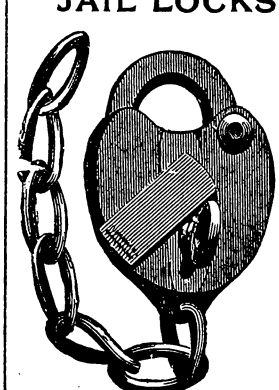
Cronk's Inside Adjustable Stay.

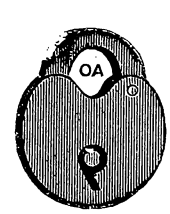


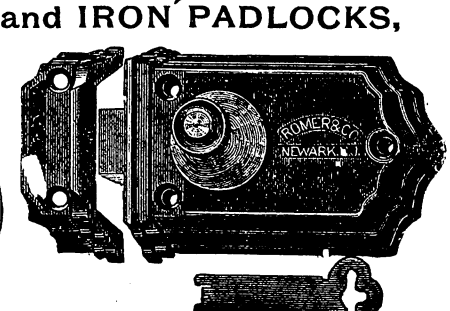
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ROMER & COMPANY, Manufacturers of PATENT JAIL LOCKS, BRASS and IRON PADLOCKS,







Adjustable Door Knobs and Trimmings,
Front Door Handles.

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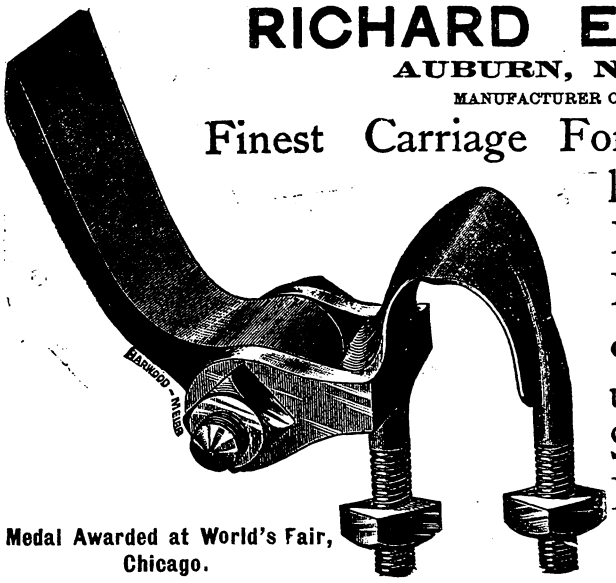
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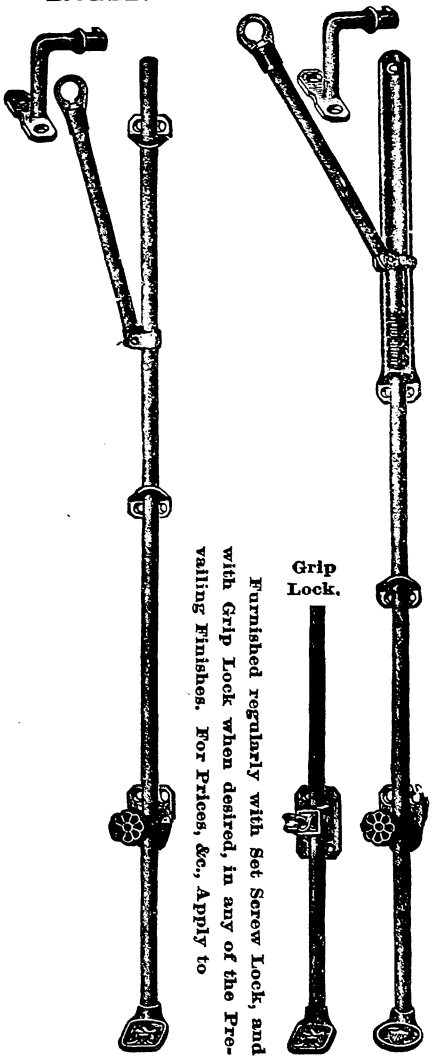
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Pat. Jan. 20, 1880.
Cut One-half Size.
Sample pair sent to any hardware or saddlery firm by addressing
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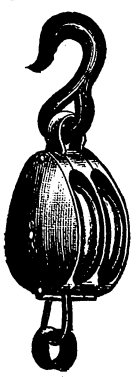
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"EAGLE." "SHIELD."

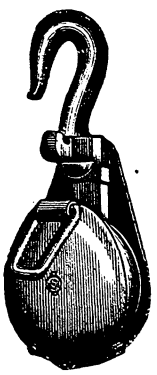


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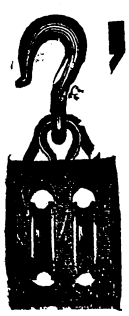
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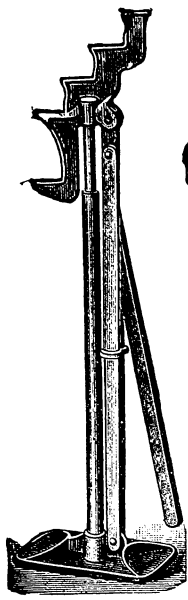


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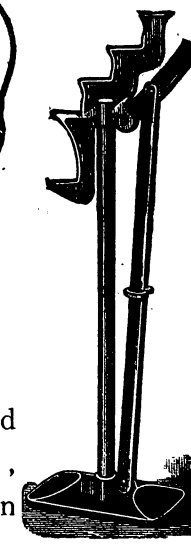






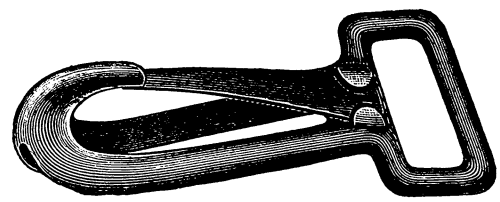
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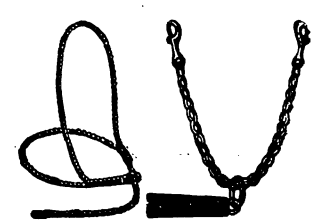
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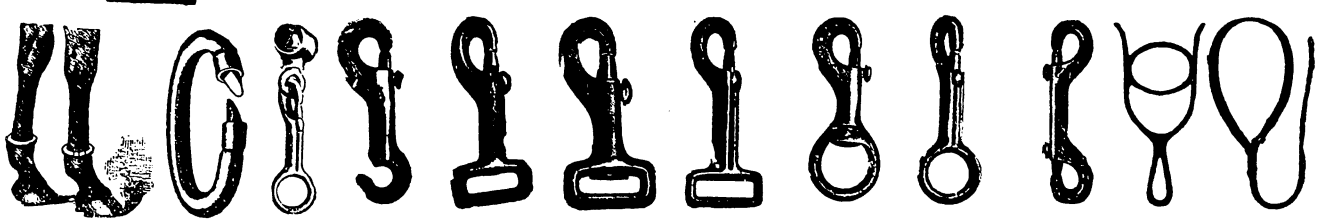




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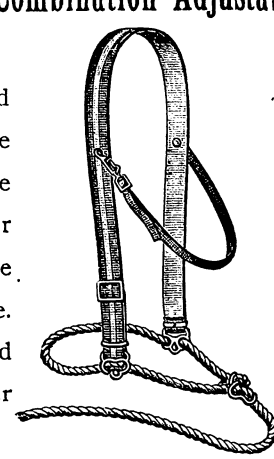






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Its utility is greatly increased by attaching a bit to the halter



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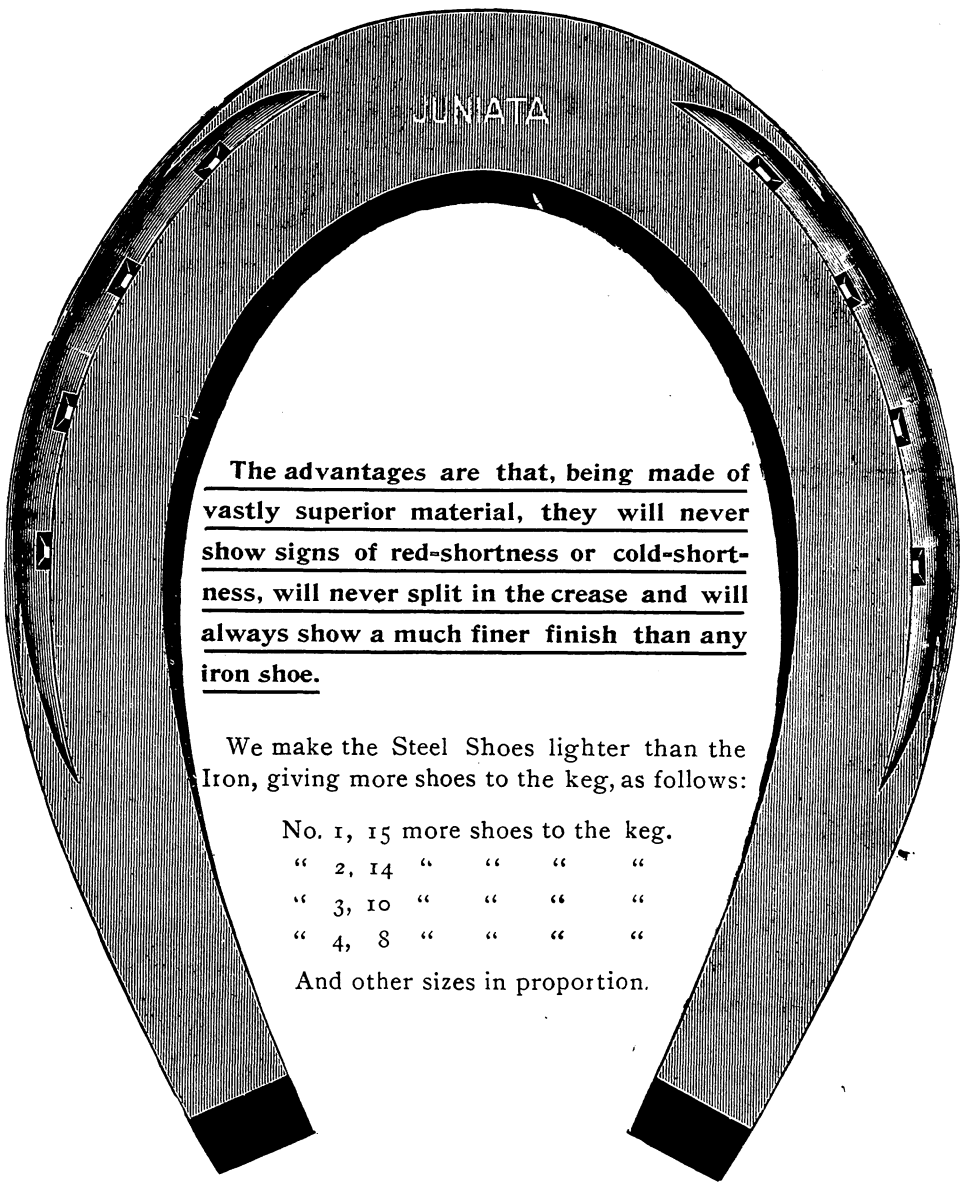
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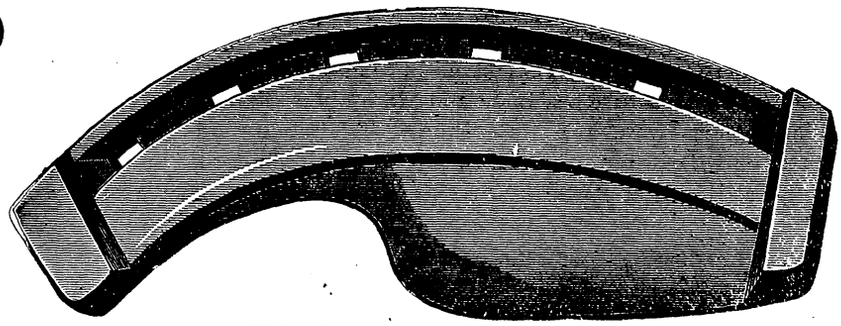
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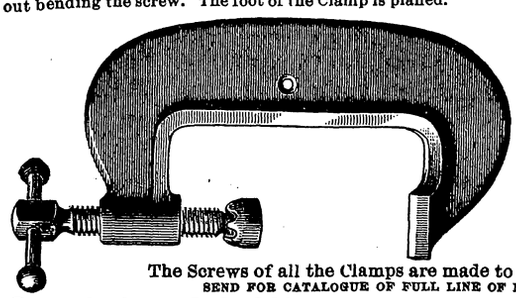
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Extra heavy, with Button on end of screw, hung on a ball so as to accomodate itself to irregularities without bending the screw. The foot of the Clamp is planed. The back is 2½ inches from center of Screw



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" 6,	"	8	"	3 25
" 7,	"	10	"	3 75
" 8,	"	12	"	4 25
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Full Set, 11 sizes, $40.50.

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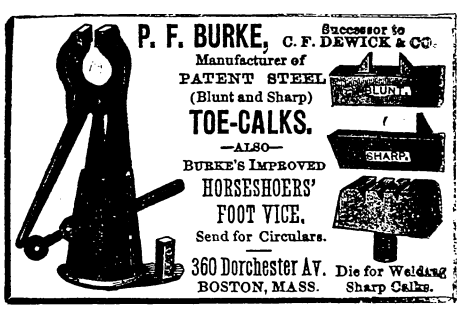
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Manufactured by the NATIONAL HORSE NAIL CO.,
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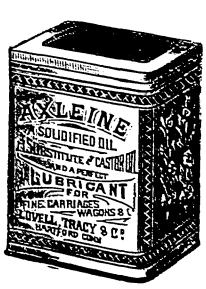
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Beautiful Shape.

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Light, Medium and Heavy.
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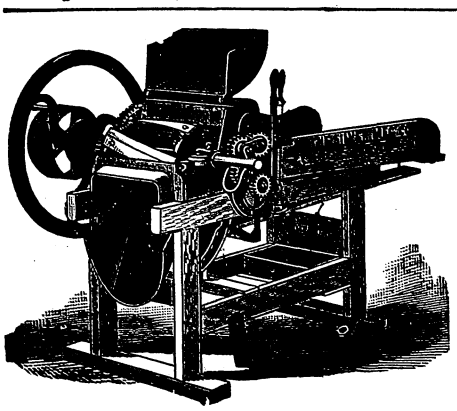
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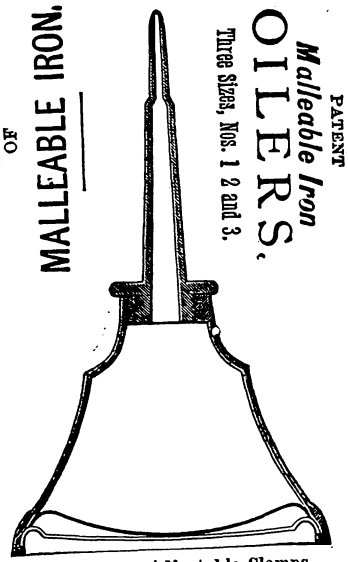
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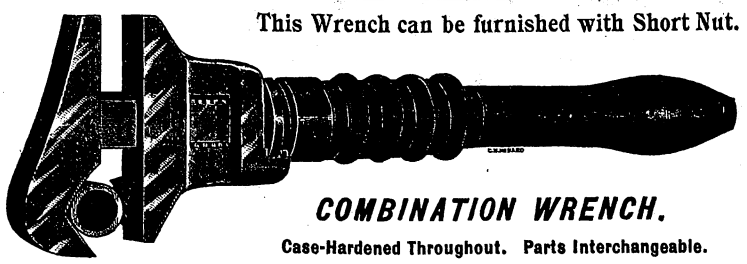
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MANUFACTURERS OF
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ALSO SPECIAL FORGINGS.
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This Wrench can be furnished with Short Nut.



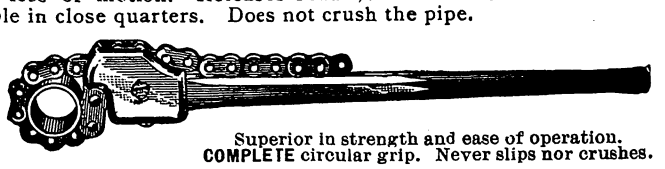
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This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all, th requisite combinations of a regular Nut Wrench, thus making a combination which has no equal.
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Forged Steel
All parts interchangeable.
Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

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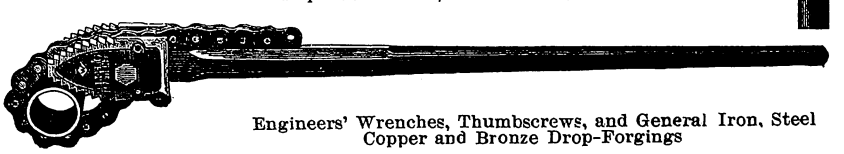
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In Twelve Sizes.

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Brock's Patent Drop-Forged Chain Pipe Wrench,
Improved Model, in Seven Sizes.



Engineers' Wrenches, Thumbscrews, and General Iron, Steel Copper and Bronze Drop-Forgings

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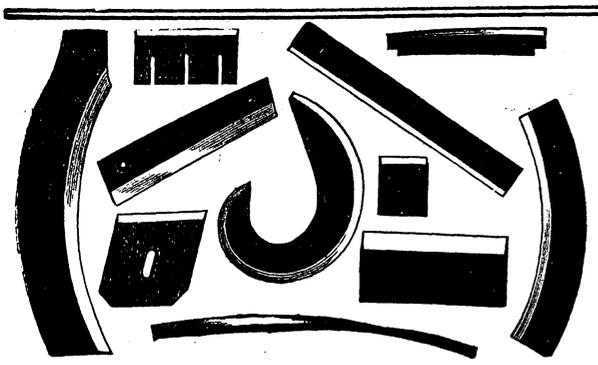


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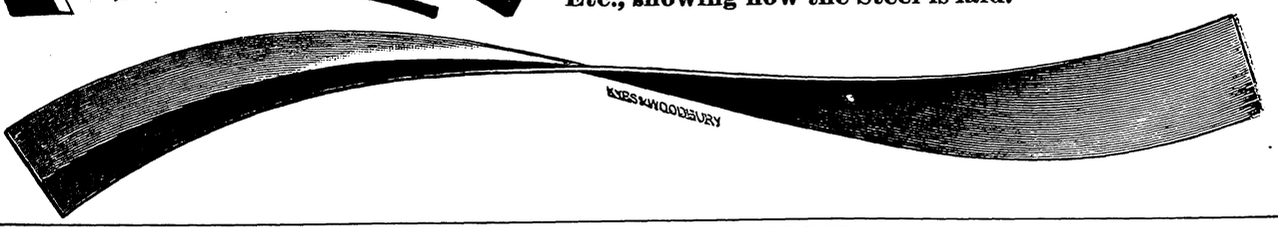
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Shear Blades and Strips, Moulding Cutter Plate, Die Stock for Leather, Cloth and Paper Cutting Dies. Lawn Mower and Hay Cutter Knives of every description.



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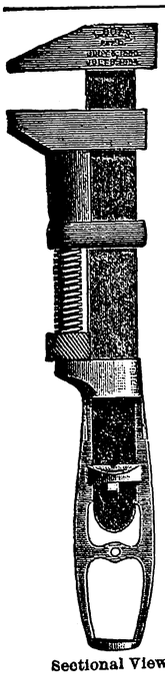
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Screw Wrenches





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6 DIFFERENT STYLES OF SPOUTS.

SAMPLE 15¢.

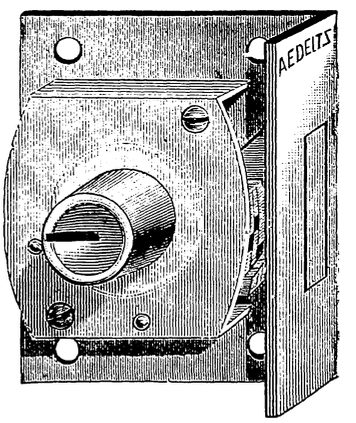
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BRASS HINGE Lid SOLID

NO SOLDERING

B. E. LEONARD, Scranton, Pa.

A. E. DEITZ



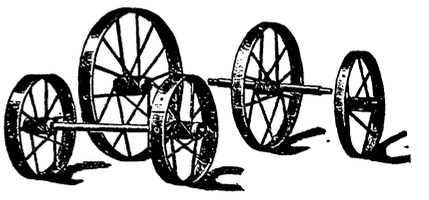
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J. C. McCARTY & CO., Agents,

97 Chambers and 81 Reade Sts., New York.

Factory, BROOKLYN, E. D., N. Y.

WHEELS. WHEELS. WHEELS.



The best there is made for Wheelbarrows and Trucks. Send for Circular and Prices.

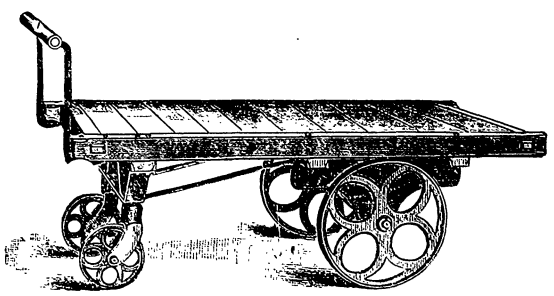
Address

THE Arnold Metal Wheel Co.

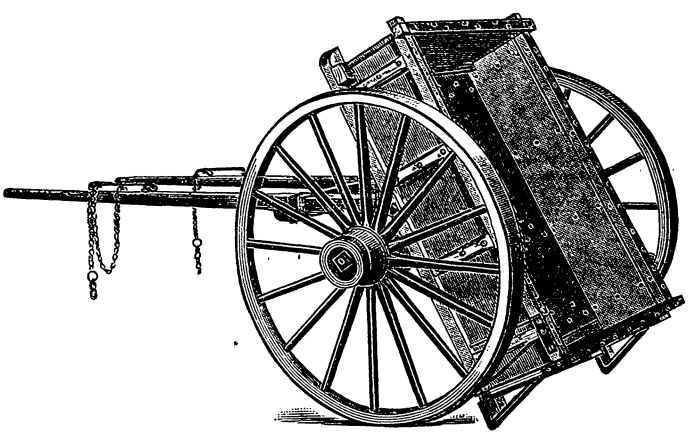
Mention *The Iron Age.* New London, Ohio.

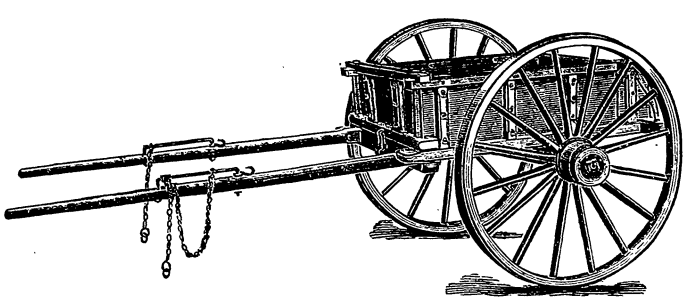
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THE REYNOLDS IMPROVED WAREHOUSE TRUCKS.





CONTRACTORS' DUMP CART.

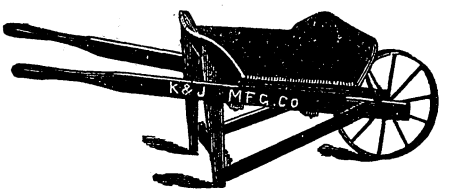
WRITE FOR DIMENSIONS AND PRICES OF CARTS, BARROWS AND TRUCKS.

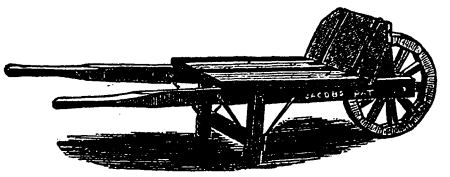
LANSING WHEELBARROW CO.,

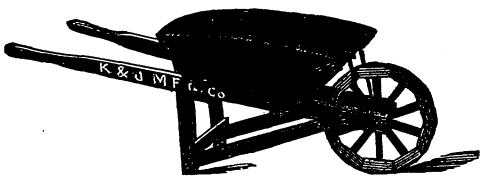
LANSING, MICH.

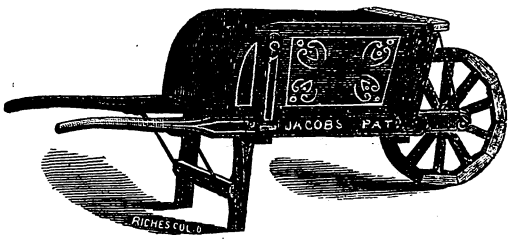
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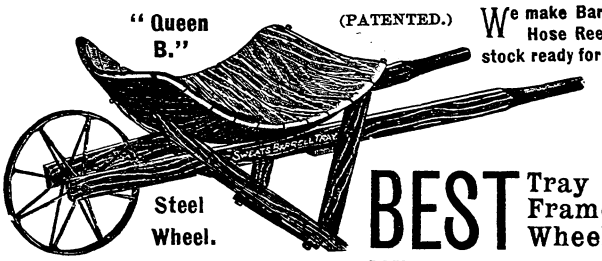


Timely Advice

To dealers about to purchase; do not make the common error of buying goods **because they are cheap** only; see that they are **both, good** and **cheap.** A rare combination, but one the discriminating buyer can always secure when purchasing Wheelbarrows, Scrapers, etc., from us.

The Kilbourne & Jacobs Mfg. Co.,
COLUMBUS, OHIO, U. S. A.

"BARREL TRAY" WHEEL BARROWS ARE THE BEST ON EARTH.



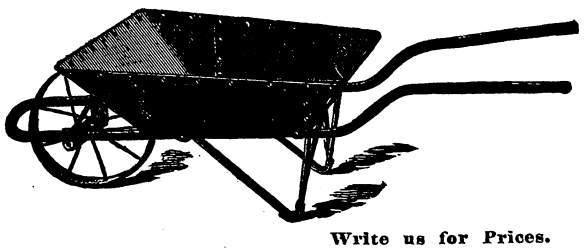
BEST Tray Frame Wheel.

We make Barrows of every description, Factory Trucks, Hose Reels, Mortar and Brick Hods, and carry large stock ready for shipping.

Get our prices and we will get your order.

SWEATT MFG. CO.,
Minneapolis, Minn.
J. C. McCARTY & CO., New York, Direct Representatives.
G. A. SEAVER, New Orleans, Special Agent.

Akron Tubular Steel Wheelbarrows.

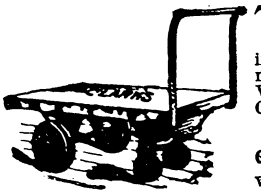


Re-enforced Tray, Strong and Durable.

Also McNeil's Patent Balanced Charging Barrows, Automatic Dump.

Write us for Prices.

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TRUCKS of all kinds Mounted on rubber or iron wheels. Trucks made to order. Write for prices. Catalogues free.

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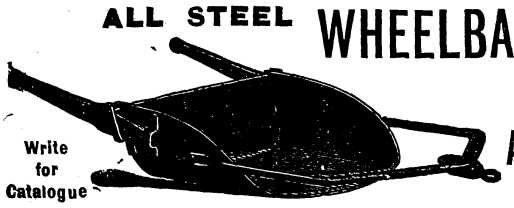
BEFORE

Placing your order for next season's supply of
GRASS HOOKS, Marks Patent,
CORN KNIVES,
HAY KNIVES, Etc.

Drop us a line. You will hear from us promptly in an agreeable way. Goods are conceded to be the finest in finish and quality ever offered the trade.

Bruce & Marks Manufacturing Co., GAS CITY, INDIANA.

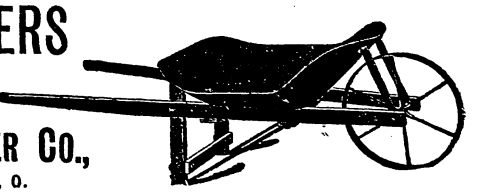
ALL STEEL WHEELBARROWS & SCRAPERS



Write for Catalogue

MANUFACTURED BY

AMERICAN STEEL SCRAPER CO.,
1104 Court Street, SIDNEY, O.



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Speaking of Barrows

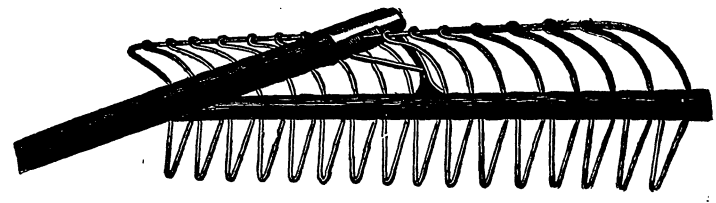
How do you know that what you're buying is the best the market affords if you don't look into the claims of various Mfrs. and make comparison? *WE* invite comparison both as to quality and price.



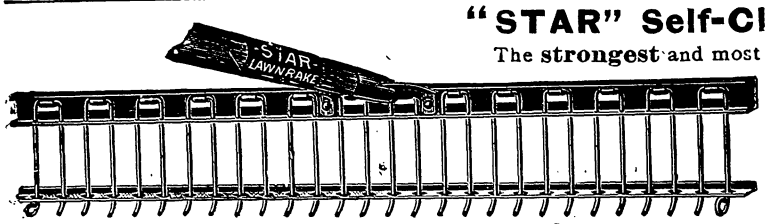
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LAWN RAKES. The "GEM" AND "DAVIS."

Both good and each the best. If you have not stocked up, better do so at once. Our prices are low.



SCHAEFFER & CO., Dayton, O.



"STAR" Self-Cleaning Lawn Rake.
Pat. Feb. 21, 1893.

"STAR" Self-Cleaning Lawn Rakes. All Steel.

The **strongest** and most **practical** rakes in the market. The **cleaning bar keeps the teeth free from leaves and grass** and the **eyes on the end teeth prevent** the other teeth **from digging in the ground.** We also make **"STAR" Lawn Rakes** as above **without** the self-cleaning bars and turned up end teeth.

SYRACUSE SPECIALTY MFG. CO., Syracuse, N. Y., U. S. A.

SURPLESS, DUNN & ALDER, 97 Chambers St., New York, DIRECT REPRESENTATIVES.

The "Perfect" Lawn Rake



Write for our prices before buying your stock of Lawn Rakes, Post Hole Diggers, Saw Sets, Can Openers, Steel Spring Curry Combs, Etc.

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"LIGHTNING"
(Reg. Trade-Mark No. 9583.)

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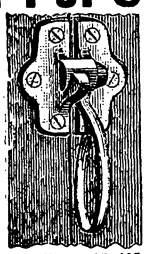
It pays to handle FIRST CLASS goods.

Write us early for prices and terms.

Sole Manufacturers,
The HIRAM HOLT COMPANY
EAST WILTON, MAINE.

P. J. Conroy & Co.,

Paschall, PHILADELPHIA.



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"CONROY"
Refrigerator Door Fasteners

Have rapidly supplanted all others.

Refrigerator Trimmings.

CYCLONE CORN SHELLER.

Will Shell a Bushel of Corn in 4 Minutes.

BEST SHELLER in the world.

All Machines Warranted.



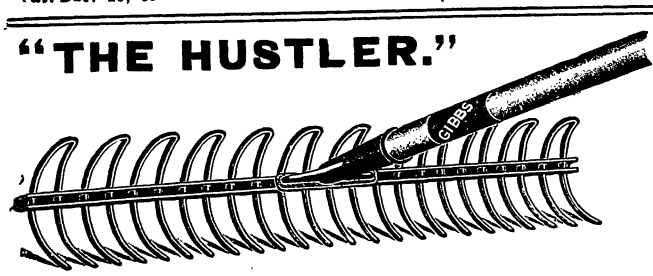
Sample Sheller **$3.00.**

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Ask your Merchant for it Send for circular.

GARRY IRON ROOFING CO., Sole Manufacturers and Owners, Cleveland O., U. S. A. Mention *Iron Age*.

"THE HUSTLER."



JNO. H. GRAHAM & CO, General Agents.
113 CHAMBERS ST., NEW YORK.

These **LAWN RAKES** are self-cleaning and have the correct formed teeth to run smoothly and rake clean without digging up the sod.

ALL STEEL—TINNED.

For a light, strong, neat and cheap rake, "THE HUSTLER" is the one to buy.

It's our LATEST and BEST design.

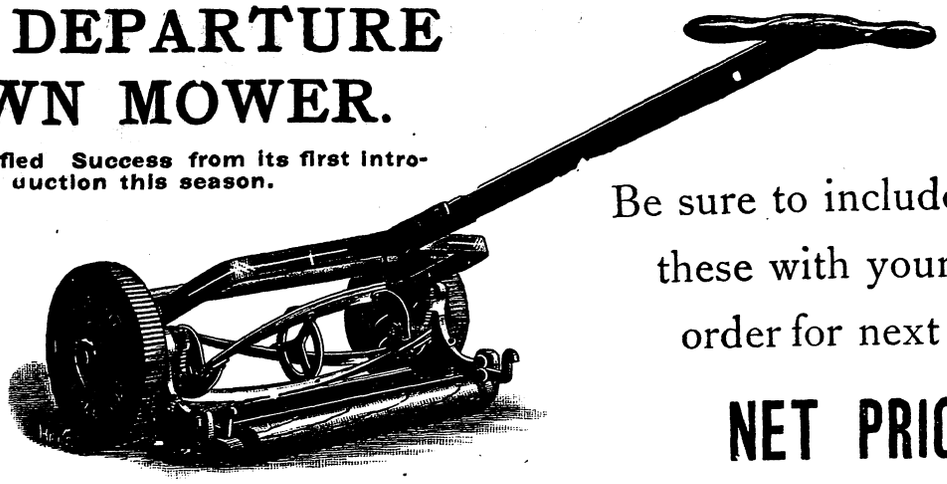
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NEW DEPARTURE LAWN MOWER.

An Unqualified Success from its first introduction this season.



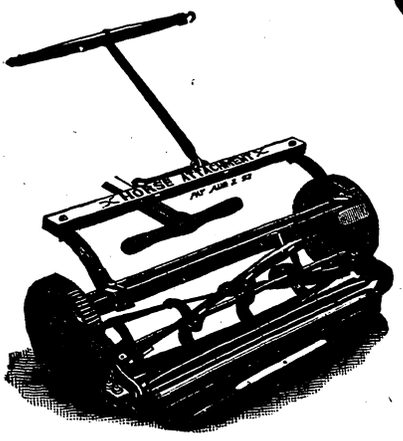
Be sure to include a line of these with your Mower order for next season.

NET PRICES.

Also the celebrated and always popular line of Mowers: *PENNSYLVANIA, CONTINENTAL, GREAT AMERICAN, NEW QUAKER CITY.*

SUPPLEE HARDWARE CO., - PHILADELPHIA.

THE "CHIEF" MOWER



With Horse Attachment.

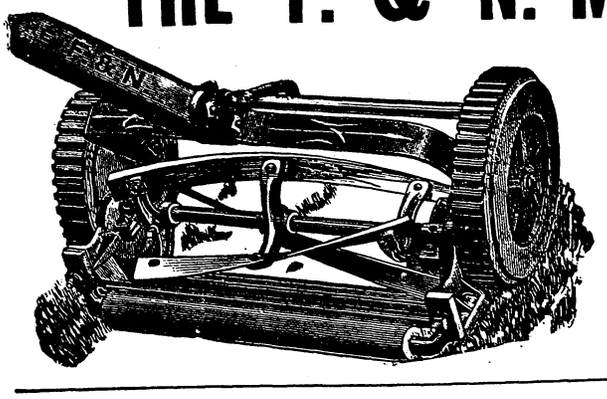
TEN INCH TRACTION WHEEL. EXCELS FOR FINE QUALITY OF MATERIAL AND FINISH. SIMPLE ADJUSTMENTS, SMOOTH CUTTING.

THE ONLY FIRST-CLASS COMBINATION MOWER ON THE MARKET. PRICES LOW, TERMS REASONABLE.

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LAWN MOWERS, RAKES, Etc., 257 Ft. Wayne Ave., Richmond, Ind.

THE F. & N. MFG. CO.,



Manufacturers of

Lawn Mowers, Lawn Sweepers and Grass Catchers,

RICHMOND, IND., U.S.A.

The F. & N. High Grade Lawn Mower. Fully Guaranteed.

AGENTS

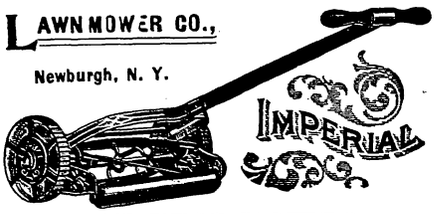
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C. F. Guyon Co., Ltd., New York.

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COLDWELL LAWN MOWER CO.,

Newburgh, N. Y.



THE BEST MOWER ON THE MARKET.

SEND FOR OUR PAPER "THE LAWN,"

IT IS FULL OF INFORMATION ABOUT LAWNS AND LAWN MOWERS.

HENLEY'S LAWN MOWERS

First-class high grade machines made of the best materials. Neat, symmetrical, strong, durable and unexcelled in construction and ease of operation. Does perfect work. For prices address



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CARPENTER & BAYLES, Eastern Agents, 91 Chambers St., and 73 Reade St., New York City.



Boss Sprinkler.

For Potatoes, Tobacco, Cotton and all small Plants and Vines.

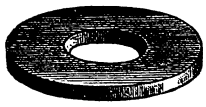
Has given satisfaction to all who have handled it.

Prices and Circulars sent on application.

OLIVER A. SMITH,

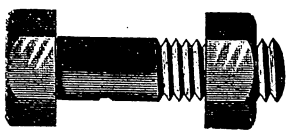
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WROUGHT WASHERS

Every Washer FLAT With hole in TRUE CENTER.



Packed in kegs for general trade, or in 1 and 5 lb. boxes for hardware trade.

MACHINE BOLTS.

HOT PRESSED NUTS.

Highest Standard of EXCELLENCE.

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DIAMOND LAWN MOWER.

OFFICIAL
World's Columbian Exposition Mower.
1892 and 1893.
105 MOWERS,
FIRST PREMIUM.
PRACTICAL SERVICE.
UNIVERSAL SATISFACTION.

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F. L. OLMSTED & CO.
LANDSCAPE ARCHITECTS.

OFFICE OF
D. H. BURNHAM, CHIEF OF CONSTRUCTION.
WORLD'S COLUMBIAN EXPOSITION.
JACKSON PARK,
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Dille & McGuire Mfg. Co.
Richmond, Ind.

Gentlemen:- August 24th, 1893.

Your McGuire Diamond Lawn Mowing Machines have been in practical use on the World's Columbian Exposition Grounds since the lawns were first made. It affords me great pleasure to give these machines the best testimonial, in every respect, as regards simple construction, easy care, light working, clean cut and durability. About fifty of our men have operated the Dille & McGuire Mower and they join me in its utmost praise, and I can cheerfully recommend it to the public as one of the best lawn mowers made to-day.

Yours Respectfully, R. Wirth
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Chadborn & Coldwell Mfg. Co.,

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—Sole Manufacturers of—



New Model AND Excelsior LAWN MOWERS ALSO The Rival, The O K, Etc., Etc.

Send for Illustrated Catalogue.

The New Britain Hardware Mfg. Co.

New Britain, Conn., U. S. A.
—MAKERS OF ALL KINDS OF—
Special Machine Screws, Studs, Bolts, &c.
BICYCLE PARTS,
SPECIAL HARDWARE.
Pattern Makers' Dowels and Emery Wheel Dressers.
Electro, Brass and Nickel Plating.

CALF WEANER "Shaw's Pat."



MADE BY
(anch) Muzzle Co.
CARROLL, IA.
No wounds. No fretting.



Put Weaners on Calves and turn them out with the cows.
"It is the only machine I ever had that worked perfectly in every way."
A. R. ANDERSON, County Supervisor.

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NEW CONCRETE MIXING MACHINES.

Coal and Ash Buckets, Coaling Tubs, Coal and Coke Cars, Patent Tubular Frame Wheelbarrows, Furnace Charging Barrows and Cars, Sheet Iron Work of every description, Patent Power Punching Machines, Every Description of General Forgings, Dimpfel Blow er Machine Work

A REVOLUTION

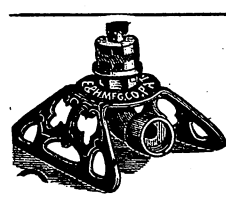
In Lawn Mower Construction.

Frame of single piece of wrought steel. No breakable cast iron bed plate. Bed knife riveted to frame. Adjustment in wiper. All parts steel and malleable iron except drive wheels and pinions.

HIGH WHEEL. HIGH GRADE. LOW PRICE. Fully Guaranteed.

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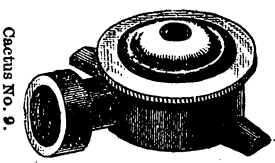
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Japanese No. 12, Adjust.

LAWN SPRINKLERS.

Cactus No. 9.



We manufacture the BEST and CHEAPEST Lawn Sprinklers in the World.

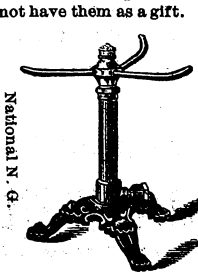
The only Sprinklers which have no revolving parts to leak or wear out.
The only Sprinklers free from small holes, and which cannot become clogged with gritty substances.
The only Sprinklers which are adjustable and will give a spray as fine as the mist of Niagara, or as heavy as the area of the supply pipe.
The best Sprinklers for high pressures, and the only sprinklers which will give satisfaction with low pressures.
We also manufacture the old style revolving sprinklers, but for our own use would not have them as a gift.



Cactus No. 5.

Ette & Henger Mfg. Co.

ST. LOUIS, MO.



National N. G.

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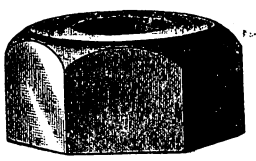
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Port Chester Bolt & Nut Co.,

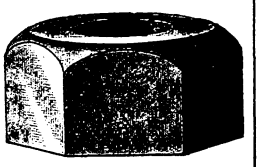
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NUTS.



NUTS FOR RAILROADS, CAR BUILDERS', LOCOMOTIVE BUILDERS' AND MACHINISTS' USE A SPECIALTY.

CORRESPONDENCE SOLICITED.

THE "EASY" BOLT CLIPPER

WILL CUT ANYTHING.



Manufactured by
H. K. PORTER,
66 Beverly St.,
Boston, Mass.

23,000 Sold.

It is the Best in the World.
For sale by the trade generally. SEND FOR CIRCULAR.

ESTABLISHED 1865.

J. H. Sternbergh & Son, READING PA.

MANUFACTURERS OF

BOLTS. NUTS. WASHERS, RIVETS,

Including Machine Bolts, Carriage Bolts, Bridge Bolts and Car Bolts,

THE HARVEY PATENT GRIP-THREAD TRACK BOLT, Soft Steel Bolts with Cold Rolled Thread, Bolt Ends, Turnbuckles, Sleeve Nuts, Lag Screws, Set Screws and Tap Bolts and every variety of screwed work,

BOILER, BRIDGE AND SHIP RIVETS, Square and Hexagon Nuts of all kinds and sizes, Plate Washers, Belt Lacing Machines, Rods and Irons for Bridges and Buildings, Merchant Bar Iron, etc., etc.

Branch Establishment, **THE KANSAS CITY BOLT & NUT CO.,** Kansas City, Mo.

All Wrought Steel Center Neck Yoke.



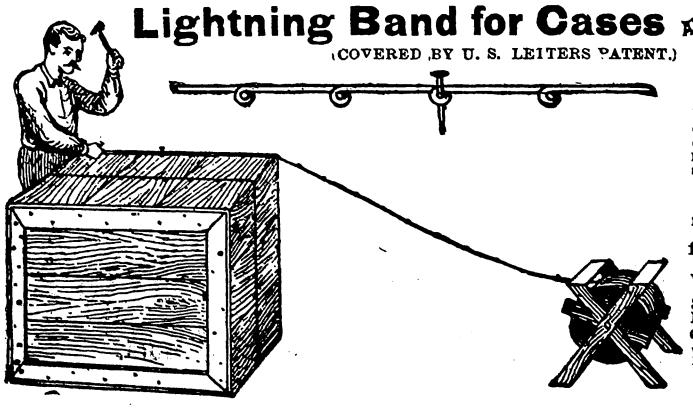
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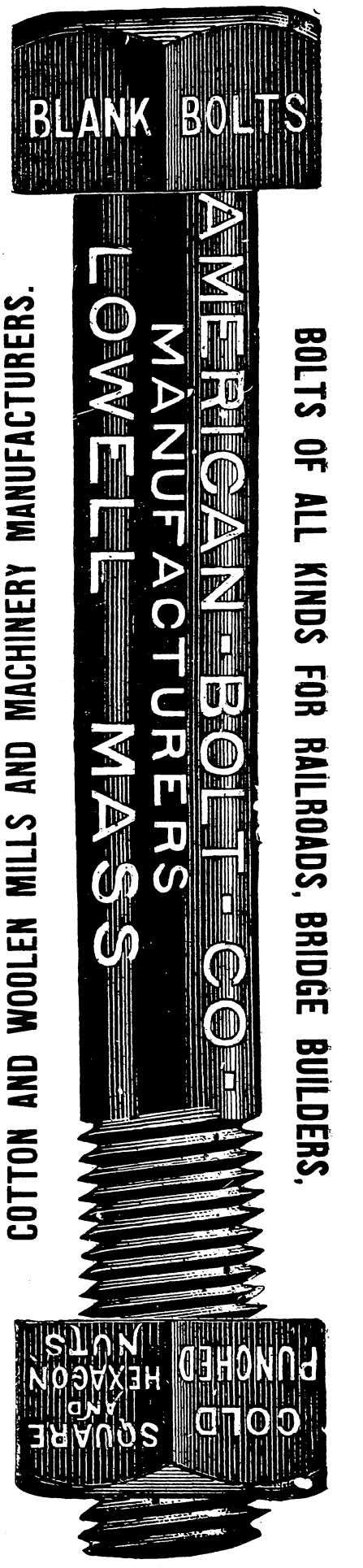
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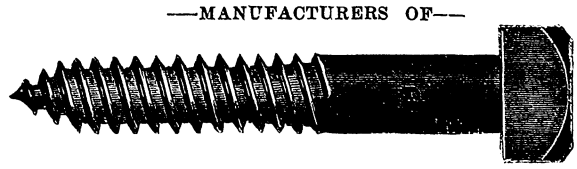
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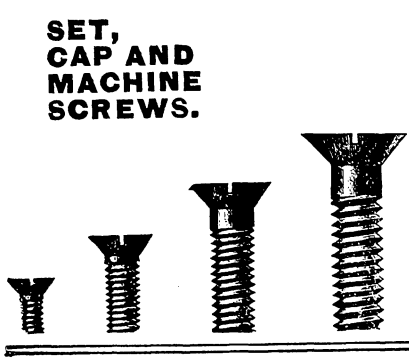
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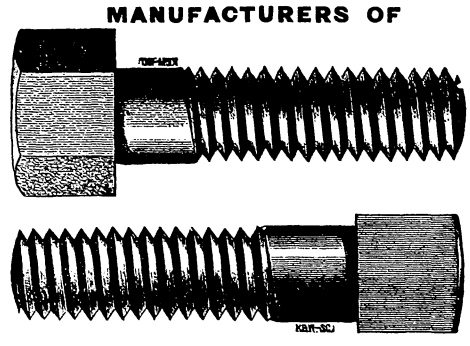
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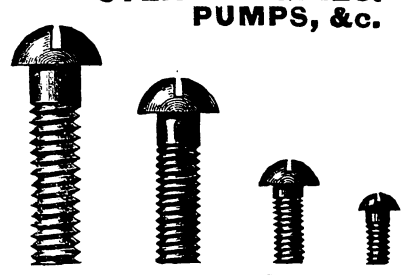
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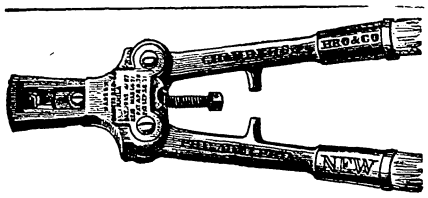
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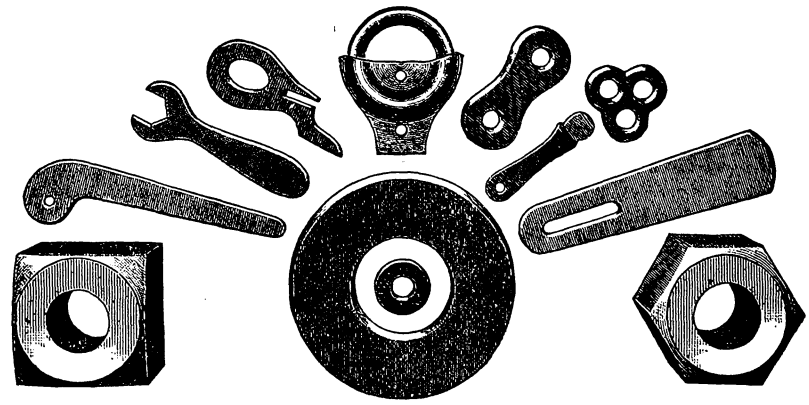
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Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amsler & Co., Pittsburgh, Pa
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa
Witherow, Jas. P. Co., Pittsburgh, Pa.

Engines, Gas.
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg. N. Y.

Engines, Steam. *Makers of.*
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Erie Engine Works, Erie, Pa.
Lane & Bodley Co., Cincinnati, O.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Phoenix Iron Wks. Co. Meadville, Pa.
Shipman Engine Co., Boston, Mass
Southwark Foundry and Machine Co. Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.
Sweester, W. A., Brockton, Mass.

Expansion Bolts.
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O

Faucets, Self-Measuring
Lane Bros., Poughkeepsie, N. Y.

Faucets, Wooden. *Makers of.*
Boston & Lockport Block Co., Boston Mass., and Lockport, N. Y.
John Sommer's Son, Newark, N. J.

Feed-Water Heaters.
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N.Y
Harrison Safety Boiler Wks, Phila, Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hartman Mfg. Co., Ellwood City, Pa.
Kimer Mfg. Co., Newburgh, N. Y.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire & Iron Wks., Milwaukee

Fiber Ware.
Standard Fiber Ware Co., Mankato, Minn.

Files. *Importers of*
Moss, F. W., 80 John, N. Y.

Files and Rasps, *Manufacturers of*
Arcade File Works, Anderson, Ind
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.

Fire Brick. *Makers of.*
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer B & Sons, foot E. Houston, St
McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. L. & Bro., Woodbridge.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Fishing Tackle.
Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flour Sifters.
Meyers, F. J. Mfg. Co. Covington, Ky.
Sills, W. H., 83 Lake St., Chicago, Ill.

Flower Stands.
Cincinnati Mfg. Co., Cincinnati, O.

Flue Cleaners.
Mackey, Jas. T., St. Louis, Mo.

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Foreign Periodicals.
Stechert, G. E., 810 Broadway, N.Y.

Forges, Portable, &c.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Scranton Forging Co., Scranton, Pa.

Foundry Facings.
Paxson, J. W. & Co., Phila.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.

Foundry Riddles.
Estey, W. S. 65 Fulton, N. Y.

Foundry Supplies.
Colliau, Victor, Detroit, Mich.
Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Paxson, J. W. & Co., Philadelphia.
Smith, J. D. Fdy. Supply Co., Cinn., O

Friction Clutches.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.
Evans Friction Cone Co., Boston, Mass

Fruit Presses.
Enterprise Mfg. Co. Philadelphia, Pa

Garden Tools.
Dunlap, C. W., Box 2703. New York

Gas Producers.
Wood, R. D. & Co. Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast, Henry B. & Co., Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
D. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glass Tubes,
Ashcroft Mfg. Co., 111 Liberty St., N.Y.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.
Supplee Hardware Co,, Phila., Pa.

Grass Hooks.
Bruce & Marks Mfg. Co., Gas City, Ind.

Grinding and Polishing Machines.
Herrick & Cowell, New Haven, Conn.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grindstone Dressing Machinery
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gun Implements.
Union Hdw. Co., Torrington, Conn.

Gunpowder, *Makers of.*
Laflin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich.

Handles.
Hartwell, E. B., Gallipolis, Ohio.
New York Mallet and Handle Wks. 456 E. Houston St., N. Y.

Hangers, Door.
Cronk Hanger Co., Elmira, N. Y.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Dunlap, C. W., Box 2703, New York.
Hotchkiss, E. S. Bridgeport, Conn.
Russell & Erwin Mfg. Co., Chambers St., New York.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Graham, John H. & Co., 113 Chambers,
McCoy, Jos F. Co., 26 Warren St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N. Y.
Underhill, Clinch & Co., 94 Chambers St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co. New Haven, Conn.
Clark Mfg. Co., Buffalo, N. Y.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Gwinner Mfg. Co., Hamilton, O.
Haines & Zimmerman, Phila Pa.
Hart, H. C Mfg. Co., Detroit, Mich.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
New Britain Hdw. Mfg. Co., New Britain, Conn.
North Bros. Mfg. Co., Philadelphia, Pa
Peabody & Parks, Troy, N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
Weiland, Chas., 149 Chambers St., N.Y
Wilson, J. Fred, Worcester, Mass.
Underhill, Clinch & Co., 94 Chambers Street, N. Y

Hardware, Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N.Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Bruce & Marks Mfg. Co., Gas City, Ind.
Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.
Box, Alfred & Co., 314 Green, Phila.
Browo Hoisting & Conveying Mch. Co. Cleveland, Ohio.
Copeland & Bacon, 85 Liberty St. N.Y
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hollow Ware, Aluminum.
Illinois Pure Aluminum Co. Lemont, Ill

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, *Makers of.*
National Horse Nail Co., Vergennes, Vt.

Horse and Mule Shoes. *Makers of.*
Bryden Horse Shoe Co., Catasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co,, Pittsburgh, Pa.
Standard Horse Shoe Co,, Boston, Mass.

Hose.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N.Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co.; Nashua, N. H.

Ice Shavers.
Enterprise Mfg. Co., Philadelphia, Pa.

Injectors.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York
Sherwood Mfg. Co. Buffalo, N. Y.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. Hartford Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y

Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron, *Merchants.*
Barnes, C. K. & Co., Philadelphia, Pa
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia
Cotton, Bradley & Co., Philadelphia
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co. 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St. N. Y
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, *Importers.*
Abbott Wheelock & Co. N.Y. and Boston
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet. *Manufacturers of.*
Cambridge Iron & Steel Co., Cambridge Ohio
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Lange Fence & Wire Co., St. Louis, Mo.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladles.
Detroit Fdy. Equipment Co., Detroit, Mich.

Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.

Lanterns.
Ohio Lantern Co., Tiffin, Ohio.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls N. Y.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mowers.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Champion Mfg. Co., Richmond, Ind.
Coldwell Lawn Mower Co., Newburg, N. Y.
Dille & McGuire Mfg. Co., Richmond, Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Lape, W. E., Syracuse, N. Y.
Mast, Foos & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila. Pa.

Lawn Rakes.
Gibbs Mfg. Co, Canton, Ohio.
Konler, F. E. & Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse N. Y.

Lawn Sprinklers.
Ette & Henger Mfg. Co., St. Louis,
McGowan, John H. Co., Cincinnati, O.

Lawn Sweepers.
Lape, W. E., Syracuse, N. Y.

Lemon Squeezers.
Ripley Mfg. Co., Unionville, Conn.

Letters and Figures, Metallic
White, A. A. & Co., Providence, R. I.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol. Mass.

Locks & Knobs, *Manufacturers of*
Deitz, A. E., 97 Chambers, N. Y
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Romer & Co., Newark, N. J.
Smith & Egge Mfg Co. Bridgeport, Conn
Yale & Towne Mfg. Co., Stamford, Conn

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Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Sement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N.Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N.Y.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Cruikshank, D. B., Providence, R. I.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila. Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Genley Mch. Tool Wks, Richmond, Ind
Hill, Clarke & Co., Boston, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield Vt.
Lodge & Shipley Mch. Tool Works, Cincinnati, O.
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co. Rochester, N Y
Manville, E. J. Mch. Co, Waterbury, Conn
National Machinery Co., Tiffin, Ohio
Newark Mch. Tool Works, Newark, N. J.
New Haven Mfg. Co, New Haven, Conn
New York Mach'y Depot, N. Y.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Prentiss Tool & Supply Co., N. Y.
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ld., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.
Adt, Jno. & Son, New Haven, Conn.

Machine Knives.
Loring Coes & Co., Worcester, Mass

Machine Screws.
New Britain Hdw. Mfg Co., New Britain, Conn.

Machine Tools.—*See Machinery,*

Machine Work.
Papping, J., 58th St., & 11th Ave., N.Y. City.

Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y
Starrett, L. S., Athol, Mass
Vallentine Tool Co., Hartford, Conn.

Machinists' Tools and Supplies.
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.

Mallets.
N. Y. Mallet & Handle Works, N. Y

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St,, N.Y.
Lufkin Rule Co., Saginaw Mich

Meat Cutters and Stuffers.
Enterprise Mfg. Co., Philadelphia, Pa
Russell & Erwin Mfg. Co., New York.

Mechanical Instruction.
Correspondence School of Mechanics Scranton, Pa.

Metals.
Fearing, Wm. S., 100 Chambers, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
American Metal Co., N. Y.

Metallurgists.
Britton J. Blodgett, Phila.

Milling Machines.
Cin. Milling Mch. Co., Cincinnati Ohio.

Mincing Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
Darby, Edw. & Sons Phila. Pa
Leonard, B. E., Scranton, Pa.

Mining Screens.
Harrington & King Perforating Co Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y

Mirrors.
Rice, C. F., Chicago, Ill.

Molding Sand.
Obermayer, S. Co., Cincinnati, O.
Paxson, J. W. & Co., Phila.

Motors, Water and Electric.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington,
Pottstown Iron Co., Pottstown, Pa
Riverside Iron Wks, Wheeling, W. Va.

Neck Yokes.
Johnson, S. C., Racine, Wis.

Nickel Platers' Supplies.
Colburn Electric Mfg. Co., Fitchburg, Mass.
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett Chemical Company. 10 to 14 Grand St., N. Y

Norway Shapes, *Rollers of.*
Bowland, William & Harvey, Frankford, Philadelphia

Novelty Manufacturers.
Franklin, H. H. Mfg., Syracuse, N. Y.

Nut Machines.
Dunham Nut Mch. Co., Unionville, Ct

Nuts, Bolts, &c., *Makers of.*
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Haskell, Wm. H. Co., Pawtucket, R. I.
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Port Chester Bolt and Nut Co., Port Chester, N. Y.
Russell, Burdsall & Ward, Port Chester
Sternbergh, J. H. & Son, Reading, Pa
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R. I.

Oil Cups and Lubricators.
Sherwood Mfg. Co., Buffalo, N. Y.

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
Glazier Stove Co., Chelsea, Mich.

Orange Shears.
Henry, J. T., Mfg. Co., Hamden, Conn.

Ores.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Morrison, Robt., St. Louis, Mo.
N. Y. Belting & Packing Co. Ltd., N.Y.

Padlocks.
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Miller Lock Co., Philadelphia, Pa.

Paint.
Dixon, Jos. Crucible Co., Jersey City, N.J

Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O

Paint Cans.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Patent Solicitors.
Howson & Howson, Phila. & Wash'gton.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Peanut and Coffee Roaster.
Olsen, A. B., Kansas City, Mo.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co. Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., Boston, Mass.
Halk & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

Pile Drivers.
Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast Henry B. & Co., Philadelphia.
Saunder's Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y,

Pipes, Fittings, &c., *Makers of.*
McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas. *Makers of.*
Cumberland Nail & Iron Co., Phila, Pa
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W Va.
Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.

Planes, *Manufacturers of.*
Stanley Rule & Level Co., N. Y

Plate, Iron and Steel, *Mfrs of*
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Vellman Iron & Steel Co., Thurlow, Pa
Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.

Polishing Machines.
Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
La Massena, C. E. & Co., Newark, N. J.

Post Hole Diggers.
Buckeye Mfg. Co., Union City, Ind.
Wister, L. & R. & Co., Philadelphia, Pa.

Poultry Nettings.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Wks. Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
Laflin & Rand Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y.

Power Hack Saws.
Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Jenkins & Lingle, Bellefonte, Pa.
Long & Allstatter Co., Hamilton, Ohio.

Presses, Dies, &c.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J.
Niagara Stamping & Tool Co., Buffalo, N. Y.
Stark Mch & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn

Presses, Power, *Makers of.*
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct,
Merriman, A. H., Meriden.
Niagara Stamping and Tool Co., Buffalo, N. Y.
Robinson, J. M. & Co., Cincinnati, O.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
Keystone Clutch Mch. Wks., Phila., Pa.
Lake, J. H. & D. Co., Massillon, Ohio,
Reeves Pulley Co., Columbus, Ind.

Pulley Fixings.
Foley, J. W. & Co., Cincinnati, O.

Pulverizing Mill.
Bradley Fertilizer Co., Boston, Mass,

Pumping Machinery.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Hooker-Colville Steam Pump Co., Chicago, Ill.
Lucas, C. O. & Co., Greenville, Ohio.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa
Valley Pump W'ks, Easthampton, Mass
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, *Makers of.*
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Mast, Foos & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.
Bertsch & Co., Cambridge City, Ind.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J.
Henderer, A. L., Wilmington, Del.
Long & Allstatter Co., Hamilton, Ohio.
Niagara Stamping and Tool Co. Buffalo, N. Y.
Robinson, J. M. & Co., Cincinnati, O.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
Perry, W. H. & Co., Providence, R. I.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Estey, W. S. 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.
Sun Mfg. Co., Greenfield, O.

Razors.
Electric Cutlery Co., 113 Chambers, N. Y
J. R. Torrey Razor Co., Worcester, Mass

Reels.
Hendryx, A. B. Co., New Haven, Conn

Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.

Rivets.
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Troy, N. Y.
Cobb & Drew, Plymouth, Mass.
Henderson, Jas. S., 165 Greenwich, N. Y.
New England Screw Co., Boston, Mass.
Plymouth Mills, Plymouth, Mass.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Rock Drills.
Sand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd, Co., Youngstown, O.
Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning F'dry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd, Co., Youngstown, O.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh Pa.

Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Johns, H. W Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y

Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa.

Rubber Goods.
Canfield, H. O., Bridgeport, Conn.

Rules, *Manufacturers of.*
Keuffel & Esser Co., 127 Fulton St., N.Y
Lufkin Rule Co., Saginaw, Mich.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Pullman Sash Balance Co., Rochester, N. Y.
Vanderbilt Sash Balance Co., Canandaigua, N. Y.

Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.
Cincinnati Corrugating Co., Piqua, O.

Sash Fasteners.
Wooster, F. V., Boston, Mass.

Sash Locks.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Portable Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.

Saws, *Makers of.*
Disston, Henry & Sons, Phila., Pa.
Hiles, C. A. & Co., 336-338 Carroll Ave Chicago, Ill.
National Saw Co., 96 Reade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Taintor Mfg. Co., 84-86 Chambers, N

Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N.Y

Scrapers, Road.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.

Screens, Coal and Ore.
Hendrick Mfg. Co., Ltd., Carbondale, Pa,

Screens, Door and Window.
Queen Anne Screen Co., Burlington, Vt.

Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Capitol Mfg. Co., Chicago, Ill.
Gay & Parsons, Augusta, Me.
Mayhew, R. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.

Screws, *Makers of.*
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
National Screw & Tack Co., Cleveland, Ohio.
New England Screw Co., Boston Mass.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls N. Y

Scythe Stones and Whetstones.
Pike Mfg. Co., Pike Stat'n, N. H.
Cleveland Stone Co., Cleveland, O.

Shafting, *Makers of.*
Cresson, Geo. V., Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Fitzsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc. Phila. Pa.
Stow, Co. Mfg, Binghamton, N. Y.

Shaped Iron and Steel,—*Manufacturers of.*
Ætna-Standard Iron & Steel Co. Bridgeport, O.

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Allentown Rolling Mill, Allentown, Pa
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phœnix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn
Heinischs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, *Manufacturers of.*
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh,
Pierson & Co., 29 Broadway, N. Y.
Reily, John W., Fort Hunter P.O., Pa.
Singer, Nimick & Co., Ld., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch. A. B. & Co., Peoria, Ill.

Shipping Blanks.
Barlow Bros., Grand Rapids, Mich.

Sinks.
Douglas, W. & B., Middletown Conn.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Sickels, Sweet & Lyon, 55 Barclay St., N. Y.
Winslow, Sam'l, Skate Mfg. Co. Worcester, Mass.

Skates, Roller.
Henley, M. C., Richmond, Ind.
Union Hardware Co., Torrington, Conn
Winslow, Saml., Skate Mfg. Co., Worcester, Mass

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.
Clendenin Bros., Baltimore, Md.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.

Speed Indicators.
Church & Sleight, 109 Fulton St., N. Y.

Spelter.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
Rogers & Hamilton Co., Waterbury, Conn.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y

Springs.
American Spiral Spring Co., Pittsburgh, Pa.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y
Morgan Spring Co., Worcester, Mass
Nourse, Fred. Co., 315 to 319 E. 22d St., N. Y.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt
Tuck Mfg. Co., Brockton, Mass
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Bardsley, J., 149 & 151 Baxter St., N.Y.
Pullman Sash Balance Co., Rochester N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Sprinklers.
Smith, Oliver A., Clarkston, Mich.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St. New York

Stamping Works.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co. Binghamton N.Y

Steam Gauges.
Ashcroft Mfg. Co., 111 Liberty St., N.Y
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., *Makers of*
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Camden, N.J.

Steam Separators.
Goubert Mfg. Co., 32 Cortland St N. Y.
Harrison Safety Boiler Wks. Phila. Pa

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.

Steel Figures and Alphabets.
Krogsrud, W., 61 Fulton N. Y.
Wolff, C. H., 177 William St., N. Y.

Steel Importers.
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa
Boker, Hermnan & Co., 108 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Elken & Co., Hagen, Germany
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburg Pa
Moss, F. W., 83 John, N. Y
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Reily, J. W., Fort Hunter P. O., Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co. High Bridge, N.J
Wordlaw, S. & C., Sheffield, Eng
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn

Steel, *Manufacturers' Agents.*
Barnes, C. K. & Co., Philadelphia, Pa
Corning, Edw, & Co., 29 B'way, N. Y
Frasse Co., 19 Warren St., New York.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, *Manufacturers of.*
Bethlehem Iron Co., S. Bethlehem, Pa
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville Pa
Riverside Iron Wks., Wheeling, W. Va

Steel, Tool.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.

Steel Wheels.
Lilienberg, M. N., 150 Broadway, N. Y.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill
Croissant, M., Albany, N. Y.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunder's Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Storage.
Security Warehouse, E. St. Louis, Ill.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y

Stove Pipe Thimbles.
Cheney, S. & Son Manlius, N. Y

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.
Gwinner Mfg. Co., Hamilton, O.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse N. Y.

Strops.
Electric Cutlery Co. 113 Chambers, N.Y
J. R. Torrey & Co., Worcester, Mass.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co. La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation, Boston, Mass
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland O.
Phillips, E. & Sons, South Hanover.
Plymouth Mills, Plymouth, Mass.
Trefant, W. E., Whitman, Mass.

Tank Heaters.
Hunt, Helm & Ferris, Harvad, Ill,

Taps and Dies.
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tinning Process.
Sands, Thomas, Nashua, N. H.

Tin Plate Machinery.
Lloyd Booth Co., Youngtown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St.,

Tire Upsetters.
Butts & Ordway, Boston, Mass,

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N.Y.

Tools.
Brown, R. H. & Co., New Haven, Conn.
Frasse Co., 19 Warren St., New York.
Fray, Jno. S. & Co., Bridgport, Conn.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,
Starrett, L. S., Athol, Mass.
Tower & Lyon, 95 Chambers St., N. Y.

Tools, Blacksmith and Wheelwrights.
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R. Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasolene.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.

Transom Lifters.
Wollensak, J. F. Chicago, Ill.

Tree Protectors.
McCallip Fence & Wire Wks., Columbus, Ohio.

Trucks. *Manufacturers of.*
Berger Bros., Philadelphia, Pa.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co. Lansing Mich.

Tubes, Seamless Drawn Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y
Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.
Leng's John S. Son & Co., 4 Fletcher St., New York.
Mannesmann Tube Co. Ltd., Landore, England.
Shelby Steel Tube Co., Shelby, O.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Central Iron & Steel Co., Brazil, Ind.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills. *Makers of.*
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 56 John N. Y.
Mason Regulator Co., Boston, Mass.

Ventilating Fans.
Huyett & Smith Mfg. Co., Detroit, Mich

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vises.
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Tower & Lyon, 95 Chambers St., N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.

Washing Machines.
Neff, W. H., Cowan, Ind.
Wayne, A. Mfg. Co., Ft. Wayne, Ind.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Wheelbarrows.
Akron Tool Co., Akron O.
Amer. Steel Scraper Co., Sidney, Ohio
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Sweatt Mfg. Co., Minneapolis, Minn.

Wheels.
Arnold Metal Wheel Co., New London, Ohio.

Whips.
American Whip Co., Westfield, Mass,

Window Cord, *Makers of.*
Samson Cordage Works, Boston, Mass

Wire, *Manufacturers of.*
Amer. Spiral Spring Co., Pittsburg, Pa
Consolidated Steel & Wire Co., St. Louis, Mo.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co. Worcester, Mass

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Wks. Milwaukee Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.
Cronk Hanger Co., Elmira, N. Y.
King, J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.

Wire Door Mats.
Hartman Mfg. Co., Elwood City, Pa.
Horrock, Joshua, 45 Cliff St., N. Y.

Wire Fences.—*See fencing, Iron and Wire.*

Wire Goods, *Manufacturers of.*
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y.
Lange Fence & Wire Co., St. Louis, Mo
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros, Cortland, N. Y.
Williamson, C. T. Wire Novelty Co. Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester Mass.
Waterbury Mch. Co., Waterbury, Conn

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn

Wire Nails.
Consolidated Steel & Wire Co., St. Louis, Mo.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle Pa.
Phillips, E. & Sons, South Hanover Mass
Phillips, Townsend & Co., Phil., Pa.
Plymouth Mills, Plymouth, Mass.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City

Wire Rods, Steel.
Consolidated Steel & Wire Co., St. Louis, Mo.
New Castle Wire Nail Co., New Castle Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y

Wire Rope, Iron and Steel *Makers.*
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Wire Spool.
Malin & Co., Cleveland, O.

Wood-Working Machinery.
Seneca Falls Mfg. Co., Seneca Falls, N.Y

Wrapping Paper.
Amer. Roll Paper Co., St. Louis, Mo.

Wrenches, *Manufacturers of.*
Bemis & Call Hardware & Tool Co Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn.
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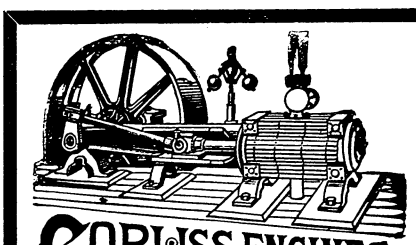
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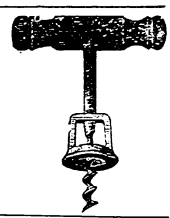
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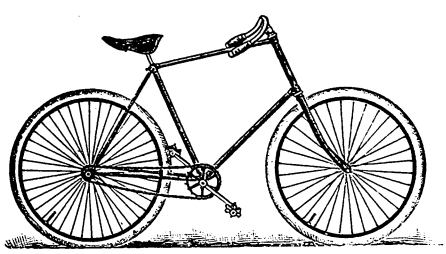
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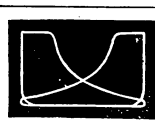
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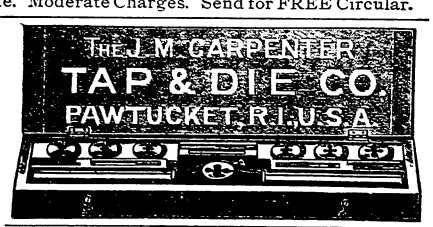
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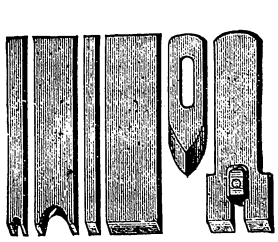
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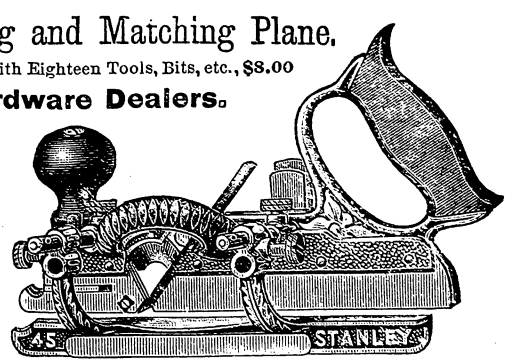
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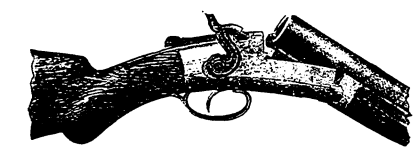
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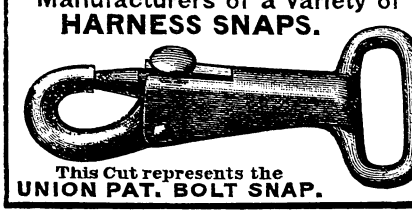
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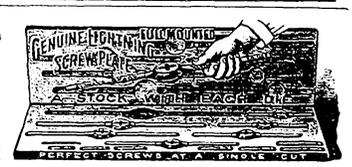
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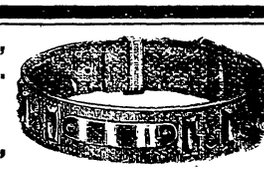
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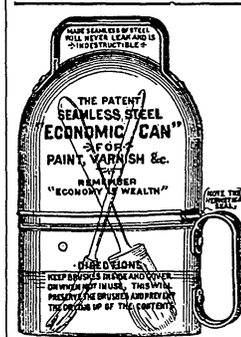


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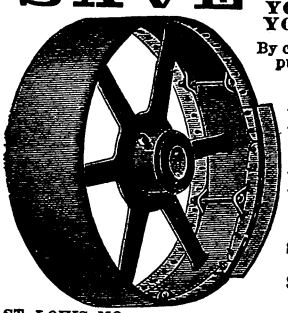
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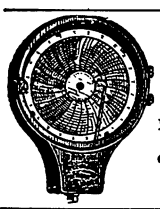
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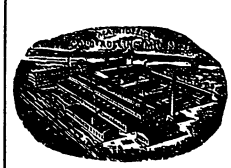
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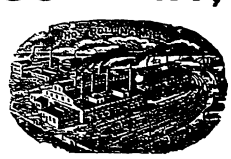
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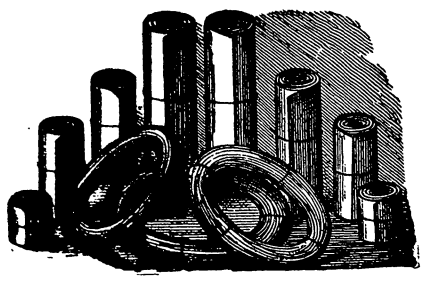
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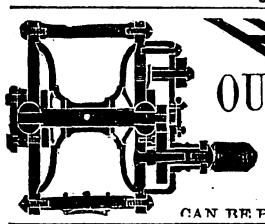
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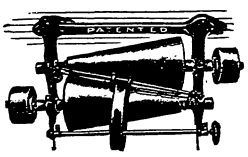


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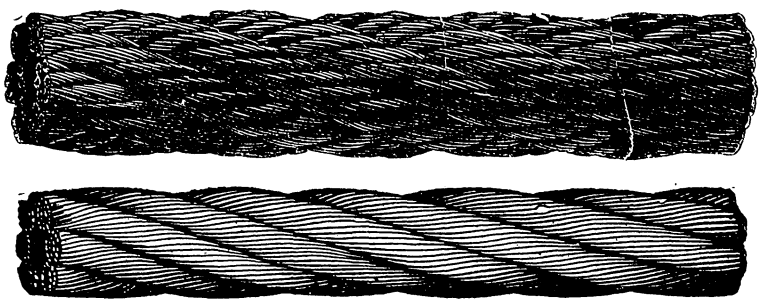
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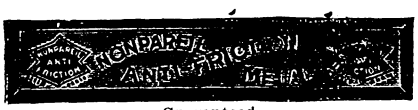
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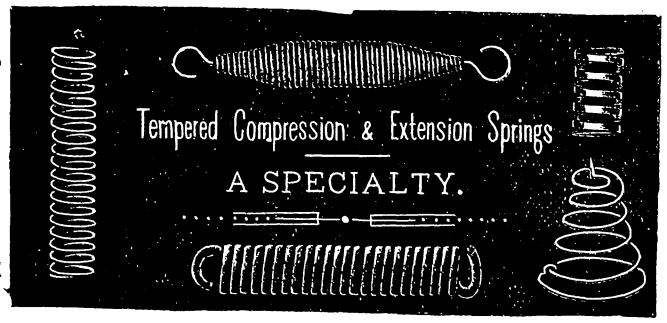
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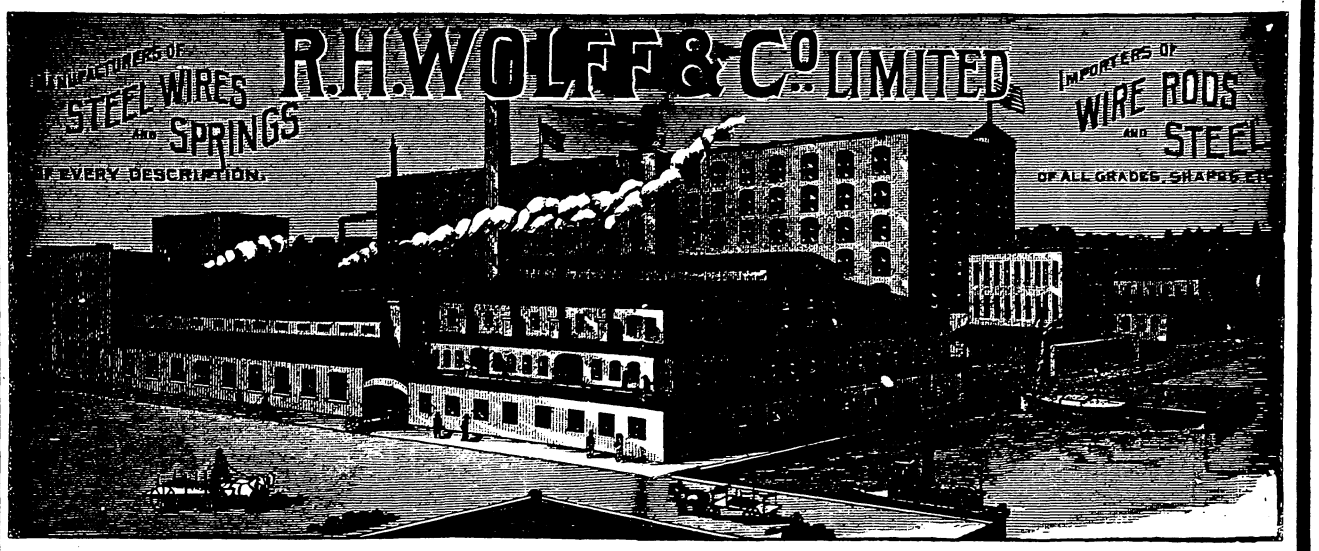
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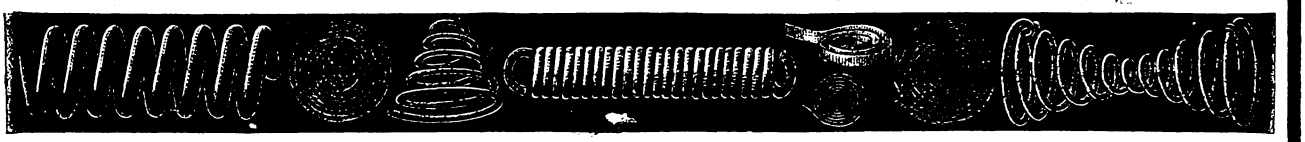
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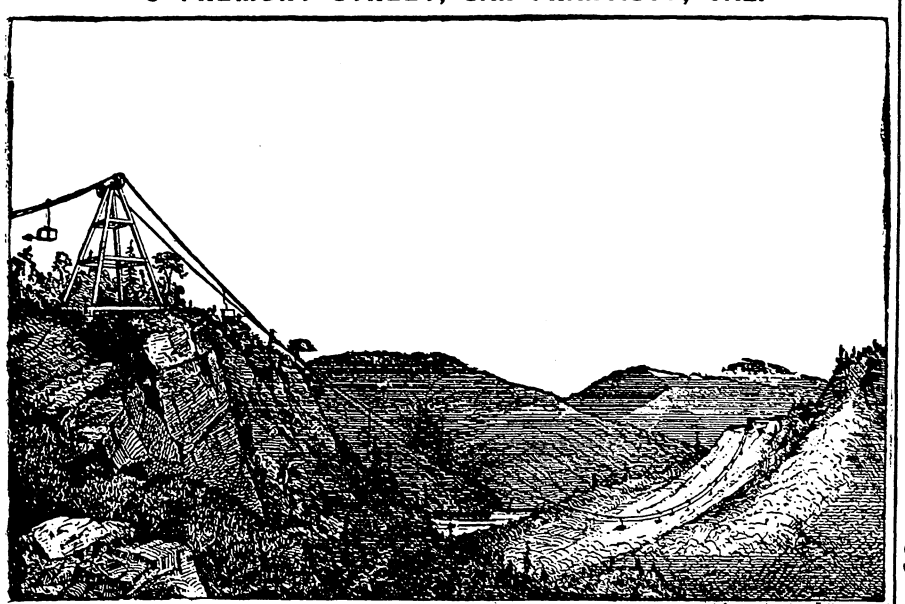
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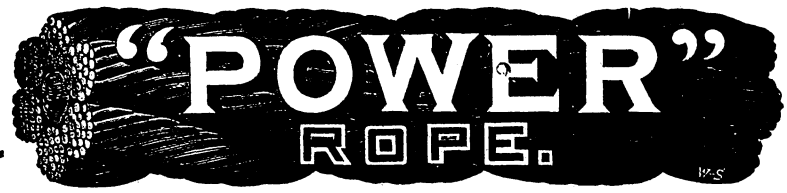
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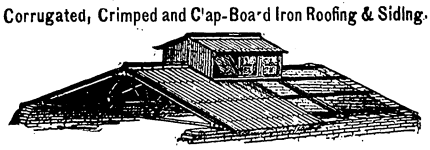
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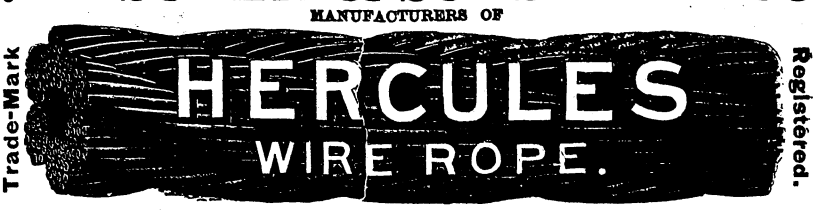


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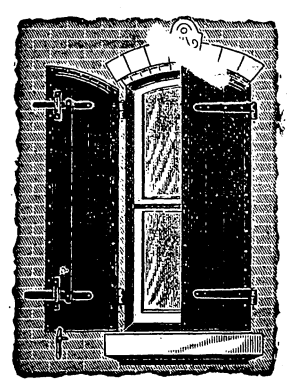
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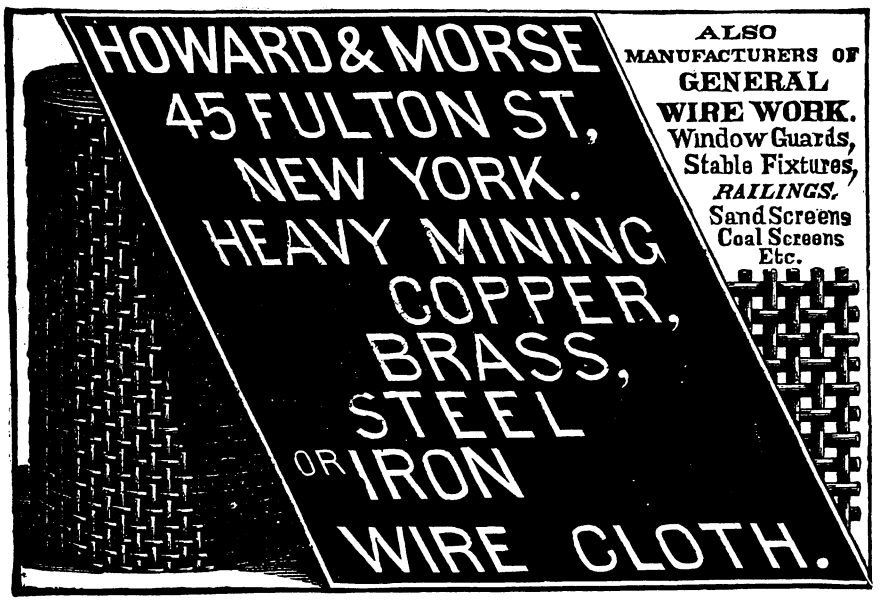
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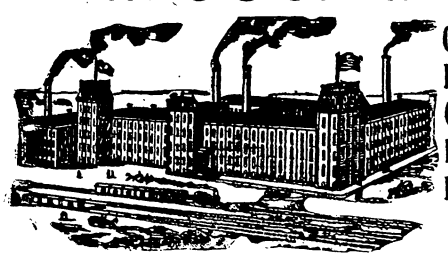
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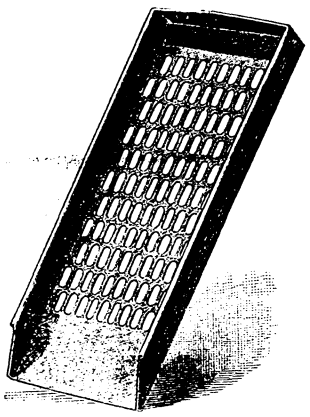
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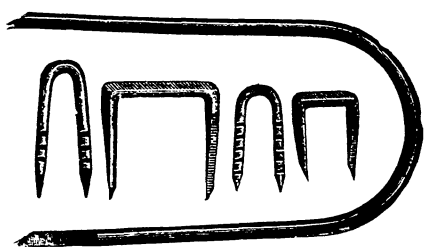
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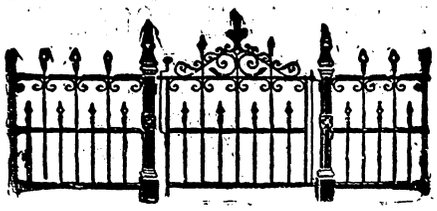
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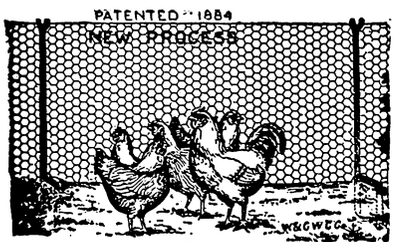
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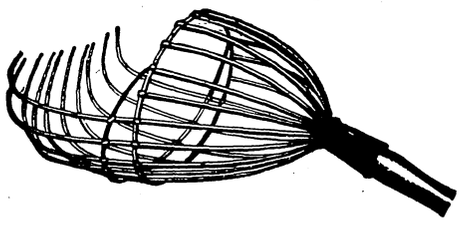
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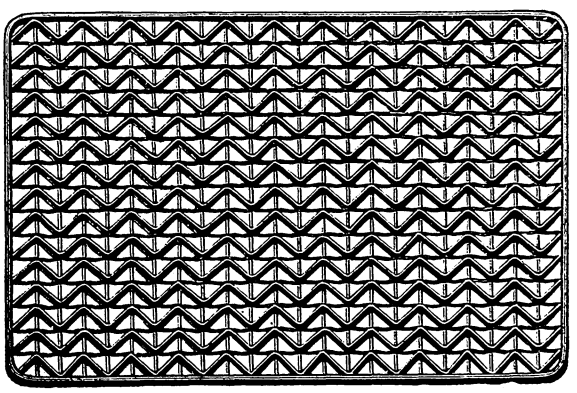
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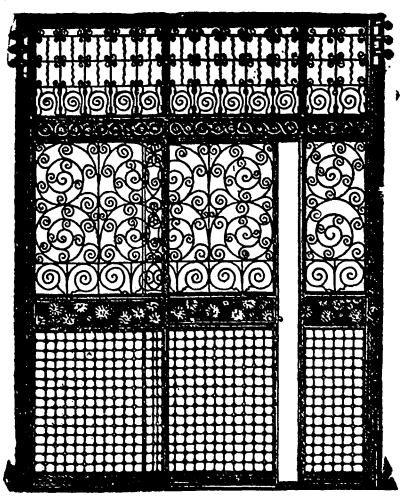
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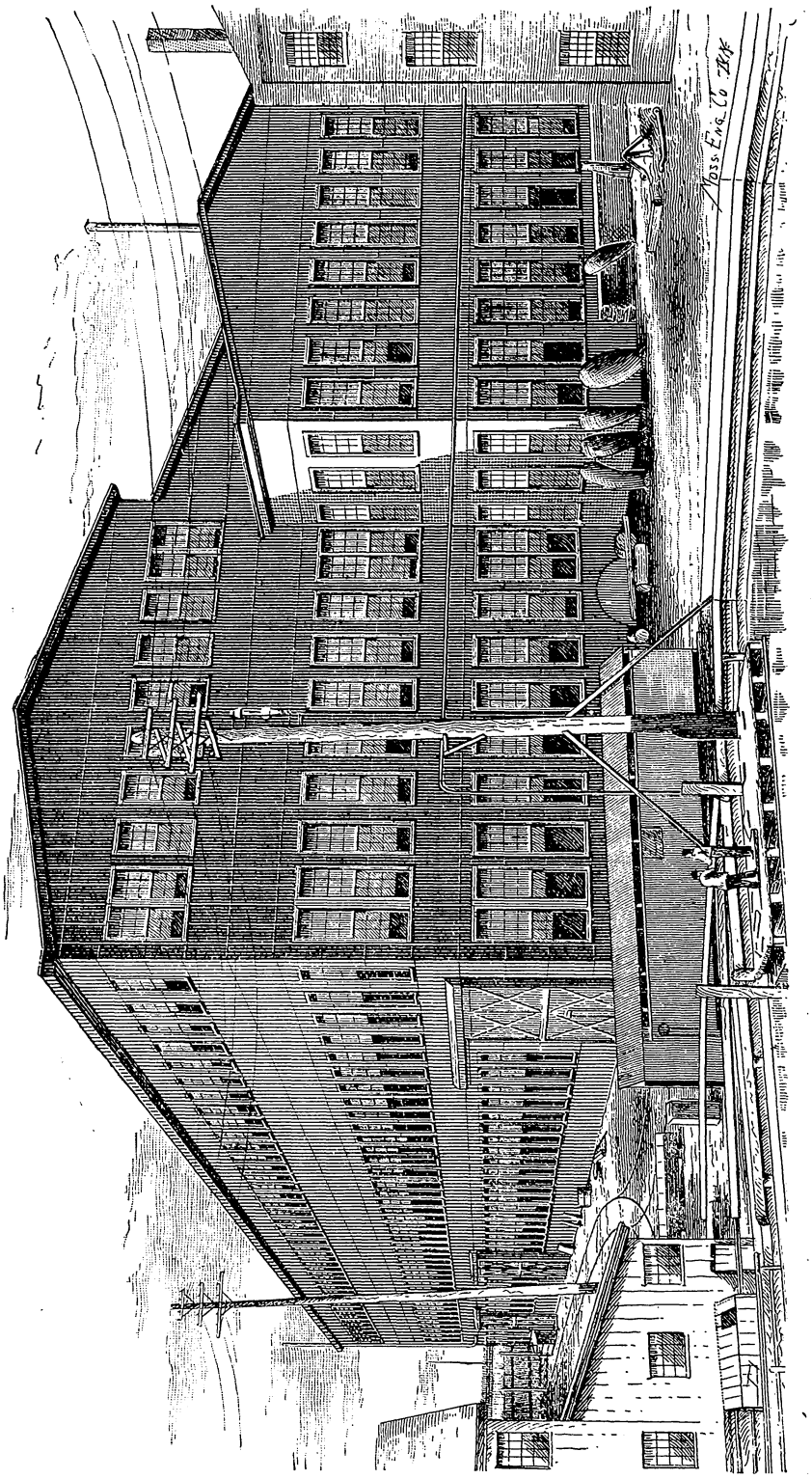
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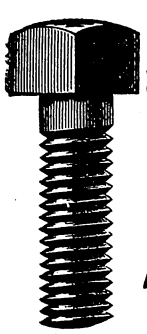
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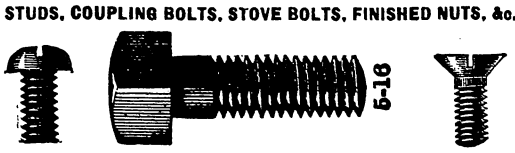
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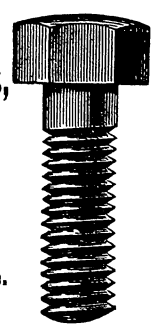
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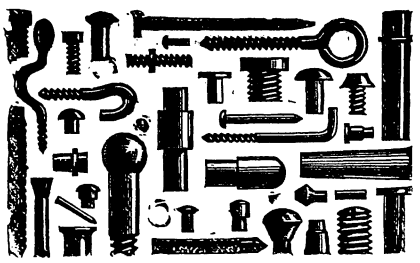
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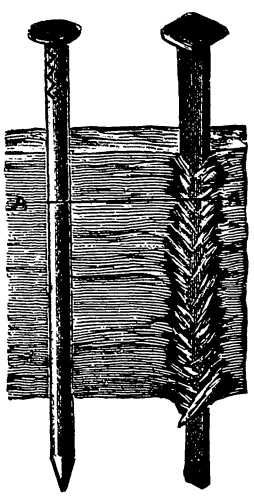
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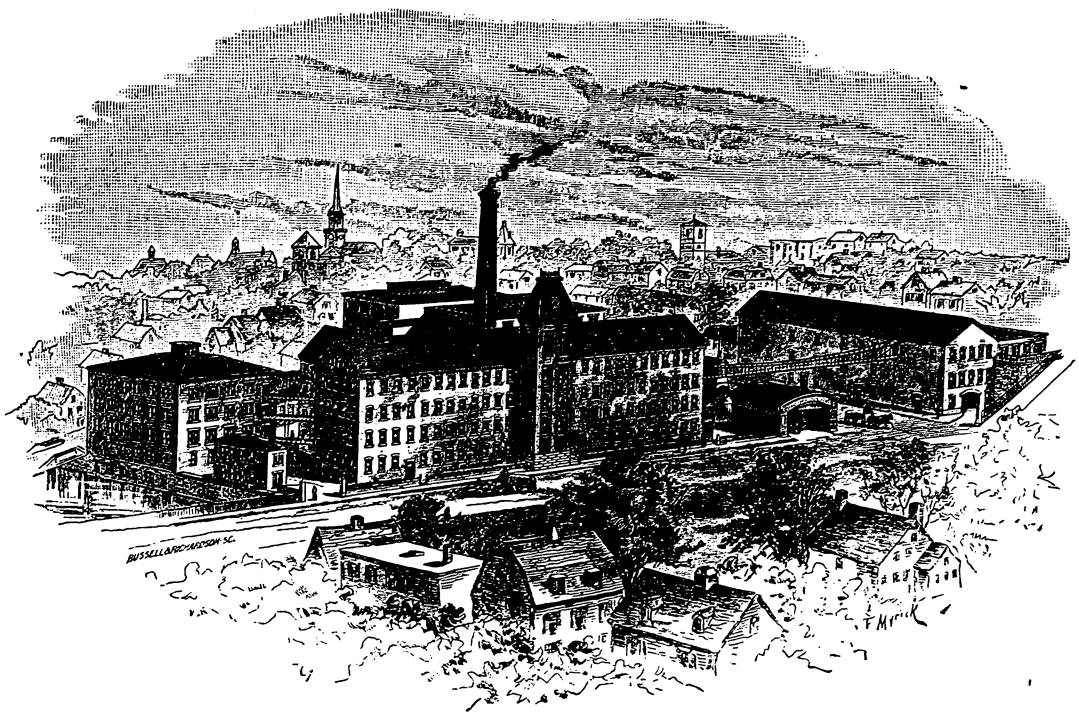
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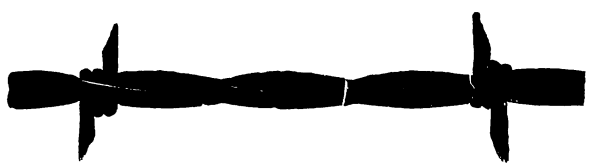
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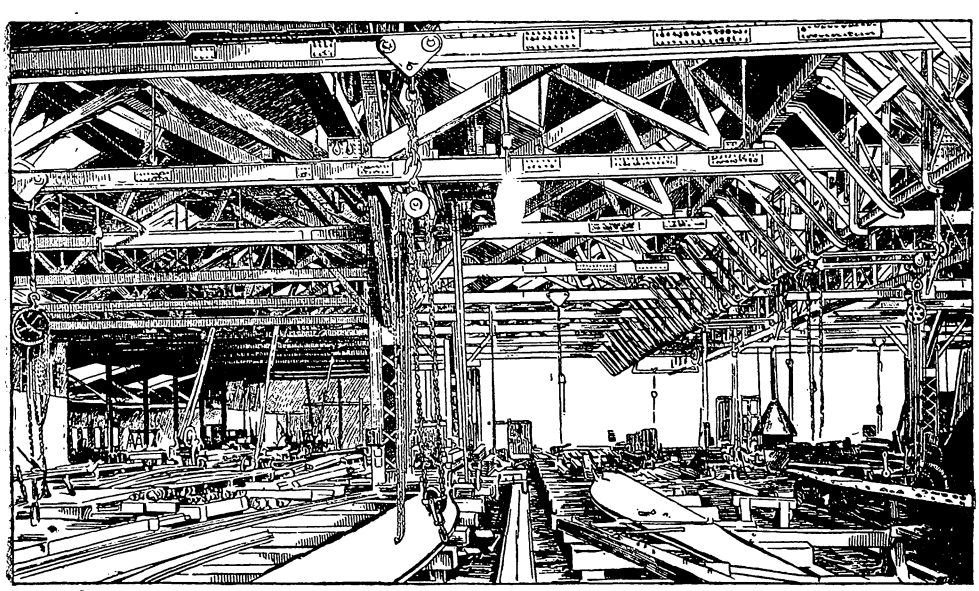
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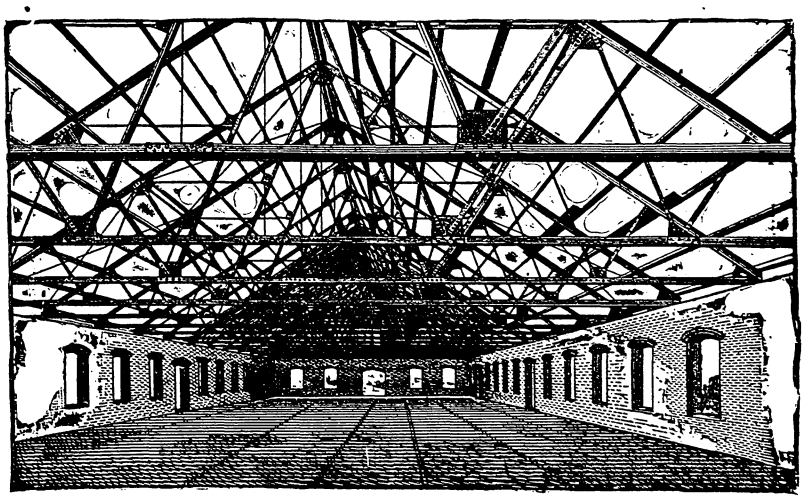
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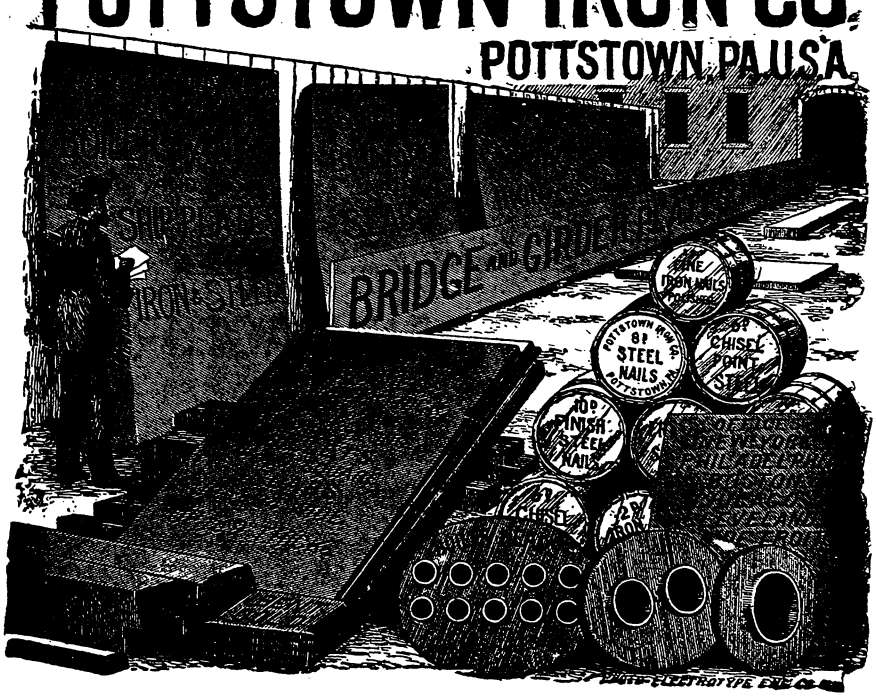
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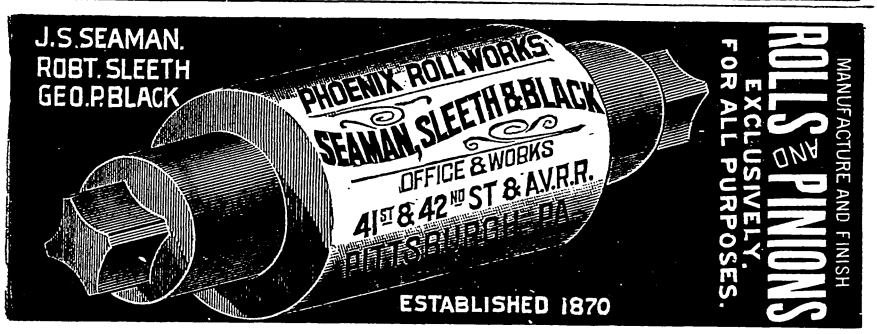
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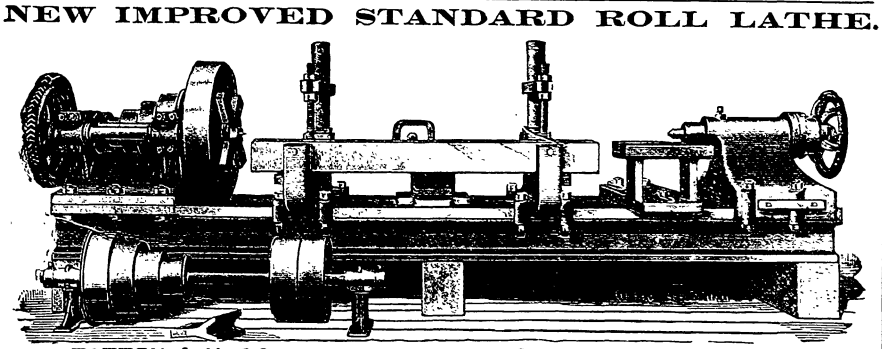
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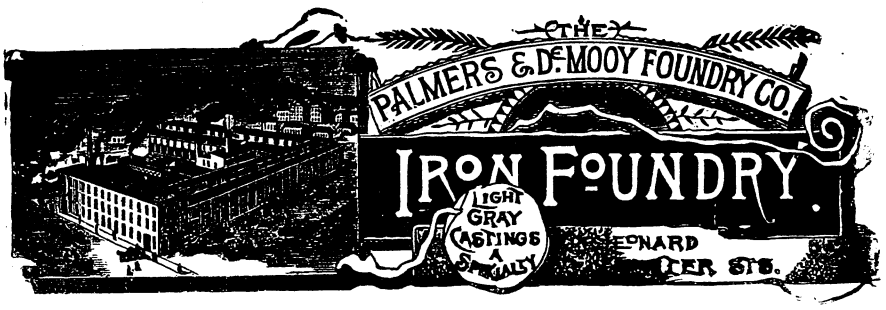
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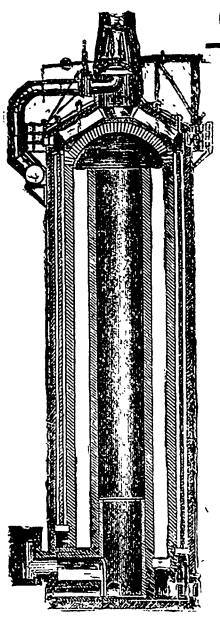
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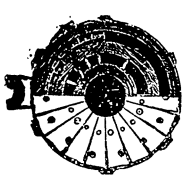
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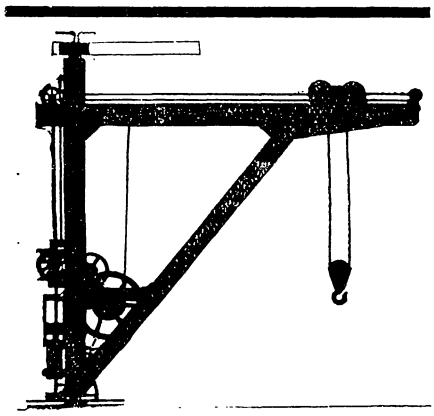
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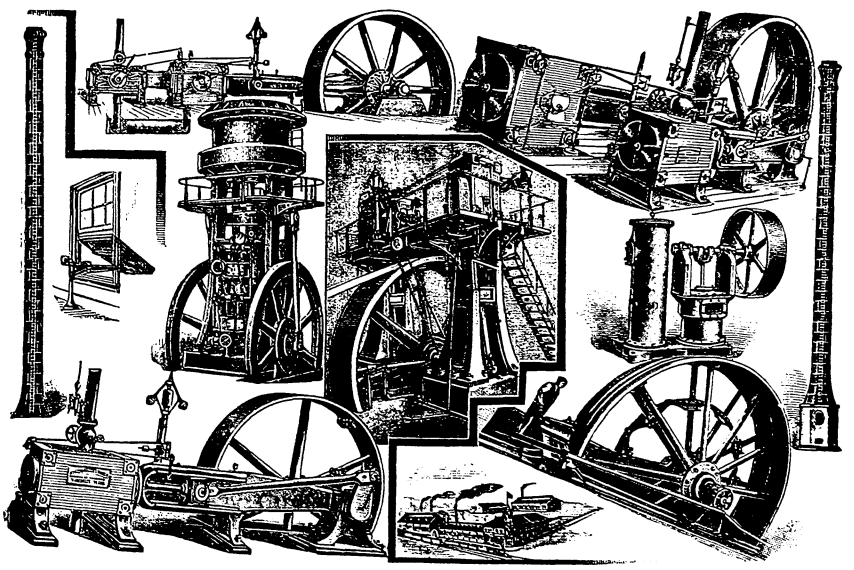
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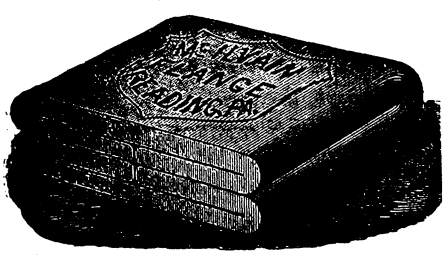
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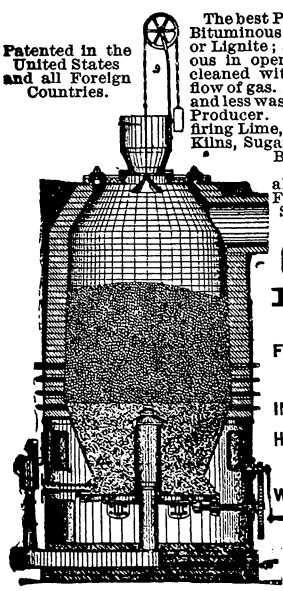
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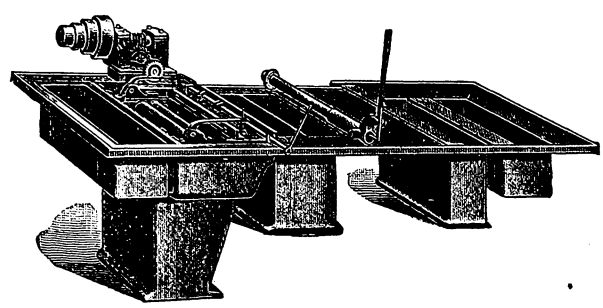
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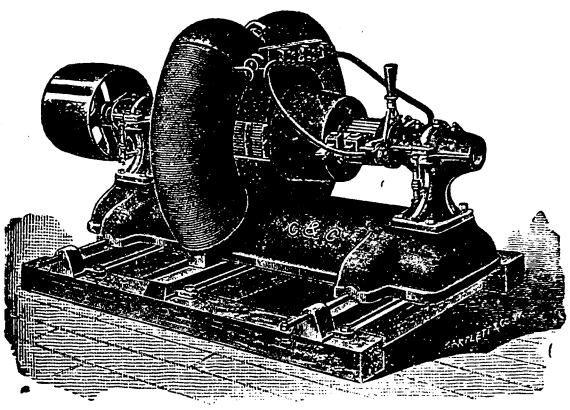
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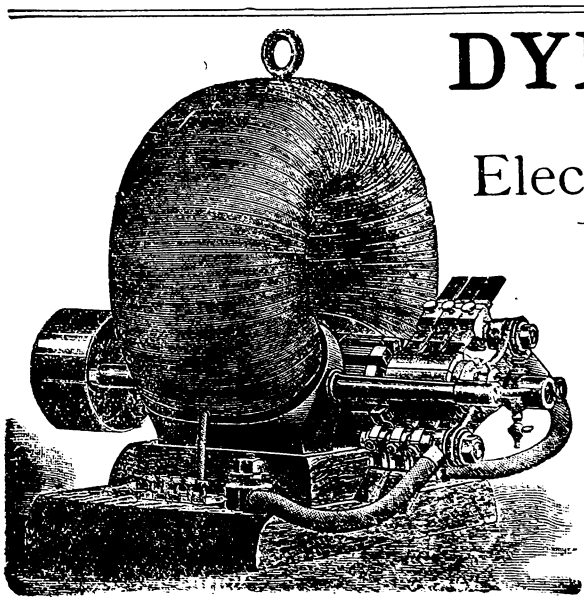
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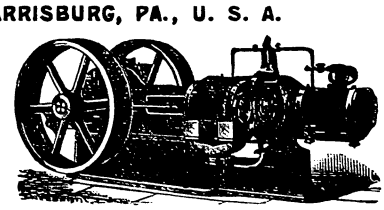
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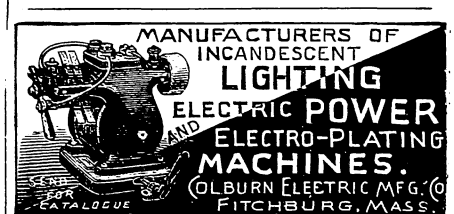


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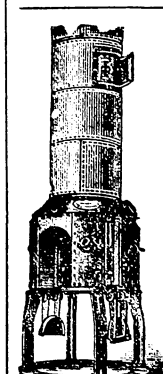


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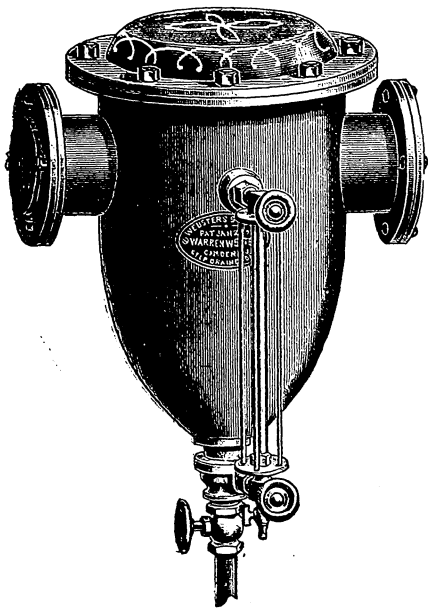
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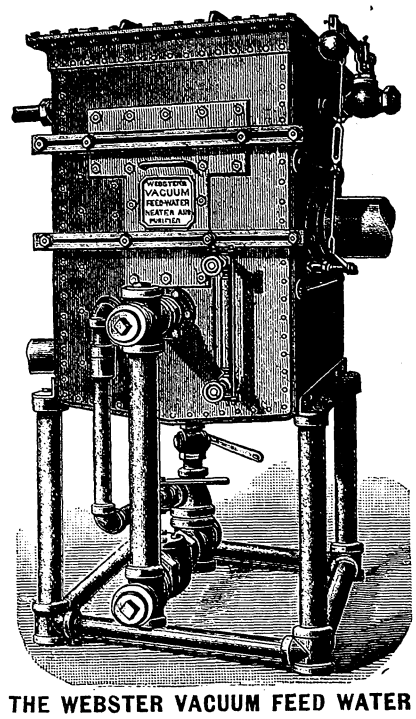
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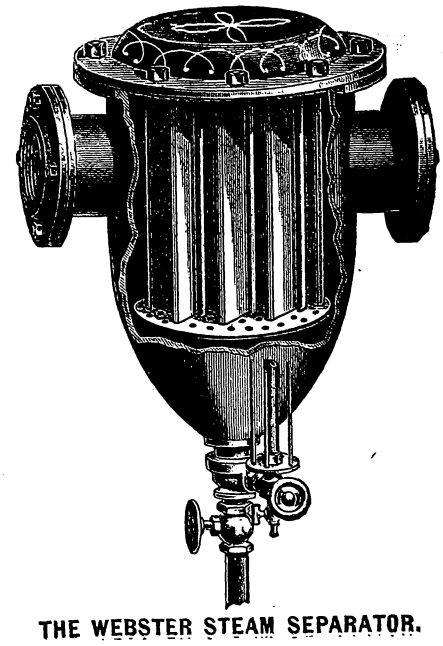
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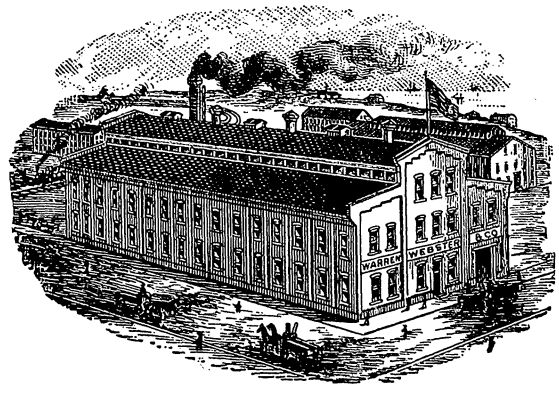
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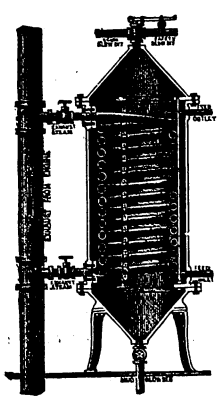
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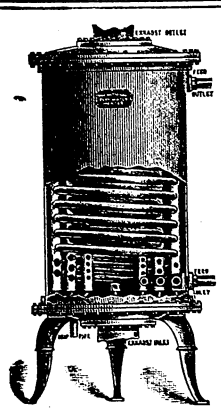
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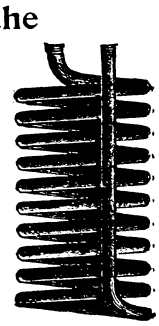




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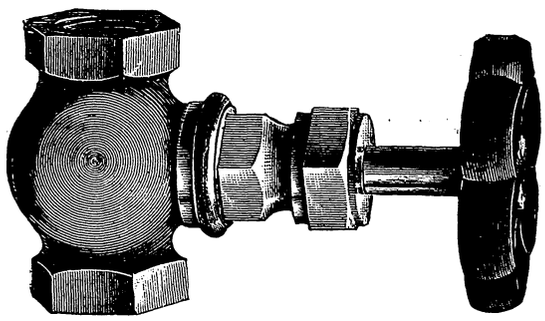
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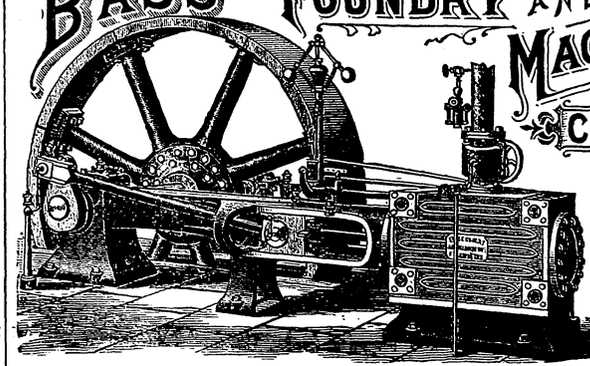
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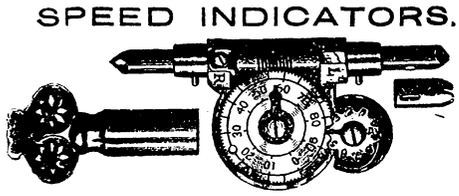
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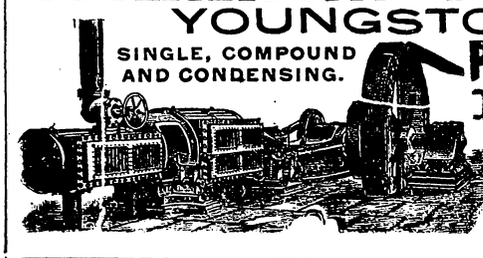


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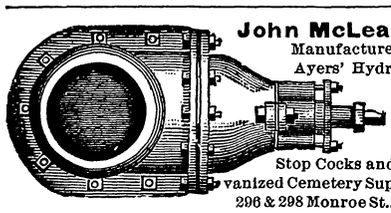
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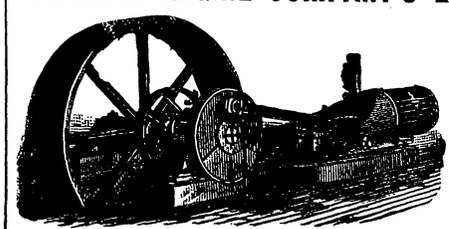
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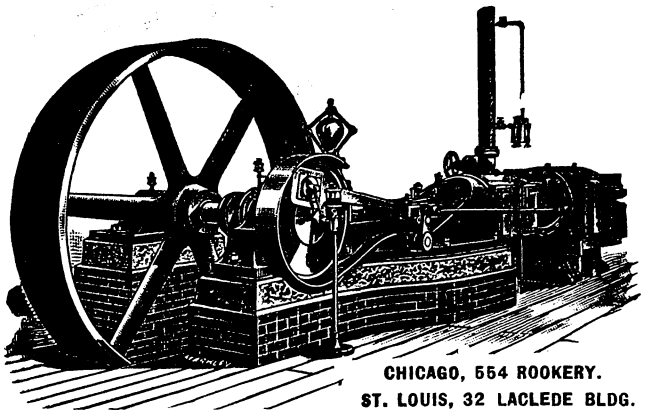
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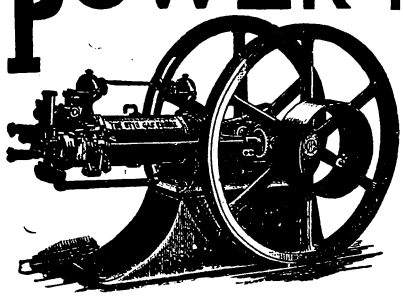


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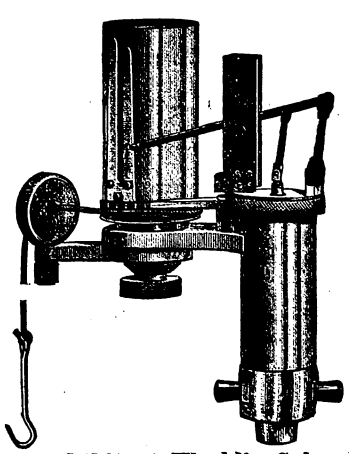
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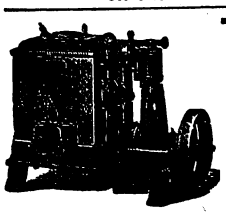
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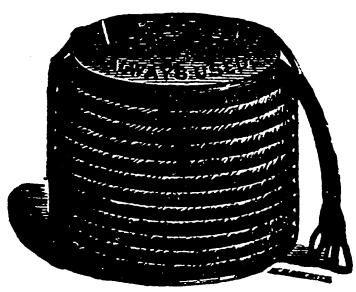
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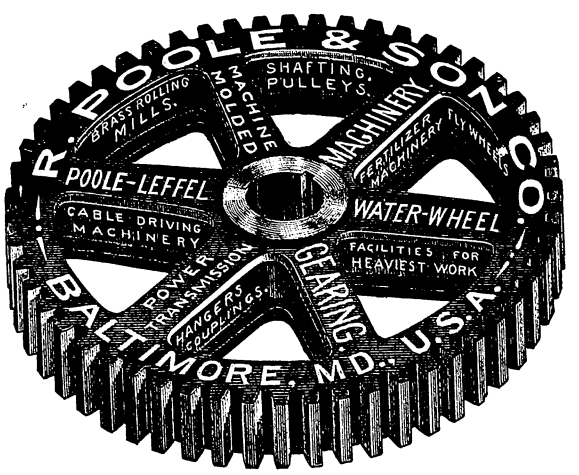


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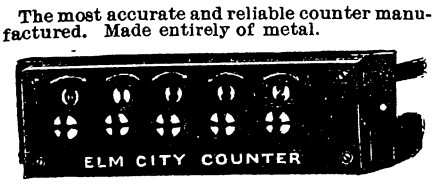


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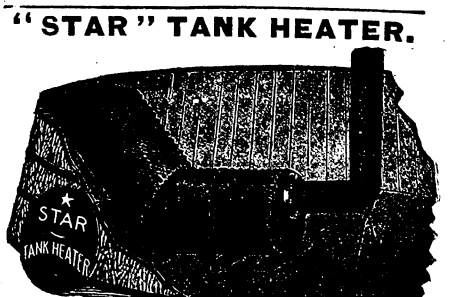
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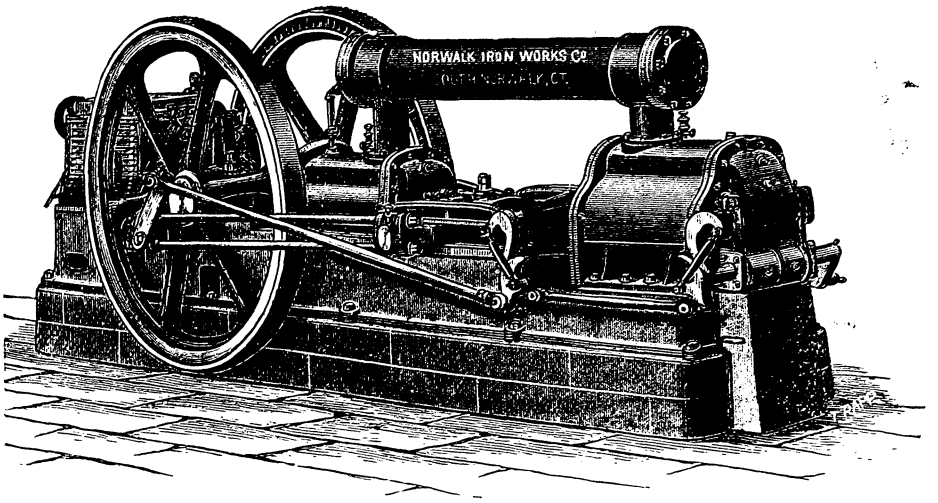
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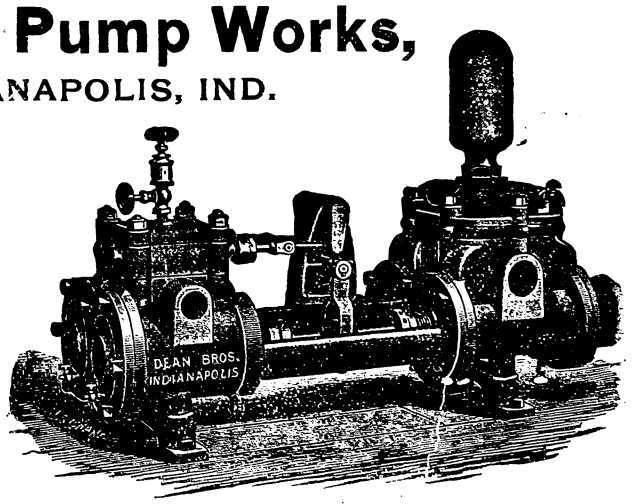
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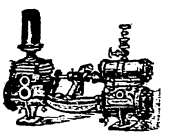




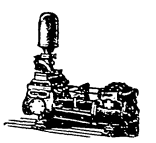
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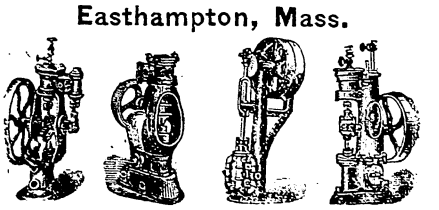


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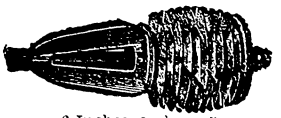
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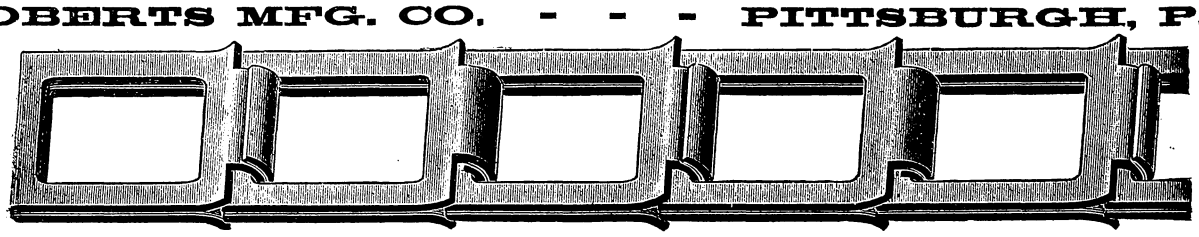
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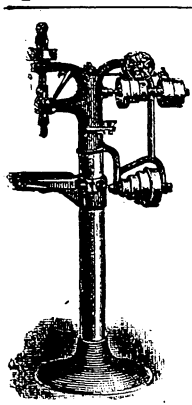
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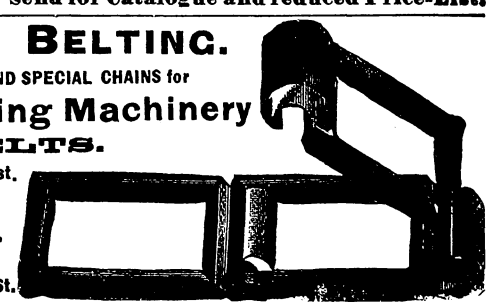
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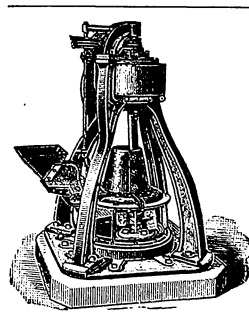
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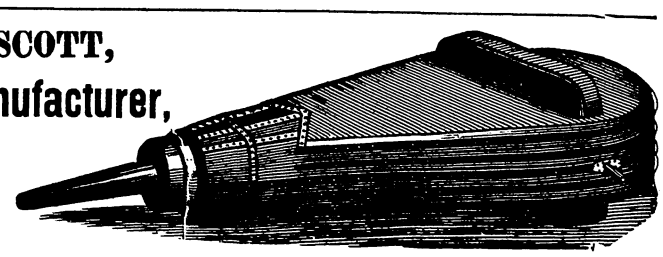
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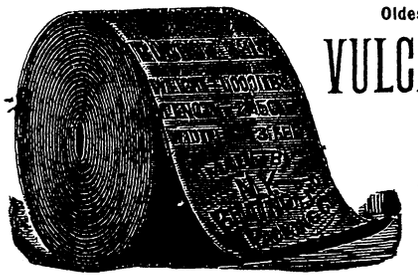
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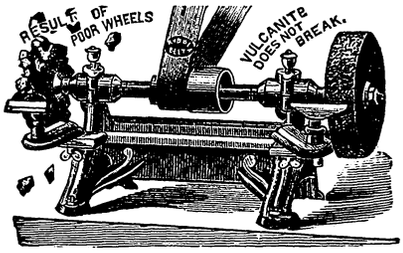
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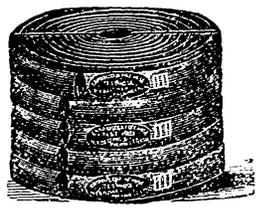
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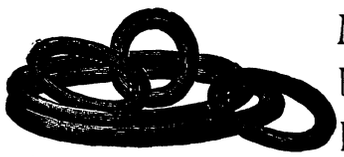
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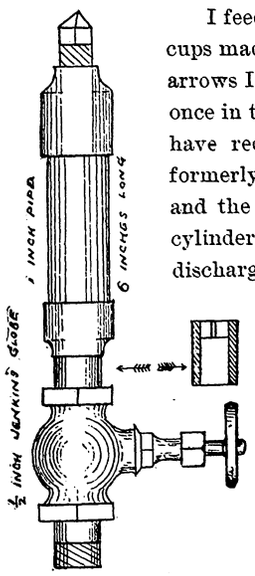
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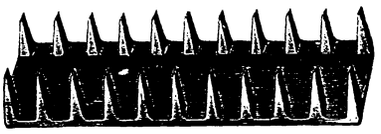
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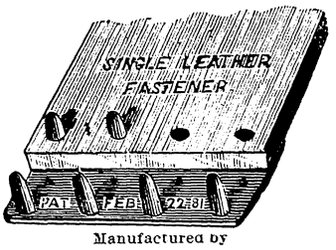
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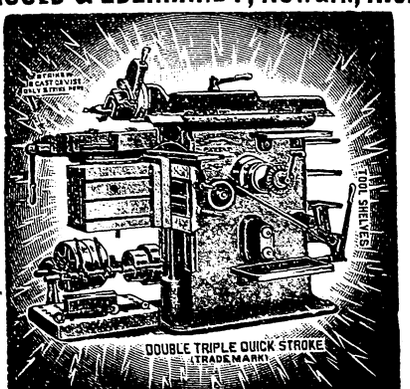
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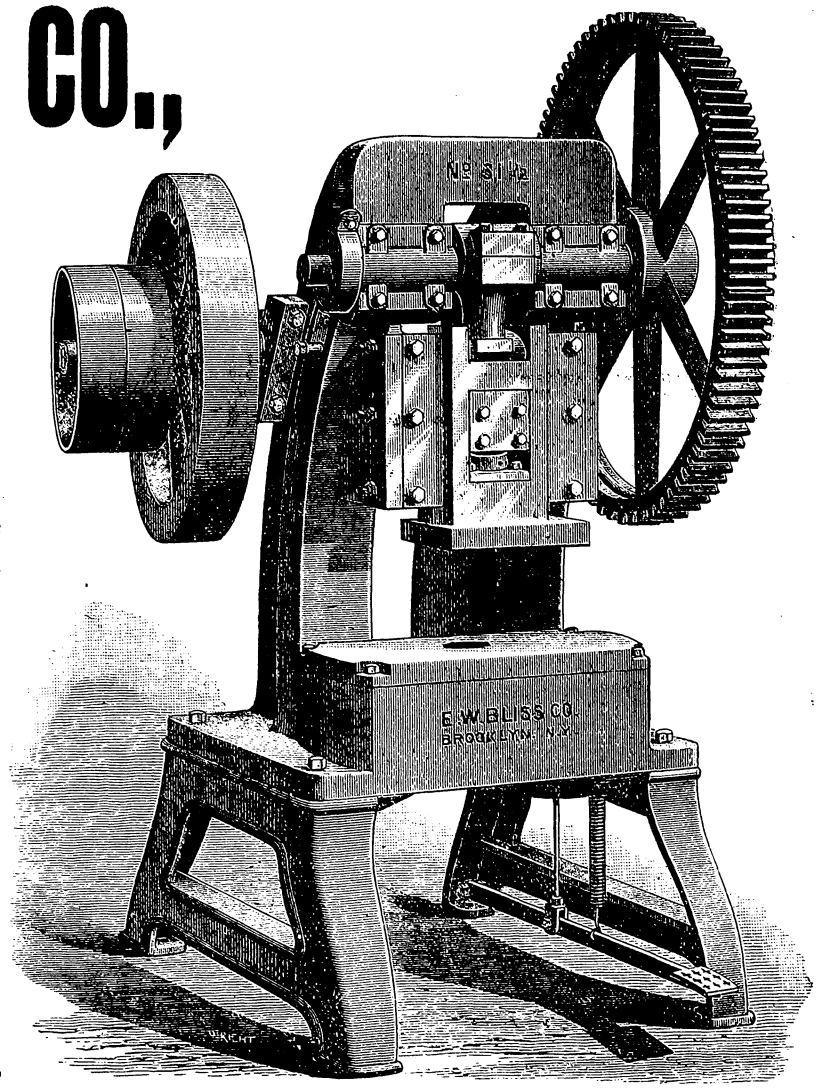
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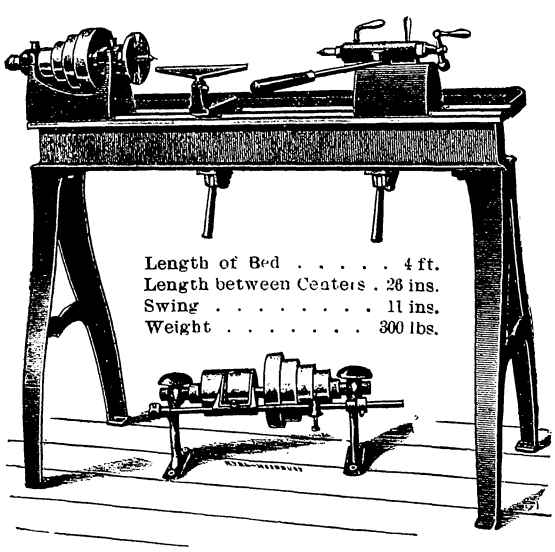
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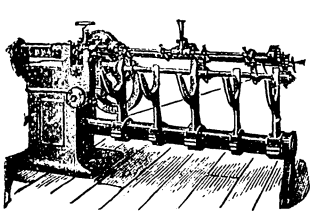
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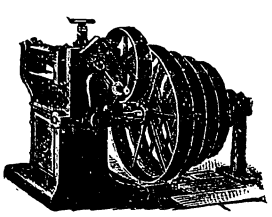
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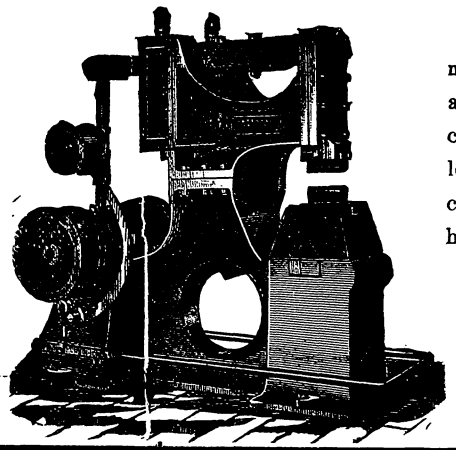
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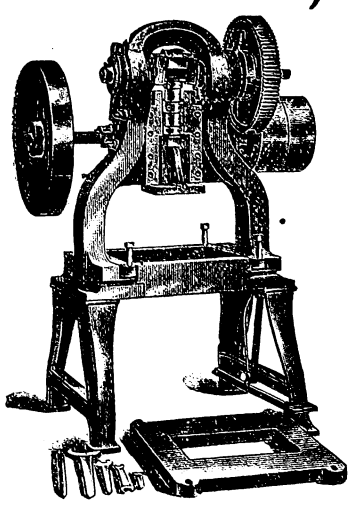


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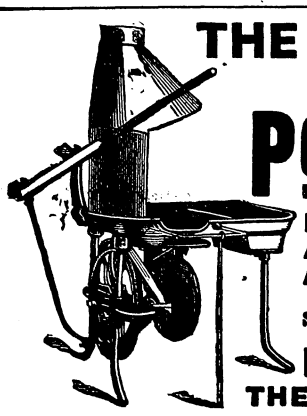
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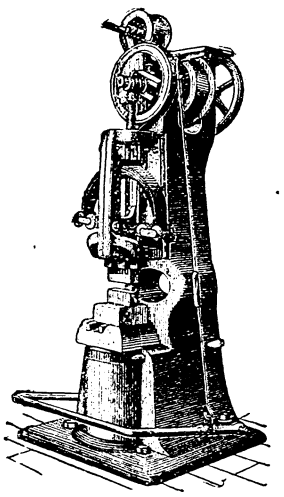
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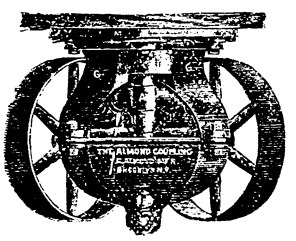
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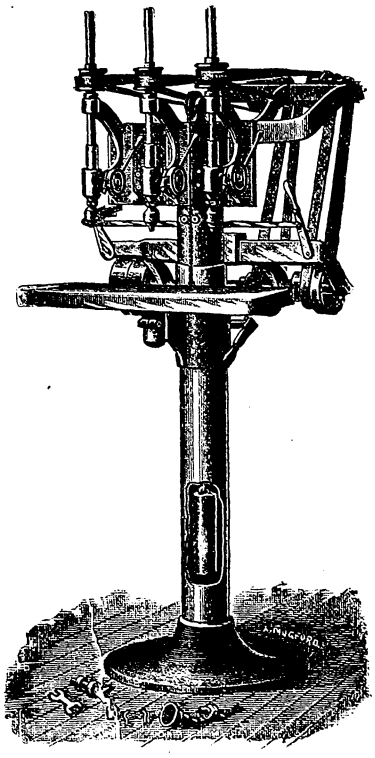


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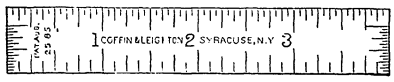
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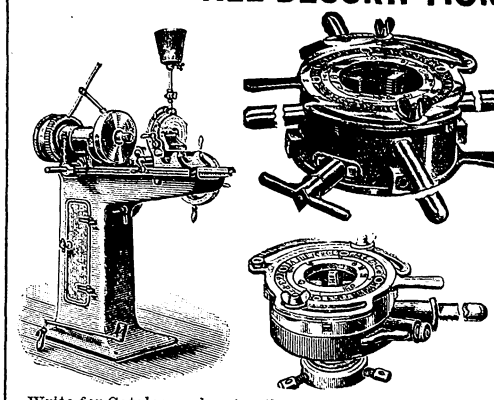
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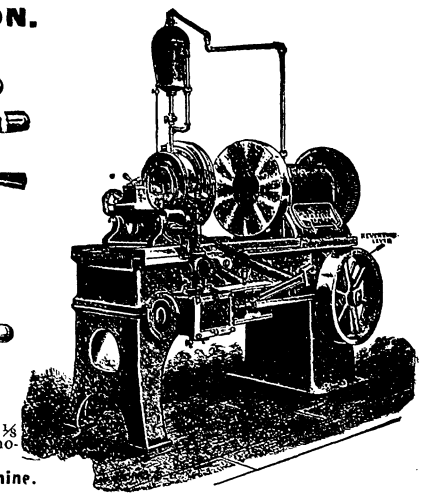


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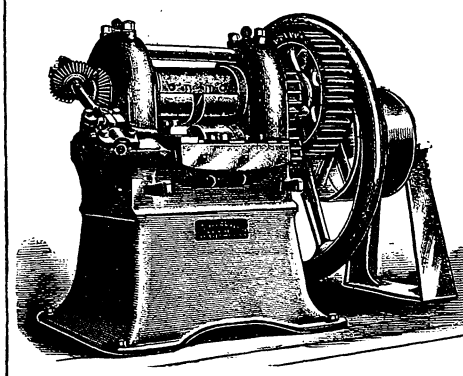
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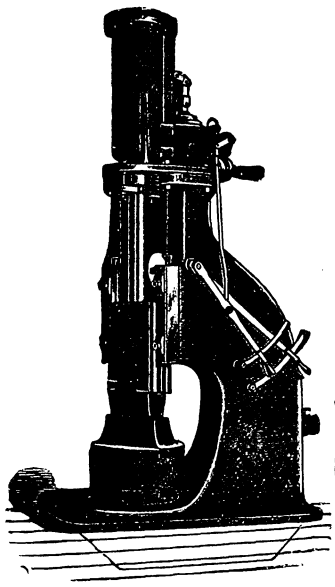
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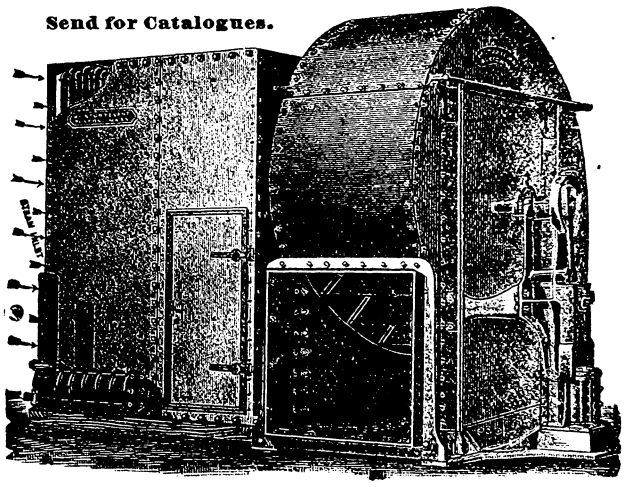
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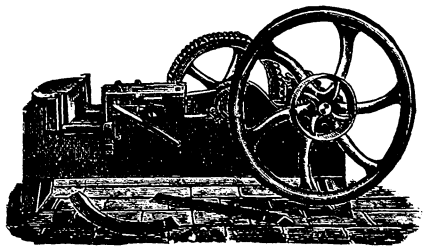
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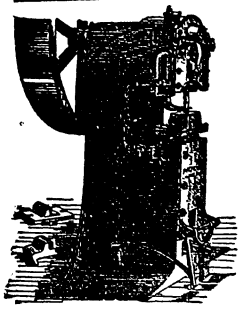
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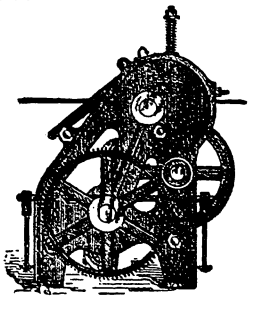
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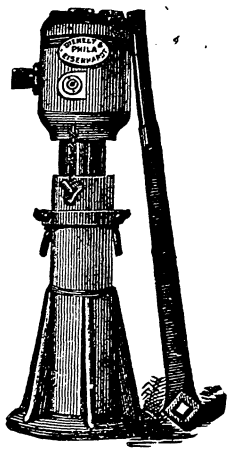
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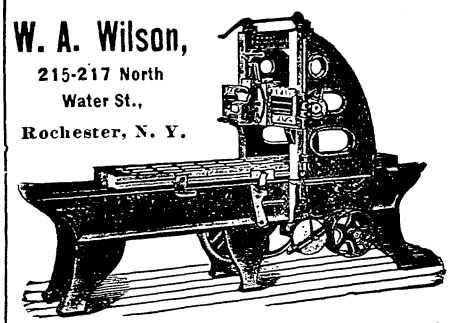
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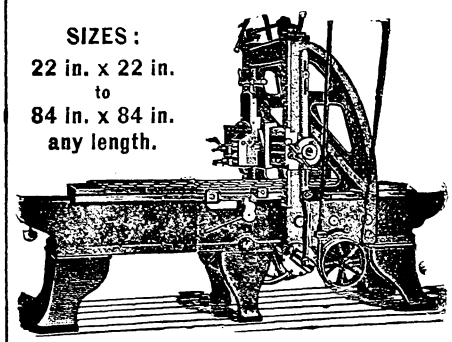
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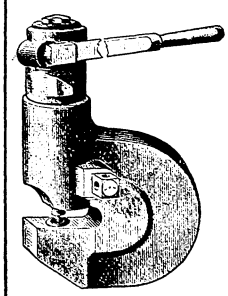
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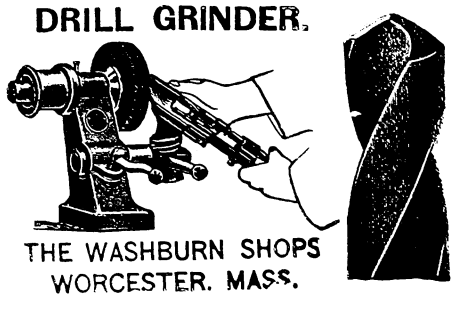
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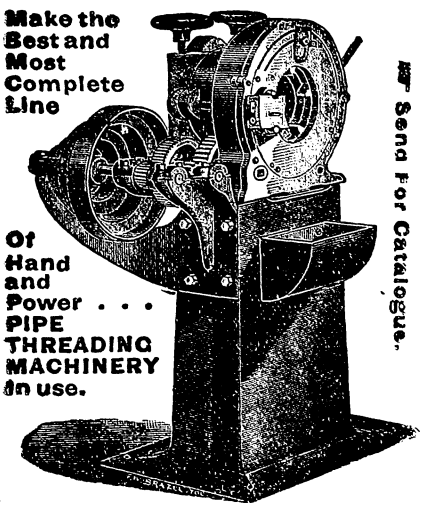
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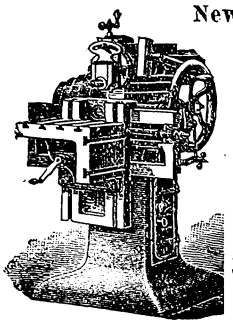
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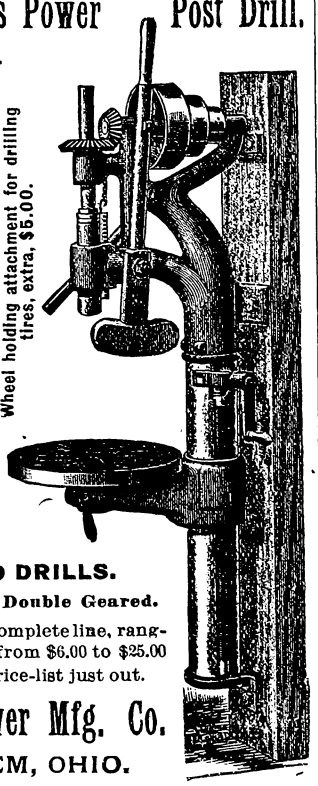
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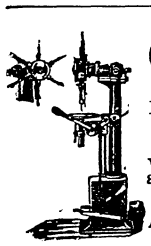
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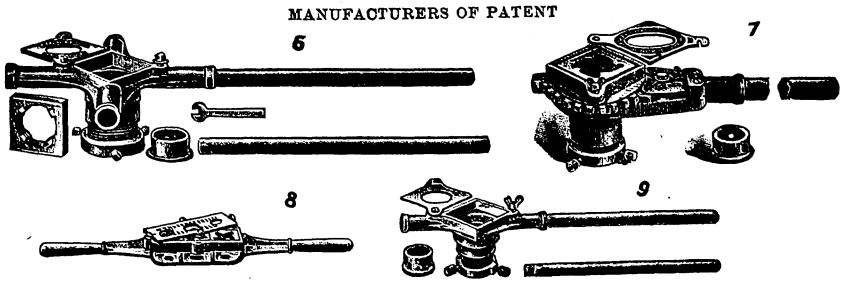
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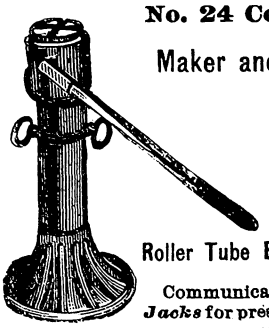
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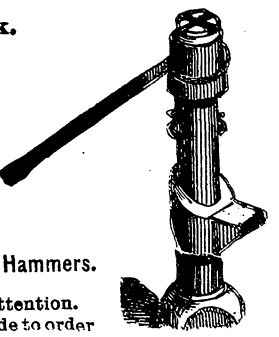


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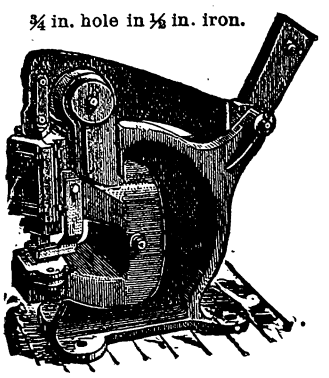
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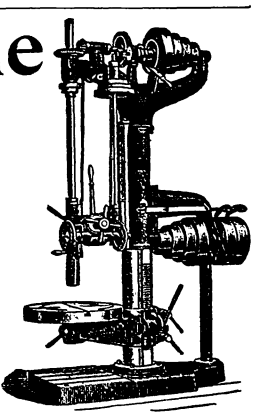
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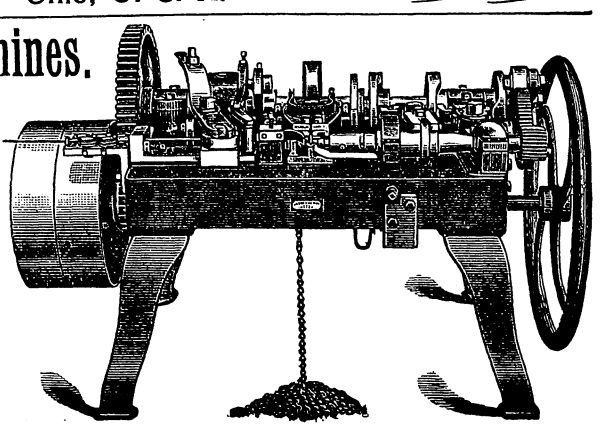
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FOR BOTH DOUBLE AND SINGLE LINKS.

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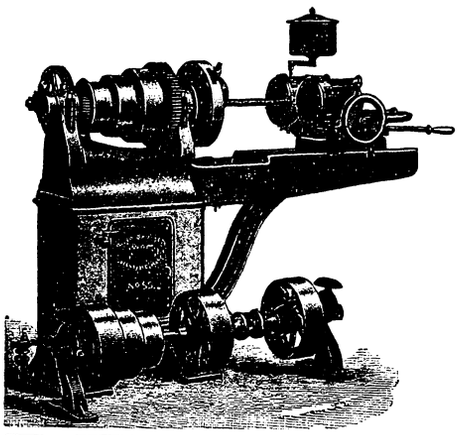
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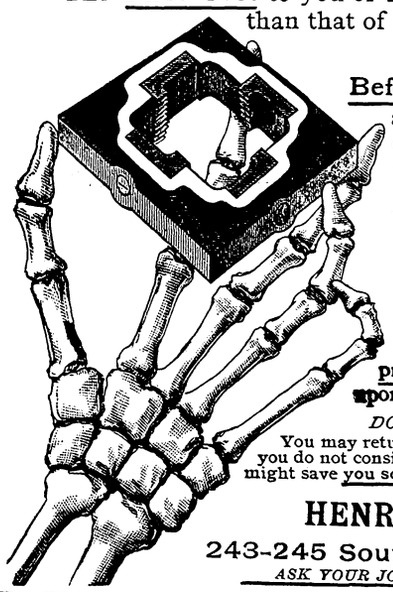
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Two "Points" about it—only 2 (There are plenty more, but we only mention these two here.)

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Before it becomes dull from use it will cut as many perfect threads as the best solid die extant, and when it is dull, you don't throw it away and buy a new one—Oh, no! You simply sharpen the cutters on a common grindstone, and so make it practically as good as it was at first, and this sharpening process may be repeated a number of times.

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DO NOT SEND US ANY POSTAGE STAMPS.

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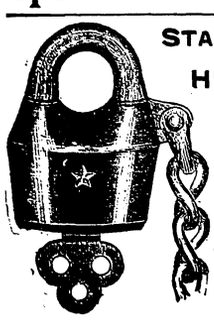
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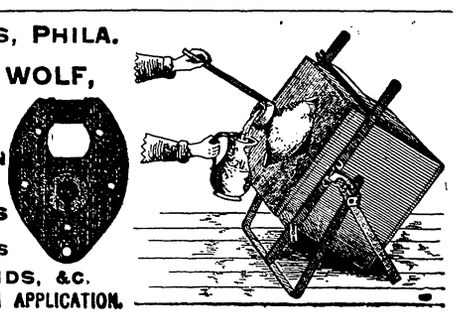
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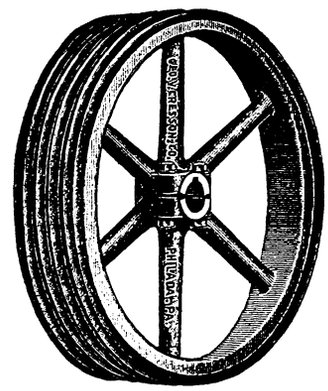
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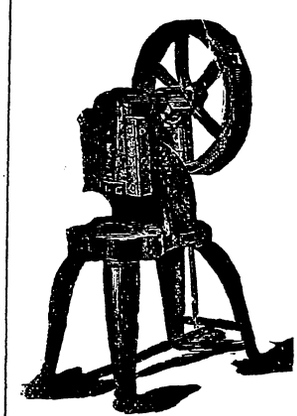
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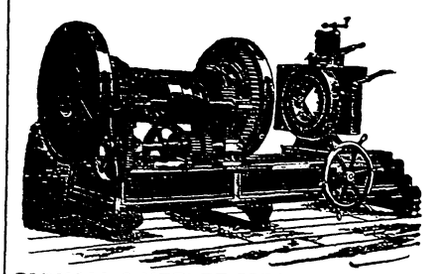


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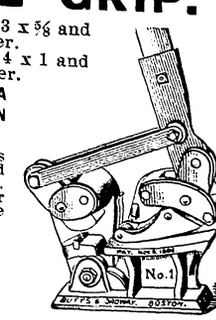
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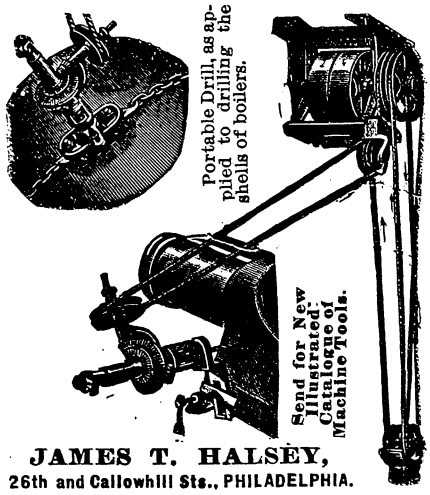
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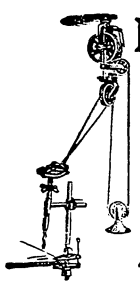
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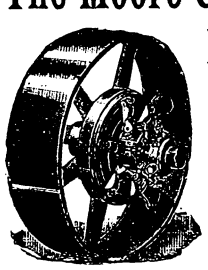
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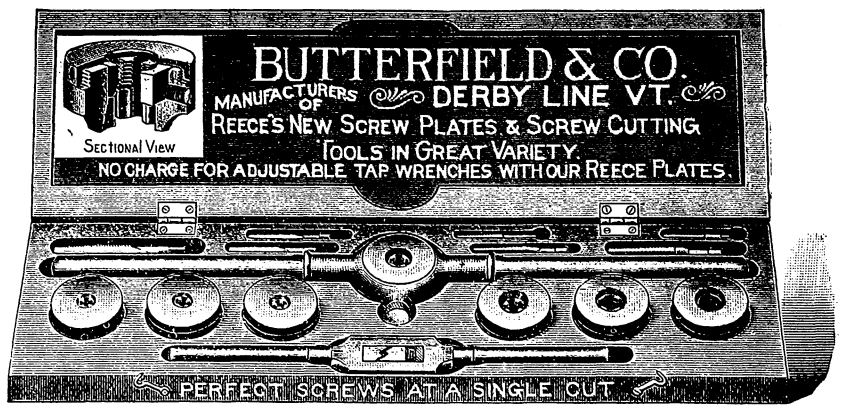


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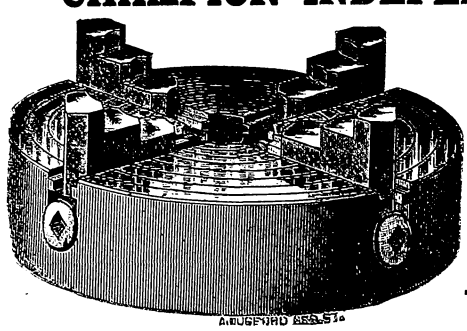
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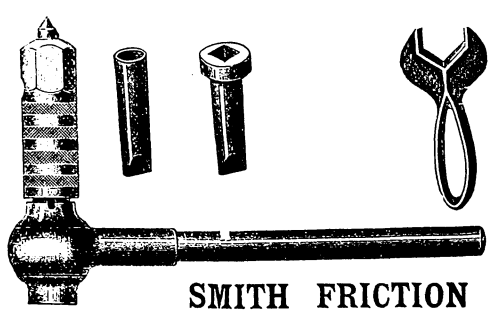


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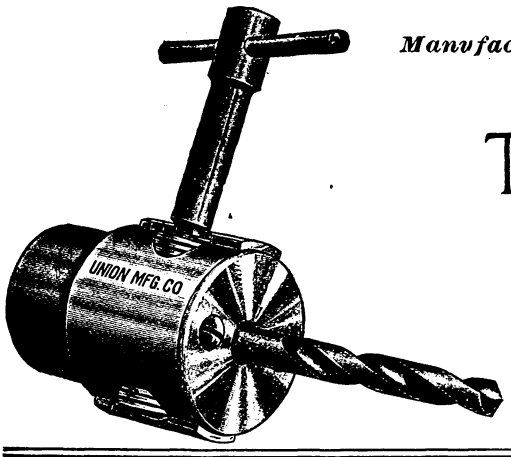
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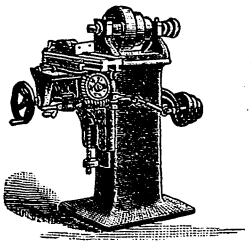
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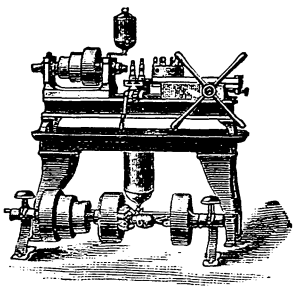
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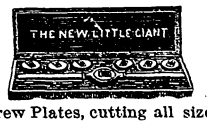


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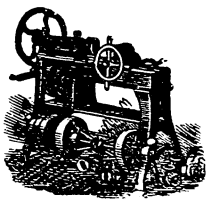


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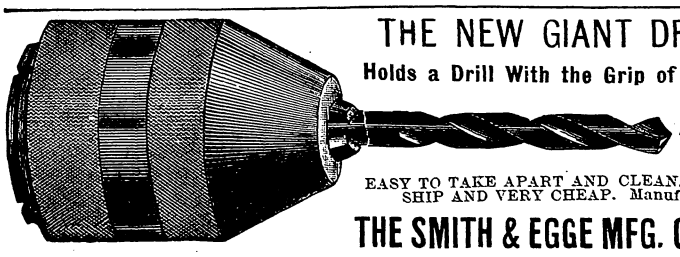
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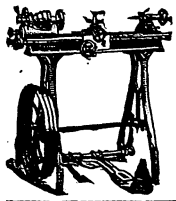
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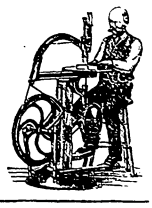
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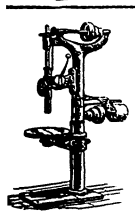
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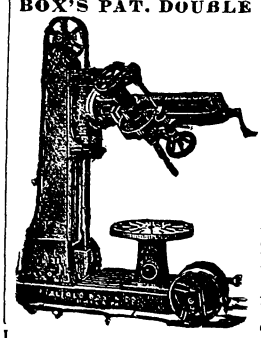
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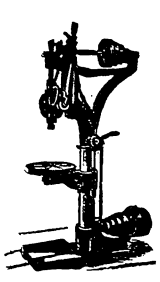
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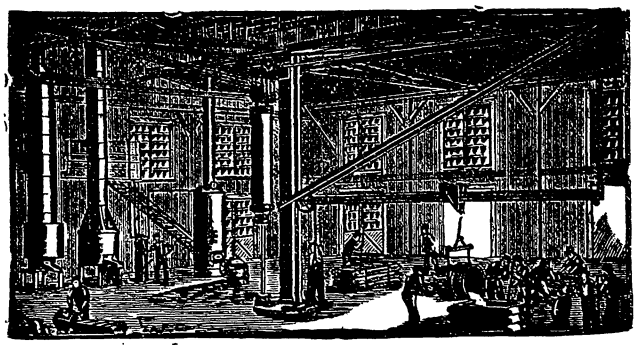
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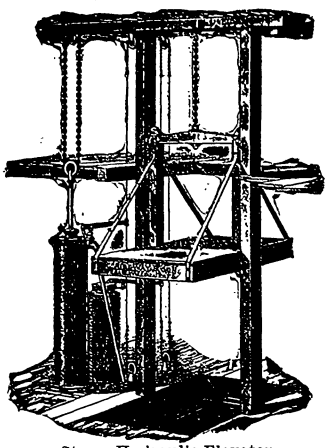
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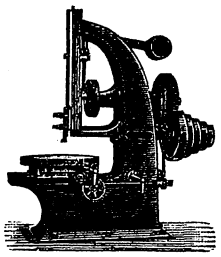
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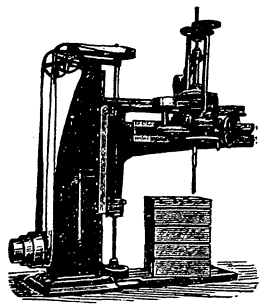
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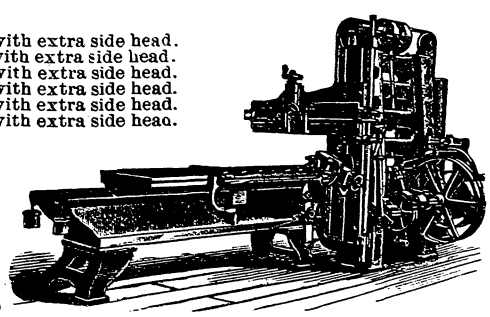
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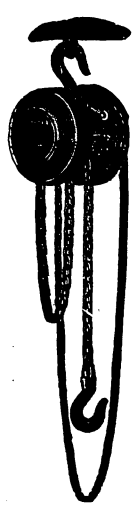
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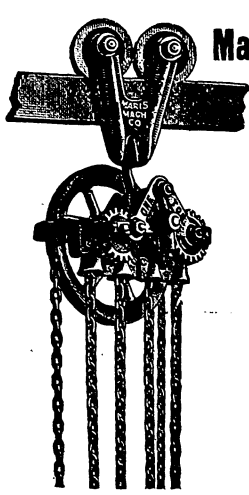
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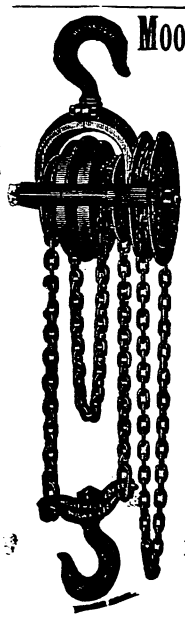
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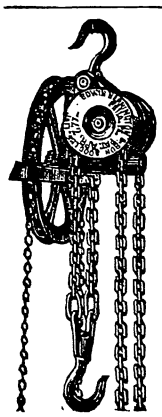


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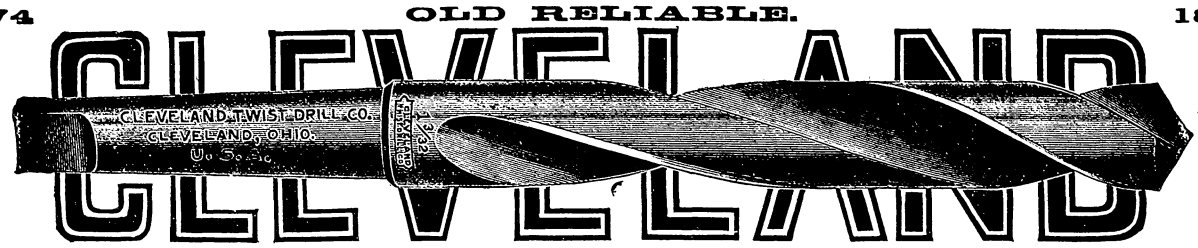
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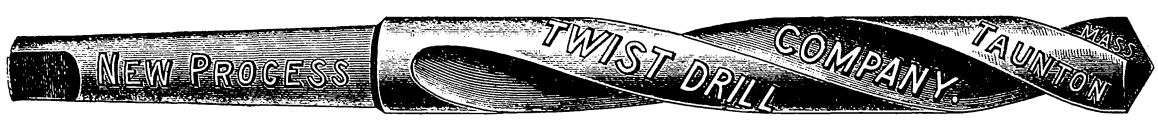
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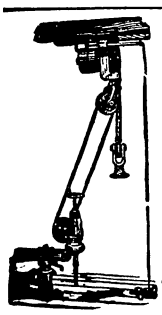
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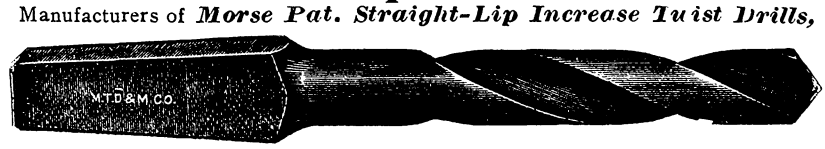
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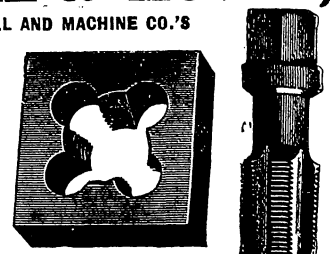


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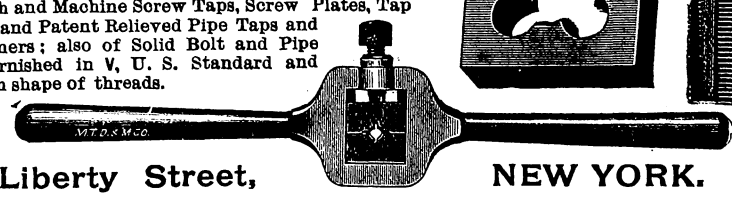
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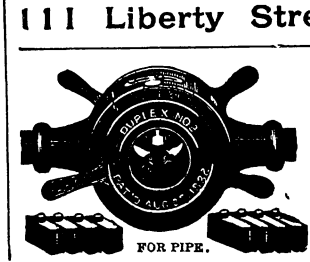




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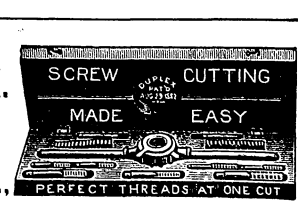
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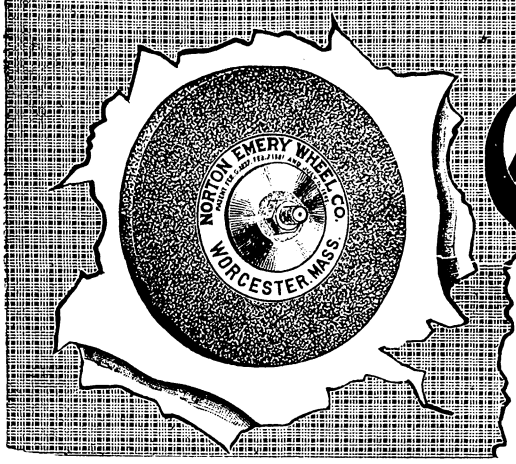
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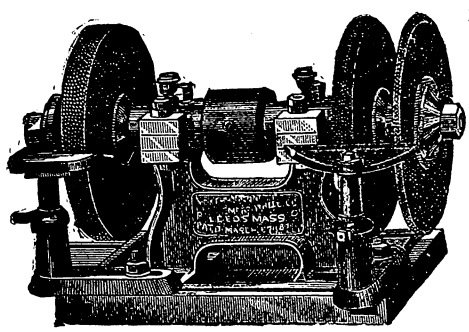
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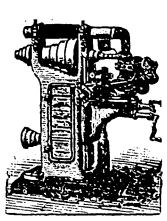
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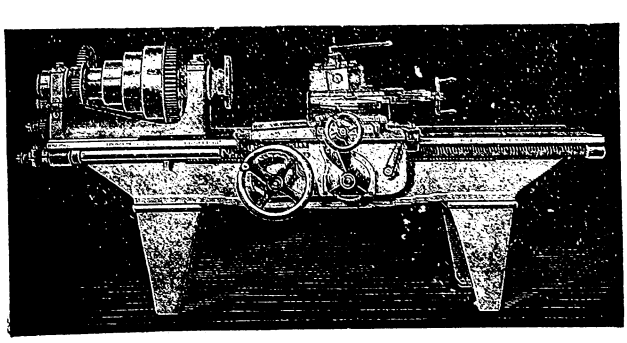


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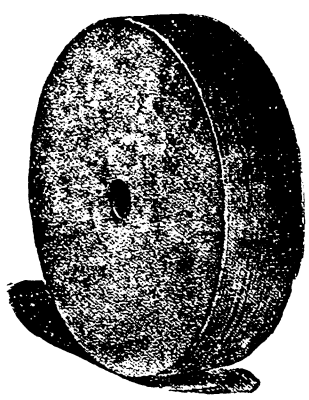
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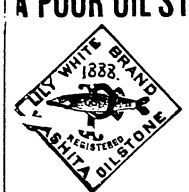


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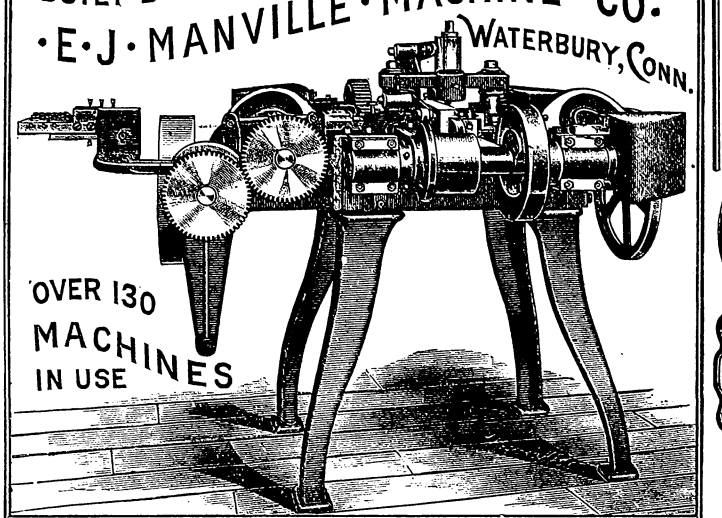
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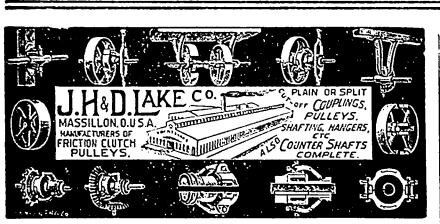
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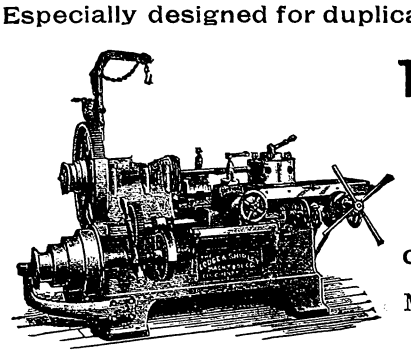
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1 50 H.-P. 12 in. x 24 in. Wright Engine.
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And many others.

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BERRYMAN HEATER, 44 in. dia., 10 ft. high.
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1 16 in. x 6 ft. Young Lathe.
1 16 in. x 6 ft. Perkins Lathe.
2 16 in. x 6 ft. Blaisdell Lathes.
1 16 in. x 6 ft. Flather Lathe.
1 18 in. x 8 ft. New Haven Lathe.
1 18 in. x 8 ft. Dustin Lathe.
2 20 in. x 6 ft. Bullard Lathes.
1 26 in. x 10 ft. Dustin Lathe.
2 20 in. x 8 ft. Bullard.
1 20 in. x 10 ft. Bullard.
1 26 in. x 13 ft. New Haven
1 Dexter Pattern Lathe.
1 Bullard Turret Lathe.
2 Brainard No. 7 Overh'ging Arm Plain Millers
2 Brainard No. 7 Lincoln Plain Millers.
1 B. & S. No. 1 Universal
1 Brainard Heavy No 6 Lincoln Pattern Miller.
1 Garvin No. 2 Miller and Screw Slotter.
1 No. 3 Garvin Plain Miller.
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1 Wilder Punch Press.
1 Grindstone and Frame.
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1 Garvin No. 2 three-spindle drill.
1 Garvin No. 3 four-spindle Drill.
1 Garvin No. 4 four-spindle Drill.
1 Garvin No. 2 Wire Feed Screw Machine.
1 Garvin No. 2 Plain Screw Machine.
1 Garvin Small Gear Cutter.
1 Dustin 18 in. wheel feed one-spindle Drill.
1 Brainard Universal Cutter Grinder.
1 Band Saw.
1 Diamond No. 3 Emery Grinder on column.
1 Diamond Polishing Head.
1 Bullard 15 in. stroke Shaper.
1 16 in. Smith & Mills Shaper.
1 24 in. x 24 in. x 6 ft. New Haven Planer.
1 10 ft. Boring Mill.
1 8 ft. 4 in. Boring Mill.
1 76 in. x 60 in. x 13 ft. Planer.
1 48 in. Car Wheel Borer.
1 Axle Lathe.

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4 3 H.-P. Vertical High Pressure Engines.
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3 6 x 10 Horizontal Engines.
2 8 x 12 " "
2 10 x 14 " "
8 5 H.-P. Gas Engines.
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CORLISS

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ROLLING MILL OUTFIT.

For Sale, the Following Machinery and Tools, in good order, for immediate or future delivery.

For further particulars apply to the undersigned:

1 Horizontal Low Pressure Engine, 19 in. x 72 in.
2 Fly Wheels, 24 ft. diameter, each weighing 53 tons.
1 Vertical Engine, 7 in. x 16 in.
2 Horizontal Engines, 14 in. x 24 in.
1 3 High 30 in. train, complete.
1 3 High 30 in. train, complete.
The above trains will roll 90 in. plates; also a lot of extra rolls, all made by Garrison & Co.
1 Roll Turning Lathe made by Garrison, will take in 12 ft. roll and turn up to 40 in.
1 Guillotine Shear, Engine attached, made by Morgan, Williams & Co., knife 104 in. long, will cut 1 inch steel plates.
2 Plate Straightening Machines.
1 Adams' Plate Shear, 48 in. throat, 26 in. knife, will cut up to ¾ in. Plate.
2 Heavy Upright Plate Shears, 12 in. throat, 22 in. knife, will cut up to 1¼ in. Plate.
2 Bar Shears.
1 Rotary Shear.
1 Fairbank's Testing Machine, with countershaft, or can be worked by hand power.
4 Large Iron Cranes, improved pattern, each about 25 tons capacity.
8 Small Cranes, also charging Cranes and Portable Cranes on car for handling Ingots.
Blake Pump, 14 in. steam, 16 in. water.
2 Worthington Duplex Pumps.
1 Blake Pump, No. 7.
1 Sturtevant Blower, No. 12.
3 Tubular Boilers, with Fronts and Attachments.
1 No. 7 Brush Light Machine, 15 Double Lamps.
Also Furnaces, Cylinder and Flue Boilers, Buggies, Shafting, Pipe Stacks, etc., etc., and other tools, etc., belonging to above plant.

MATTHEW GILL, Jr.,
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BAKER BLOWERS, Nos. 1, 4½, 5, 6 and 7.
ROOT BLOWERS, Nos. 1, 2, 3, 4, 5, 6 and 7.
Sturtevant Blowers, Nos. 4, 5, 6, &c.
1 Corliss Band Wheel, 12 ft. x 24 in., in halves.
A Variety of Machinery. Such as Boilers, Engines, Pumps, Crushers, &c., very cheap.
Do you want to buy or sell Machinery? If so, write

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For quick sale, a perfect 20 ton Fly Wheel. 16 feet diameter, rim 15 in. x 15 in., in 8 sections, made by A. Garrison & Co. Also, 10 in. forged iron shaft for same.

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FOR QUICK SALE.

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Two 12 ton 3-ft. Gauge Locomotives.
Two Standard Gauge Saddle Tank Locomotives.
20 Dump Cars, 3-ft. Gauge, 3-yd. Capacity, Side Dump.
3000 tons Mill Cinder, &c.
Also Pig Iron, Muck Bars, Bar Iron and Steel Billets, Scrap, &c. We are always in the market to buy and sell Equipment and Scrap.

G. H. SIBELL & CO.,
62 and 64 Michigan Ave., Chicago, Ill.

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SALE OF VALUABLE PROPERTY of the corporation known heretofore as The Albany Stove Company. Whereas, by order of the Supreme Court of the State of New York, granted in the City of Albany, N. Y., on the 10th day of October, 1893, the undersigned, receiver of the assets and effects of the corporation known heretofore as The Albany Stove Company, was directed to offer for sale the following described property, viz.: The real estate and buildings owned by the said corporation "The Albany Stove Company," situated on Tivoli street, in the City of Albany, N. Y., being the same premises used by the said corporation in carrying on its business of manufacturing stoves and iron castings, and is the same real estate conveyed by Eugene Van Rensselaer and others, as executors, etc., to The Capital Co-operative Foundry Company, by deed dated October 15, 1869, recorded in Albany County Clerk's office, December 15, 1869, in Book No. 228 of Deeds, on page 241, and by Van Rensselaer Land Company to Albany Stove Company by deed dated January 10, 1890, recorded January 14, 1890, in Book No. 412 of Deeds, on page 318, together with the machinery, tools and implements used in carrying on the business above referred to.

Now, therefore, in pursuanee of said order, the undersigned offers for sale to the highest bidder the property above described.

All bids to be sealed, and must be distinctly marked on the envelope in which they are enclosed, "Bids for property of the Albany Stove Company," and addressed and delivered to the undersigned at No. 82 State street, Albany, New York, on or before the 17th day of November, 1893. The right to reject any and all bids is hereby reserved, and sale can only be completed upon order of the court.

Bids will be opened by the receiver at the office of Francis H. Woods, No. 116 State street, Albany, New York, on Saturday, November 18, 1893, at 10 A.M. Terms, purchase price to be paid within twenty days after notification of acceptance of bid.

Dated October 11, 1893.

JOHN GUTMANN,
Receiver of The Albany Stove Company.

SALE OF VALUABLE PROPERTY of the corporation known heretofore as The Albany Stove Company. Whereas, by order of the Supreme Court, granted in the city of Albany, N. Y., on the 10th day of October, 1893, the undersigned, receiver of the assets and effects of the corporation known heretofore as The Albany Stove Company, was directed to offer for sale the following described property, viz.: The patterns, shop rights and flasks owned by the said corporation, and being the patterns, shop rights and flasks for the "Home Yale" parlor and range, "Yale" cook, "White Oak," "Art Yale Range," "Rose" range, "Oneida," and for other castings, formerly manufactured by the said corporation, a more particular description of which will be given on application to the undersigned.

Now, therefore, in pursuance of said order, the undersigned offers for sale to the highest bidder the property above described.

All bids to be sealed and must be distinctly marked on the envelope in which they are inclosed, "Bids for property of The Albany Stove Company," and addressed and delivered to the undersigned, at No. 82 State street, Albany, N. Y., on or before the 17th day of November, 1893.

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Terms: Purchase price to be paid within twenty days after notification of acceptance of bid.

Dated October 11th, 1893.

JOHN GUTMANN,
Receiver of The Albany Stove Company.

FOR SALE, CHEAP.

400 tons of 60-pound, 200 tons 52-pound and 400 tons of 30-pound second-hand Steel Rails, suitable for relaying. For prices, etc., address

J. H. RICHARDSON & CO.,
Pittsburgh, Pa.

FOR SALE.

2 Double Deck Boilers about 40 H.-P. each, cheap. Hoisting Engine. Cylinder Boilers for Stacks, 30, 40 and 42 in. diameter. Round and Square Iron Tanks. Book Binding Machinery. Smoke Stacks, light and heavy, all sizes. Large lot Cast and Wrought Scrap Iron on hand. Also Dealers in Metals.

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All selected and in excellent condition for relaying and only slightly worn. For prices and particulars apply to

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Lathes, 52 in. swing by 41 ft., 54 in. swing by 22 ft., 30 in. swing by 22 ft. One Pit Lathe.
Planers, 54 in wide by 20 ft., 36 in. wide by 13 ft.
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Engines, 5 new and 7 second-hand, from 100 H.-P down.
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WANTED.

Machinery to manufacture.—Machinery built of Wood and Iron, or all Iron only, wanted, same must be of real merit.

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Maria Stein, Ohio.

WANTED.

A second-hand Squeezer in good order and modern construction, with or without Engine. Name lowest price for cash. Address

"H.,"
Office of *The Iron Age*, 220 South 4th St., Philadelphia, Pa.

FOR SALE

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800 tons 35-lb. Tee Iron Rails, 100 tons 30-lb. Tee Iron Rails, all in good condition for relaying, complete with fish plates and spikes. Also several complete switches. Apply to

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FIRST LOFT, 50 FEET FRONT.
THIRD LOFTS, 100 FEET FRONT.

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Fourth and Fifth Lofts, 50 Feet Front.

Excellent Light, Elevator, Power and Steam Heat.

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Tools and Second Quality Files a Specialty.
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NEW NOVELTIES TO MANUFACTURE.

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STOCK OF IRON AND STEEL,

Consisting of Bar, Band, Hoop and Scroll Iron and Spring and Plow Steel, at

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Receiver's Sale.

Notice is hereby given that the undersigned Receiver of The Vienna Enamel & Stamping Company, will sell the assets of said corporation at private sale to the highest bidder. Bids will be received on and after November 10th and up to November 20th, 1893. The plant is situated at Porter, Porter County, Indiana; all the main buildings are made of brick and have been recently erected and the machinery is new. It is located on two and one-half blocks of ground; there are three railroads within a few rods of it; and it is about forty miles from Chicago. There is also a large amount of manufactured product and of raw material on hand. In fact, there is everything ready to start up with the business

Terms of Sale: The plant with tools and fixtures will be offered together for one third cash and the balance in equal payments of twelve and eighteen months; the purchaser to give his notes with mortgage on the premises to secure the same, with interest at six per cent. payable annually, and he must keep the property insured in good companies to an amount sufficient to cover loss by fire, payable to the receiver. The manufactured and the raw material will each be offered separately, and the whole will be sold for all cash or one-half cash and the balance in six months; the purchaser giving his note with approved security for the deferred payments, with interest at six per cent.

All bids on the plant, fixtures and tools must be accompanied by a deposit of two thousand dollars cash, conditioned that the bidder will make good his bid if accepted; and all bids on the personal property must be accompanied by a like deposit of two thousand dollars.

EDWARD ECKL,
Receiver of the Vienna Enamel and Stamping Company.

IRON WORKS
FOR SALE.

To close estate of John R. Smith, late of Springfield, Mass., the executors offer for sale the old established business of the Springfield Iron works, including real estate, stock and machinery

This is a live business in ornamental and building iron, machine and drop forgings, bolts, bridges, iron and steel structural work, fire escapes, etc., with several large contracts at the present time, including a State building at Concord, N. H., to be carried out. Mr. John R. Smith was successor to the bridge business of A. D. Briggs & Co. The business is old and well established. Inquire of

RALPH W. ELLIS, Atty.,
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COAL LAND.

Eight thousand (8000) acres of Coal Land, containing two seams, one of four to six (4 to 6) ft. thick above water level; and one seam seven (7) ft. below water level. Good railroad and river facilities. Titles good. Will be sold cheap for cash. Map can be seen by calling or writing to

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FOR SALE.

A Rolling Mill, not far from Chicago; Cheap Fuel, Cheap Scrap; Good Machinery, comprising 9 in., 12 in. and 18 in. trains, in first-class condition. Can show a profit of $7 to $10 per ton on all iron made since mill has been in operation. Don't apply unless you mean business. Other engagements reason for selling. Address

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AN OLD ESTABLISHED hardware house in New York, whose salesmen cover the entire United States, wants the sole agency of American manufacturers of Chains, Toilet Clippers, Locks, Files, Carpenters' Tools and similar articles. Address

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WANTED

Partner to take half interest in established hardware and house furnishing store in Baltimore, Md; $5000 required; want to increase stock is reason for selling. Address "HIRAM,"
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IMPORTANT ANNOUNCEMENT.

E. Bissell, Son & Co.,

Auctioneers.

12 Murray Street and 15 Park Place, N. Y.

Nov. 14th and 15th, at 10 o'clock each day.

Large Special and Unreserved Trade Sale of Table and Pocket Cutlery, Carvers, Butcher Knives, Shears, Silver Plated Flat Ware, Etc., Etc.

ALSO

250 Cases Fine Carvers, Pearl Handle Knives, Fruit Knives, Etc., all elegant goods in cases.

ALSO

By order of The Emery-Waterhouse Co., in Liquidation, 1500 Dozen Cast Steel Axes, assorted weights and brands, to be sold on sixty days, time for approved paper without interest.

ALSO

The Largest Line of Quadruple and Triple Plated Silverware we have offered this season, comprising Medium and Dessert Forks, Tea, Table and Dessert Spoons, Fancy Pieces, Hollow Ware, Etc, all of the best makes and stamps.

ALSO

5000 Pair of Acme and Long Reach Skates, manufactured by Keene Mfg. Co., and Sam'l Winslow Skate Co.

This will be our Last Cutlery Sale this Season. It is important that the **Jobbing** and **Retail Trade** and **Department Stores** should be represented.

The Entire Sale Absolutely without Reserve.

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One Air Compressor, Belt Driver, about 12 in. Cylinder. State price, delivered at Communipaw, N. J., also when and by whom made. Address THOMAS A. EDISON, Orange, N. J.

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To furnish reasonable estimates on specialties in light metal work.

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Manufacturers of Clock Trimmings, Rivets, Springs, &c.

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JAS. H. GOLDEY, Treas.

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Good stock of Hardware, invoice $5,000, good store building with living rooms above, valued at $2,500, in a good town in Southwestern Minnesota; only hardware store in the town; good established trade of $15,000 a year. This is a rare chance to go into business. Address

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BY AN EXPERIENCED HARDWAREMAN, ten years' experience, three years' on the road; good salesman and stock keeper; West or Southwest preferred; best of references. Address L. W. VIVION, Benton City, Mo.

AS CHEMIST for iron or steel plant; thoroughly experienced in the analysis of iron ores, pig iron and steel; best of references given. Address "D. C.," No. 119, office of *The Iron Age*, 96-102 Reade St., New York.

TRAVELING SALESMAN.—A reliable, energetic and practical man seeks an engagement January 1st with manufacturer of heavy hardware, machinery or machinery supplies; best of references given from present employers. Address "SALESMAN," office of *The Iron Age*, 59 Dearborn St., Chicago.

A RESPONSIBLE PARTY wishes to represent manufacturers of builders' hardware and specialties for Chicago and the West. Address "BUILDERS' HARDWARE," office of *The Iron Age*, 59 Dearborn St., Chicago, Ill.

GENTLEMAN, aged 36, for many years manager of a jobbing house in this city, dealing in a specialty used by the stove and hardware trade throughout the United States and Canada, is open for an engagement from January 1st with a reponsible house requiring the services of a competent and reliable business man as manager, or to fill a similar position of reponsibility; 18 years' practical business experience; thoroughly familar with commercial usages, correspondence, management of salesman, etc. Address "NILO," office of *The Iron Age*, 96-102 Reade St., New York

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BY SUCCESSFUL Stamping Works Superintendent, thorough machinist, die maker; large experience laying out plans, starting and running new works, designing, building, labor saving tools and machinery; A1 manager of men, factory or machine shop; controls stamped article, pays good profit to manufacturer; best reference. Address "STAMPING," office of *The Iron Age*, 96-102 Reade St., New York

A YOUNG MAN, 25, will change position; eight years with well known and one of largest concerns manufacturing builders' hardware (four as bookkeeper and assistant manager); quick, accurate accountant; experienced in able and economical management, all operating prices and complete data; thoroughly familiar with labor, costs, supplies, etc.; hard worker; can superintend; highest references; satisfactory reasons. "BUSINESS," No. 1019, office of *The Iron Age*, 96-102 Reade St., N. Y.

BY A THOROUGHLY Practical Sheet Mill Manager of many years' experience; good references. Address "CASTLE," office of *The Iron Age*, 96-102 Reade St., New York.

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BY A STEAM ENGINE COMPANY in the New England States, a thoroughly competent man to take position of chief or assistant foreman of iron and brass foundry; must be perfectly familiar with green and dry sand, also loam work; must also understand the mixture of metals, and be used to handling men; none but a strictly reliable and temperate man need apply, giving complete particulars regarding qualifications, with whom experience has been gained, and salary expectations. Address "NEW ENGLAND FOUNDRY," office of *The Iron Age*, 96-102 Reade St., New York.

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EXPERIENCED pig iron salesman, one acquainted with the Cincinnati and Western trade; state salary wanted. Address "B.," office of *The Iron Age*, Rooms 22-24 Pickering Building, Cincinnati, Ohio.

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SALESMAN traveling the jobbing and large retail trade in the East, one in the West, and one in the South, to handle line of hardware specialties as side line; salary or commission; the line is too small for manufacturer to travel alone. Address "L.," office of *The Iron Age*, 220 S. Fourth St., Philadelphia.

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COMPETENT FOREMAN, in wrought iron and wire factory; must be experienced in all its branches; give references and salary expected. Address "WIRE AND IRON WORKER," office of *The Iron Age*, Bank of Commerce Building, St. Louis.

SALESMAN drumming the hardware trade to handle as a side line, on commission, Mason's patent door lock and ventilator combined; new and salable. BROOKLYN SPECIALTY CO., 166 Pierrepont St., Brooklyn, N. Y.

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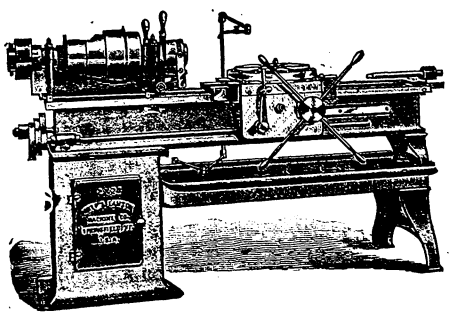
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Assays of Ores, Metals and Metallurgical Products of every description. Analysis of Water, Ores, Minerals, Metals, Fuel, and Natural and Industrial Products generally.

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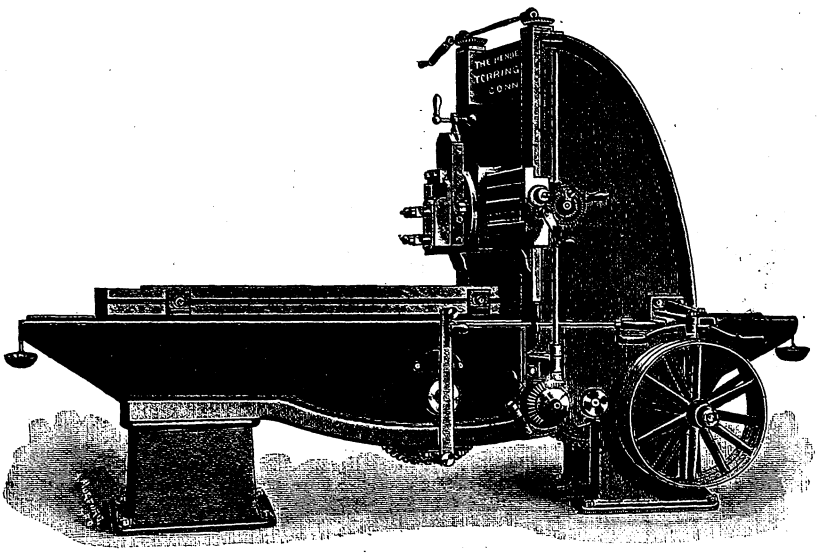
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Iron Planers at Reduced Prices.

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THE HORIZONTAL BORING MACHINE

IS A SPECIAL TOOL FOR THIS PURPOSE.

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IF SO, THE PRICES WE ARE MAKING ON

OIL HEATERS AND GAS STOVES

WILL INTEREST YOU.

B. & B. Stoves are the Leaders.

B. & B. Combination Oil Heaters and Cook Stoves are a great success, as proven by the many testimonials received from all parts of the country.

Every Stove is mounted on rollers, and can easily be moved from room to room. *They can be used in place of a range in the kitchen or in place of a base-burner in the parlor.* They are thoroughly well adapted to fill all requirements, *combining as they do all the qualities of a first-class Oil Heater and an elegant Parlor Cook Stove.*

If you happen to have one of them upstairs, *the tank can easily be removed and taken down to the kitchen to be filled*, and again replaced in the Stove.

Those who have used the old style Stove with tanks fastened in them as tight as if cast in the iron will appreciate this feature. They can be fitted with our 2-hole, 3-hole or 4-hole Extension Tops for regular 8-inch ware. We want your trade, and if you will give us a chance to quote you prices we will have it.

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It always has been, and is still, the best. Try them.

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FOR **WHIPPING** AND **BEATING** EGGS. **MIXING** BATTERS, DRINKS, SAUCES, ICINGS, POWDERS, ETC. **CREAMING** MELLOW FRUITS, BANANAS, PEACHES, BERRIES, BUTTER & SUGAR.

No. 20 for Family Use.

JAR ENTIRELY COVERED. No more Spattering.

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ALWAYS READY FOR USE. Nothing to be fixed.

SIMPLY PERFECT.

No. 20.—Jar holds 1 quart level full.
Complete Machine securely packed in one single package.
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Manufacturers of Hardware Specialties for Household use
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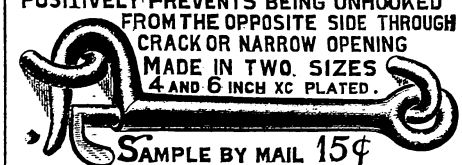
Write for latest list and catalogue free. **Sylphs, Overlands** and **Rudges** of our own manufacture on favorable terms to the trade; **Western Wheel Works'** Cycles of which we are largest Western jobbers at Bed-Rock prices. Positively 20 to 60% saved on many styles. The low prices and high quality of our goods will surprise you. Don't miss it. Write now. Cycles sold on easy payments.

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POSITIVELY PREVENTS BEING UNHOOKED FROM THE OPPOSITE SIDE THROUGH CRACK OR NARROW OPENING

MADE IN TWO SIZES 4 AND 6 INCH XC PLATED.



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This snap has many important advantages over other makes of Bolt Snaps, viz.: It is lighter, the spring is entirely covered and protected from foreign substance and freezing, and is lower in price.

Made in all sizes; Round, Loop and Open Eye. **We are headquarters** and the most extensive manufacturers in Saddlery, Coach and General Hardware Specialties.

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We want enterprising agents of good standing and solicit correspondence

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MADE OF WROUGHT STEEL.

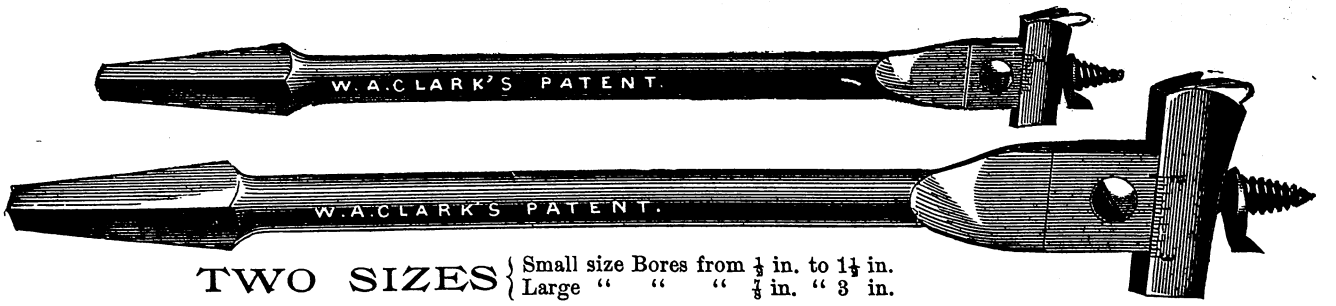
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TWO SIZES { Small size Bores from ½ in. to 1½ in.
Large " " " ⅞ in. " 3 in.

SPECIAL CUTTERS: No. 5—For Large Bit, Bores from 3 in. to 4 in. No. 6—For Large Bit, Bores from 4 in. to 5 in.

Stock and workmanship superior to all others. Every part interchangeable.
Quality guaranteed. For sale by all Hardware Dealers.

Manufactured by **R. H. BROWN & CO.,** New Haven Conn.

You have no risk on the Quality
We have only the Best!

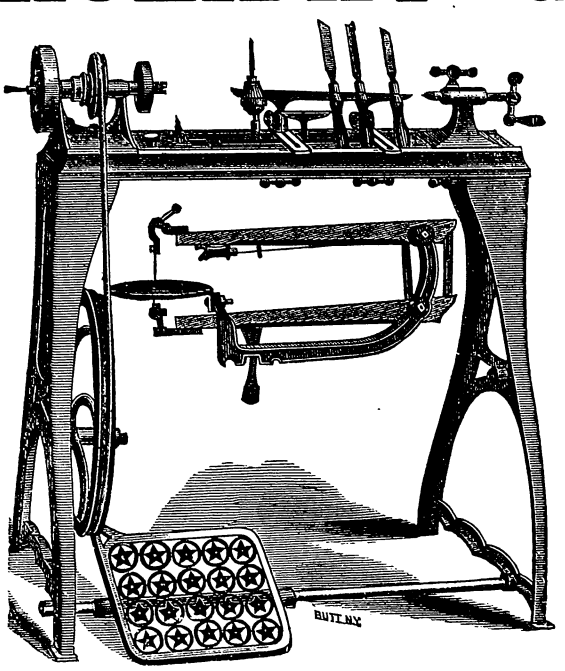


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These two machines are taking the place of all others, and are now the most in demand throughout the world.

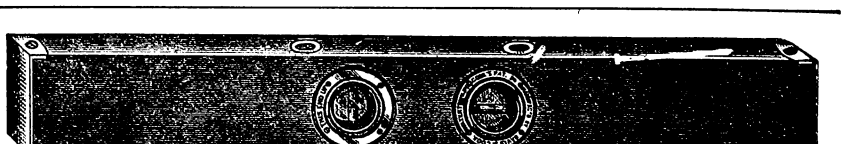
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We also keep a full stock of Designs, Wood, and all other Scroll Sawing goods.

Price of Goodell Lathe, complete, $12.00.

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Made in Wood and Iron. Every Level Fully Guaranteed.
Inquire at your nearest hardware store for them. If not in stock, send to
TAKE NO OTHER.
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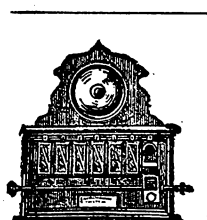
THE GEM SOLID STEEL MINCER



Single and Double Blades.

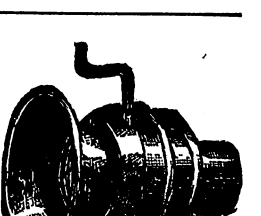
Handle and Blade Formed in one piece.
Always Clean. Indestructible.
No Rivets to Wear Loose.
No Wooden Handle to Shrink, Swell, Loosen, Split, or Fill with Rancid Grease.

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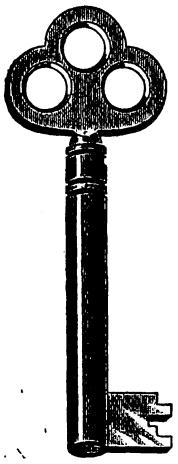
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204 FULTON STREET, NEW YORK,
Manufacturers of
SPEAKING TUBES, WHISTLES, ORAL, ELECTRIC MECHANICAL AND PNEUMATIC ANNUNCIATORS AND BELLS.

Complete outfits of Speaking Tubes, Whistles Electric, Mechanical and Pneumatic Bells. A full line always in stock. Send for new catalogue. Factory, DeKalb ave. near Knickerbocker Brooklyn, N. Y



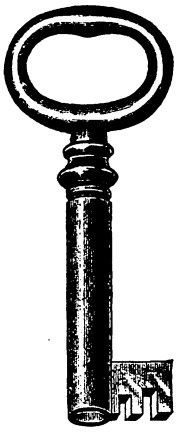
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DESK LOCKS.



A complete line of more than 1000 list numbers exclusive of our old and complete line of

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THE DEALER who sells what
THE PEOPLE ask for.

MAKES FRIENDS and MONEY, and
SAVES TIME and TROUBLE.

The people ask for

LePage's Liquid Glue,

And the people are right.

It is the strongest and best glue made. It has been imitated, but never equalled. Be sure to get what you order and ACCEPT NO SUBSTITUTES.

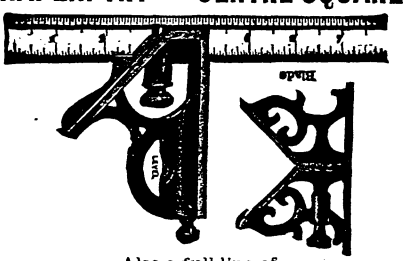
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Ratchet Wrenches.

Made of best forged Tool Steel; are easily and readily adjusted and controlled. Can be made reversible instantly without removing from their work by throwing over the lever in slot of the handle.

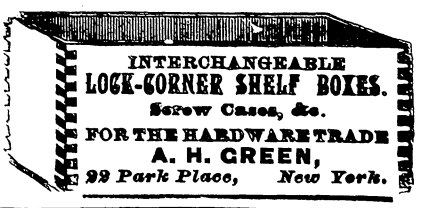
The Set of Combination Tools No. 1 includes the wrench, two sockets, one for screw-driver, bit or reamer shank, with wood handle, and one socket

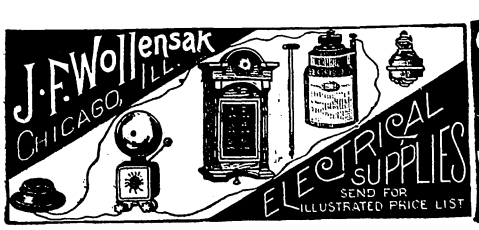


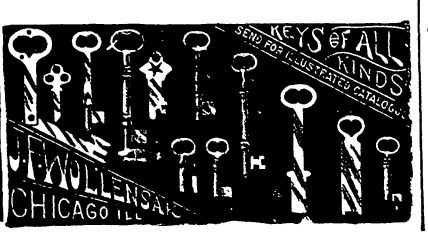
for drill shank and feed nut. The jaws on this wrench open from 3-16 to 1¼ inches.

Send for Illustrated Circular and Price-list of various sizes

The Keystone Mfg. Co.
312 Terrace, Buffalo, N. Y.







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Pumps, Hydraulic Rams, Garden Engines,

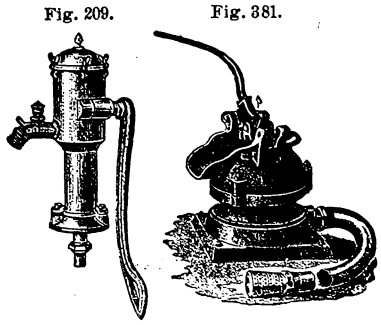
Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines in the World.

DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 209. Fig. 381.



or wherever it is desired to raise a large quantity of water by

hand power.

The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

CAPACITY

from 3,000 to 4,500 gallons per hour.

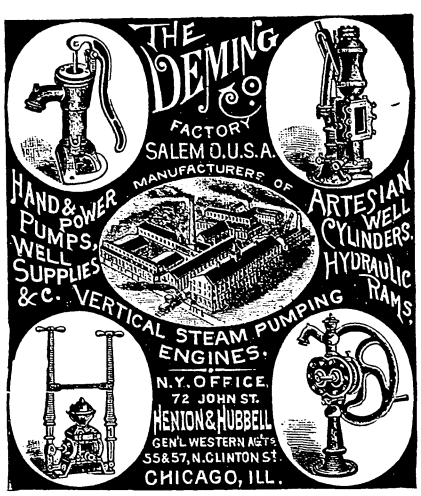
These pumps are simple, durable and low priced.
Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.

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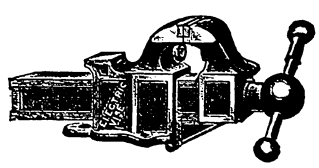
Fig. 145.



C. I. Grindstone Frame.



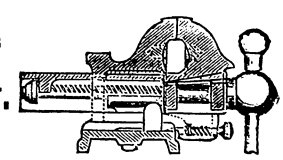
VISE.



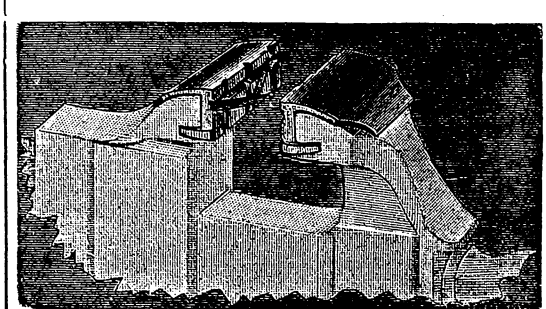
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IT HAS QUALITIES THAT ARE UNDISPUTED.

Rapid, Active, Prompt.

One movement in and out, one turn of the hand and the work is secured.



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Will Fit any Kind of Vise.

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3½ inch.....per pair, 40 cents.
4 " ..... " " 50 "
4½ " ..... " " 60 "

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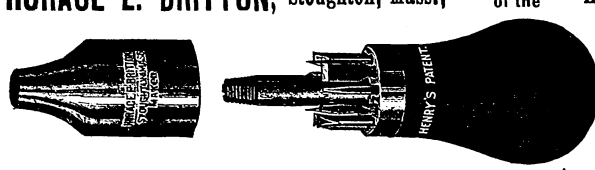
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The Combination Haft contains six Brad-Awls, one Chisel, Screw Driver, Diamond Point Awl, Marking Awl, Tack Puller and Reamer. Send for Circular and Prices.

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4-6 and 8 inch.



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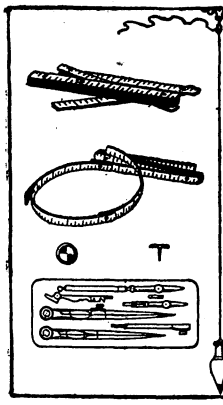
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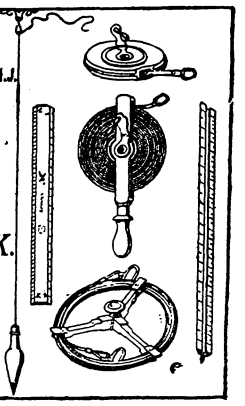
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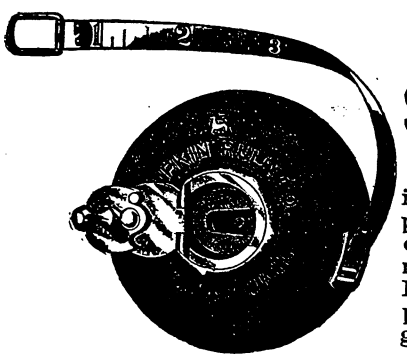


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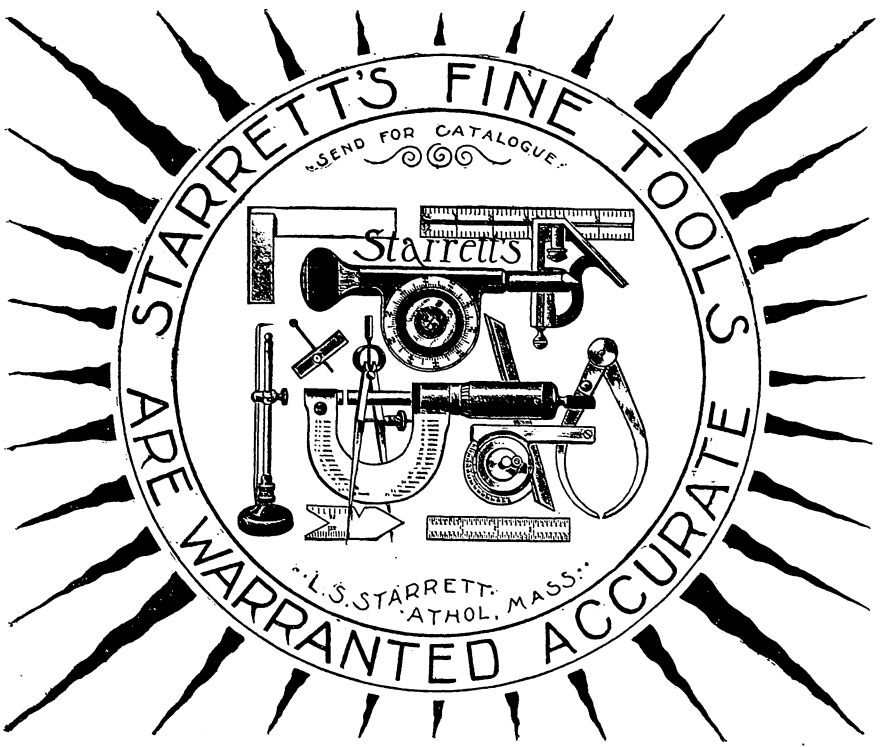


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TUBING and CURB,

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CHAIN PUMPS,

(Kegler's Patent)

Are Giving Universal Satisfaction,

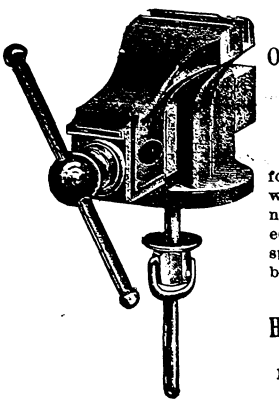
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Specially adapted for drill press work where chucks cannot be used and equally good for special or regular bench work.

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Manufacturers all styles VISES.



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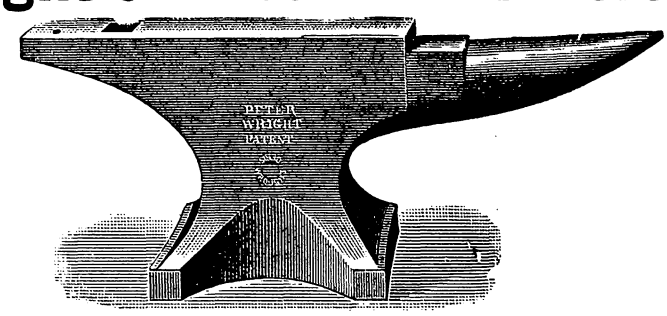
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Made of Best Scrap Iron!
THE BICK FACE AND END ALL IN ONE SOLID PIECE!

You are cautioned in buying to see that each anvil is stamped with the full trade-mark on one side and has the green label affixed to the other.

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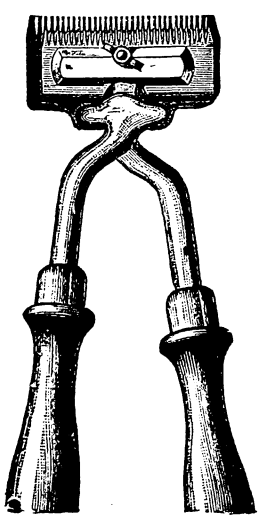
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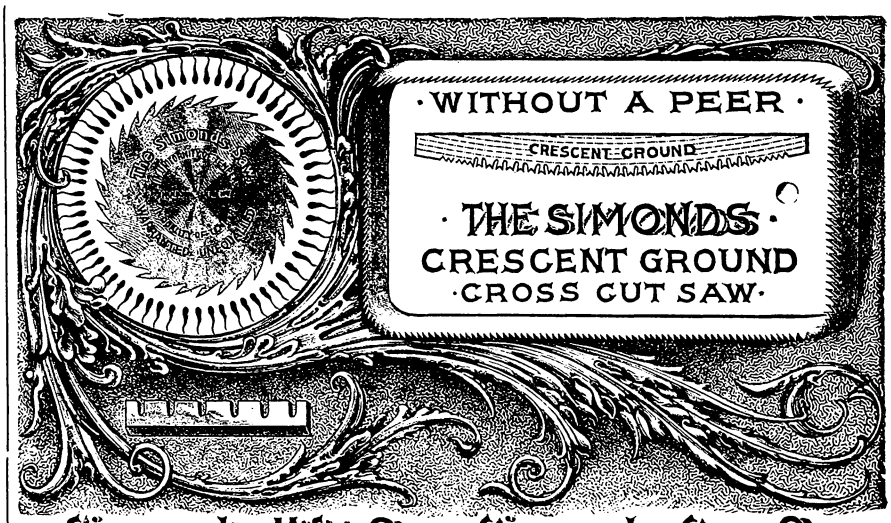
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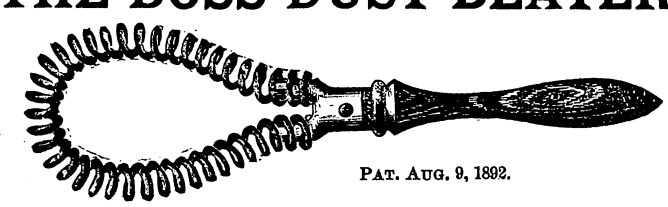
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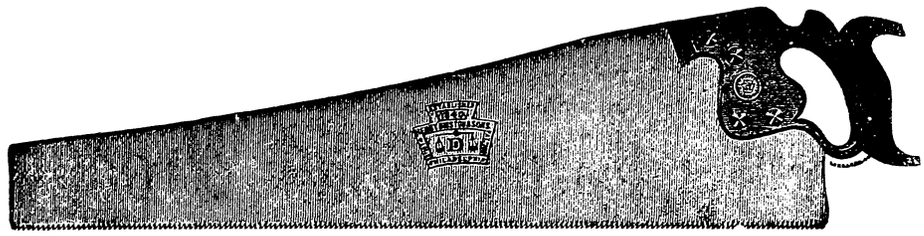
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"If you want a Saw it is best to get one with a name on it which has a reputation.
A man who has made a reputation for his goods knows its value as well as its cost and will maintain it."—HENRY DISSTON.

THE SAWS THAT LEAD THEM ALL

"THE SAW;" HOW TO CHOOSE IT, AND HOW TO KEEP IN ORDER, Sent Free on Receipt of Name and Post Office Address.

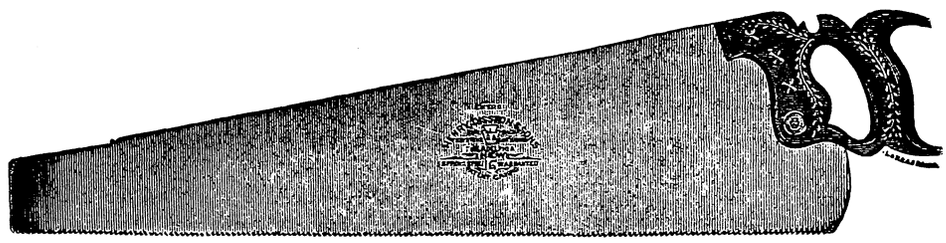
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This Saw combines all the valuable improvements in Hand Saws that have been made by us of late. The first and most important is the hollow or skew back, the success of which can best be attested by the number sold. The peculiar shape of the butt or heel, coupled with the new method of fastening to the handle, give a full stroke of the blade without fear of catching or hooking in the work ; and as the handle is put further on the blade you have a full stop on the proper point and a greater command over your Saw, by reason of being two inches nearer the point, which must give more power.

The Saw being let into the handle on a circle, has a perfect bearing, which, with the new screws, makes it stronger and almost impossible to work loose, and avoids the unsightly gap that is seen on the back of the old style handle. All the above features are patented.

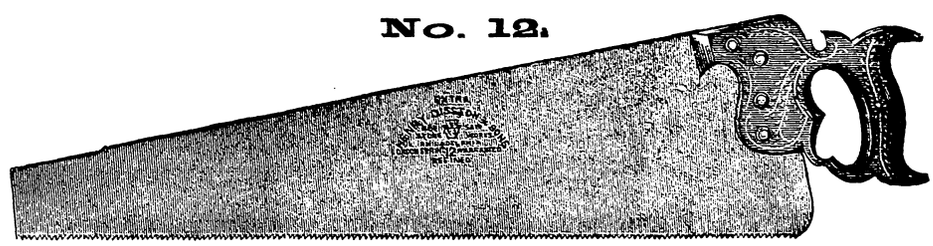
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AN EXTRA FINE SAW IN EVERY RESPECT.

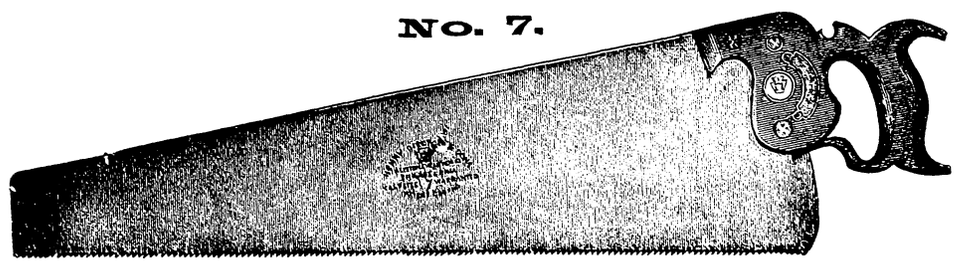
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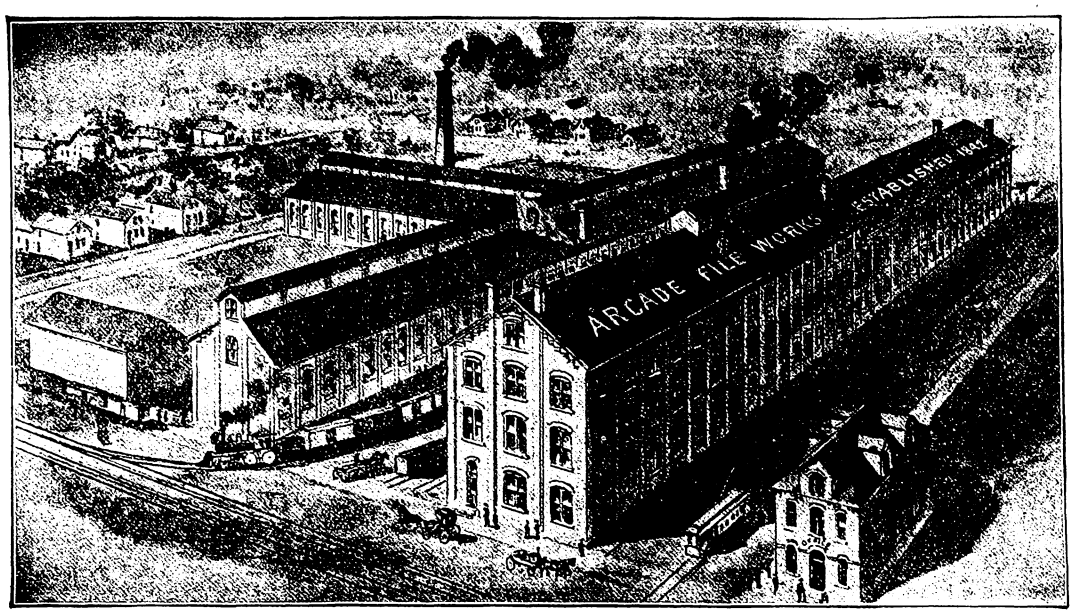
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Philadelphia, 1876. For Superiority.

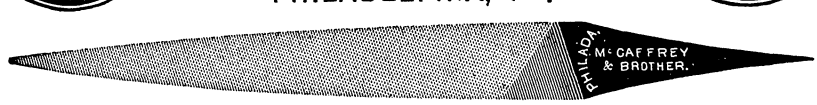


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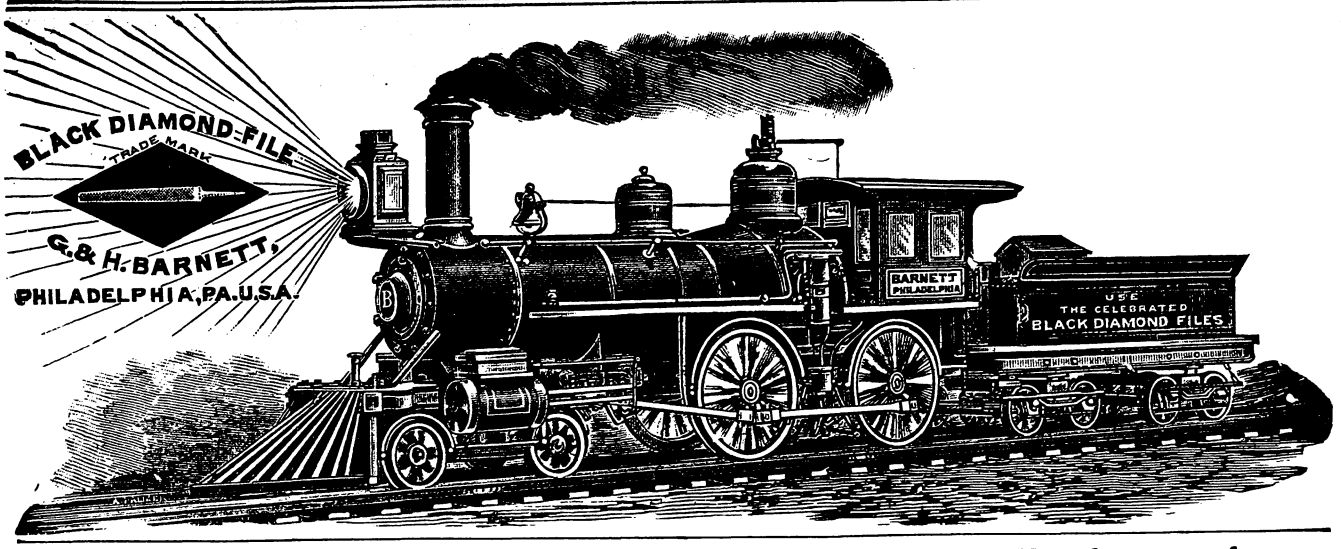
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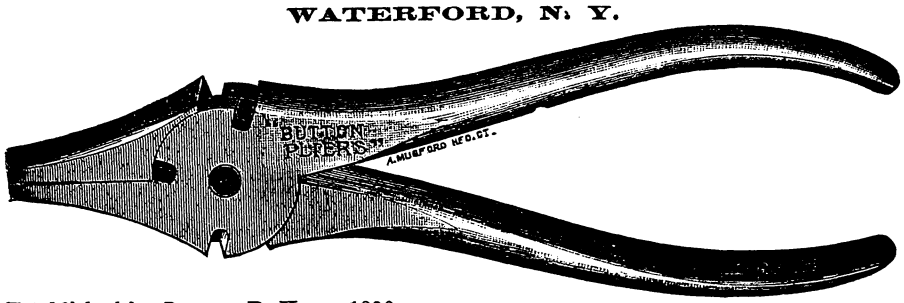
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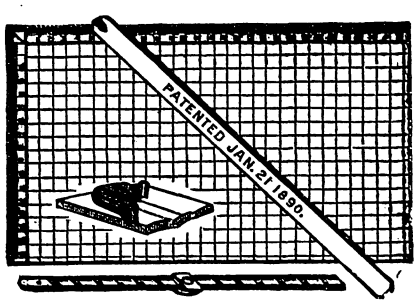
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Also Manufacturers of BLACKSMITHS' and MACHINISTS' STOCKS and DIES, PLUG and TAPER TAPS, HAND, NUT and SCREW TAPS, PIPE TAPS and REAMERS.

Price-List on Application.

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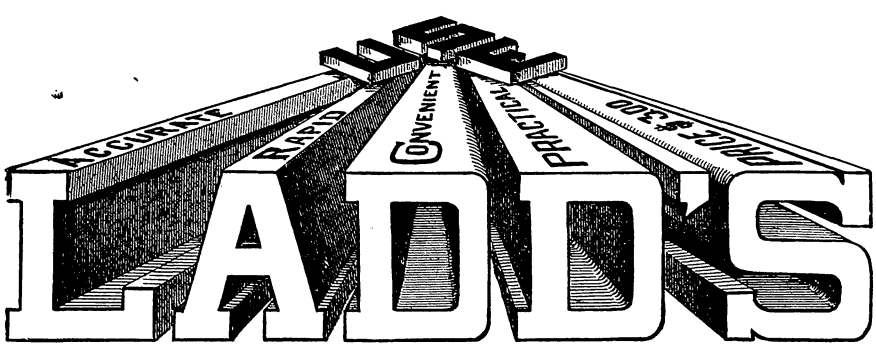
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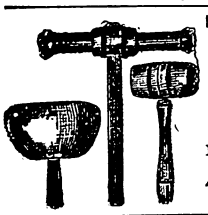
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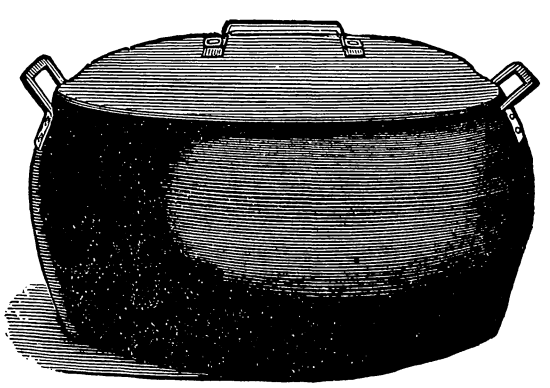
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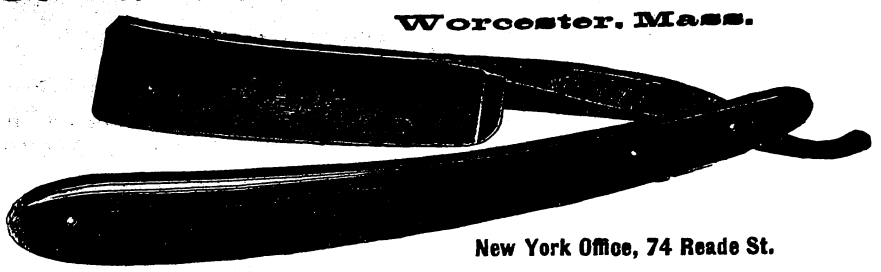
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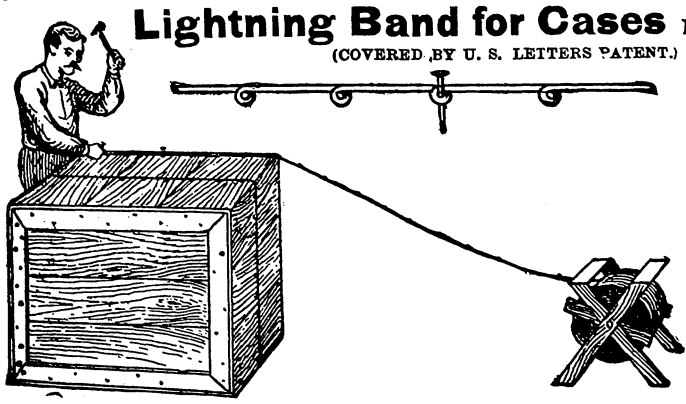
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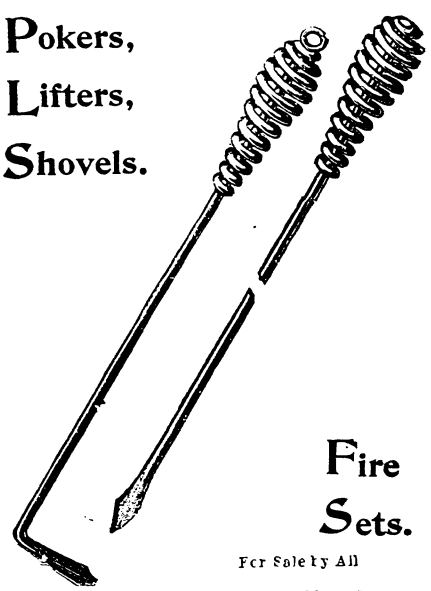
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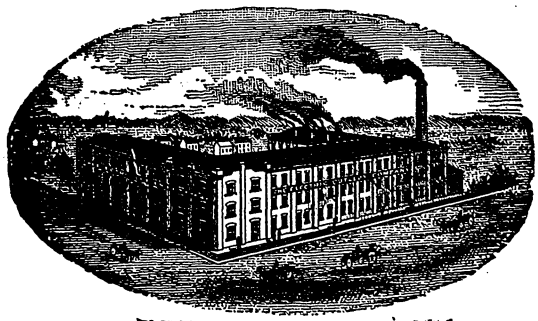
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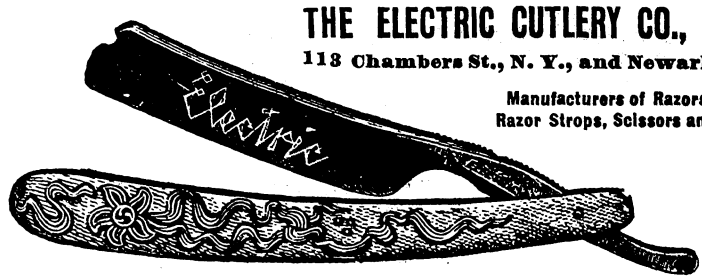
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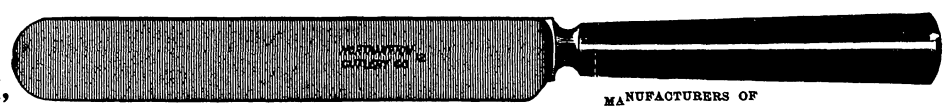
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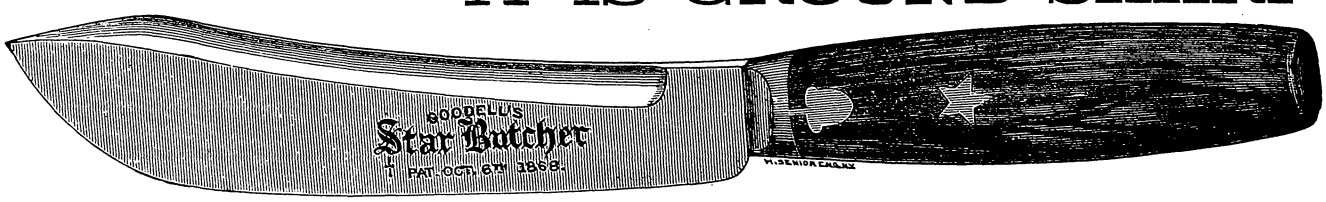
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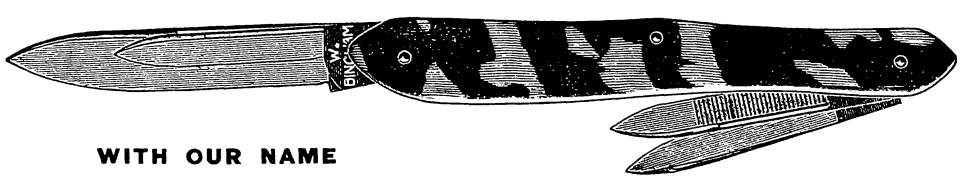
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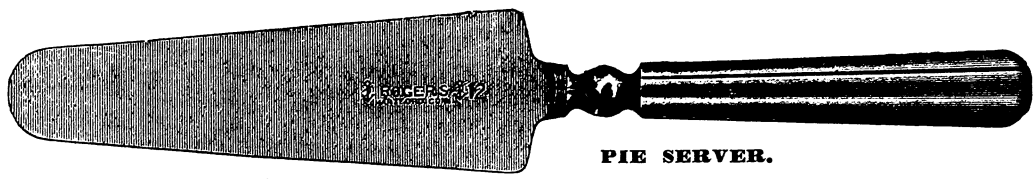
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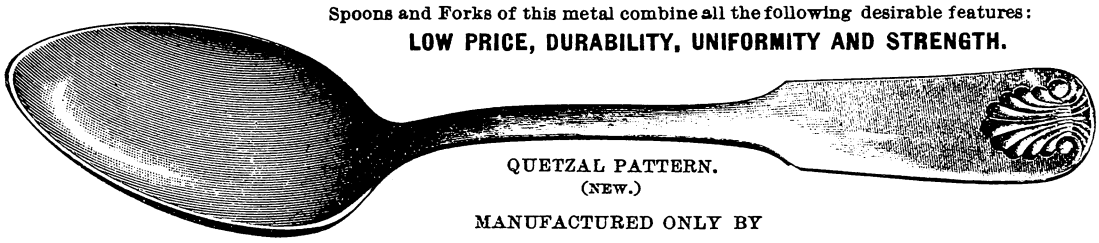
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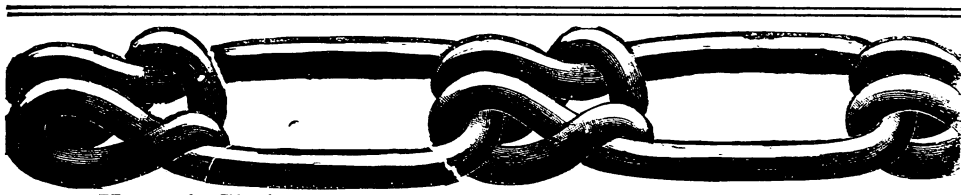


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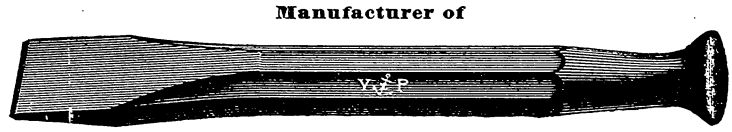
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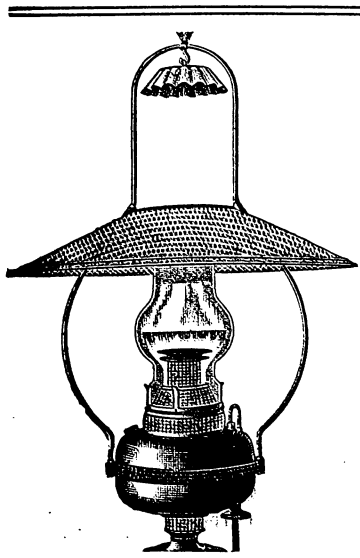
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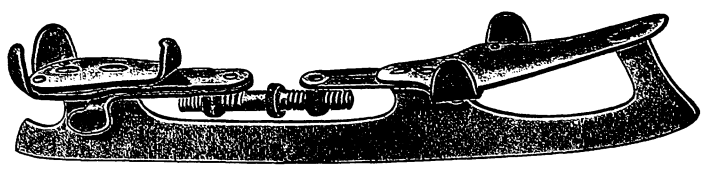
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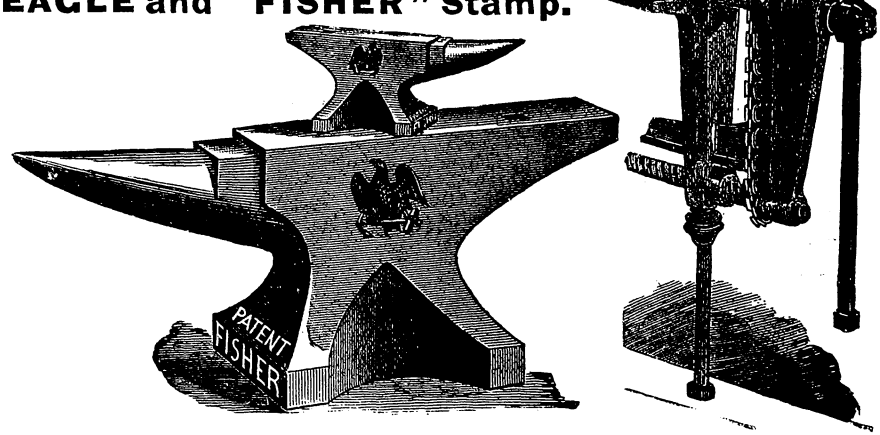
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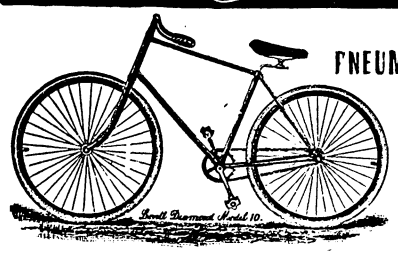


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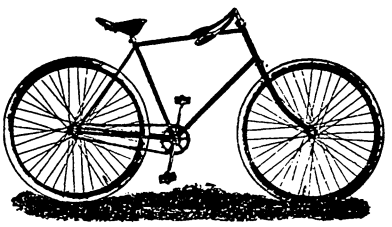
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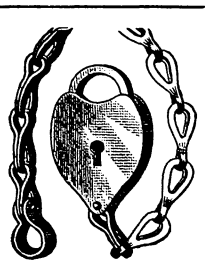
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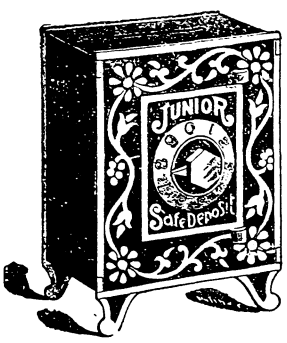


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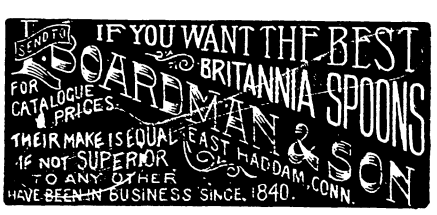
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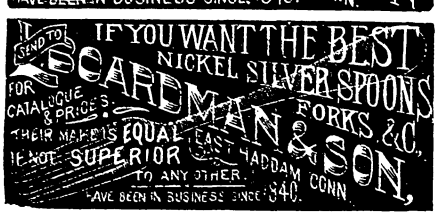


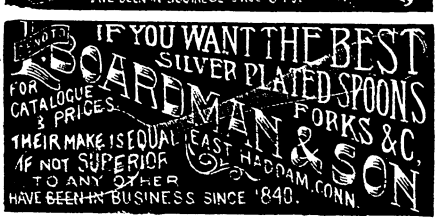
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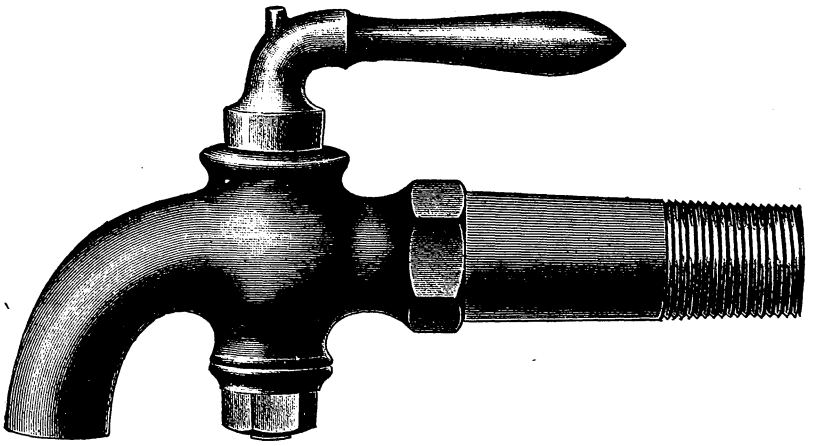






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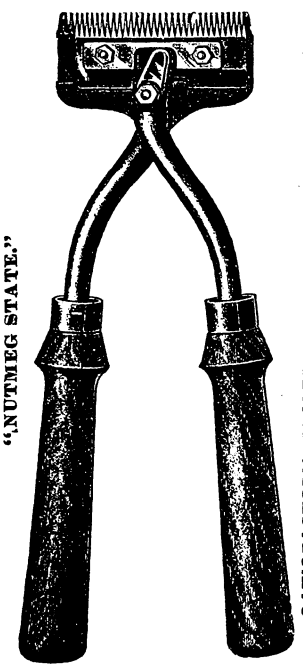
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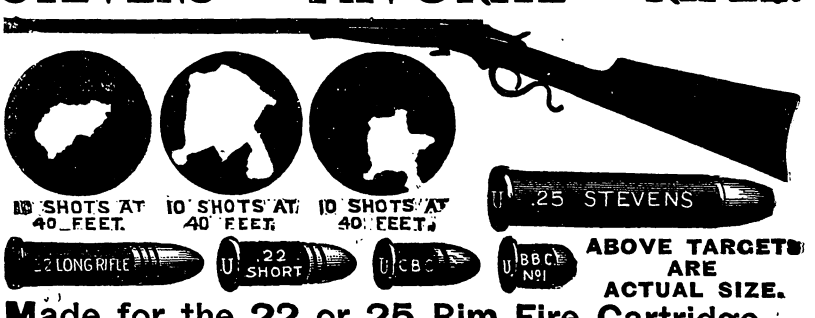
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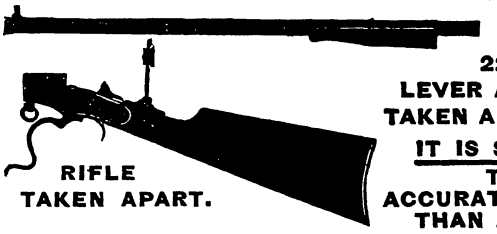
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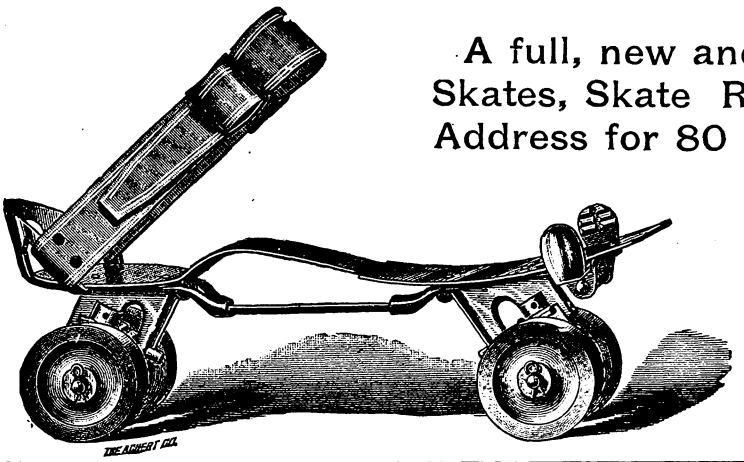
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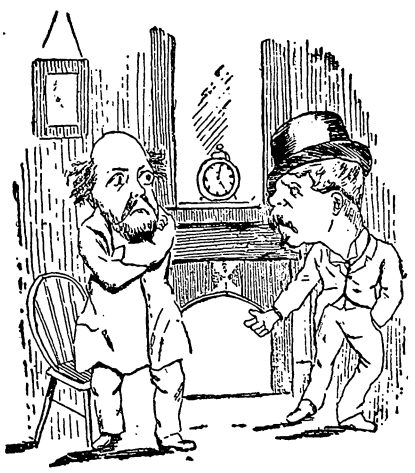


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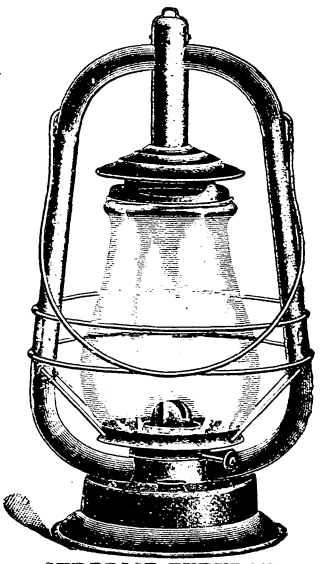
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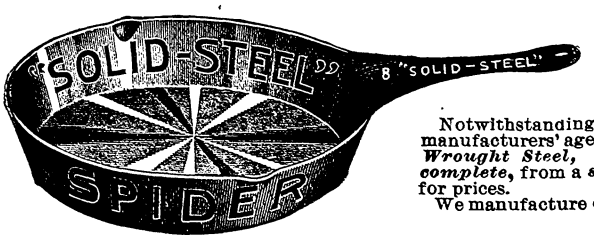
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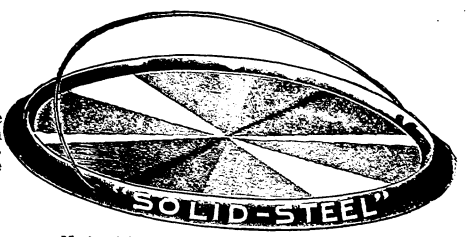


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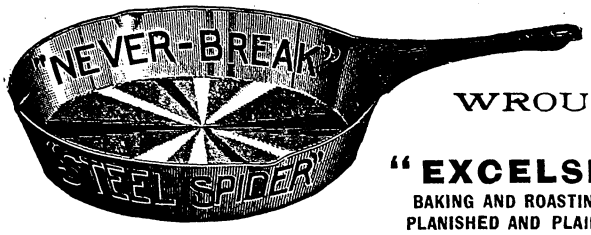
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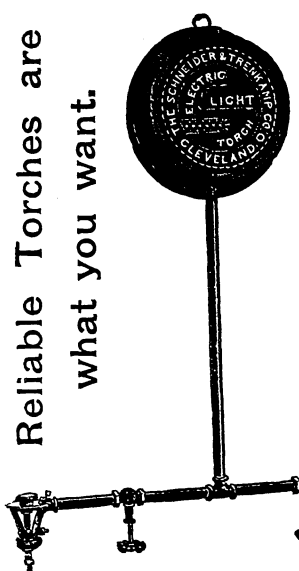
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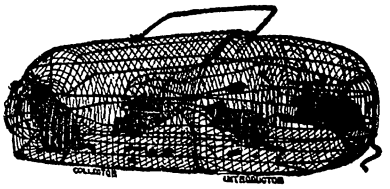
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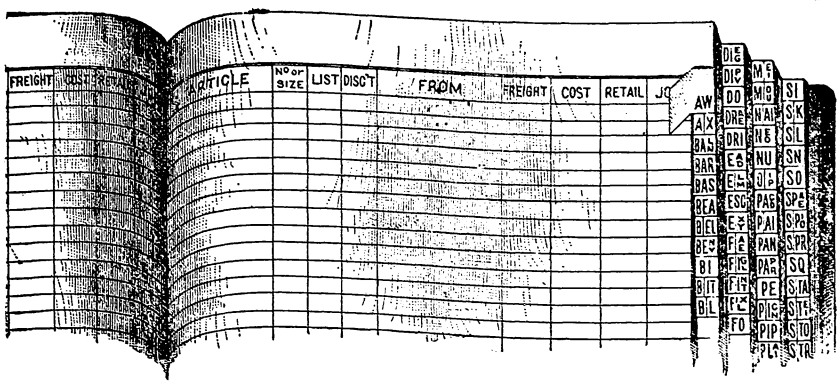
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BAL N	EA D	O! P	SPE A
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Sufficient space has been provided for large lines of goods such as Axes, Bits, Springs, etc., by allowing four pages to such indices, instead of two pages, as for lines of goods requiring less space. This is accomplished, as in AX for example, in Book F by having a short tab with the letter A on the tab on the first leaf, and AX on the tab on the second leaf. The A on the first leaf is directly over the A on the lower leaf, so that the index reads AX whether looking at both leaves together, or at the lower one only.

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For Augers,	turn to	AU	For Chisels,	turn to	CH! U	For Iron,	turn to	IRO
" Parers, Apple	"	PAP R	" Cutlery,	"	CUT	" Irons,	"	IR'S
" Saws,	"	SAW	" Cartridges,	"	CAR	" Shovels,	"	SHO R
" Pumps,	"	PUM N	" Rules,	"	RUB L	" Grindstones,	"	GRI
" Bits,	"	BIT	" Locks,	"	LO	" Stones,	"	STO

Special care has been taken to make the classification as indicated in the index correct and comprehensive, making provision for all Hardware articles and giving sufficient space for the keeping and recording of prices. It is thought that every strictly Hardware article has its first two or three letters given, thus permitting immediate reference to it by a single motion.

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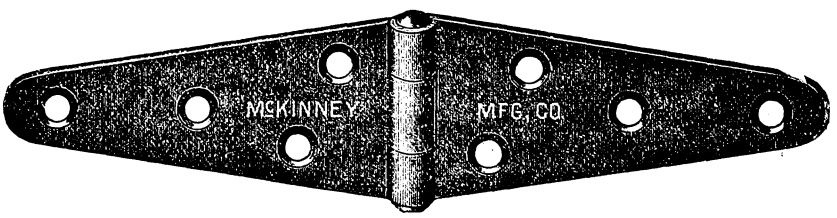
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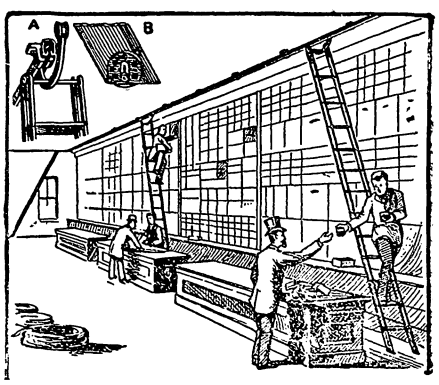
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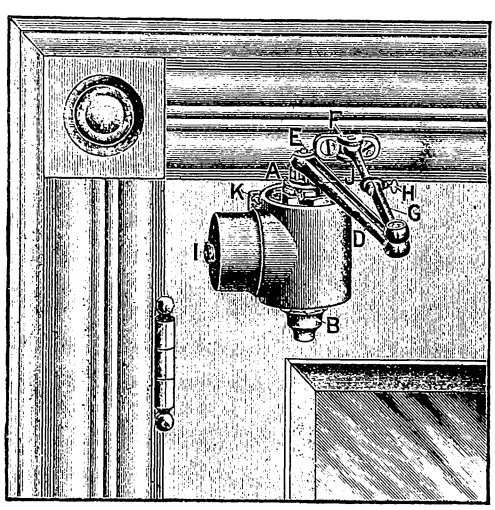


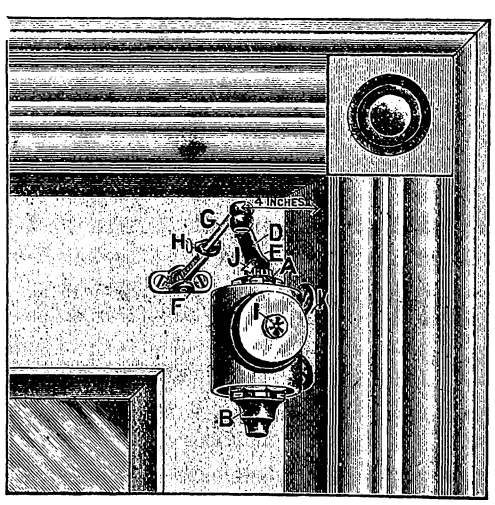
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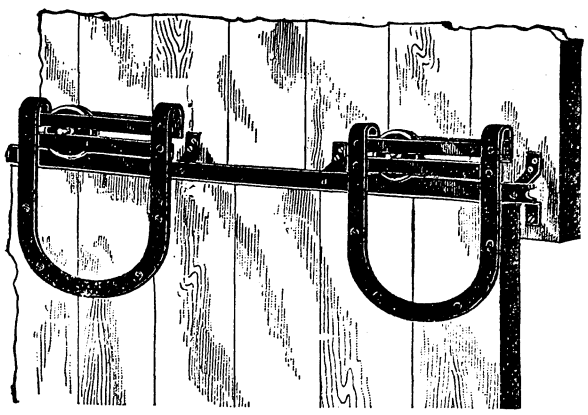
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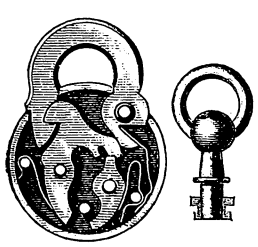
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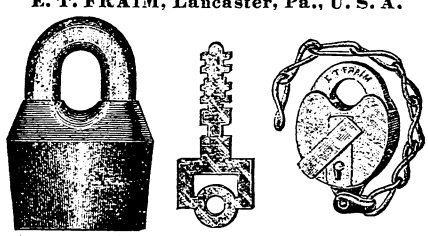
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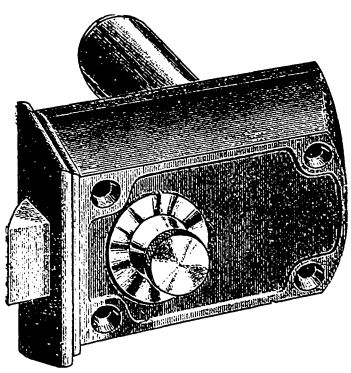
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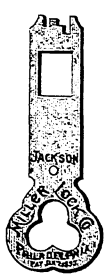


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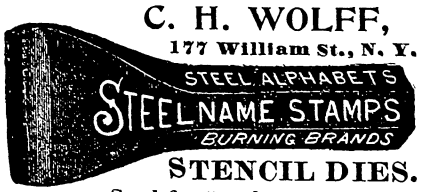
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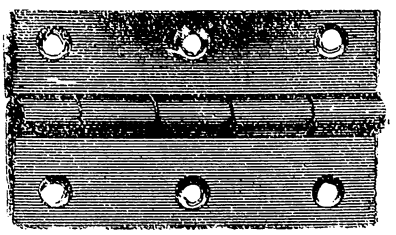
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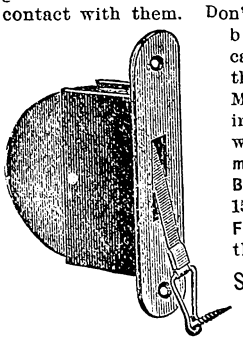
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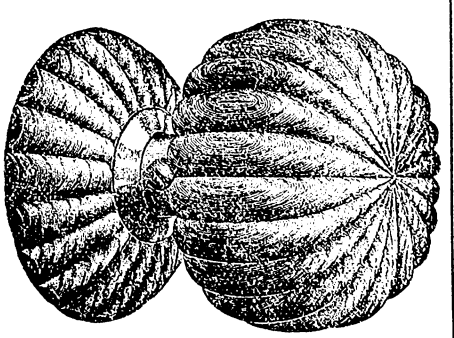
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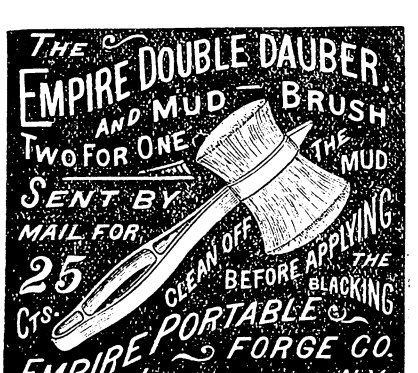


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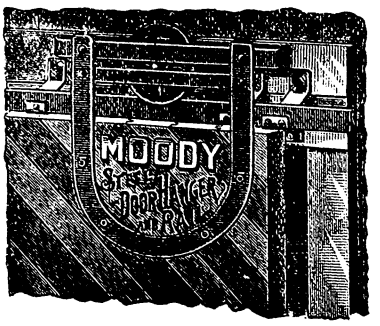
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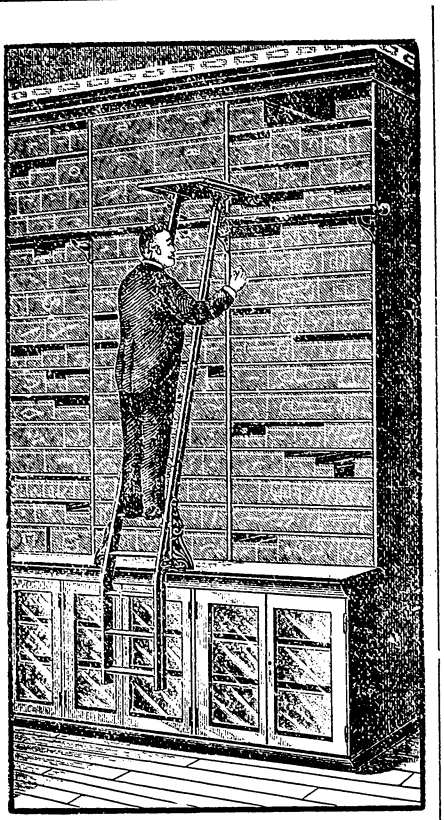
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The Newest, Neatest, Simplest, Easiest Operated and Safest Store Ladder made.

Ladders are not *Suspended*, but *Supported* from below on wheels. Move easier with operator on than others when empty. Highly finished, and very handsome. Made in different grades and prices to suit.

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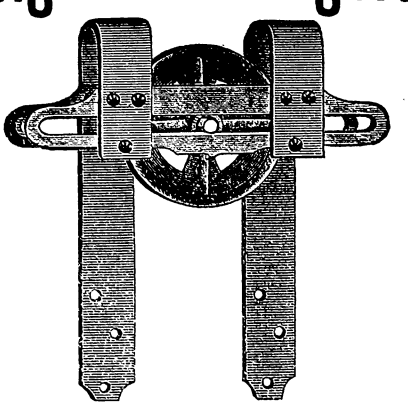
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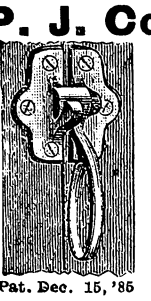
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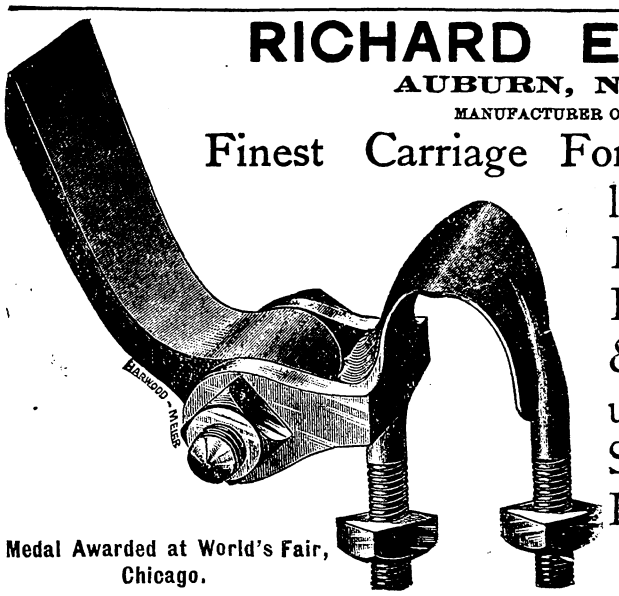
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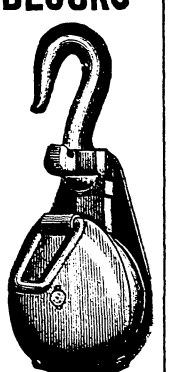
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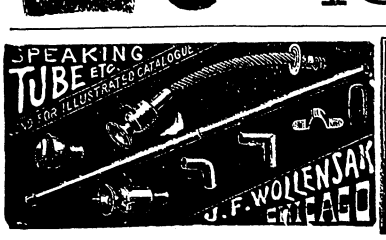
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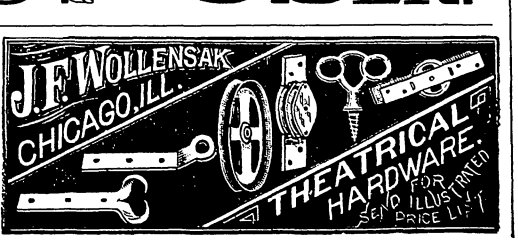
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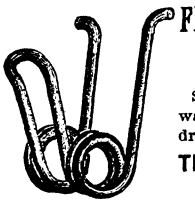
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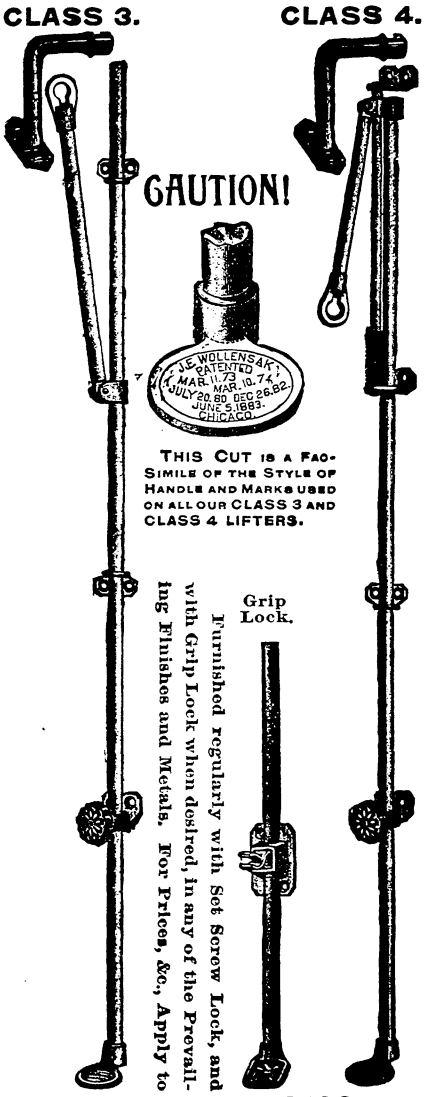
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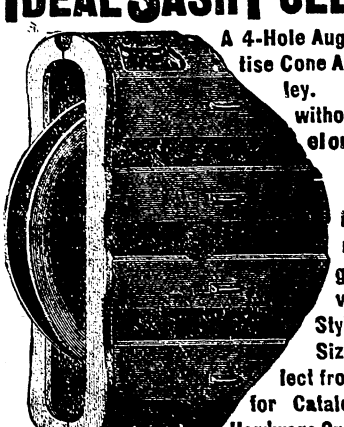
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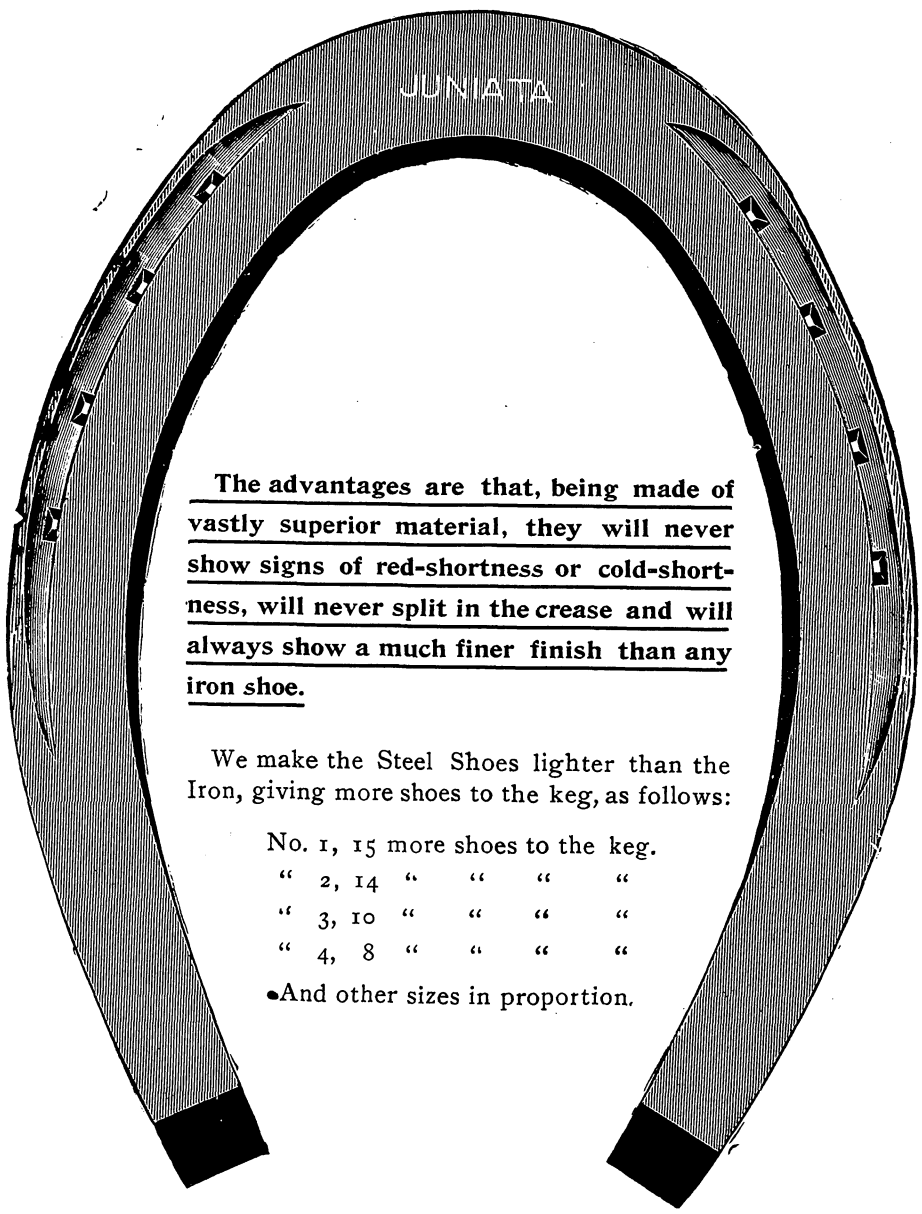
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After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged, and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



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We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

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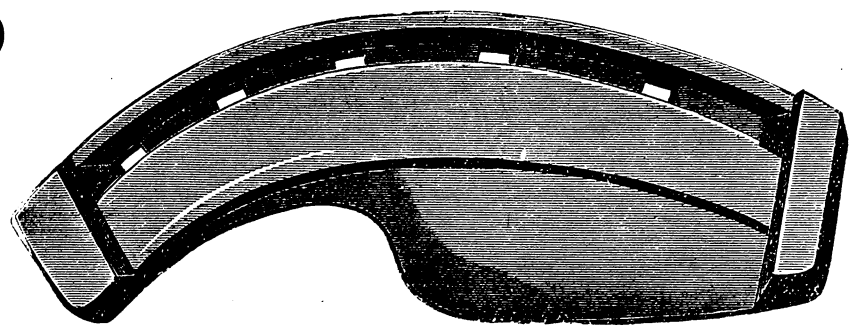
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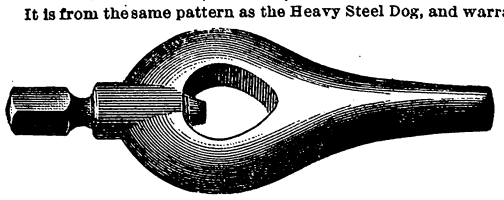
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4	1¼	80	14	4	2 10
5	1⅓	80	15	4½	2 75
6	1⅜	95	16	5	3 25
7	1½	95	17	5½	4 00
8	1¾	1 10	18	6	5 00
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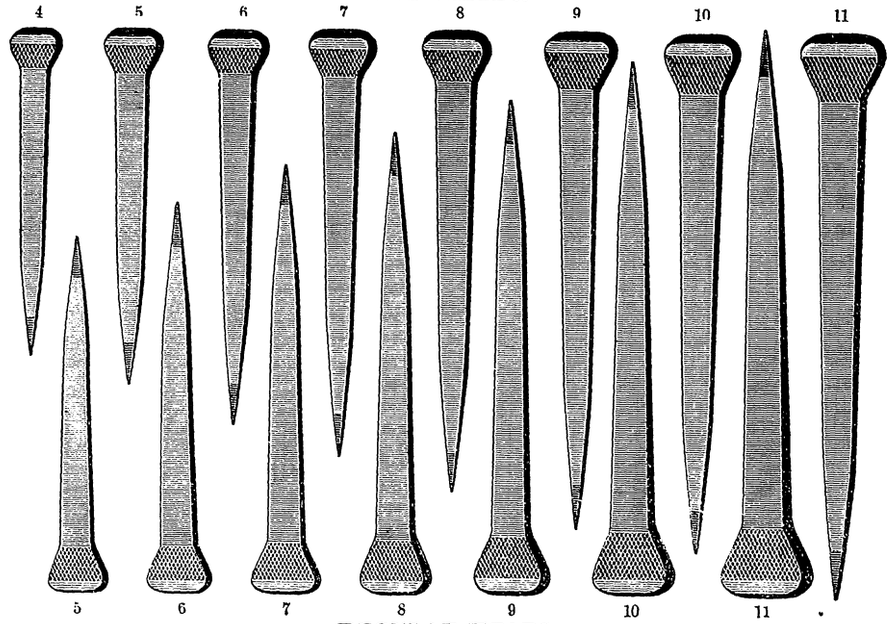
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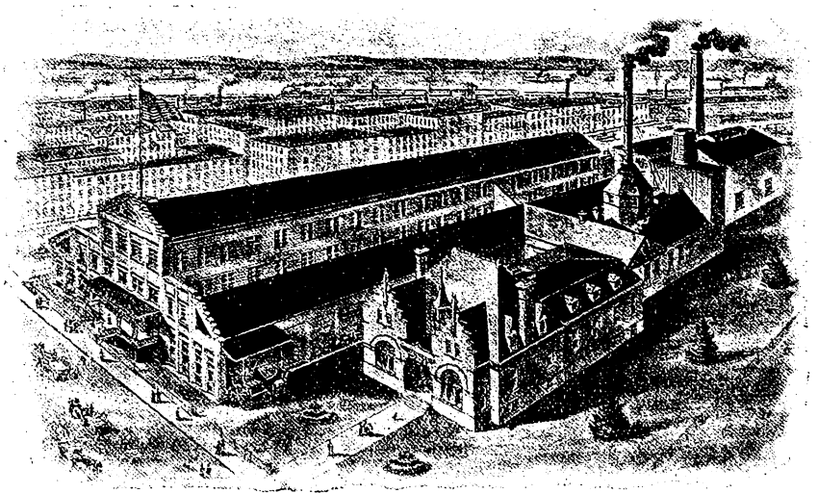
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Beautiful Shape.

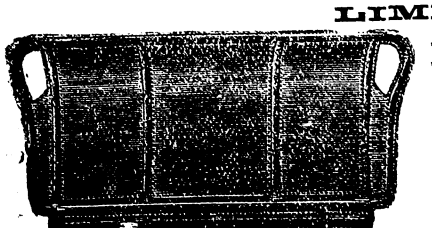
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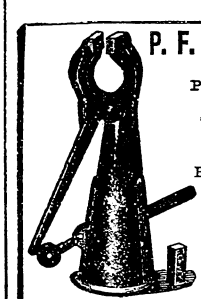
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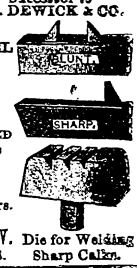
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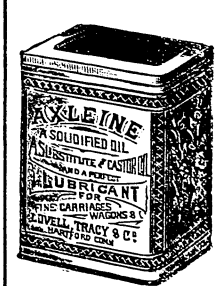


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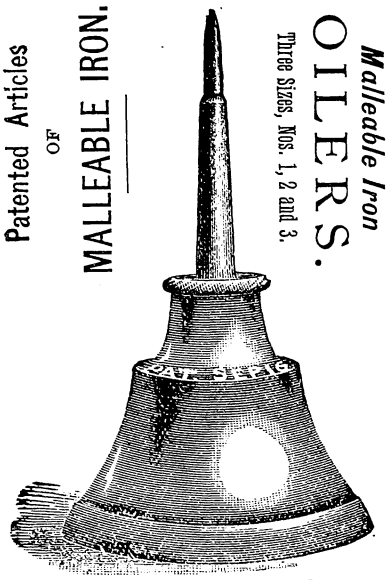
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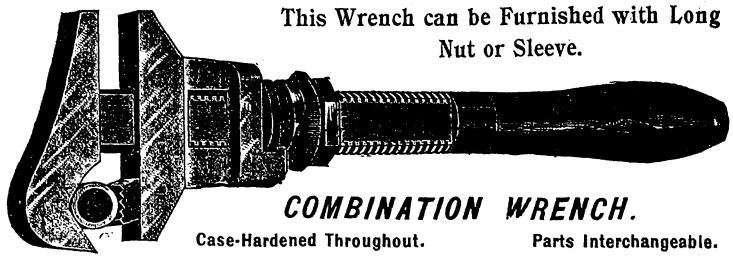
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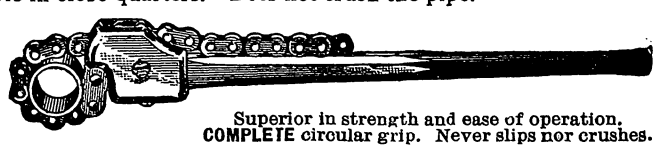
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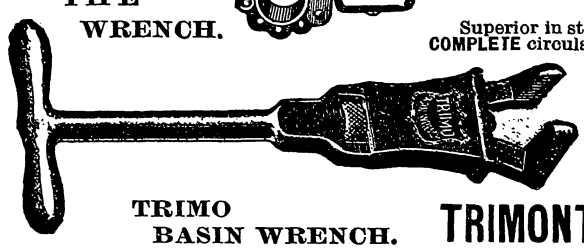
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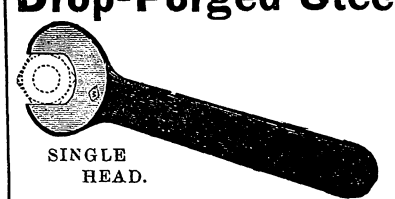


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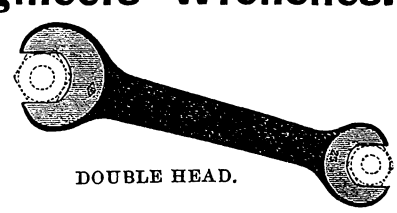
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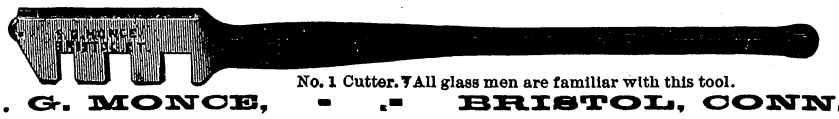
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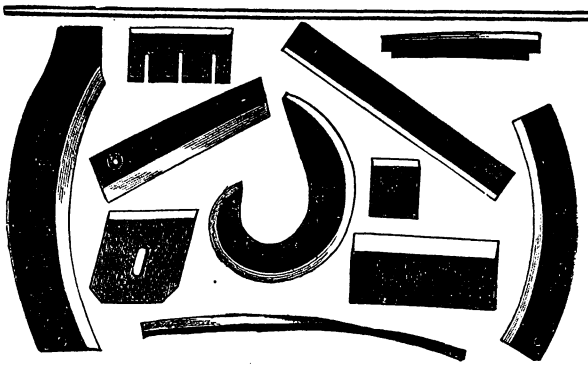
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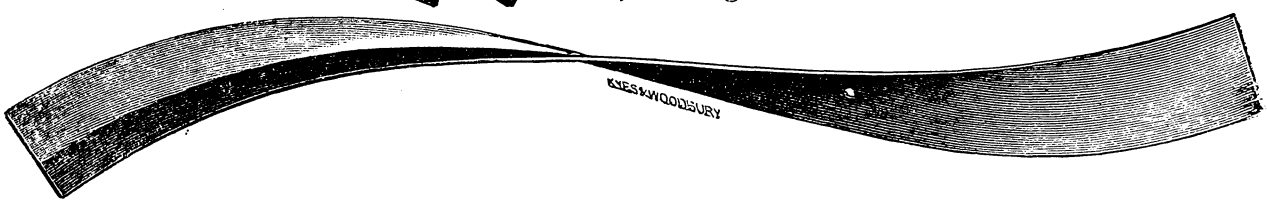
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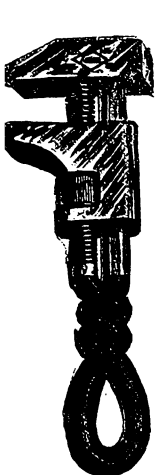
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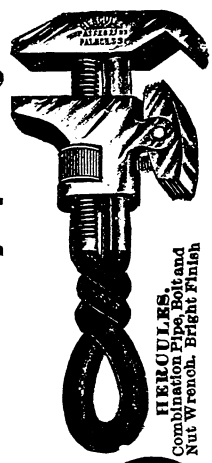
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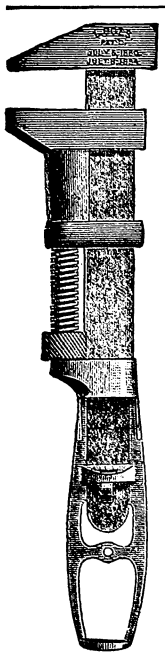
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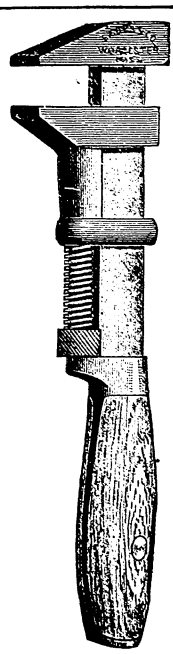
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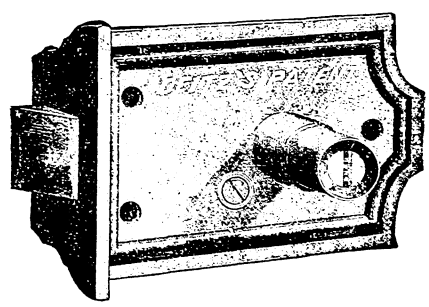
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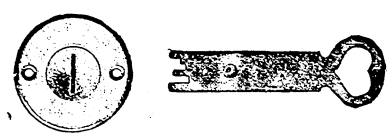
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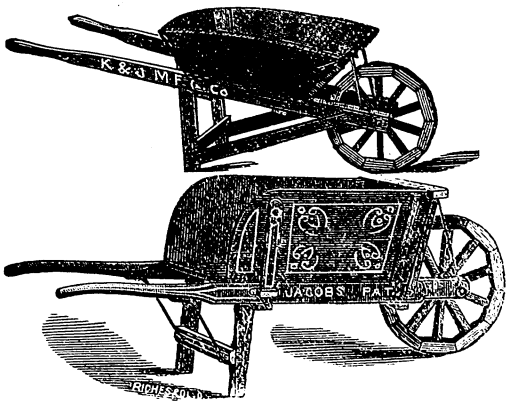
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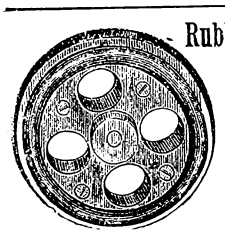
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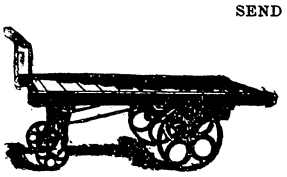
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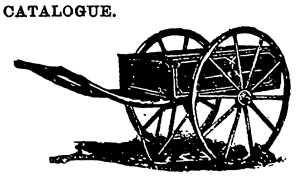
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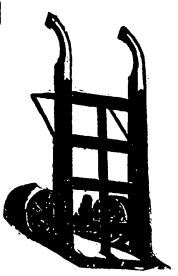
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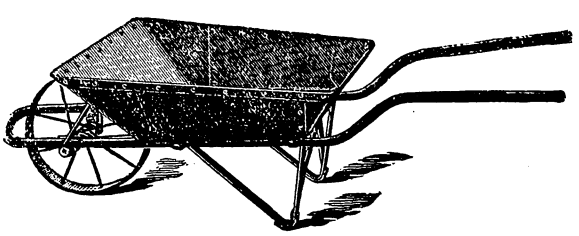
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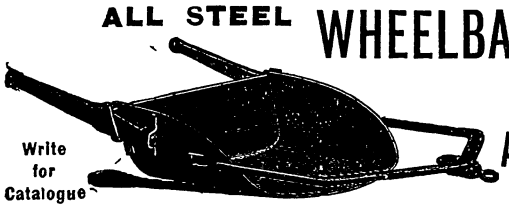
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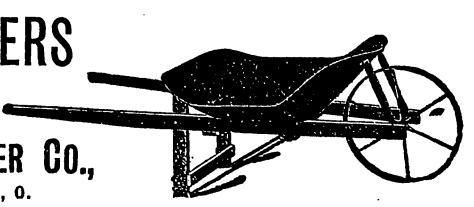


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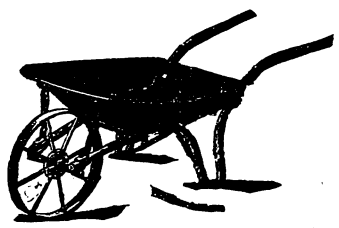
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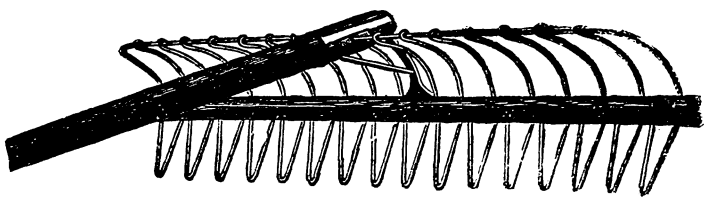
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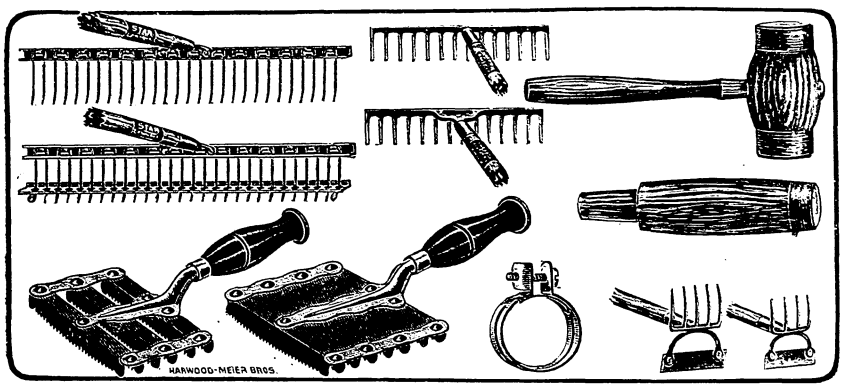
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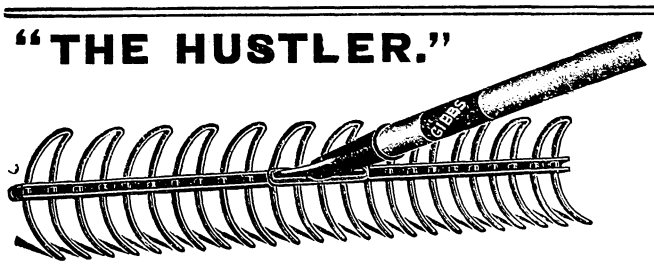
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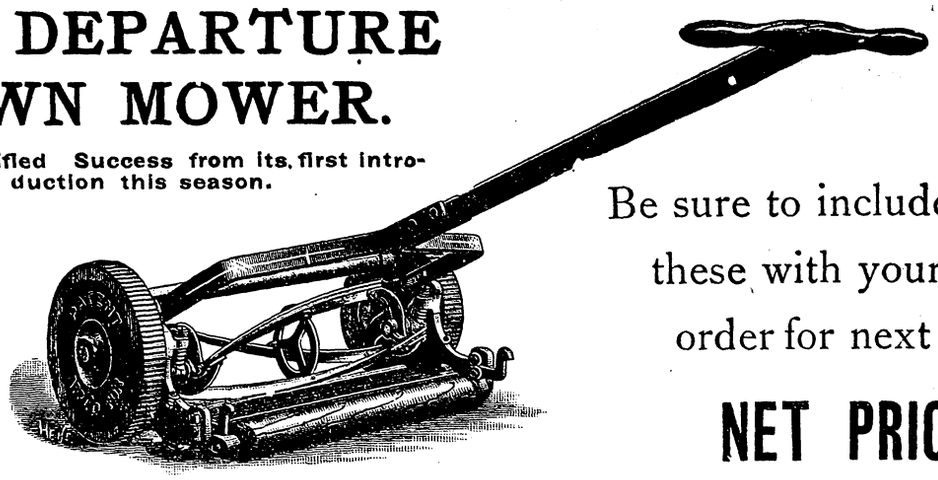
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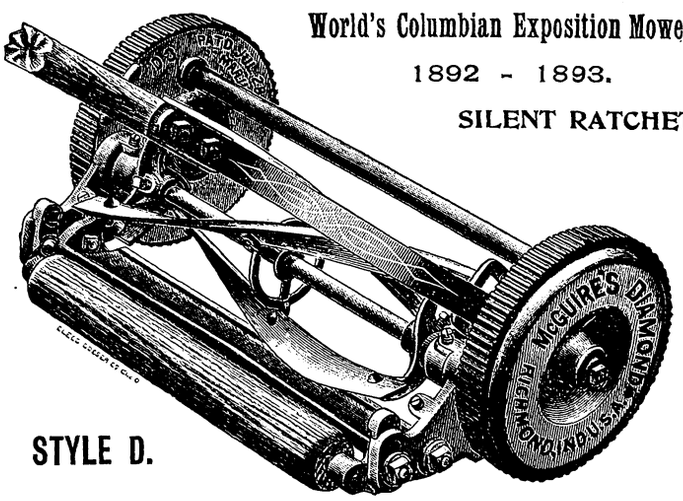
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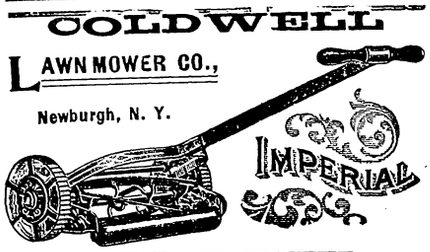
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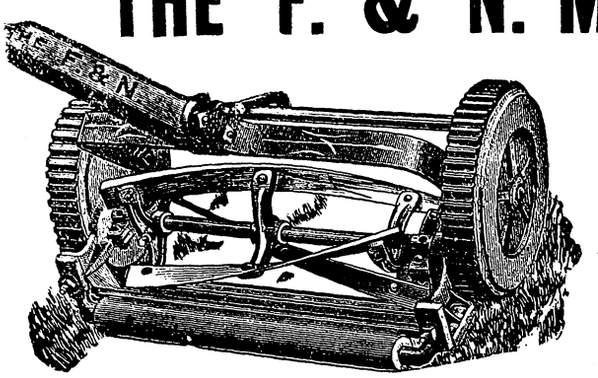
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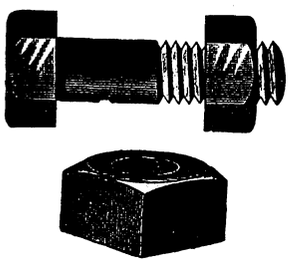
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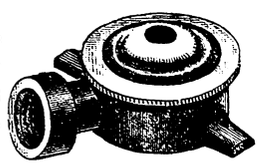
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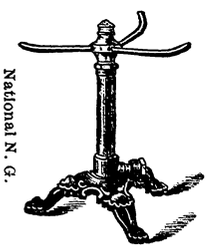
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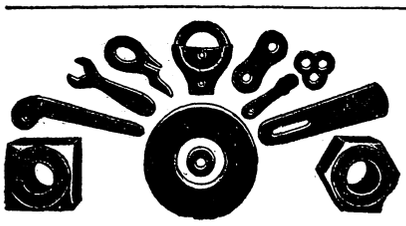
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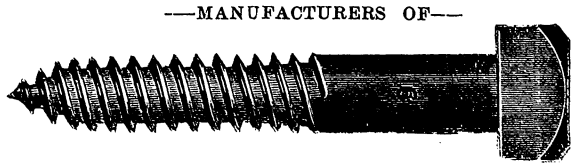
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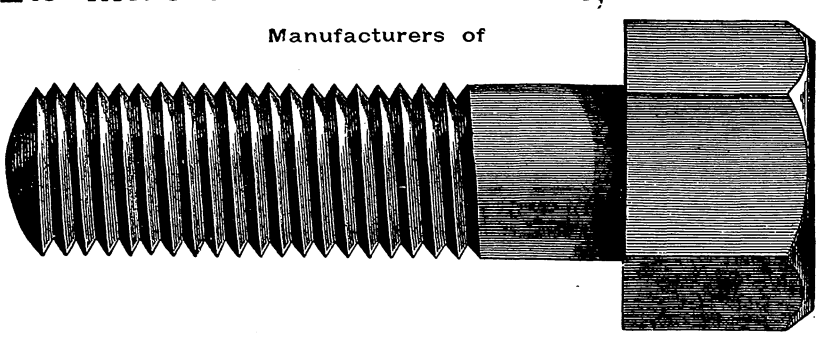
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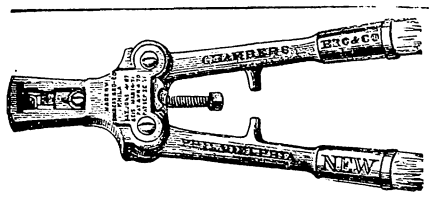


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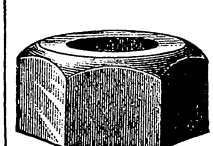
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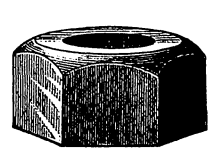
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Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Dumb Waiters.
Storm Mfg. Co., Newark, N. J.

Dust Beaters.
Peabody & Parks, Troy, N. Y,

Dynamite.
New York Powder Co., 62 Liberty St N. Y.

Dynamos.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Lovell Mfg. Co., Ltd., Erie, Pa.
Zucker & Levett Chemical Co., 10 & 14 Grand St., N. Y.

Edge Tools. *Makers of.*
Buck bros., Millbury, Mass.
Buffalo Edge Tool Wks., Buffalo, N.Y.
Plumb, Fayette R., Philadelphia, Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
North Bros. Mfg. Co., Philadelphia.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St., New York
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines.
Colburn Electric Mfg. Co., Fitchburg, Mass.
Eddy Electric Mfg. Co., Windsor, Conn

Electro-Platers.
Boardman, L. & Son, East Haddam Ct.

Elevators. *Makers of.*
Link-Belt Engineering Co., Phila., Pa
Morse, Williams & Co., Phila., Pa.
Salem Fdry & Mch. Co., Salem, Mass

Emery and Emery Wheels.
Bell, Geo. E , 36 John St. N. Y.
Grant Corundum Wheel Mfg. Co Worcester, Mass.
N Y. Belting & Packing Co. Ltd. N. Y
Northampton Emery Wheel Co
Leeds, Mass.
Norton Emery Wheel Co., Worcester Mass.

Enamels.
Nubian Iron Enamel Co., Cragin, Ill

Engineers and Contractors.
Aiken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amsler & Co., Pittsburgh, Pa
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa
Witherow, Jas. P. Co., Pittsburgh; Pa.

Engines, Gas.
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg. N. Y.

Engines, Steam. *Makers of.*
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Erie Engine Works, Erie, Pa.
Harrisburg Fdy. & Machine Works Harrisburg, Pa.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Phoenix Iron Wks. Co. Meadville, Pa.
Shipman Engine Co., Boston, Mass.
Southwark Foundry and Machine Co. Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.
Sweester, W. A., Brockton, Mass.

Expansion Bolts.
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O

Faucets, Self-Measuring
Lane Bros., Poughkeepsie, N. Y.

Faucets, Wooden. *Makers of.*
Boston & Lockport Block Co., Boston Mass., and Lockport, N. Y.
John Sommer's Son, Newark, N. J.

Feed-Water Heaters.
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N.Y
Harrison Safety Boiler Wks. Phila, Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hartman Mfg. Co., Ellwood City, Pa.
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire & Iron Wks., Milwaukee

Files, *Importers of*
Moss, F. W., 80 John, N. Y.

Files and Rasps, *Manufacturers of*
Arcade File Works, Anderson, Ind
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.

Fire Brick. *Makers of.*
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer B & Sons, foot E. Houston, St
McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro., Woodbridge.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Fishing Tackle.
Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flue Cleaners.
Mackey, Jas. T., St. Louis, Mo.

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Foreign Periodicals.
Stechert, G. E., 810 Broadway, N. Y.

Forges, Portable, &c.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Foos Mfg. Co., Springfield, Ohio.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Scranton Forging Co., Scranton, Pa.

Foundry Facings.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.

Foundry Riddles.
Estey, W. S. 65 Fulton, N. Y.

Foundry Supplies.
Colliau, Victor, Detroit, Mich.
Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O

Friction Clutches.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.
Evans Friction Cone Co., Boston, Mass

Fruit Presses.
Enterprise Mfg. Co. Philadelphia, Pa

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Gas Producers.
Wood, R. D. & Co. Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast, Henry B. & Co., Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
D. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston, Mass.
Poole, Robt. & Son Co., Baltimore, Md.

Glass Boards.
Canton Saw Co., Canton, O.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glass Tubes,
Ashcroft Mfg. Co., 111 Liberty St., N.Y.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.
Supplee Hardware Co,, Phila., Pa.

Grass Hooks.
Bruce & Marks Mfg. Co., Gas City, Ind.

Grinding Mills.
Foos Mfg. Co., Springfield, O.

Grinding and Polishing Machines.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grindstone Dressing Machinery
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gunpowder, *Makers of.*
Laflin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich.

Handles.
New York Mallet and Handle Wks. 456 E. Houston St., N. Y.

Hangers, Door.
Chicago Spring Butt Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Hotchkiss, E. S. Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Graham, John H. & Co., 113 Chambers,
McCoy, Jos F. Co., 26 Warren St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N. Y,
Underhill, Clinch & Co., 94 Chambers St., N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co. New Haven, Conn.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Haines & Zimmerman, Phila. Pa.
Hart, H. C Mfg. Co., Detroit, Mich.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Philadelphia, Pa
Peabody & Parks, Troy, N. Y.
Weiland, Chas., 149 Chambers St., N.Y
Wilson, J. Fred, Worcester, Mass.
Underhill, Clinch & Co., 94 Chambers Street, N. Y

Hardware, Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N.Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Bruce & Marks Mfg. Co., Gas City, Ind.
Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co. Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Stuart & Peterson Co., Phila., Pa.

Hollow Ware, Aluminum.
Illinois Pure Aluminum Co. Lemont, Ill

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, *Makers of.*
Caswell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt,

Horse and Mule Shoes. *Makers of.*
Bryden Horse Shoe Co., Catasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co,, Boston, Mass.

Hose.
Cleveland Rubber Works, Cleveland, O.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N.Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Shavers.
Enterprise Mfg. Co., Philadelphia, Pa.

Injectors.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. Hartford Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y

Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron, *Merchants.*
Barnes, C. K. & Co., Philadelphia, Pa
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Bradley & Co., Philadelphia
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co. 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 35 Elm St. N. Y
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, *Importers.*
Abbott Wheelock & Co. N.Y. and Boston
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet. *Manufacturers of.*
Cambridge Iron & Steel Co., Cambridge Ohio
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladders, Rolling,
Coburn Trolley Track Mfg. Co., Holyoke, Mass.

Ladles.
Detroit Fdy. Equipment Co., Detroit, Mich.

Lamps.
Standard Lighting Co., Cleveland, O.

Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.

Lanterns.
Ohio Lantern Co., Tiffin, Ohio.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls N. Y.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mowers.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Coldwell Lawn Mower Co., Newburg, N. Y.
Dille & McGuire Mfg. Co., Richmond, Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Mast, Foos & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila. Pa.

Lawn Rakes.
Gibbs Mfg. Co, Canton, Ohio.
Konler, F. E. & Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse N. Y.

Lawn Sprinklers.
Ette & Henger Mfg. Co., St. Louis,
McGowan, John H. Co., Cincinnati, O.

Lemon Squeezers.
Ripley Mfg. Co., Uxbridge, Conn.

Letters and Figures, Metallic
White, A. A. & Co., Providence, R. I.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.

Locks & Knobs, *Manufacturers of*
Deits, A. E., 97 Chambers, N. Y
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg Co. Bridgeport, Conn
Yale & Towne Mfg. Co., Stamford, Conn

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Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N.Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N.Y.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila. Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Lodge & Shipley Mch. Tool Works, Cincinnati, O.
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co. Rochester, N.Y.
Manville, E. J. Mch. Co, Waterbury, Conn
Newark Mch. Tool Works, Newark, N.J.
New Haven Mfg. Co., New Haven, Conn.
New York Mach'y Depot, N. Y.
Niles Tool Wks., 188 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y.
Poole, Robt. & Son Co., Baltimore, Md
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Prentiss Tool & Supply Co., N. Y.
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ed., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.
Adt, Jno. & Son, New Haven, Conn.

Machine Knives.
Loring Coes & Co., Worcester, Mass
Loyd, John, 558-562 Water St., N. Y.

Machine Tools.—*See Machinery.*

Machine Work.
Papping, J., 58th St., & 11th Ave., N.Y. City.

Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y.
Starrett, L. S., Athol, Mass.
Vallentine Tool Co., Hartford, Conn.

Machinists' Tools and Supplies.
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.

Mallets.
N. Y. Mallet & Handle Works, N. Y.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St,, N.Y.
Lufkin Rule Co., Saginaw, Mich.

Meat Cutters and Stuffers.
Enterprise Mfg. Co., Philadelphia, Pa

Mechanical Instruction.
Correspondence School of Mechanics Scranton, Pa.

Metals.
Fearing, Wm. S., 100 Chambers, N. Y
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
American Metal Co., N. Y.

Metallurgists.
Britton J. Blodgett, Phila.

Milling Machines.
Cin. Milling Mch. Co., Cincinnati, Ohio.

Mincing Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
Darby, Edw. & Sons Phila. Pa.
Leonard, B. E., Scranton, Pa.

Mining Screens.
Harrington & King Perforating Co Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y

Mirrors.
Rice, C. F., Chicago, Ill.

Molding Sand.
Obermayer, S. Co., Cincinnati, O.

Motors, Water and Electric.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington, Pottstown Iron Co., Pottstown, Pa
Riverside Iron Wks, Wheeling, W. Va.

Neck Yokes.
Johnson, S. C., Racine, Wis.

Nickel Platers' Supplies.
Colburn Electric Mfg. Co., Fitchburg, Mass.
Eddy Electric Mfg. Co., Windsor, Conn
Zucker & Levett Chemical Company. 10 to 14 Grand St., N. Y

Norway Shapes, *Rollers of.*
Rowland, William & Harvey, Frankford, Philadelphia

Novelty Manufacturers.
Franklin, H. H. Mfg., Syracuse, N. Y.

Nut Machines.
Dunham Nut Mch. Co., Unionville, Ct

Nuts, Bolts, &c., *Makers of.*
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R. I
Blake & Johnson, Waterbury, Conn.
Haskell, Wm. H. Co., Pawtucket, R.I.
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Port Chester Bolt and Nut Co., Port Chester, N. Y.
Russell, Burdsall & Ward, Port Chester
Sternbergh, J. H. & Son, Reading, Pa
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R. I.

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
Glazier Stove Co., Chelsea, Mich.

Ores.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Morrison, Robt., St. Louis, Mo.
N. Y. Belting & Packing Co. Ltd., N.Y.

Padlocks.
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Miller Lock Co., Philadelphia, Pa.

Paint.
Dixon, Jos. Crucible Co., Jersey City, N.J
Garry Iron & Steel Roofing Co., Cleveland, O.

Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O

Paint Cans.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Patent Solicitors.
Howson & Howson, Phila. & Wash'gton.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co. Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 513 Arch, Philadelphia.

Phosphor Tin.
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., Boston, Mass.
Halk & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

File Drivers.
Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast Henry B. & Co., Philadelphia.
Saunder's Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c., *Makers of.*
McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas, *Makers of.*
Cumberland Nail & Iron Co., Phila, Pa
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W Va.
Wood, R. D. & Co., Philadelphia, Pa.

Piano Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.

Planes, *Manufacturers of.*
Stanley Rule & Level Co., N. Y

Plate Bending Rolls.
Schneekloth, H. A., 530 W. 28th St., N.Y

Plate, Iron and Steel, *Mfrs of*
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa
Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.

Polishing Machines.
Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
La Massena, C. E. & Co., Newark, N.J.

Post Hole Diggers.
Wister, L & R, & Co., Philadelphia, Pa.

Poultry Nettings.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Wks. Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
Laflin & Rand Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y.

Power Hack Saws.
Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Jenkins & Lingle, Bellefonte, Pa.

Presses, Dies, &c.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn

Presses, Power, *Makers of.*
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
Keystone Clutch Mch. Wks., Phila., Pa.
Lake, J. H. & D. Co., Massillon, Ohio,

Pulverizing Mill.
Bradley Fertilizer Co., Boston, Mass,

Pumping Machinery.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Hooker-Colville Steam Pump Co., Chicago, Ill.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa
Valley Pump W'ks, Easthampton, Mass
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, *Makers of.*
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Mast, Foos & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Henderer, A. L., Wilmington, Del.
Schneekloth, H. A., 530 W. 28th St., N.Y
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
Perry, W. H. & Co., Providence, R. I.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Estey, W. S. 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.

Razors.
Electric Cutlery Co., 113 Chambers, N.Y
J. R. Torrey Razor Co., Worcester, Mass

Reels.
Hendryx, A. B. Co., New Haven, Conn

Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.

Rivets.
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Troy, N. Y.
Cobb & Drew, Plymouth, Mass.
Henderson, Jas. S., 165 Greenwich, N.Y.
Plymouth Mills, Plymouth, Mass.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Rock Drills.
Sand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd, Co., Youngstown, O.
Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning F'dry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd, Co., Youngstown, O.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh Pa.

Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Cincinnati Corrugating Co., Piqua, O.
Johns, H. W Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N.Y

Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa.

Rubber Goods.
Canfield, H. O., Bridgeport, Conn.

Rules, *Manufacturers of.*
Keuffel & Esser Co., 127 Fulton St., N.Y
Lufkin Rule Co., Saginaw, Mich.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Pullman Sash Balance Co., Rochester, N. Y.
Vanderbilt Sash Balance Co., Canandaigua, N. Y.

Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.
Cincinnati Corrugating Co., Piqua, O.

Sash Locks.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Portable Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.

Saws, *Makers of.*
Disston, Henry & Sons, Phila., Pa.
Hiles, C. A. & Co., 336-338 Carroll Ave Chicago, Ill.
National Saw Co., 96 Reade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Taintor Mfg. Co., 84-86 Chambers, N

Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N.Y

Scrapers, Road.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.

Screens, Coal and Ore.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Screens, Door and Window.
Queen Anne Screen Co., Burlington, Vt.

Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Capitol Mfg. Co., Chicago, Ill.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.

Screws, *Makers of.*
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
National Screw & Tack Co., Cleveland, Ohio.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls N.Y

Scythe Stones and Whetstones.
Pike Mfg. Co., Pike Stat'n, N. H.
Cleveland Stone Co., Cleveland, O.

Shafting, *Makers of.*
Cresson, Geo. V., Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Fitzsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc. Phila. Pa.
Stow. Co. Mfg, Binghamton, N. Y.

Shaped Iron and Steel,—*Manufacturers of.*
Ætna-Standard Iron & Steel Co. Bridgeport, O.

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Allentown Rolling Mill, Allentown, Pa
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phoenix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn
Heinisohs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, *Manufacturers of.*
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh.
Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ld., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch. A. B. & Co., Peoria, Ill.

Sinks.
Douglas, W. & B., Middletown Conn.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Sickels, Sweet & Lyon, 35 Barclay St., N. Y.
Winslow, Sam'l, Skate Mfg. Co. Worcester, Mass.

Skates, Roller.
Henley, M. C., Richmond, Ind.
Winslow, Saml., Skate Mfg. Co., Worcester, Mass

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.
Clendenin Bros., Baltimore, Md.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.

Speed Indicators.
Church & Sleight, 109 Fulton St., N. Y.

Spelter.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
Rogers & Hamilton Co., Waterbury, Conn.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y

Springs.
American Spiral Spring Co., Pittsburgh, Pa.
Cary, Alanson, 240-242 W. 29th St., N.Y
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y
Morgan Spring Co., Worcester, Mass
Nourse, Fred. Co., 315 to 319 E. 22d St., N. Y.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Bardsley, J., 149 & 151 Baxter St., N.Y.
Chicago Spring Butt Co. Chicago, Ill.
Pullman Sash Balance Co., Rochester N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St. New York.

Stamping Works.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co. Binghamton N.Y

Steam Gauges.
Ashcroft Mfg. Co., 111 Liberty St., N.Y
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., *Makers of*
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Camden, N.J.

Steam Separators.
Goubert Mfg. Co., 32 Cortland St N. Y.
Harrison Safety Boiler Wks. Phila. Pa

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.

Steel Figures and Alphabets.
Krogstad, W., 61 Fulton, N. Y.
Wolff, C. H., 177 William St., N. Y.

Steel Importers.
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa
Boker, Hermnan & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa,
Elken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburg Pa
Moss, F. W., 83 John N. Y
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co. High Bridge, N.J
Wordlaw, S. & C., Sheffield, Eng
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn

Steel, *Manufacturers' Agents.*
Barnes, C. K. & Co., Philadelphia, Pa
Corning, Edw, & Co., 29 B'way, N. Y
Frasse Co., 19 Warren St., New York.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, *Manufacturers of.*
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville Pa
Riverside Iron Wks., Wheeling, W. Va

Steel, Tool.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill,

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunder's Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y

Stove Pipe Thimbles.
Cheney, S. & Son Manlius, N. Y

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse N. Y.

Strops.
Electric Cutlery Co. 113 Chambers, N.Y
J. R. Torrey & Co., Worcester, Mass.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co. La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation. Boston, Mass
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland O.
Phillips, E. & Sons, South Hanover.
Plymouth Mills, Plymouth, Mass.
Trufant, W. E., Whitman, Mass.

Tank Heaters.
Hunt, Helm & Ferris, Harvad, Ill,

Taps and Dies.
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila.

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tin Plate Machinery.
Lloyd Booth Co., Youngtown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St.,

Tire Upsetters.
Butts & Ordway, Boston, Mass,

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N.Y.

Tools.
Britton, Horace E., Stoughton, Mass.
Brown, R. H. & Co., New Haven, Conn.
Frasse Co., 19 Warren St., New York.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.

Tools, Blacksmith and Wheelwrights.
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R. Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasolene.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
Standard Lighting Co., Cleveland, O.

Transom Lifters.
Wollensak, J. F. Chicago, Ill.

Trucks, *Manufacturers of.*
Berger Bros., Philadelphia, Pa.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co. Lansing Mich.

Tubes, Seamless Drawn Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.
Leng's John S. Son & Co., 4 Fletcher St., New York.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills, *Makers of.*
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 56 John N. Y.
Mason Regulator Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vises.
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Wheelbarrows.
Akron Tool Co., Akron, O.
Amer. Steel Scraper Co., Sidney, Ohio.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.

Whips.
American Whip Co., Westfield, Mass.

Window Cord, *Makers of.*
Samson Cordage Works, Boston, Mass

Wire, *Manufacturers of.*
Amer. Spiral Spring Co., Pittsburg, Pa
Consolidated Steel & Wire Co., St. Louis, Mo.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Wks. Milwaukee, Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.
Higganum Hdw. Co., Higganum, Conn.
King, J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.

Wire Door Mats.
Hartman Mfg. Co., Elwood City, Pa.
Horrock, Joshua, 45 Cliff St., N. Y.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods, *Manufacturers of.*
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros, Cortland, N. Y.
Williamson, C. T. Wire Novelty Co. Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester Mass.
Waterbury Mch. Co., Waterbury, Conn.

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wire Nails.
Consolidated Steel & Wire Co., St. Louis, Mo.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle Pa.
Phillips, E. & Sons, South Hanover Mass
Phillips, Townsend & Co., Phil., Pa.
Plymouth Mills, Plymouth, Mass.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City

Wire Rods, Steel.
Consolidated Steel & Wire Co., St. Louis, Mo.
New Castle Wire Nail Co., New Castle Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y

Wire Rope, Iron and Steel *Makers.*
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco
Hasard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Wood-Working Machinery.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Wrenches, *Manufacturers of.*
Bemis & Call Hardware & Tool Co., Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn.
Capitol Mfg. Co., Chicago, Ills.
Coes Wrench Co., Worcester, Mass.
Keystone Mfg. Co., Buffalo, N. Y.
Trimont Mfg. Co., Roxbury, Mass.
Williams, J. H., Brooklyn, N. Y.

Wringers.
Colby Wringer Co., Montpelier Vt.

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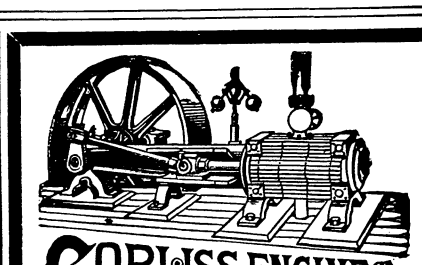
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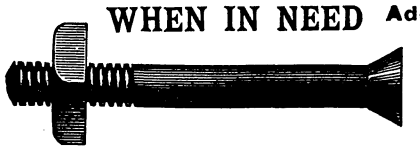
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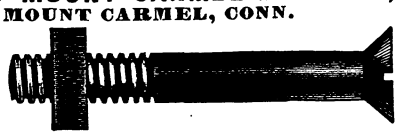
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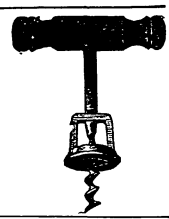
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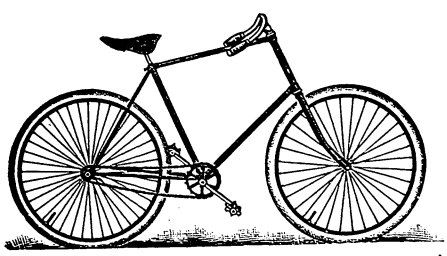
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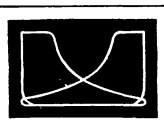
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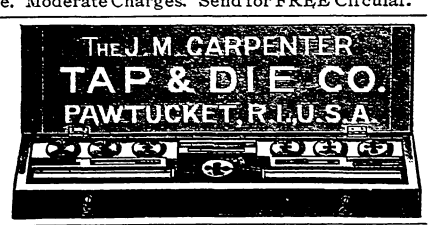
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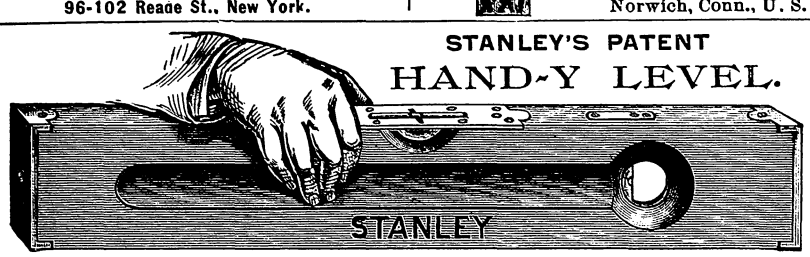
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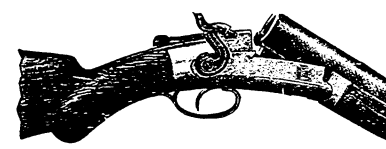
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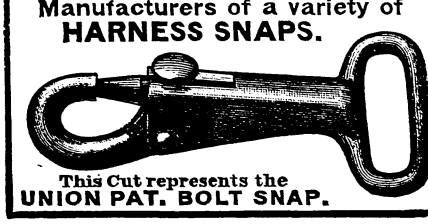
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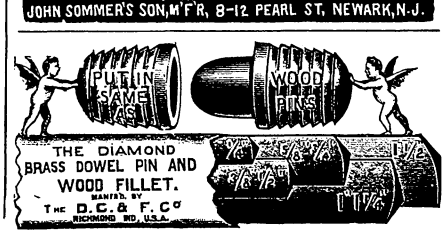


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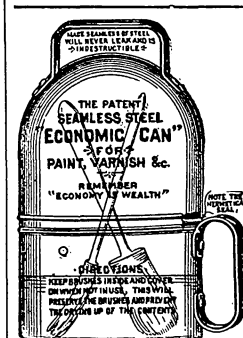

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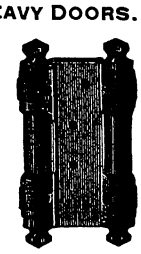
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Advertising and Subscription Rates " 921

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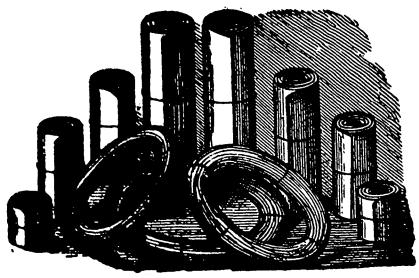
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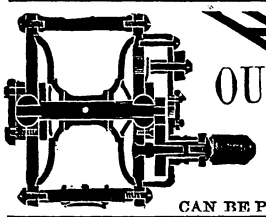
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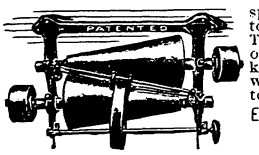


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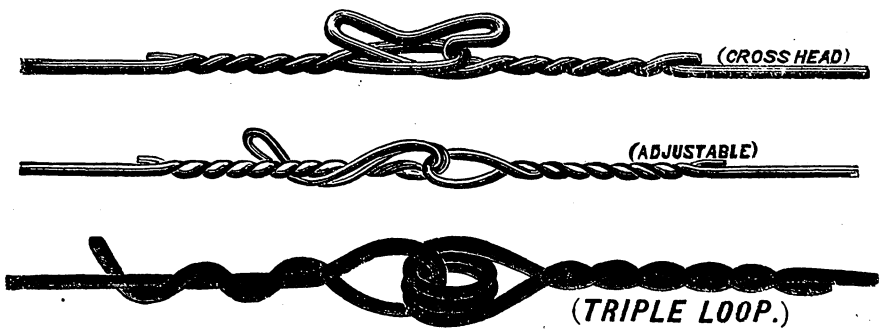
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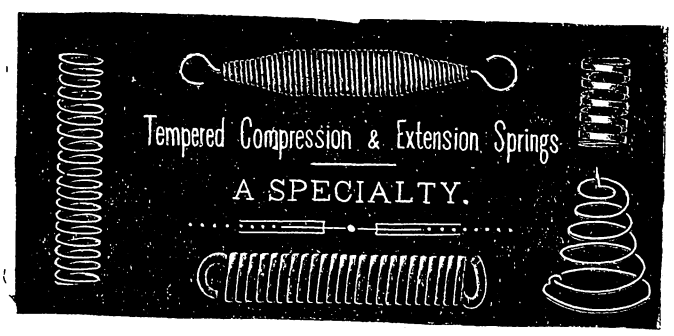
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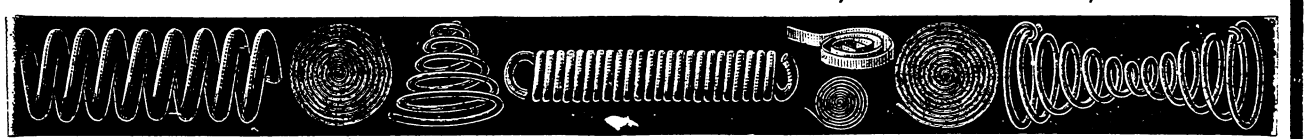
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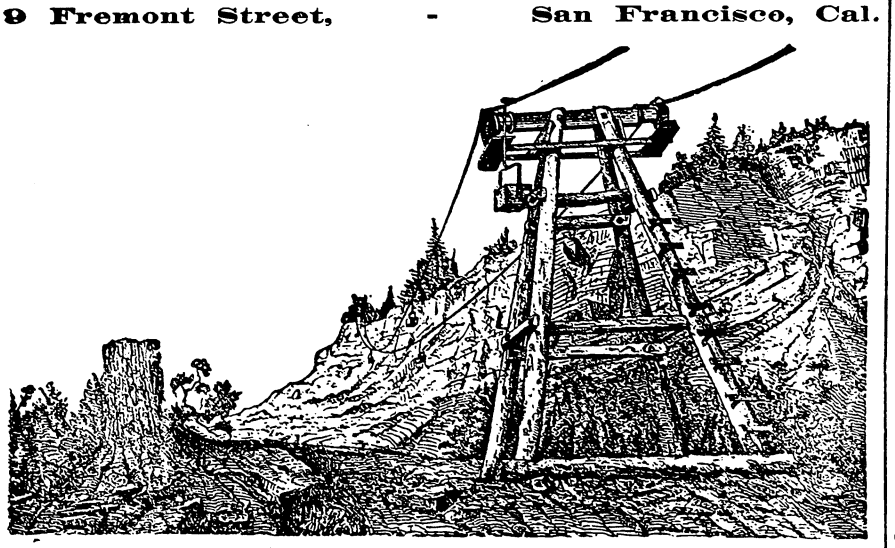
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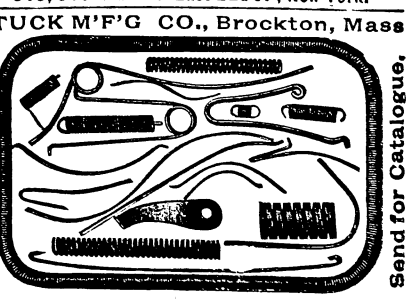
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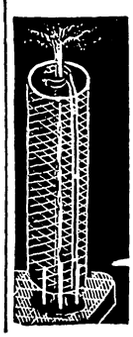
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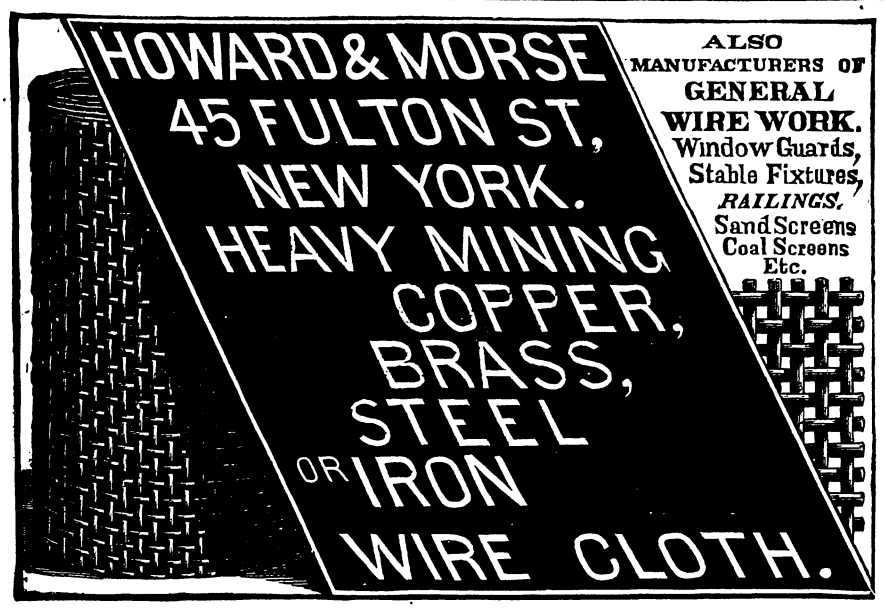
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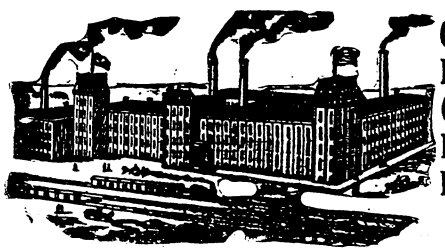


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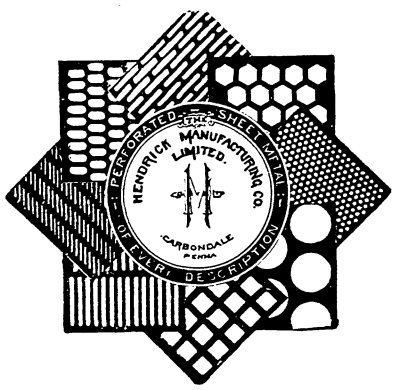
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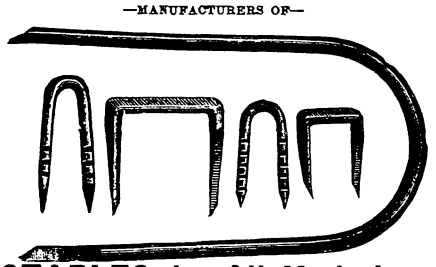
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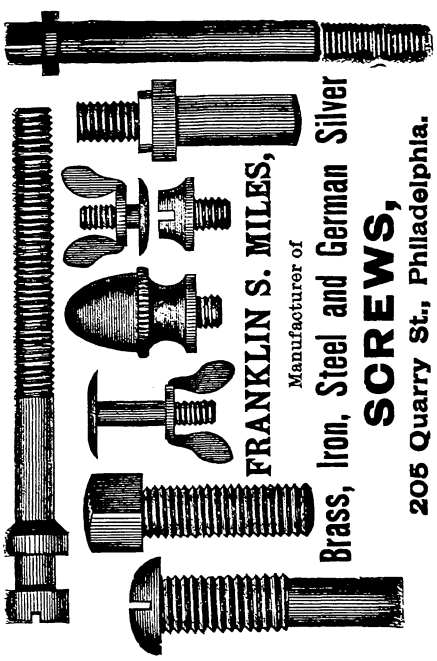


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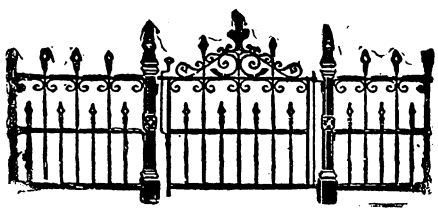
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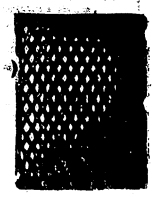


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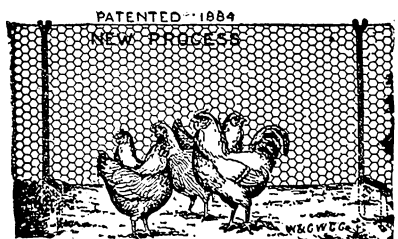
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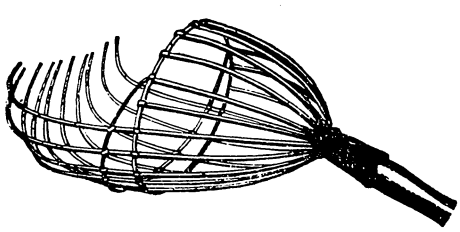
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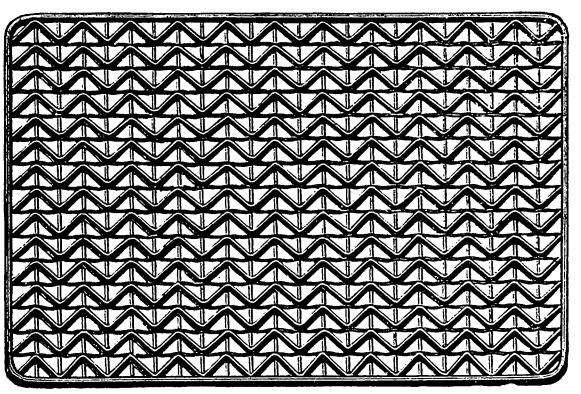
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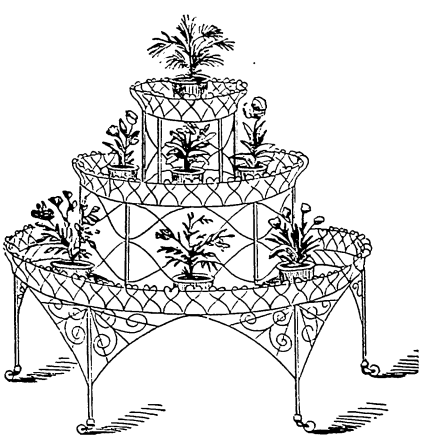
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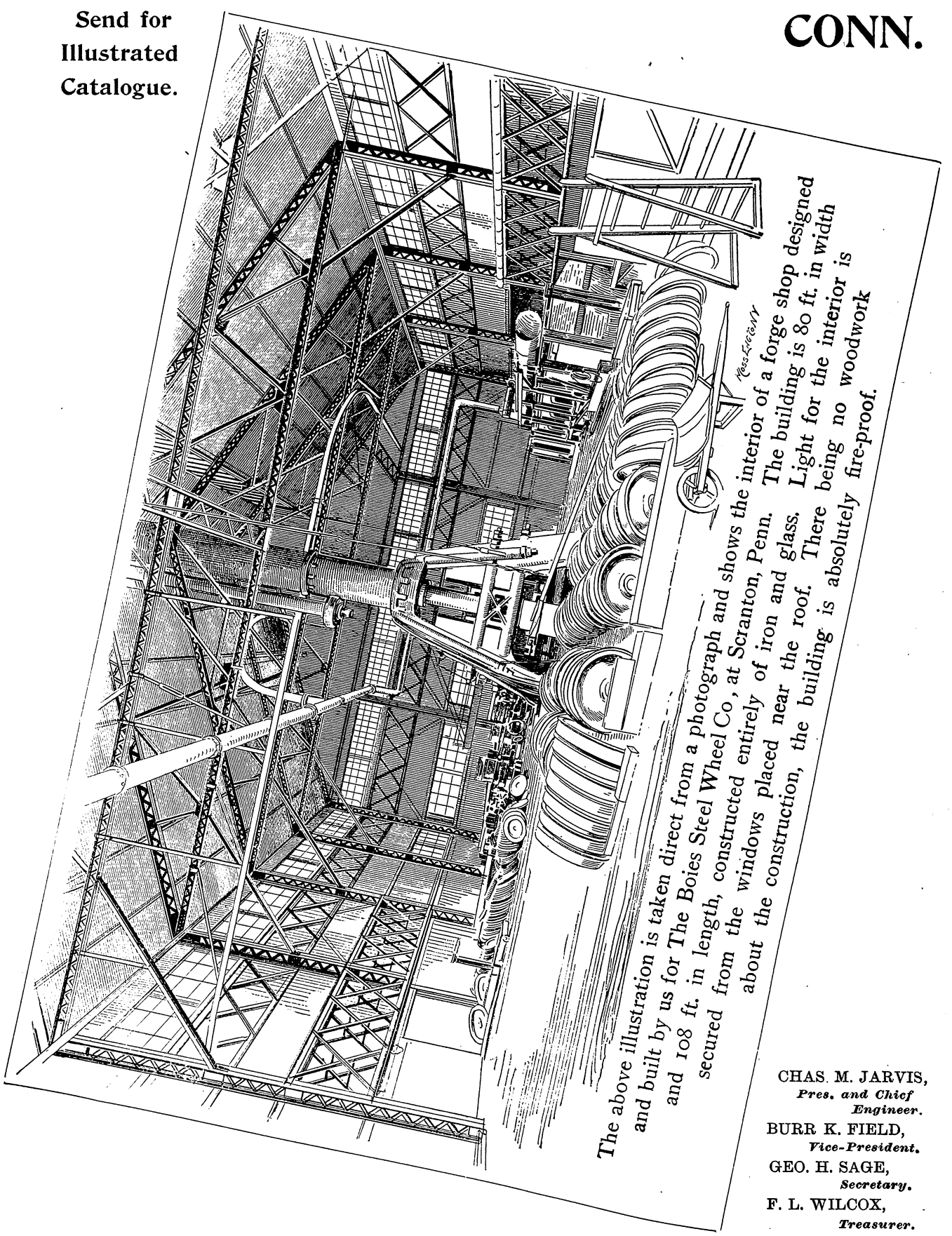
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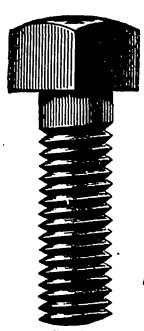
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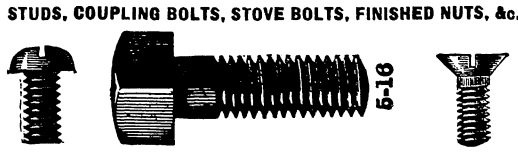
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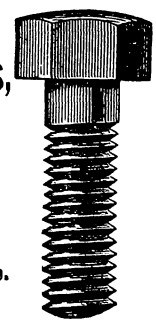
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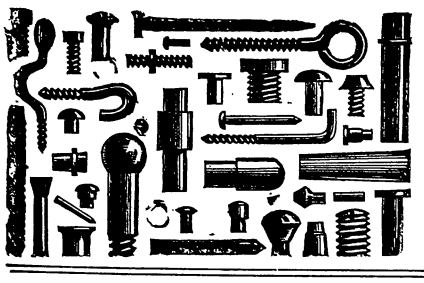
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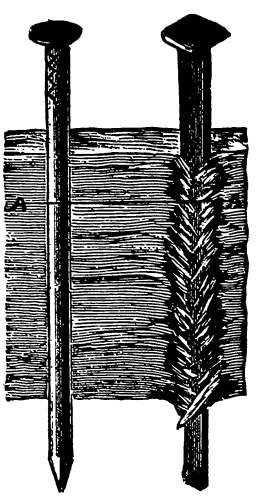
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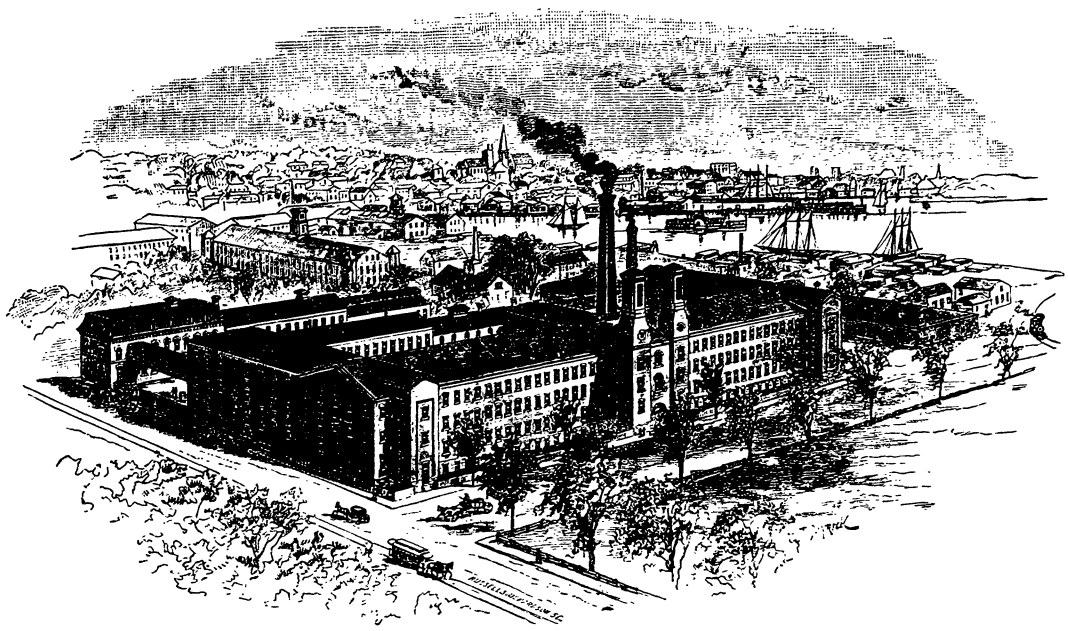
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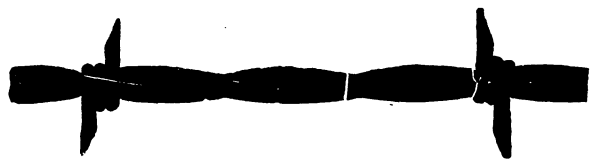
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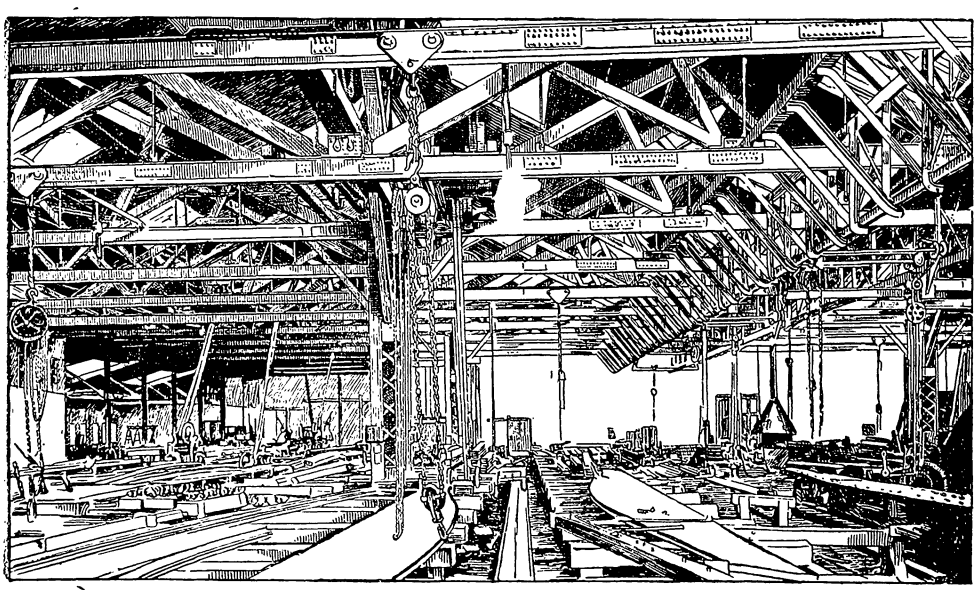
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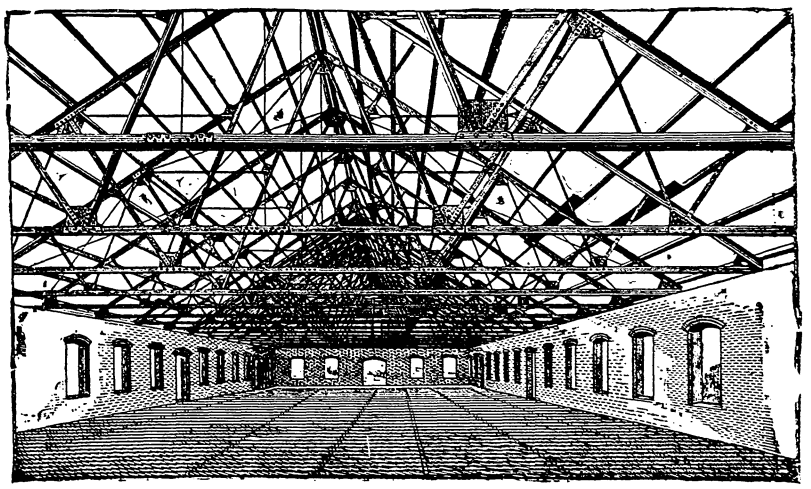
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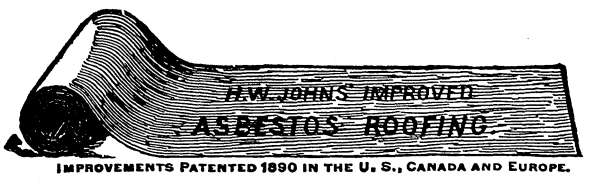
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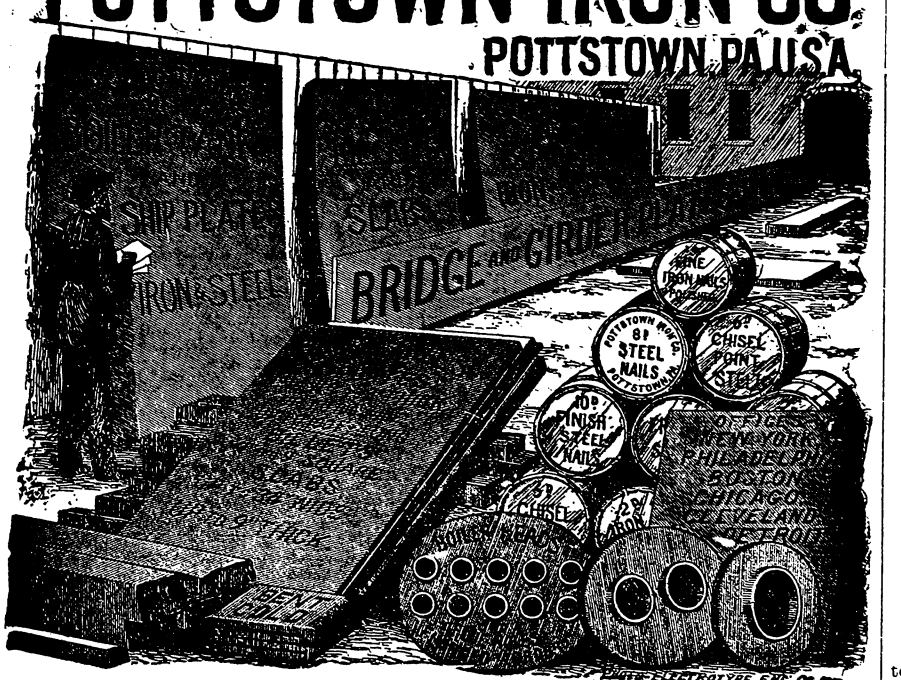
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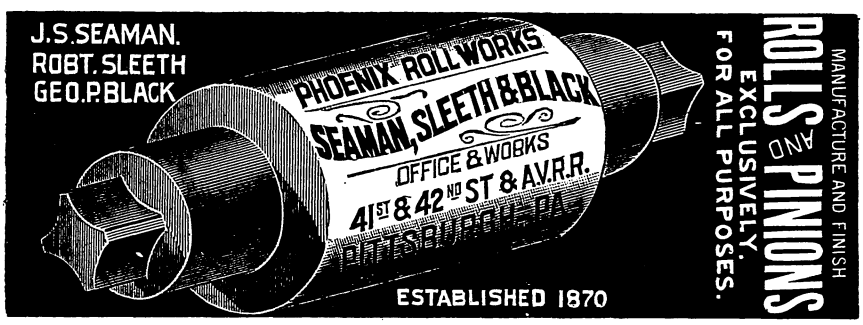
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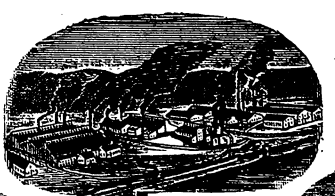
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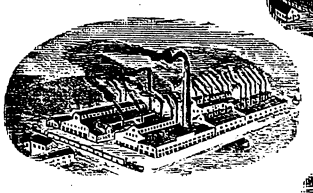
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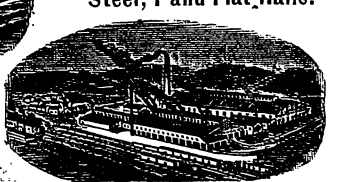
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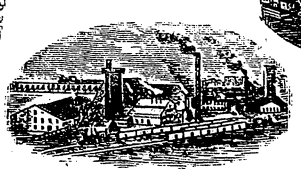
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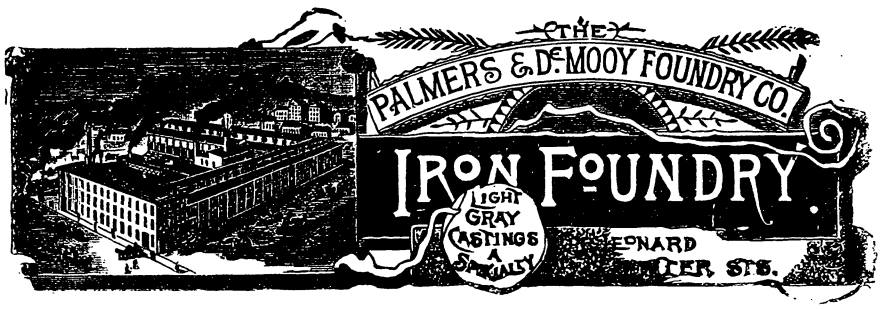
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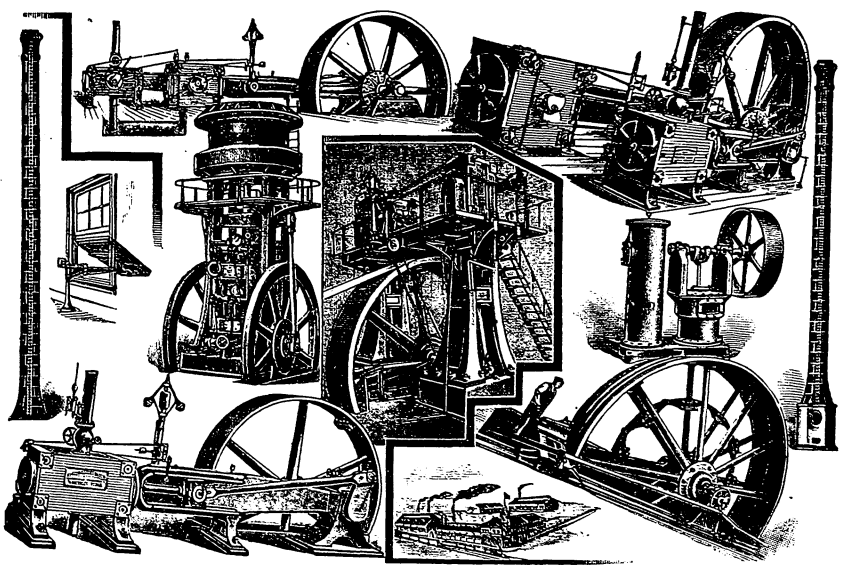
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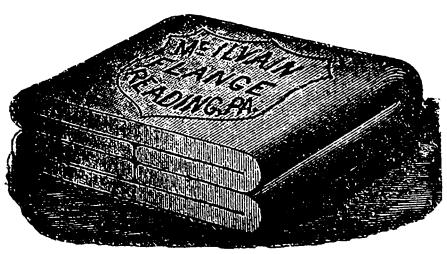
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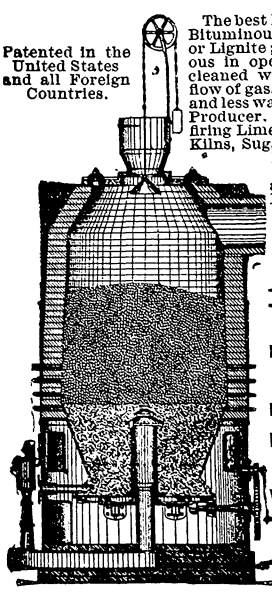
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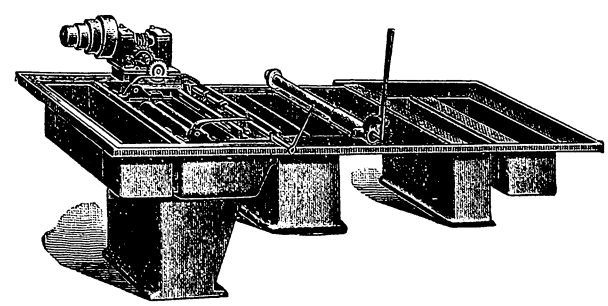
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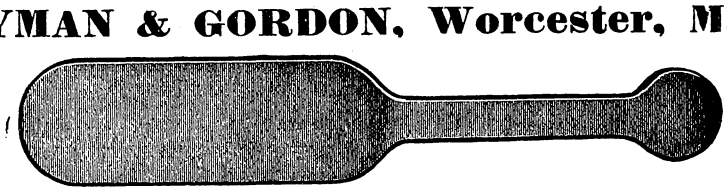
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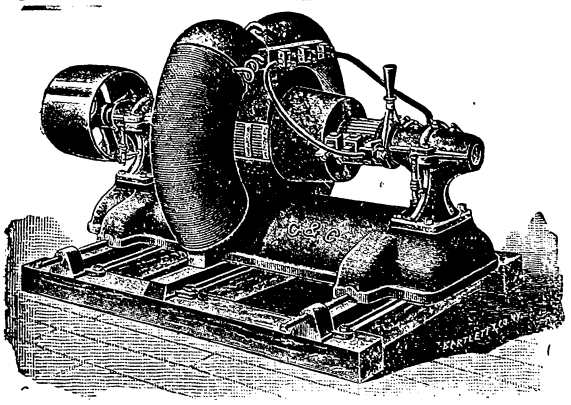
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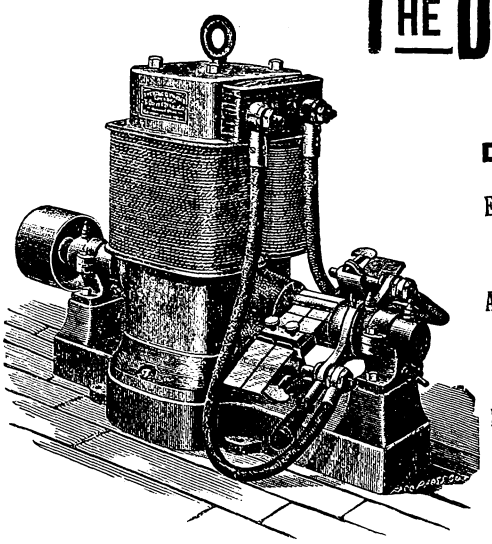
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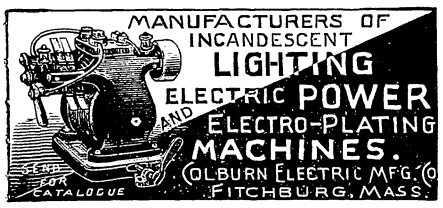
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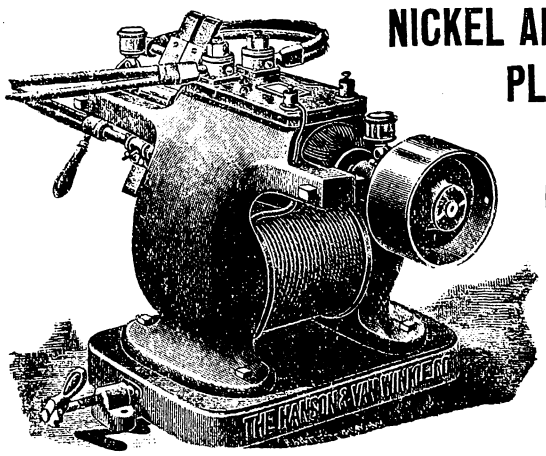
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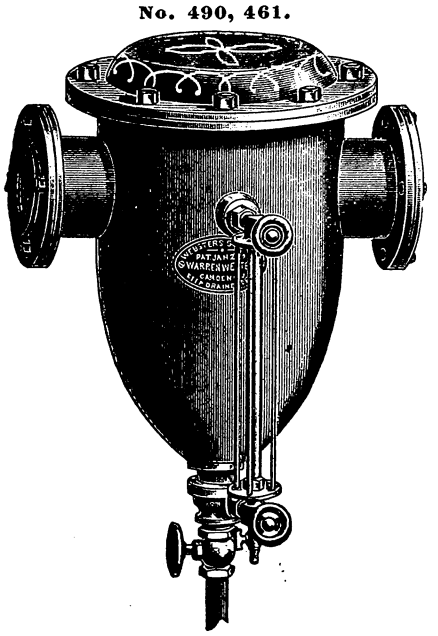
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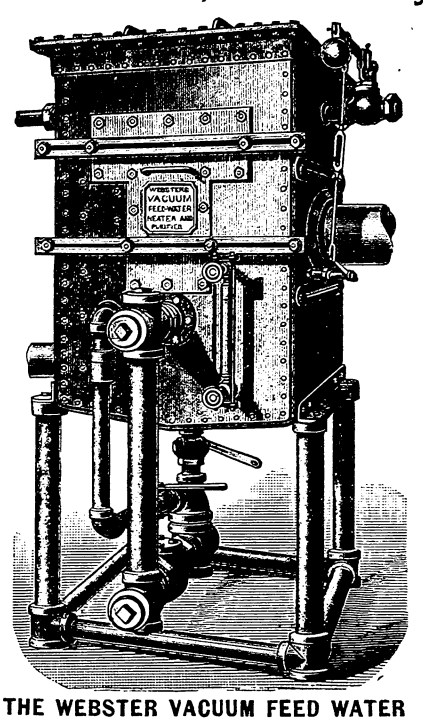
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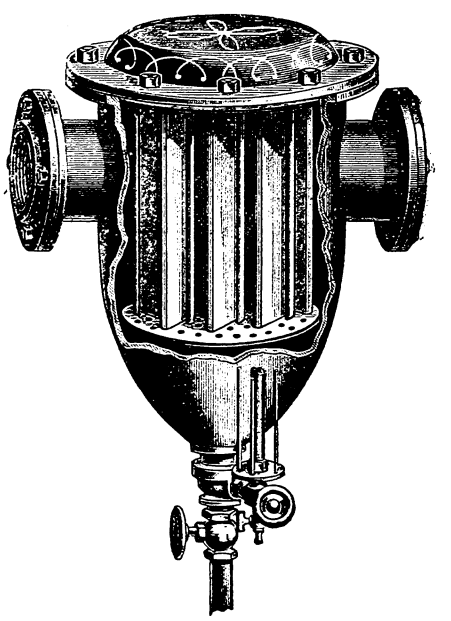
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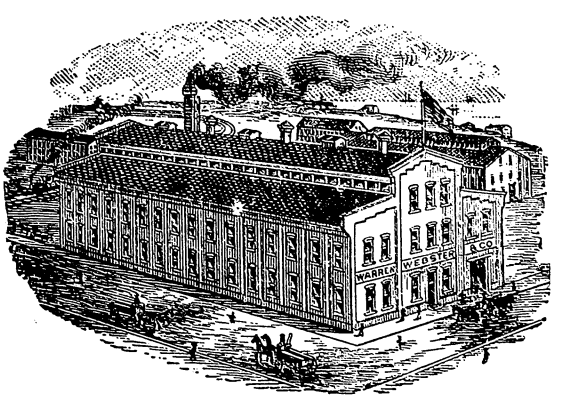
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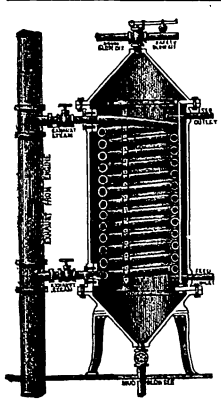
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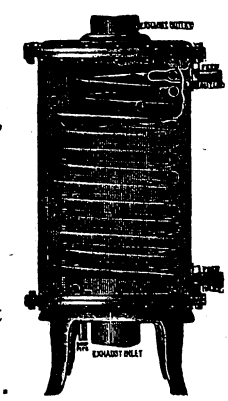
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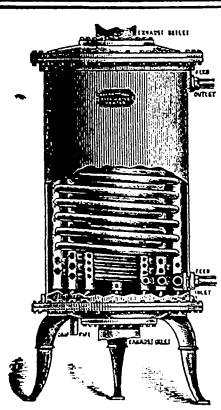
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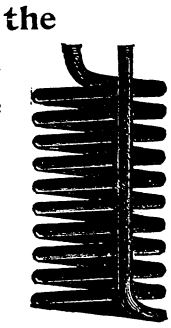




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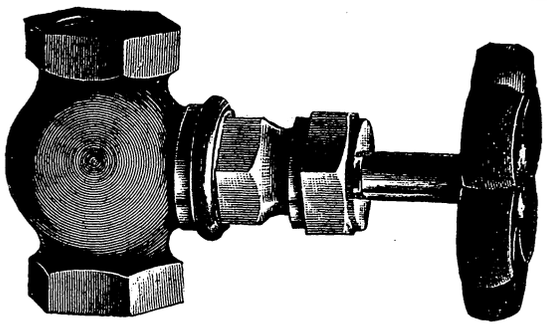
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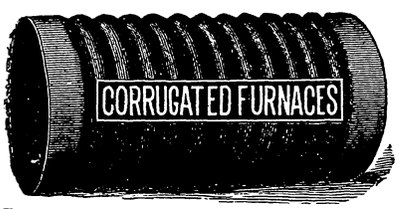
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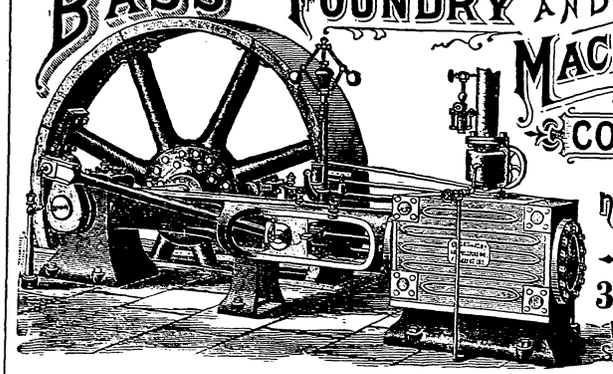
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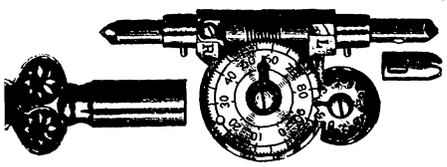
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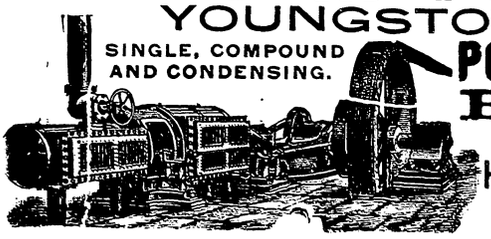


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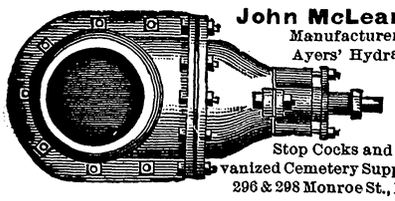
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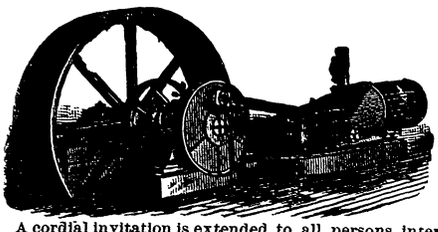
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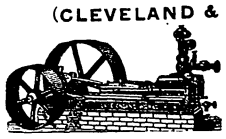
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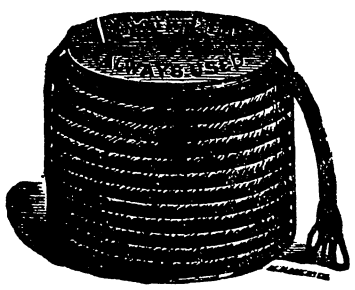
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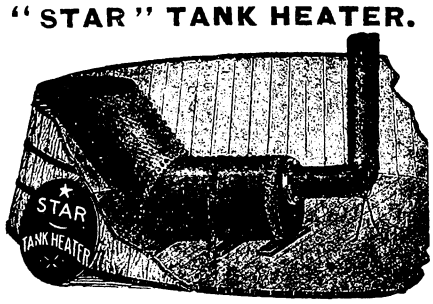
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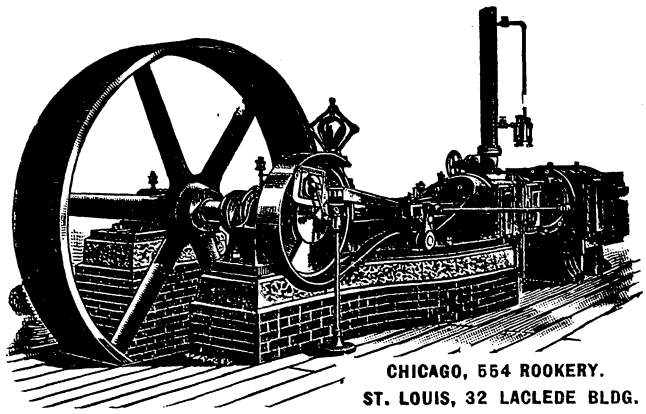
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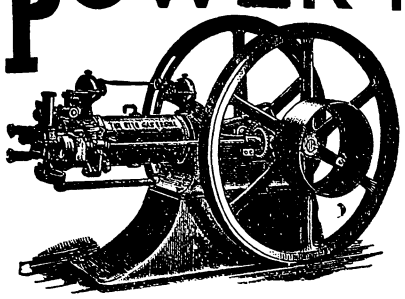
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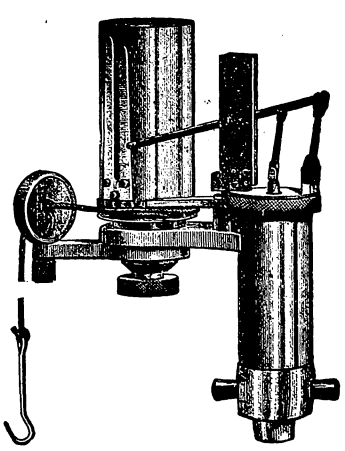
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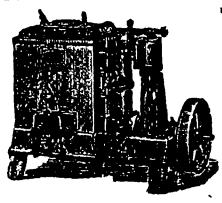
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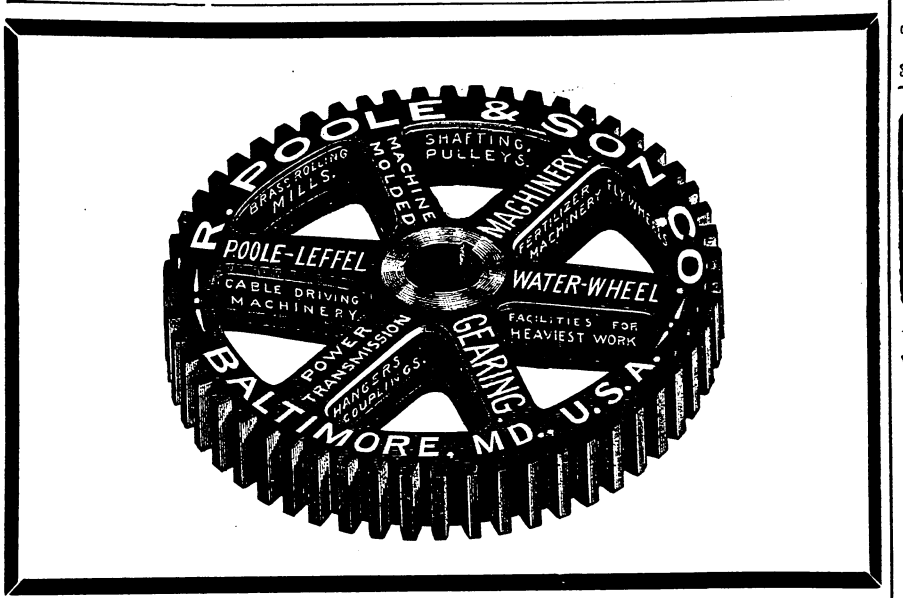
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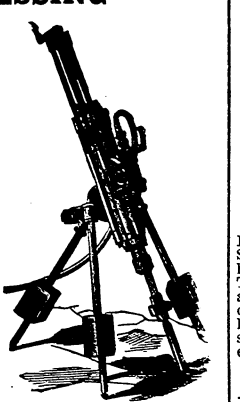
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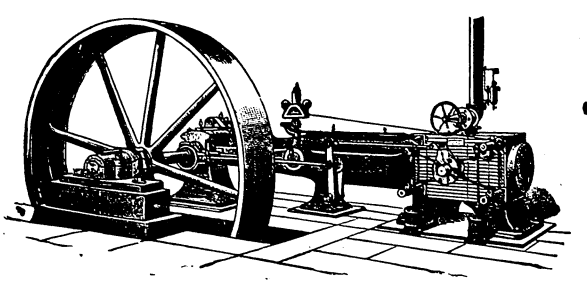
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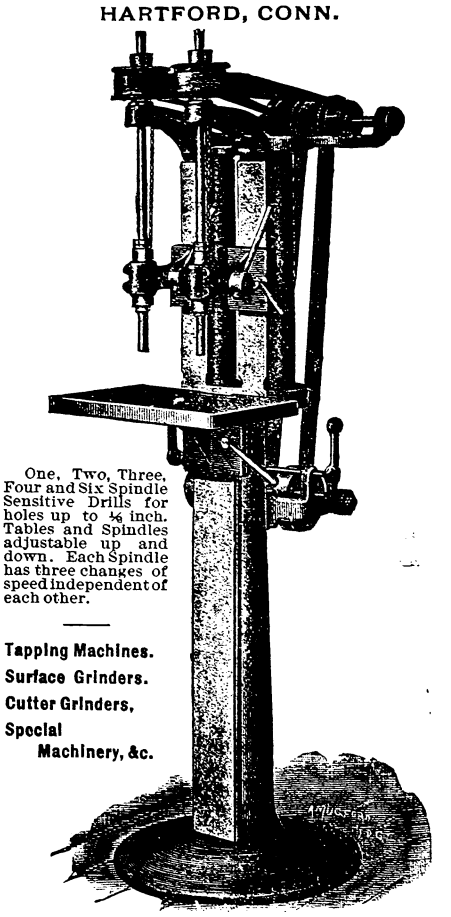
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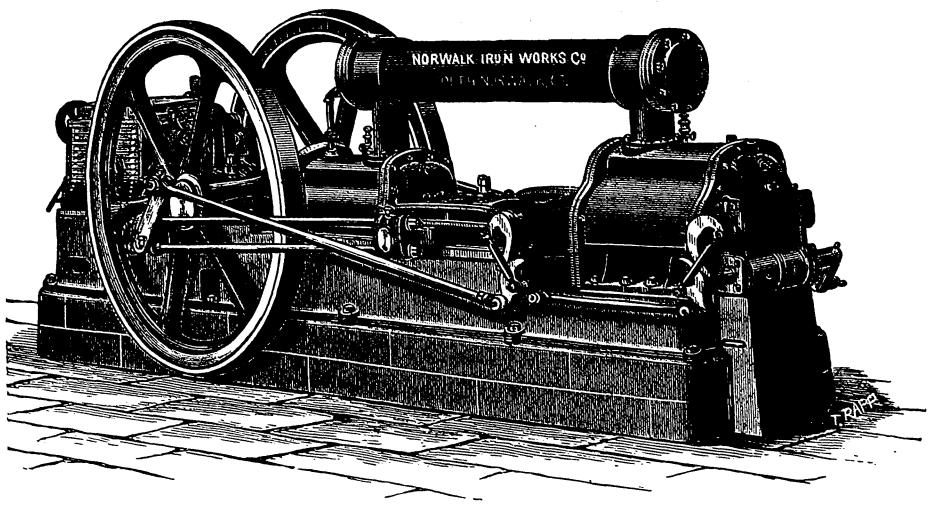
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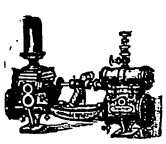
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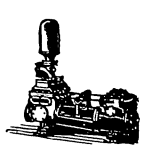
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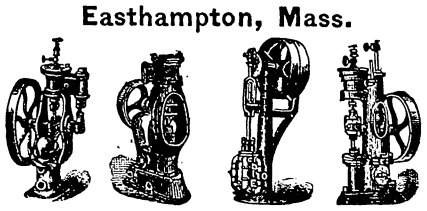


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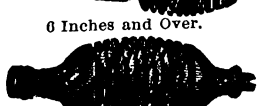
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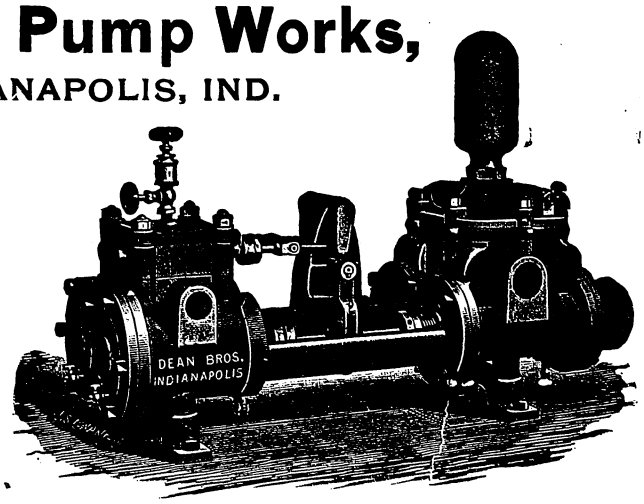
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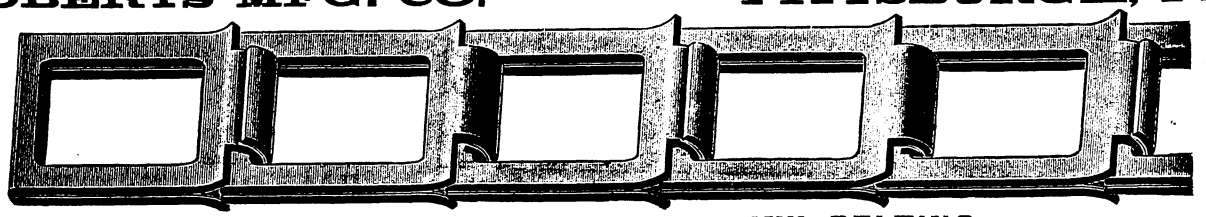
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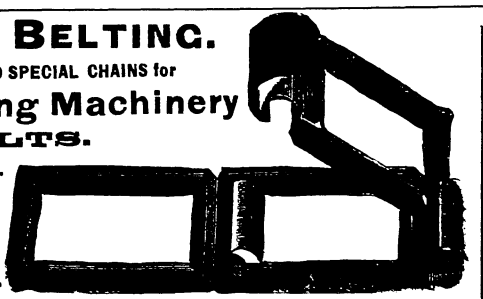
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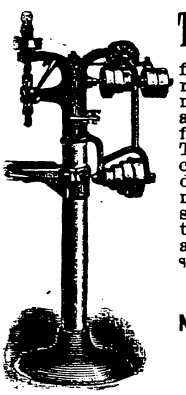
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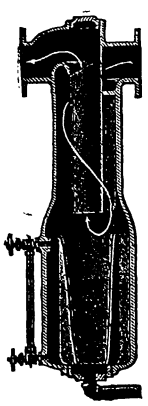


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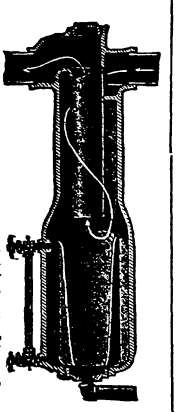
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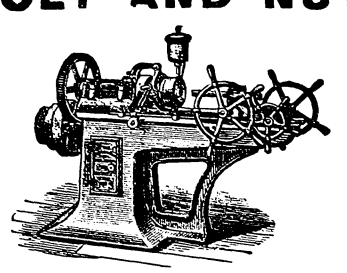
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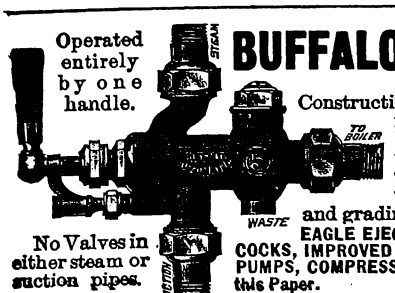
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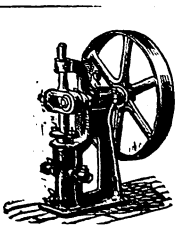
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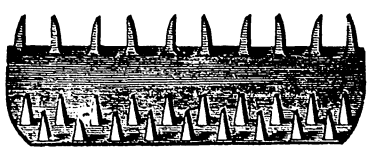
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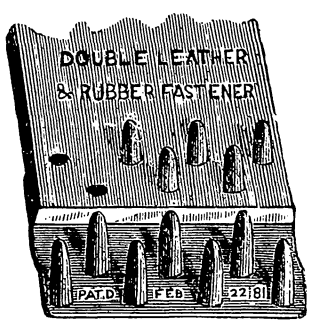
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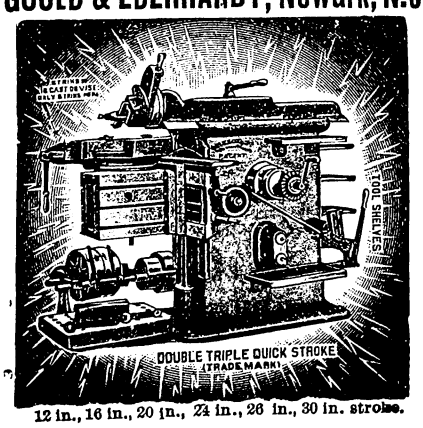
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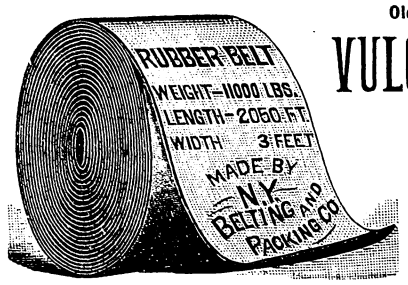
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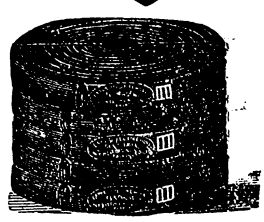
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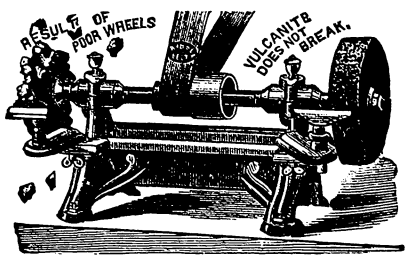


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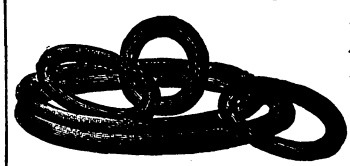
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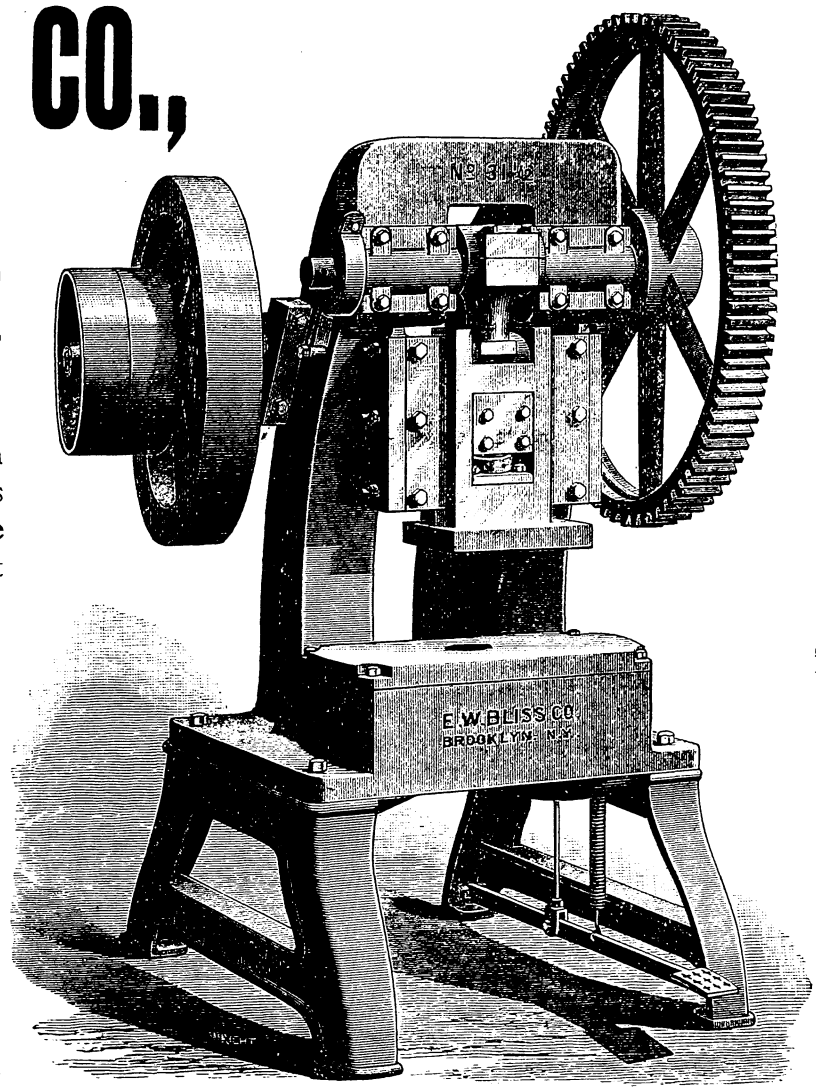
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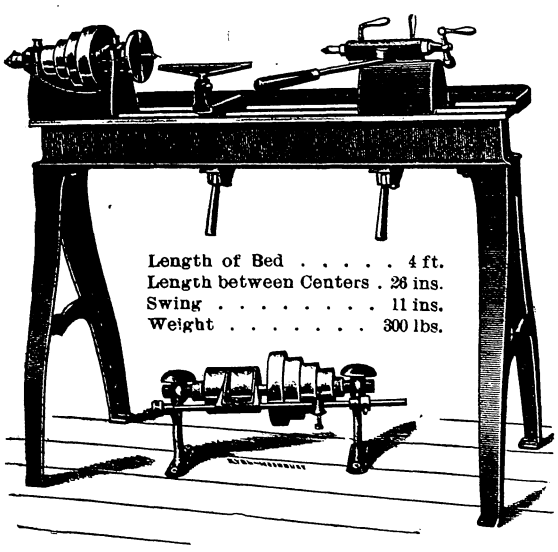


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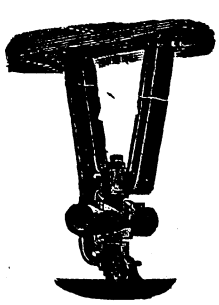
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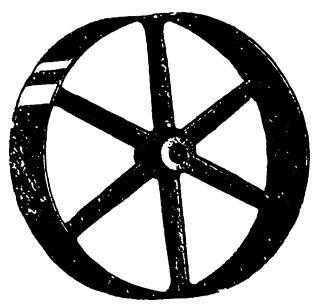
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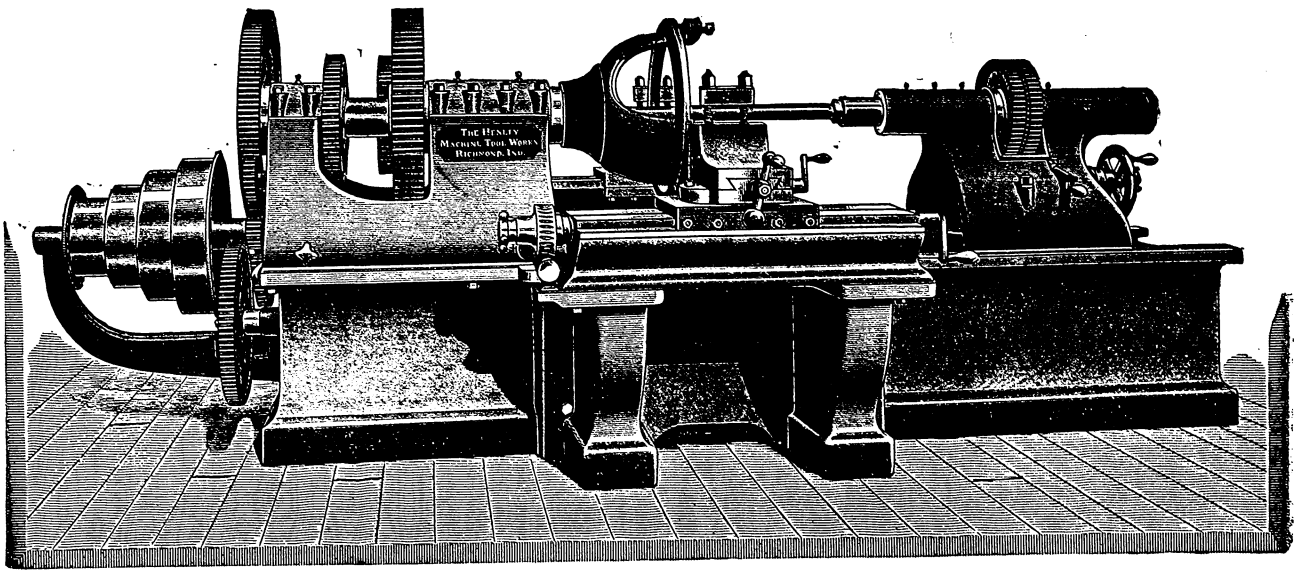


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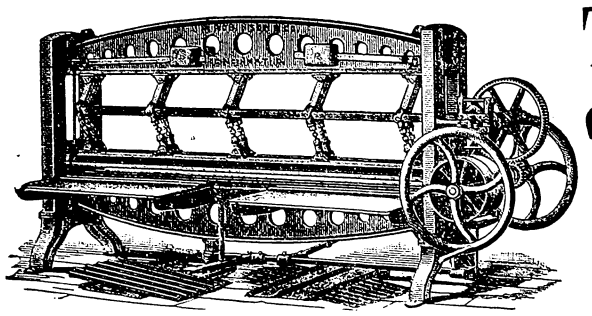
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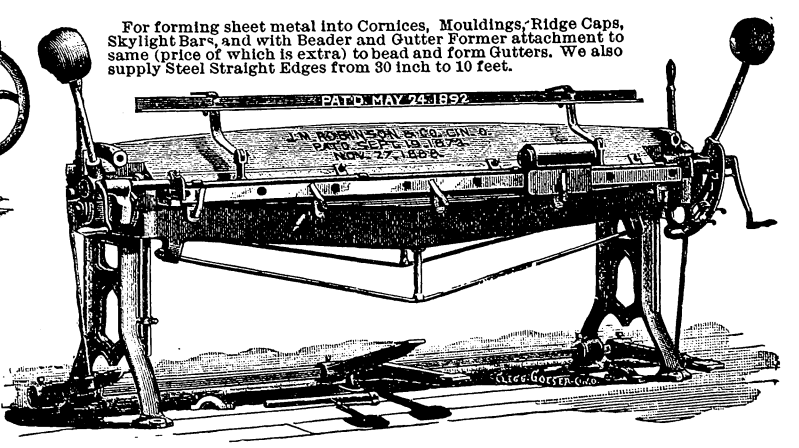
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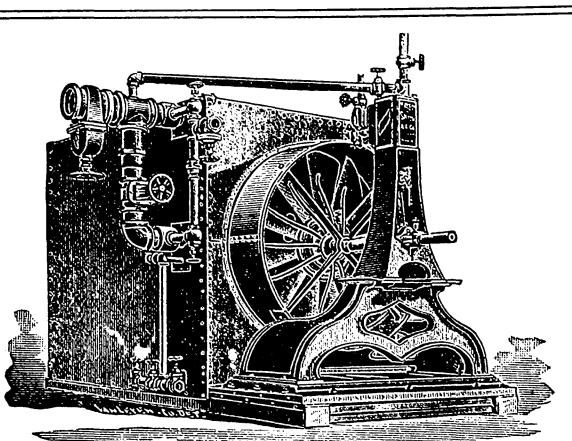
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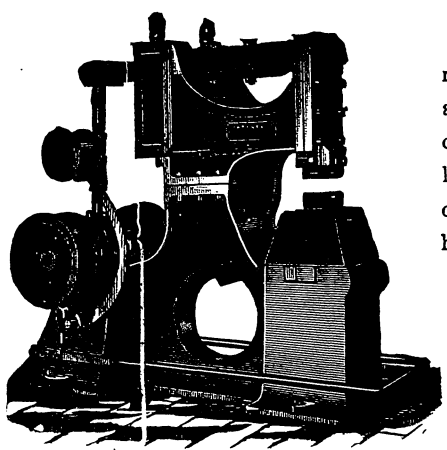
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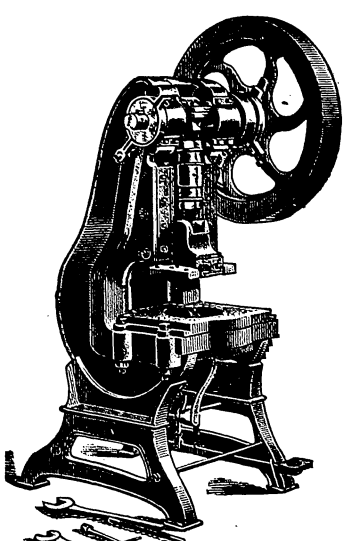


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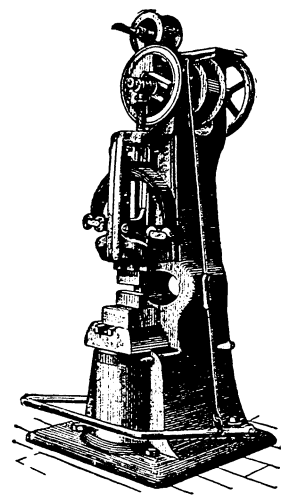
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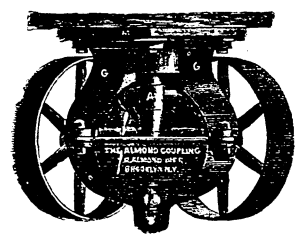
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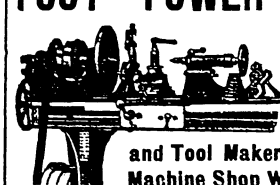
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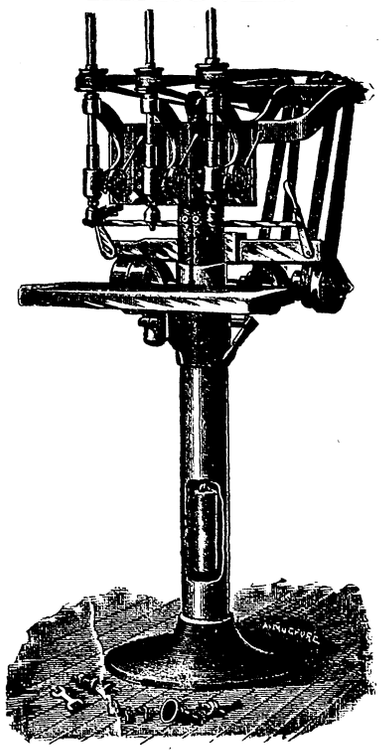


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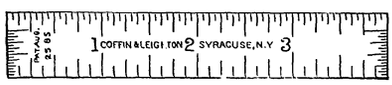
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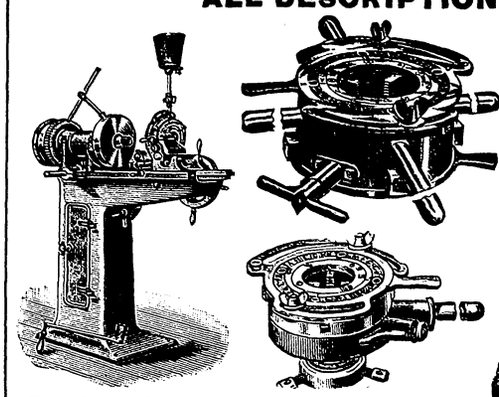
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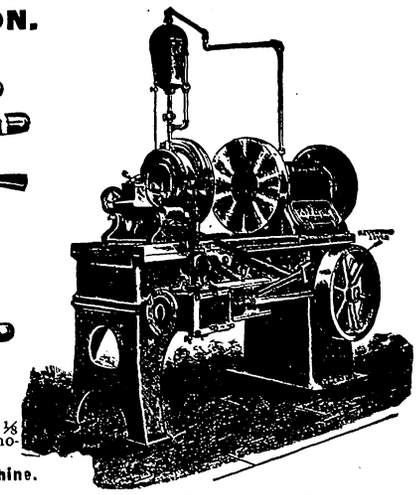


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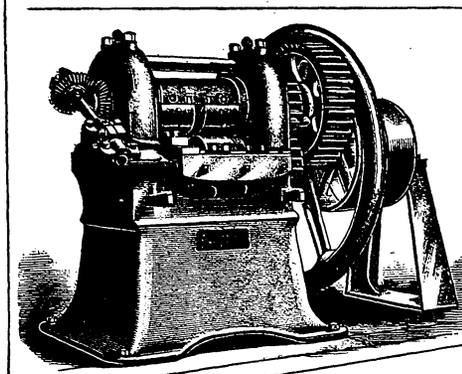
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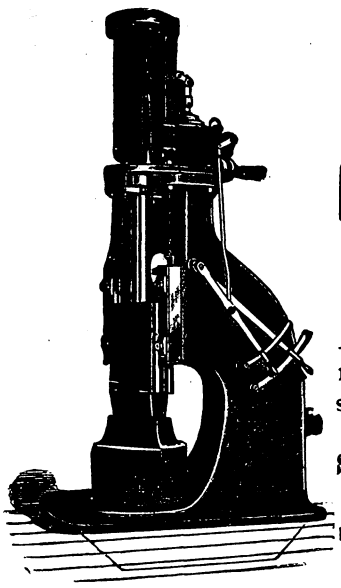
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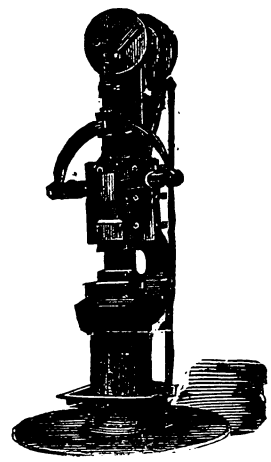
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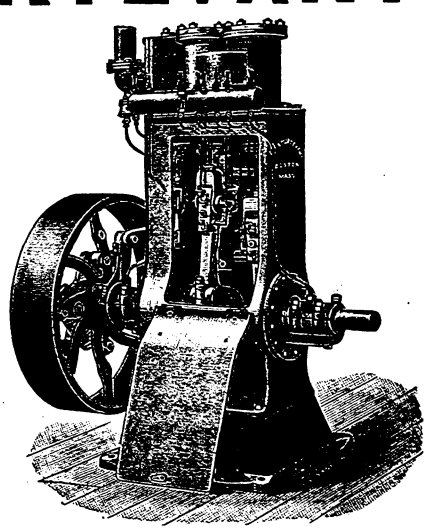
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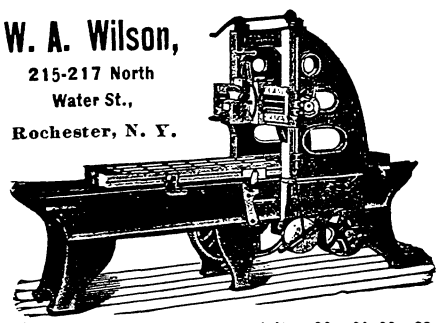
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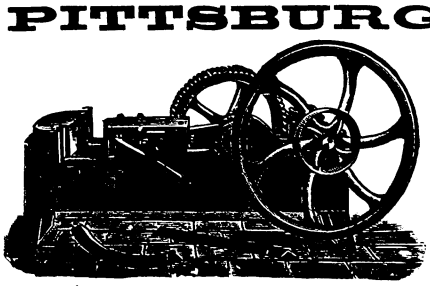
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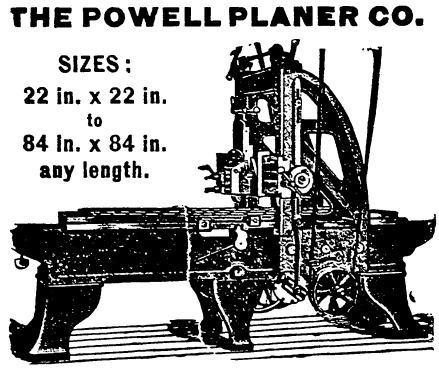
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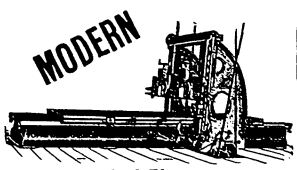
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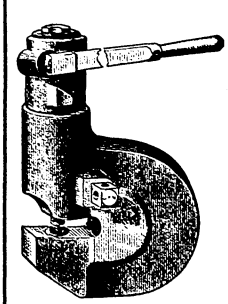
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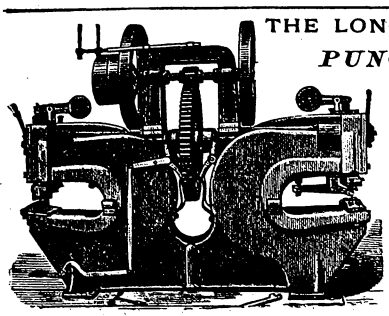
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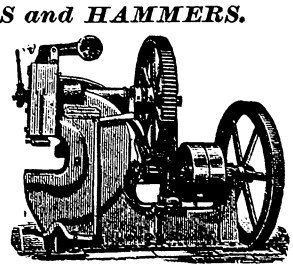


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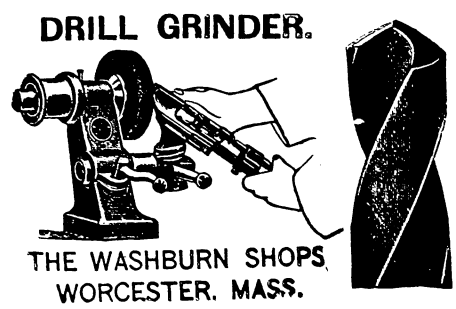
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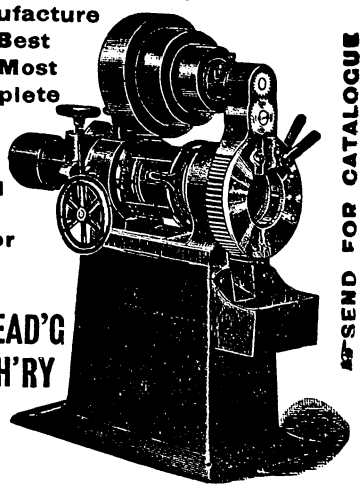
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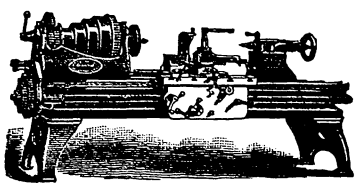
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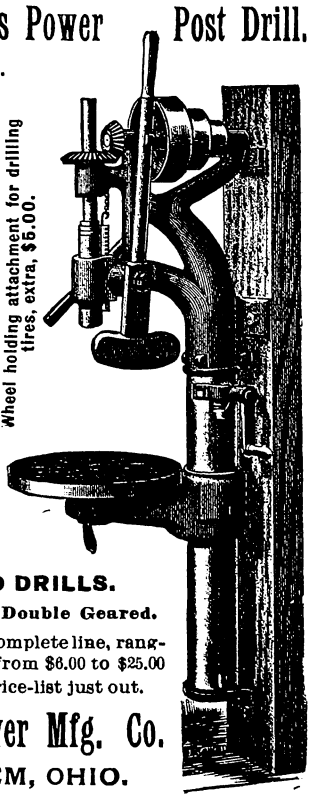
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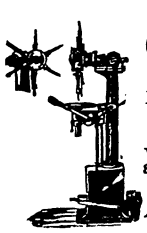
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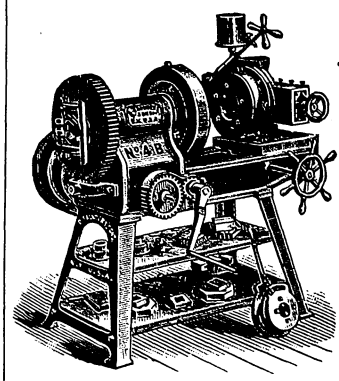
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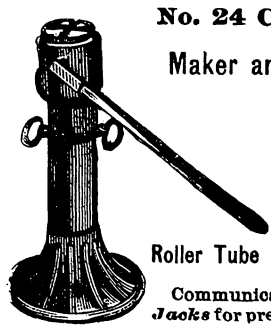
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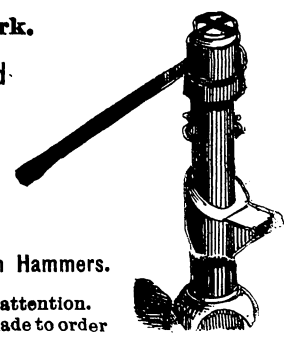
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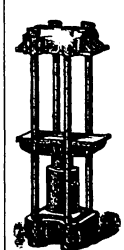
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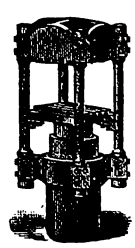
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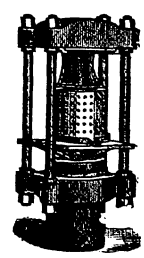
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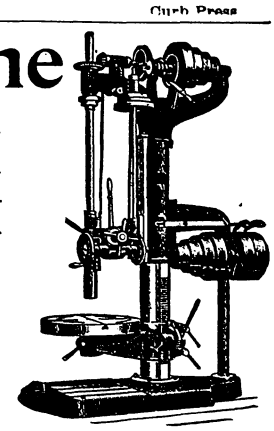


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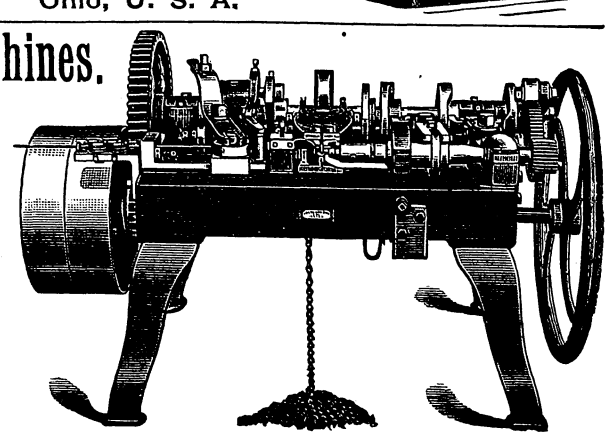
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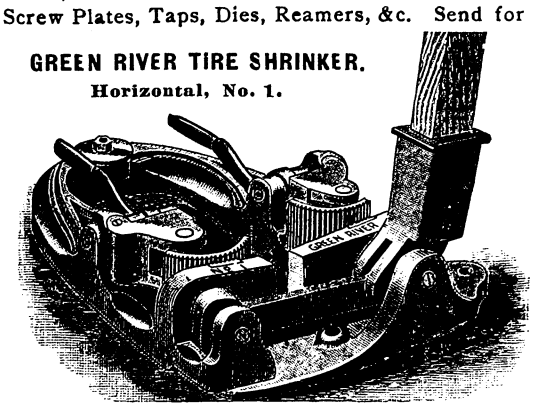
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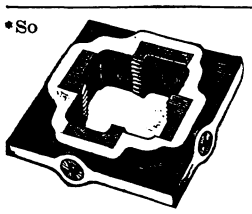
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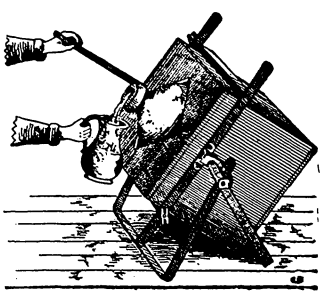
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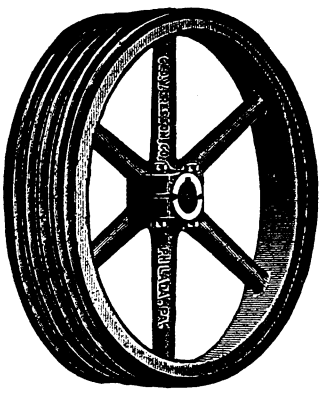


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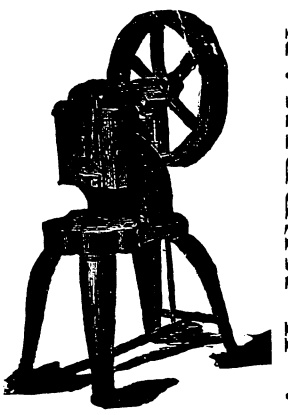
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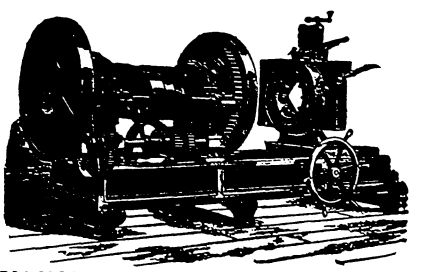


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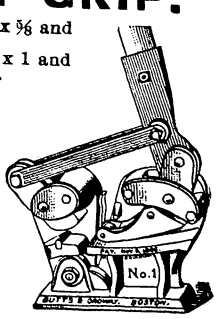
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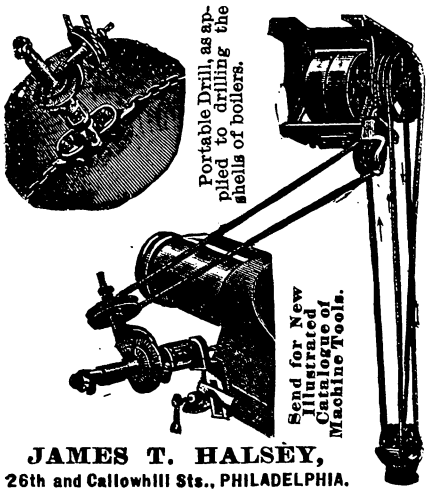
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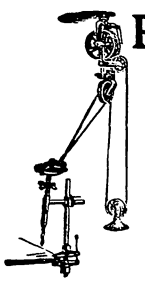
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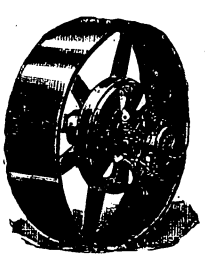
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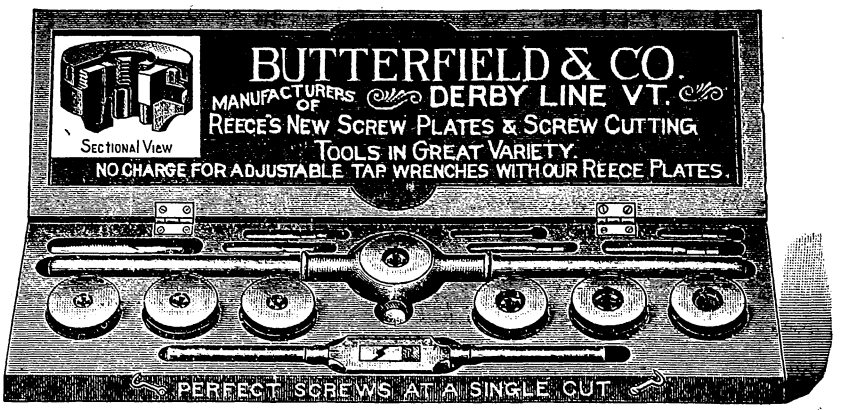
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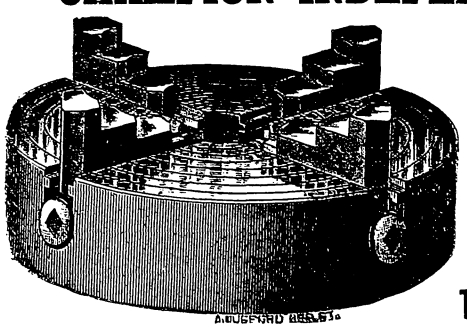
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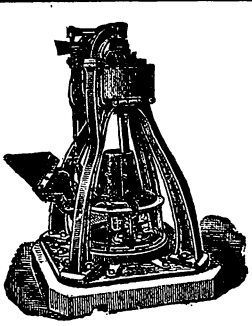
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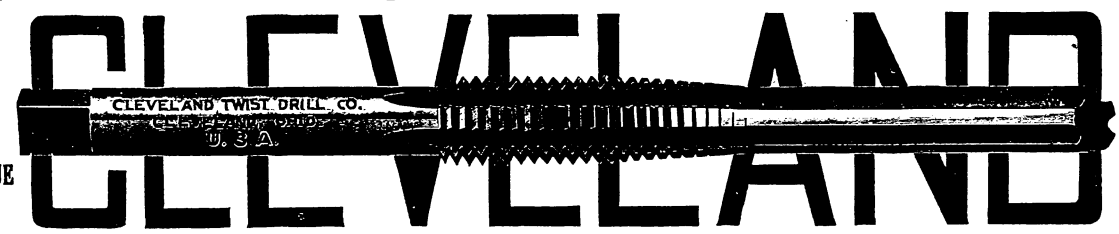
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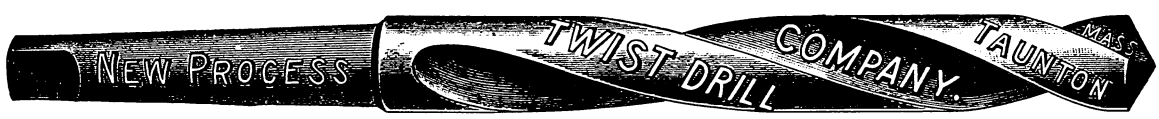
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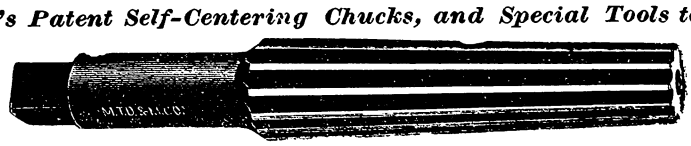
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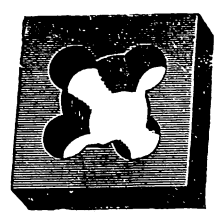


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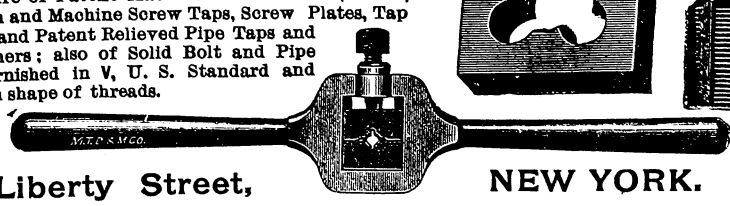
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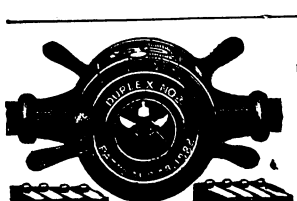




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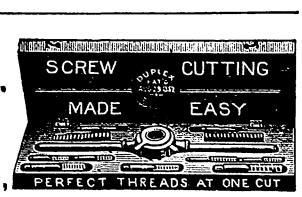
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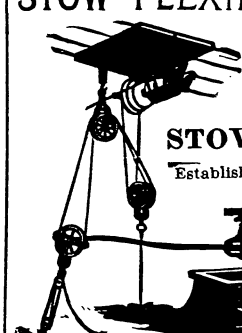
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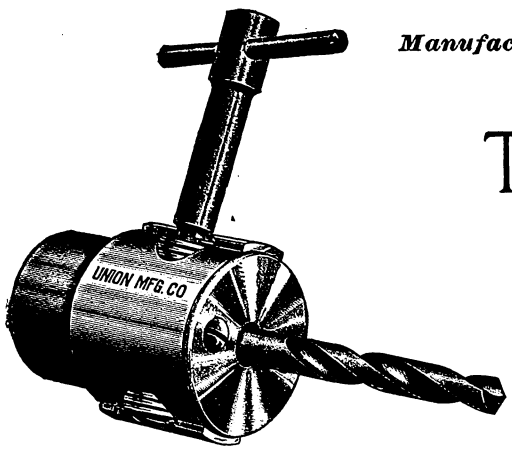
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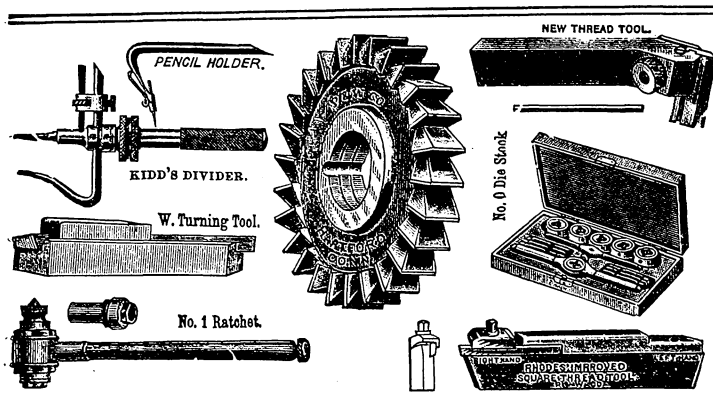
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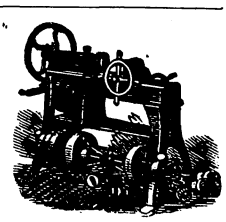
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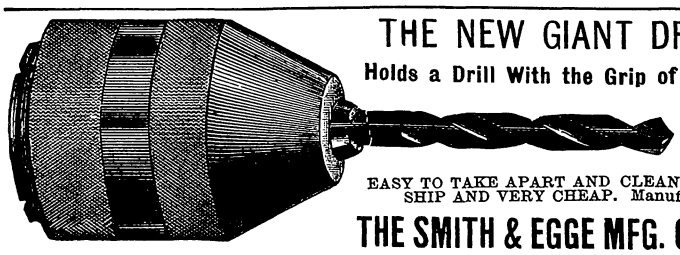
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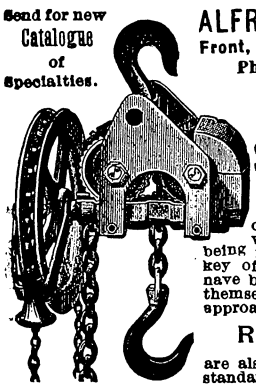
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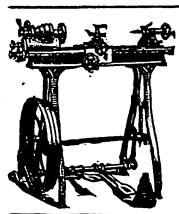
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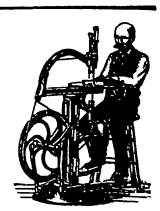
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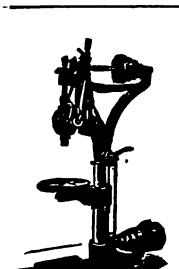
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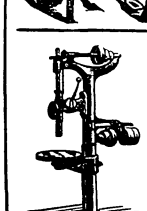


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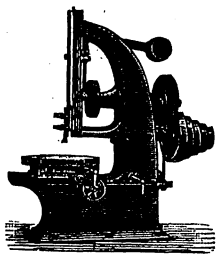
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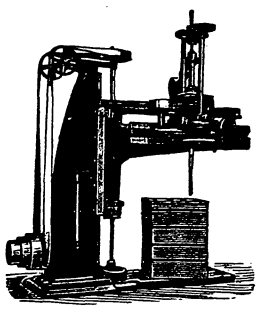
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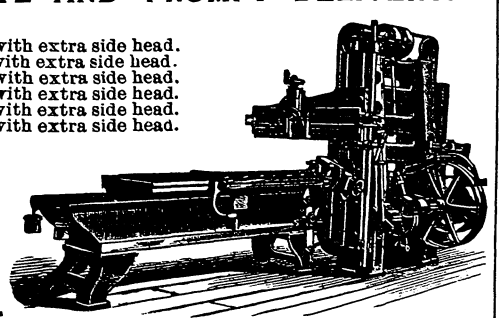
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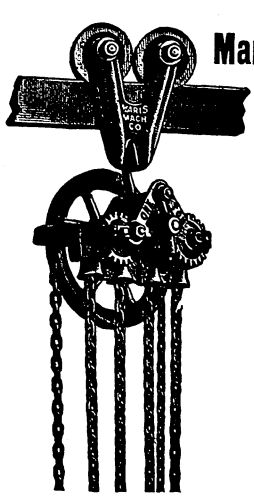
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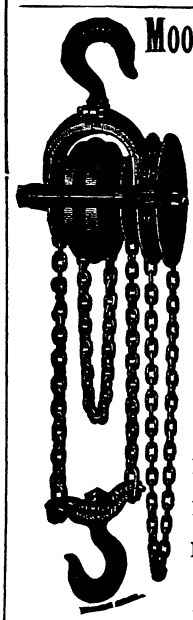
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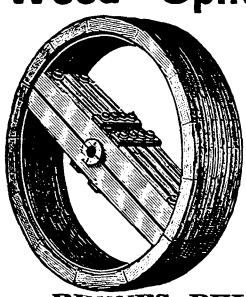


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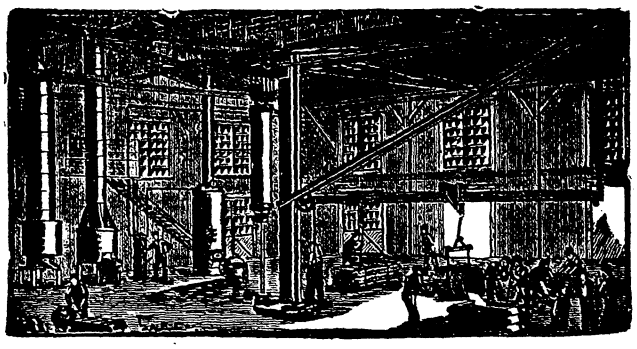
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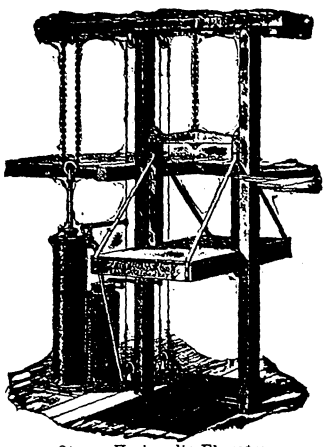
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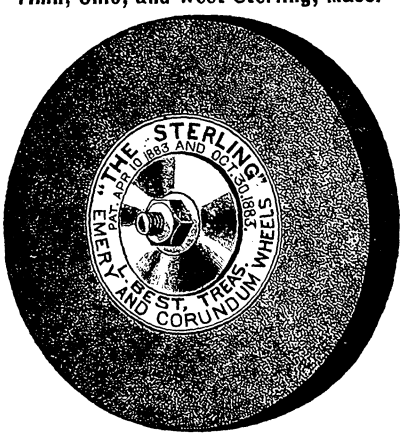
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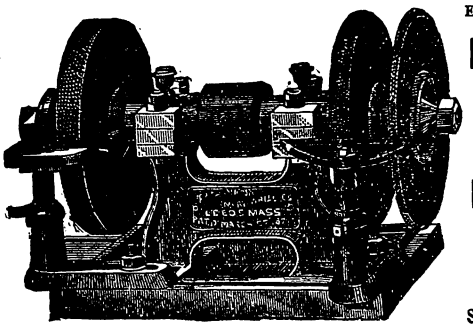
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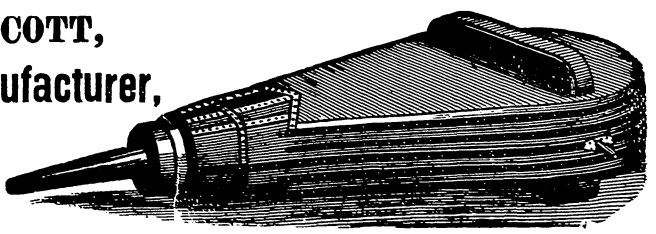
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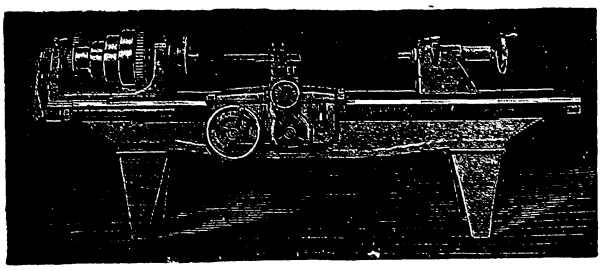
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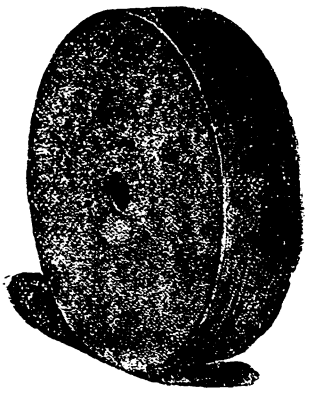
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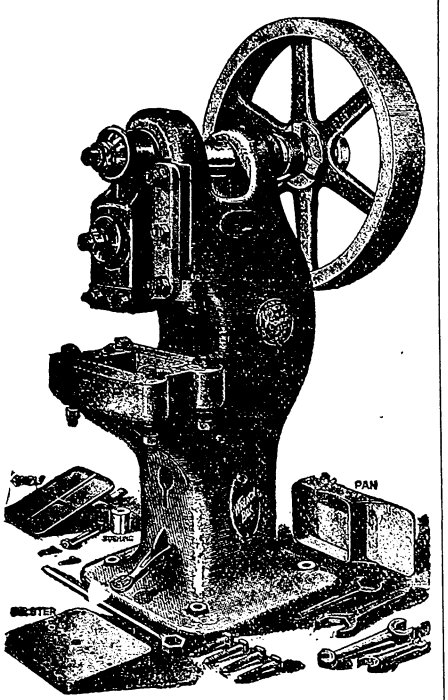
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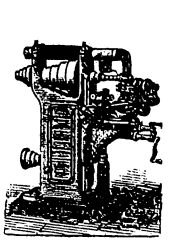


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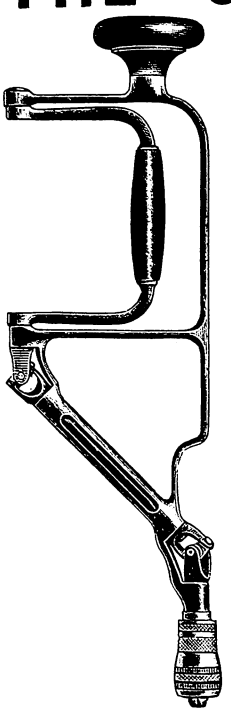
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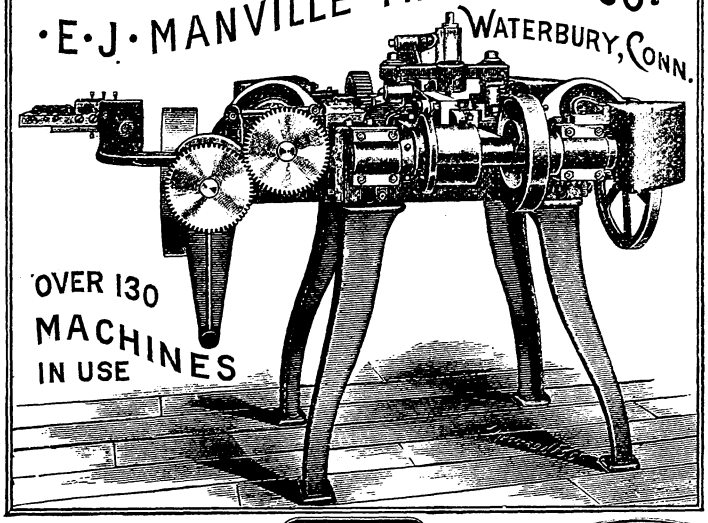
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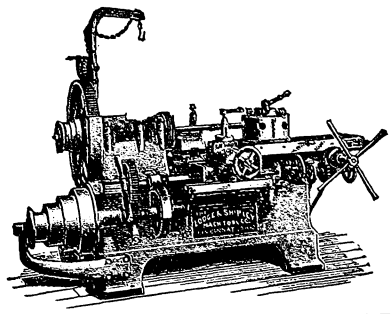
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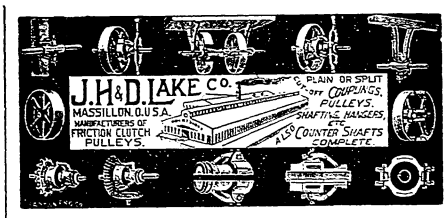


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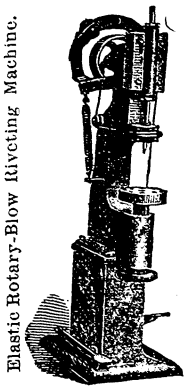
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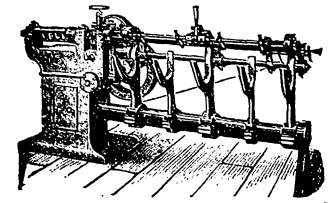
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13 2-yard 3-ft. gauge all around Dump Cars.
7 Narrow Gauge and 2 Standard Gauge Locomotives.
1 Large Worthington Duplex and other Pressure Pumps. New and Second hand.
Hoisting Engines and Grinding Pans.
Rail, Sheet and Clipping Shears.

THOMAS CARLIN'S SONS,
Allegheny, Pa.

FOR

MACHINERY

ADDRESS US.

Pennsylvania Mch. Co., Ltd.,
PHILADELPHIA, PA.

Machinery,

Second-Hand and New, on Hand.

No 4, 3, 2 Stiles Punch Presses.
No. 1½ and 0 Fowler Punch Presses.
No. 1 and 2 3-Screw Machines, Pratt & Whitney.
No. 1 Profiling Machine, " "
No 3 Hand Miller, " "
15 x 5 Eng. Lathe, Taper Attch., " "
16 x 5 x 6 Eng. Lathe, Bridgeport Mch. Tool Wks.
200 lb. Drop Hammer, Bliss.
Magnetic Separating Machine, Dynamo for Electro-plating, Shaping, Planing, Slotting Machines, all Sizes.
Engine Lathes from 11 inch Swing to 90 inch Swing.
Drill Presses, Regular, from 10 to 44 inch Swing.
" " Radial, H. & Jones, 48 "
Gang Drills, 2 Spindle and 4 Spindle.
Lot of Special Drills for Butt Drilling.
Special Butt Milling Machine.
No. 12 Turret Lathe, 3¼ inch hole, Jones & Lamson.
No. 12 " " 24 inch Swing by 8 ft. Bed, Am. T. & Mch. Co
Lot of Polishing Mchy., Leather Covered Wheels, etc.
Belting, Pulleys, Engines, etc., etc.
Boiler Shop Outfit of Machinery.
Send for our latest list or state what is required.
Warehouse, 511 & 513 West 13th St.
Office, 120 Broadway, New York.
Geo. Place Machine Co.

——ONE GONE;——
TWO ARE LEFT.

Last week we offered 1 100 H.-P. and 2 80 H.-P. **TUBULAR BOILERS**; the 100 H.-P. has been **SOLD.** The 2 80 H.-P. remaining are alike, are 60 in. diameter by 16 ft. long, have 36 4½ in. tubes, full arch fronts, and fitted with **McCLAVE GRATES** and Blowers. Are in perfect condition.

THE SCRANTON SUPPLY & MACHINERY CO.,
Scranton, Pa.

For Sale, Very Low for Cash.

500 tons Relaying Steel Street Rails, side bearing, 35 to 47 lb. sections. Also 65-lb. Steel T's.

WM. H. PERRY & CO., Providence, R. I.

FOR SALE.

2 Stokes & Parrish 7 in. x 9 in. Hoisting Engines.
3 No. 7 Knowles Pumps.
1 Worthington Duplex Pump, 10 x 6 x 10 in.
Lot 30 and 36 in. Plain Cylinder Boilers.
Lot I Beams, Stacks, &c.
At Merion Furnaces, West Conshohocken, Pa.
Apply for particulars to
POULTERER & COMPANY,
No. 26 Bullitt Building, Philadelphia, Pa.

FOR SALE.

1 Engine Lathe, 24 in. swing x 25 ft. bed. Modern. First-class condition.
1 Lincoln Miller. Good order.
1 3 in. Cutting-off Machine. Nearly new.
1 No. 1, No. 2 and No. 6 Root's Blower.
Prices very reasonable.
COOKE & CO.,
163 and 165 Washington St., New York.

FOR SALE.

Hand-power traveling crane, 16-foot span, with racking gear and brake. Low price. Terms cash. THE SARGENT CO.,
Chicago, Ill.

WANTED.

A second-hand 8 in. Guide Train; must be in first-class condition. Address, giving full description, price, etc., COMPANIA INDUSTRIAL MEXICANA, Chihuahua, Mexico.

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Great Bargains.

Must be Sold and Removed.

16 in. x 30 in. Horizontal Engine.

18 in. x 36 in. Horizontal Engine.

24 in. x 36 in. Horizontal Engine.

19½ in. x 48 in. Beam Engine, with Knowles Condenser.

Write us for what you want.

LOVEGROVE & CO.,

Third and Quarry Sts., Philadelphia, Pa.

SECOND-HAND

MACHINERY.

One American Tool Co.'s No. 2 Cabinet Turret Lathe, with slide rest; in fine order.

One Pratt & Whitney 36-in. Gap Chucking Lathe.

One Pratt & Whitney No. 3 Lincoln Milling Machine.

One Iron Planer, 52 in. wide, 44 in. high, 12 ft. long, with two heads.

One Springfield Universal Grinding Machine No. 3, swing 18½ in. over the ways and take 6 ft. between centers. Has been used but a very few times and is practically new.

One L. W. Pond Gear Cutter, to cut gears 36 in. diameter, 5 in. face, also arranged for cutting beveled gears.

HILL, CLARKE & CO.,

156 Oliver St., Boston, Mass.

12 and 14 South Canal St., Chicago, Ill.

WE ARE OFFERING

BARGAINS

from the equipment of the United Electric Traction Company's Works of Marion, N. J., comprising:

Engine Lathes, from 14 in. to 48 in. swing.
Hand Lathes, from 10 in. to 20 in. swing.
Planers, from 24 in. x 5 ft. to 42 in. x 12 ft.
Shapers, from 15 in. to 20 in. stroke.
Drill Presses, all sizes up to 24 in. swing.
Milling Machines, Plain and Universal.
Brown & Sharpe Screw Machines.
1 Large Newton Slotting Machine.
1 Large Pond Mach. Tool Co.'s Radial Drill Press.
8 Gould & Eberhardt Automatic Gear Cutters, 36 in., 48 in. and 60 in.
1 Betts Machine Co. Large Horizontal Boring Mill.
2 Large Bliss Power Presses.
1 10 H.-P. Baxter Engine, with 15 H.-P Boiler, complete. As good as new.
Also Tool Grinders, Die Sinkers, Tapping Machines, Bolt Cutters and Large Pattern and Blacksmith Shop Equipments.

These tools are in good order and of the very best makes in this country. They will be sold at remarkably low prices

Call at our salesroom and inspect them, or write for complete descriptive circular and price-list.

THE GARVIN MACHINE CO.,

Laight and Canal Sts., New York.

SOME BARGAINS HERE.

1 Hendey Shaper, 15 in. stroke, imp. vise.
1 14 x 6 Screw Cutting Engine Lathe; new.
1 5 in. hole in Turret Screw Machine and Counter, $25.
2½ Hendey Cutting-off Machine. New.
1 3-Spindle Garvin Drill Press, used 1 month.
100 H.-P Woodbury Engine. 2d-hand Good order.
2 50 H.-P. Woodbury Boilers. Good order.
2 75 H.-P. Woodbury Boilers. Good order.
1 20 H.-P. Woodbury Engine. 2d-hand.
Also variety of Engines, Boiler Pumps, &c.
And other machinery, new and second hand. Write for prices. **Machinists' Supply Company,**
39, 41 and 43 Central Ave., Rochester, N. Y.

WANTED.

Second-hand Power Press, size Bliss No. 20 or 21. Price must be low for cash.
ROBLEY & BRUNDAGE,
142 Chambers St., New York.

Boilers AND Engines

1 100 H.-P. Horizontal Tubular Boiler.
2 65 H.-P. Horizontal Tubular Boilers.
2 125 H.-P. Portable Boilers.
1 90 H.-P. Portable Boiler.
1 60 H.-P. Portable Boiler.
1 75 H.-P. Harrison Boiler.
1 50 H.-P. Galloway Boiler.
2 250 H.-P. Hazelton Boilers.
1 75 H.-P. 15½ in. x 24 in. Horizontal Engine.
1 50 H.-P. 12 in. x 24 in. Wright Engine.
1 20 H.-P. 9 in. x 12 in. Erie Engine.
And many others.

THOS. P. CONARD,

206 Walnut Place, Philadelphia.

FOR SALE.

1 140 H.-P Hor. Tub. Boiler. Al.
BERRYMAN HEATER, 44 in. dia., 10 ft. high.
36 x 48 Corliss Engine.
Lighthall Surface Condenser, 1100 sq. ft. cooling surface.
12 in. Centrifugal Pump, 60 ft. hose.

MARVIN BRIGGS, 12 Broadway, N. Y.

FOR SALE.

ELECTRIC LIGHT PLANT (used 6 months).
1000 light Mather Dynamo.
125 H.-P. Dick & Church Compound Engine.
2 75 H.-P. Steel Boilers.

MARVIN BRIGGS, 12 Broadway, N. Y.

SECOND-HAND MACHINERY.

2 11 in. x 5 ft. Reed Engine Lathes.
2 11 in. x 5 ft. Prentice Lathes.
2 12 in. x 5 ft. Young Speed Lathes.
2 13 in. x 5 ft. Ames special feature Lathes.
2 15 in. x 6 ft. Reed Engine Lathes.
1 15 in. x 8 ft. Young Lathe.
1 16 in. x 6 ft. Young Lathe.
1 16 in. x 6 ft. Perkins Lathe.
2 16 in. x 6 ft. Blaisdell Lathes.
1 16 in. x 6 ft. Flather Lathe.
1 18 in. x 8 ft. New Haven Lathe.
1 18 in. x 8 ft. Dustin Lathe.
2 20 in. x 6 ft. Bullard Lathes.
1 26 in. x 10 ft. Dustin Lathe.
2 20 in. x 8 ft. Bullard.
1 20 in. x 10 ft. Bullard.
1 26 in. x 13 ft. New Haven
1 Dexter Pattern Lathe.
1 Bullard Turret Lathe.
2 Brainard No. 7 Overh'ging Arm Plain Millers
2 Brainard No. 7 Lincoln Plain Millers.
1 B. & S. No. 1 Universal
1 Brainard Heavy No 6 Lincoln Pattern Miller.
1 Garvin No. 2 Miller and Screw Slotter.
1 No. 3 Garvin Plain Miller.
1 38 x 18 ft. N. Y. S. E. Lathe.
1 Garvin No. 4 Rack Feed Miller.
1 Brainard No. 15 Universal Miller.
2 Brainard No. 5 Universal Millers.
1 Blaisdell 30 in. Single Spindle Drill.
1 Wilder Punch Press.
1 Grindstone and Frame.
1 Garvin one-spindle Profiling Machine.
1 Garvin No. 2 three-spindle drill.
1 Garvin No. 3 four-spindle Drill.
1 Garvin No. 4 four-spindle Drill.
1 Garvin No. 2 Wire Feed Screw Machine.
1 Garvin No. 2 Plain Screw Machine.
1 Garvin Small Gear Cutter.
1 Dustin 18 in. wheel feed one-spindle Drill.
1 Brainard Universal Cutter Grinder.
1 Band Saw.
1 Diamond No. 3 Emery Grinder on column.
1 Diamond Polishing Head.
1 Bullard 15 in. stroke Shaper.
1 16 in. Smith & Mills Shaper.
1 24 in. x 24 in. x 6 ft. New Haven Planer.
1 10 ft. Boring Mill.
1 8 ft. 4 in. Boring Mill.
1 76 in. x 60 in. x 13 ft. Planer.
1 48 in. Car Wheel Borer.
1 Axle Lathe.
Also large stock of New Tools.

NILES TOOL WORKS CO.,

136 & 138 Liberty St., N. Y. City.

MACHINERY, TOOLS, &c.

IN STOCK, LARGE LINE OF NEW AND SECOND-hand engines, boilers and machinist's tools for sale or exchange Below are some special bargains:
20 H.-P. to 60 H.-P plain slide valve horizontal engines.
2 H.-P. to 50 H.-P. vertical engines.
Power shears, 1 in. iron, 36 in. Gap.
4½ in. Pratt & Whitney cut-off machine.
20 milling machines (Bement's).
6 H.-P. and 10 H.-P. hoisting engines with boilers.
4 50 H.-P. portable boilers.
10 H.-P to 100 H.-P. horizontal and vertical boilers.
20 screw-cutting lathes of different sizes.
Several rod-feed turning lathes.
6 in., 12 in and 15-in. shapers.
24 in. and 36 in. planers.
44 in. radial drill, 1¼ National bolt cutter.
No 3 Fowler press, 2 10 in exhaust heads.
25 lbs. Bradley and 10 lbs. Hotchkiss Hammers.

FRANK TOOMEY,
131 N. Third St., Philadelphia, Pa.

---

4 3 H.-P. Vertical High Pressure Engines.
2 5 H.-P. " " " "
3 6 x 10 Horizontal Engines.
2 8 x 12 " "
2 10 x 14 " "
8 5 H.-P. Gas Engines.
5 10 H.-P. " "
1 8 x 12 D. C. Hoisting Engine.
3 Rock Crushers.

H. H. MANSFIELD,

126 Liberty St., New York

CORLISS

and other Automatic Engines, Slide Valve Engines Boilers, Steam Pumps, Tanks, &c., &c.

CORLISS, 10 x 20; 10 x 24; 12 x 36; 14 x 30, 16 x 42; 23 x 36; 22 x 48; 26 x 48; 28 x 60; 30 x 60; 30 x 72; Porter-Allen, 14 x 30; Brown, 16 x 42.

HIGH SPEED AUTOMATIC, 12½ x 15; 14 x 16; 12 x 18; 11 x 20; 10½ x 12; 9½ x 12.

HORIZONTAL SLIDE VALVE, 28 x 32; 18 x 36; 16 x 48; 16 x 36; 14 x 24; 13 x 24; 12 x 24; 10 x 24; 12 x 18; 10 x 14; 10 x 12, and others.

VERTICAL SLIDE VALVE 28 x 30; 20 x 24; 13 x 16; 13 x 12; 10 x 12; 10 x 10; 9 x 9; 8 x 10; 7 x 9; 7 x 7; 6 x 6.

ASSORTMENT OF BOILERS, Horizontal, 6 x 16; 5½ x 16; 5 x 16; 4 x 14; 4½ x 12, and others.

LOCOMOTIVE BOILERS, 15, 30, 45, 50, 60, 70, 100 and 150 H.-P.

ASSORTMENT OF STEAM PUMPS, 1000 gl. Duplex Fire Pump also Brennan Crusher, Bogardus Mill, Rock Drill, Burr Stone Mill. Fan Blowers, Platform Scales, Wood Planer, Rendering Tank, Open Tanks, Hoisters, Berryman Heaters, 600-ton Hydraulic Press, Boiler Rolls. Also some Large Steel Boilers, new, below market price. Send for catalogue.

GEO. M. CLAPP,
74 Cortlandt St., New York.

ROLLING MILL OUTFIT.

For Sale, the Following Machinery and Tools, in good order, for immediate or future delivery.

For further particulars apply to the undersigned:

1 Horizontal Low Pressure Engine, 39 in. x 72 in.
2 Fly Wheels, 24 ft. diameter, each weighing 53 tons.
1 Vertical Engine, 7 in. x 16 in.
2 Horizontal Engines, 14 in. x 24 in.
1 2 High 30 in. train, complete.
1 3 High 30 in. train, complete.
The above trains will roll 90 in. plates; also a lot of extra rolls, all made by Garrison & Co.
1 Roll Turning Lathe made by Garrison, will take in 12 ft. roll and turn up to 40 in.
1 Guillotine Shear, Engine attached, made by Morgan, Williams & Co., knife 104 in. long, will cut 1 inch steel plates.
2 Plate Straightening Machines.
1 Adams' Plate Shear, 48 in. throat, 26 in. knife, will cut up to ¾ in. Plate.
2 Heavy Upright Plate Shears, 12 in. throat, 22 in. knife, will cut up to 1¼ in. Plate.
2 Bar Shears.
1 Rotary Shear.
1 Fairbank's Testing Machine, with countershaft, or can be worked by hand power.
4 Large Iron Cranes, improved pattern, each about 25 tons capacity.
8 Small Cranes, also charging Cranes and Portable Cranes on car for handling Ingots.
Blake Pump, 14 in. steam, 16 in. water.
2 Worthington Duplex Pumps.
1 Blake Pump, No. 7.
1 Sturtevant Blower, No. 12.
3 Tubular Boilers, with Fronts and Attachments.
1 No. 7 Brush Light Machine, 15 Double Lamps.
Also Furnaces, Cylinder and Flue Boilers, Buggies, Shafting, Pipe Stacks, etc., etc., and other tools, etc., belonging to above plant.

MATTHEW GILL, Jr.,
308 Walnut St., Philadelphia, Pa.

!!! FOR SALE !!!

BAKER BLOWERS, Nos. 1, 4½, 5, 6 and 7.
ROOT BLOWERS, Nos. 1, 2, 3, 4, 5, 6 and 7.
Sturtevant Blowers, Nos. 4, 5, 6, &c.
1 Corliss Band Wheel, 12 ft. x 24 in., in halves.
A Variety of Machinery. Such as Boilers, Engines, Pumps, Crushers, &c., very cheap.
Do you want to buy or sell Machinery? If so, write

C. R. BIGELOW, Machinery Expert,
45 Dey St., New York City.

FLY WHEEL.

For quick sale, a perfect 20 ton Fly Wheel, 16 feet diameter, rim 15 in. x 15 in., in 8 sections, made by A. Garrison & Co. Also, 10 in. forged iron shaft for same.

C. W. SCHULTZ & CO.,
308 Walnut St., PHILADELPHIA.

FOR QUICK SALE.

One Otis Steam Shovel in good condition.
Two 12 ton 3-ft. Gauge Locomotives.
Two Standard Gauge Saddle Tank Locomotives.
20 Dump Cars, 3-ft. Gauge, 3 yd. Capacity, Side Dump.
3000 tons Mill Cinder, &c.
Also Pig Iron, Muck Bars, Bar Iron and Steel Billets, Scrap, &c. We are always in the market to buy and sell Equipment and Scrap.

G. H. SIBELL & CO.,
62 and 64 Michigan Ave., Chicago, Ill.

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SALE OF VALUABLE PROPERTY of the corporation known heretofore as The Albany Stove Company. Whereas, by order of the Supreme Court of the State of New York, granted in the City of Albany, N. Y., on the 10th day of October, 1893, the undersigned, receiver of the assets and effects of the corporation known heretofore as The Albany Stove Company, was directed to offer for sale the following described property, viz.: The real estate and buildings owned by the said corporation "The Albany Stove Company," situated on Tivoli street, in the City of Albany, N. Y., being the same premises used by the said corporation in carrying on its business of manufacturing stoves and iron castings, and is the same real estate conveyed by Eugene Van Rensselaer and others, as executors, etc., to The Capital Co-operative Foundry Company, by deed dated October 15, 1869, recorded in Albany County Clerk's office, December 15, 1869, in Book No 228 of Deeds, on page 241, and by Van Rensselaer Land Company to Albany Stove Company by deed dated January 10, 1890, recorded January 14, 1890, in Book No. 412 of Deeds, on page 318, together with the machinery, tools and implements used in carrying on the business above referred to.

Now, therefore, in pursuance of said order, the undersigned offers for sale to the highest bidder the property above described.

All bids to be sealed, and must be distinctly marked on the envelope in which they are enclosed, "Bids for property of the Albany Stove Company," and addressed and delivered to the undersigned at No. 82 State street, Albany, New York, on or before the 17th day of November, 1893. The right to reject any and all bids is hereby reserved, and sale can only be completed upon order of the court.

Bids will be opened by the receiver at the office of Francis H. Woods, No. 116 State street, Albany, New York, on Saturday, November 18, 1893, at 10 A.M. Terms, purchase price to be paid within twenty days after notification of acceptance of bid.

Dated October 11, 1893.

JOHN GUTMANN,
Receiver of The Albany Stove Company.

SALE OF VALUABLE PROPERTY of the corporation known heretofore as The Albany Stove Company. Whereas, by order of the Supreme Court, granted in the city of Albany, N. Y., on the 10th day of October, 1893, the undersigned, receiver of the assets and effects of the corporation known heretofore as The Albany Stove Company, was directed to offer for sale the following described property, viz.: The patterns, shop rights and flasks owned by the said corporation, and being the patterns, shop rights and flasks for the "Home Yale" parlor and range, "Yale" cook, "White Oak," "Art Yale Range," "Rose" range, "Oneida," and for other castings, formerly manufactured by the said corporation, a more particular description of which will be given on application to the undersigned.

Now, therefore, in pursuance of said order, the undersigned offers for sale to the highest bidder the property above described.

All bids to be sealed and must be distinctly marked on the envelope in which they are inclosed, "Bids for property of The Albany Stove Company," and addressed and delivered to the undersigned, at No. 82 State street, Albany, N. Y., on or before the 17th day of November, 1893.

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Terms: Purchase price to be paid within twenty days after notification of acceptance of bid.

Dated October 11th, 1893.

JOHN GUTMANN,
Receiver of The Albany Stove Company.

FOR SALE, CHEAP.

400 tons of 60-pound, 200 tons 52-pound and 400 tons of 30-pound second-hand Steel Rails, suitable for relaying. For prices, etc., address

J. H. RICHARDSON & CO.,
Pittsburgh, Pa.

FOR SALE.

2 Double Deck Boilers about 40 H.-P. each, cheap. Hoisting Engine. Cylinder Boilers for Stacks, 30, 40 and 42 in. diameter. Round and Square Iron Tanks. Book Binding Machinery. Smoke Stacks, light and heavy, all sizes. Large lot Cast and Wrought Scrap Iron on hand. Also Dealers in Metals.

BUSSENIUS & CUNLIFFE,
12th and Washington Ave., Philadelphia.

FOR SALE.

CRANK and GEARED SHAPERS.

Write us for Bargains.

J. STEPTOE & CO., Cincinnati, O.

PITTSBURGH SALES AGENCY,

J. H. HILLMAN, Manager,

No. 8 Wood St., Pittsburgh, Pa.,

IS NOW ENGAGED IN THE

Sale AND Reorganization

—OF—

Manufacturing Plants,

INCLUDING

Blast Furnaces, Rolling Mills, Machine Shops, Foundries, Agricultural Works, and Manufacturing Establishments Generally.

Examinations and Reports on Properties.

References on Application.

Second-Hand Rails

FOR SALE.

In lots to suit, and ready for delivery.

2000 tons 60 lb. Steel T Rails.
800 tons 54 lb. Steel T Rails,
400 tons 50 lb. Steel T Rails.
550 tons 50 lb. Iron T Rails.
600 tons 45 lb. Iron T Rails.
2000 tons 40 lb. Steel T Rails.
600 tons 30 lb. Iron T Rails.
150 tons 30 lb. Steel T Rails.
200 tons 25 lb. Steel T Rails.
1700 tons Johnson Girder Rails, 38, 48, 52 and 66 lb. Rails.

All selected and in excellent condition for relaying and only slightly worn. For prices and particulars apply to

JOSEPH JEWKES,
Railway Equipment, Pittsburgh, Pa.

Trustee's Sale of Machine Shop Equipment.

Lathes, 52 in. swing by 41 ft., 54 in. swing by 22 ft., 30 in. swing by 22 ft. One Pit Lathe.
Planers, 54 in. wide by 20 ft., 36 in. wide by 13 ft.
Drills, 36 in. upright, 5 ft. post, 20 in. post.
Engines, 5 new and 7 second-hand, from 100 H.-P down.
Circular on application.

W. A. BOLE, Trustee,
Liberty Ave., cor. 25th St, Pittsburgh, Pa.

WANTED.

Machinery to manufacture.—Machinery built of Wood and Iron, or all Iron only, wanted, same must be of real merit.

J. M. KRAMER & BRO. MACHINE WORKS,
Maria Stein, Ohio.

WANTED.

A second-hand Squeezer in good order and modern construction, with or without Engine. Name lowest price for cash. Address

"H.,"
Office of *The Iron Age*, 220 South 4th St., Philadelphia, Pa.

DON'T INVEST in expensive machinery or let a contract until you get our estimate for making novelties or parts. Our work on novelties or fine, difficult and accurate parts astonishes the trade. White metal work a specialty, and our results cannot be duplicated at the same cost. Write us. Sample on application. Inventions perfected. Secrecy and satisfaction guaranteed. THE H. H. FRANKLIN MFG. CO.,
Syracuse, N. Y.

FLOOR PLATES.

FOR SALE.—A Superior Lot of Cast Iron Plates 2 ft. x 4 ft. They are made to avoid warping and cracking. Will sell in lots to suit.

MATTHEW GILL, JR.,
308 Walnut St., Philadelphia, Pa.

TO LET

In the "IRON AGE" Building,

FOR OFFICES OR STORES,

96-102 Reade Street.

FIRST LOFT, 50 FEET FRONT.
THIRD LOFTS, 100 FEET FRONT.

To Let for Light Manufacturing Business,

Fourth and Fifth Lofts, 50 Feet Front.

Excellent Light, Elevator, Power and Steam Heat.

APPLY TO

WM. C. WALKER'S SONS,
299½ Broadway.

CHARLES WEILAND.

I make a special business of buying and selling Job Lots of

HARDWARE AND CUTLERY.

Tools and Second Quality Files a Specialty.
Send for Catalogue.

149 Chambers St., New York

WE ARE LOOKING FOR

NEW NOVELTIES TO MANUFACTURE.

If this concerns you

please communicate with us at once.

THE BRIDGEPORT GUN IMPLEMENT CO.,

313-315 Broadway, New York.

WE OFFER FOR SALE BALANCE OF

STOCK OF IRON AND STEEL,

Consisting of Bar, Band, Hoop and Scroll Iron and Spring and Plow Steel, at

1 CENT PER LB.

About 40 tons in all.

List of sizes on application.

JOHN S. LENG'S SON & CO.,
4 Fletcher St.. - - NEW YORK.

Wanted, Contracts

For building mining, blast furnace, rolling mill and factory machinery, for making castings for cable and electric railroads, or any special line of castings. Address

MAHONING FOUNDRY AND MACHINE SHOP

Danville, Pennsylvania.

Bicycle Manufacturing Plant For Sale.

Located in a prominent Western city and adapted to the manufacture of bicycles of any grade. Capital required, $75,000 to $100,000. For particulars address The R. M. Co., P. O. Box 31, Cincinnati, O.

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STEAM DERRICK FOR SALE.

We have purchased a complete Steam Derrick from a foundry recently assigned. The derrick originally cost nearly $1200 to build. Will sell same for $400 cash where it now stands. For further particulars address

SWARTS IRON & METAL CO.,
551 to 557 So. State St.,
CHICAGO, ILL.

RELAYING RAILS FOR SALE.

We have about 60 tons of 56 pound Wrought Iron Rails from a coal mine track, suitable for relaying. Will sell cheap for cash. Address at once for particulars.

SWARTS IRON & METAL CO.,
551 to 557 So. State St.,
CHICAGO, ILL.

Business Wanted.

A successful superintendent of large experience with leading Engine and Machine Tool builders would like to engage as partner in some manufacturing or engineering business. Has moderate capital, liberal education and excellent references. Address
"W. W. R.," No. 1116,
office of *The Iron Age*, 96-102 Reade St., New York.

FOR SALE CHEAP.

In quantities to suit, 1000 feet of 2¼ in. four ply water hose, at 30¢ per foot, with couplings either to fit 2 in. wrought iron pipe, or thread to fit regular 2 in. hose coupling. Address
REUTER & MALLORY,
22 Light St., Baltimore, Md.

FOR SALE.
HARDWARE STOCK

in Cleveland, O. Will invoice very near $4500. A bargain. Write to
"M.," care E. S. Adams,
office of *The Iron Age*, 312 The Cuyahoga, Cleveland, Ohio.

TO RENT.

One floor in our brick and stone factory, 200 x 60 feet, with all modern improvements, land sufficient to erect additional buildings if required. Location most desirable in the city. Bicycle, Typewriter, Sewing Machines or any similar class of manufacturing could arrange most satisfactory terms to locate on this property.
DIAMOND MACHINE CO.,
Providence, R. I.

WANTED.

Practical Boiler Maker with small capital and business, to take interest in small shop. Fair business established and a good opportunity to an energetic man of ability. Applicants must be well recommended as to mechanical ability and moral character, and other things equal American preferred. Address
"W. B. & S.,"
office of *The Iron Age*, 96-102 Reade St., New York.

Locations for Factories.

The Industrial Department of the Chicago, Milwaukee & St. Paul Railway has charge of matters pertaining to the development of the territory traversed by the railroad and the directing of manufacturers to points best suited to their particular requirements.

Eight States are traversed by the 6,150 miles of the Chicago, Milwaukee & St. Paul Railway's tracks, namely: Illinois, Wisconsin, Northern Michigan, Iowa, Missouri, Minnesota, South Dakota and North Dakota.

The company is daily in touch with the people in its territory, and from the number and varied nature of the industries locating and springing up on the line, and its acquaintance with the natural resources, has the facilities at hand to promptly furnish manufacturers with reliable information as to locations adapted to particular industries.

LUIS JACKSON,
Industrial Commissioner,
C., M. & St. P. R'y, 160 Adams Street,
Chicago, Ill.

LUXURY ON WHEELS.

The "Electric" trains of the **Cincinnati, Hamilton & Dayton R R** and "**Monon**" **Route** between **Cincinnati and Chicago** are provided with the latest product of the Pullman Co. built expressly for this service. There are 10 compartments in each car, which may be converted at will into complete drawing rooms, most beautifully and harmoniously decorated, lighted by the Pintsch gas system, and are positively the most modernly equipped sleeping cars in the world. This is the only line running Pullman Vestibule and Dining Cars between the cities named. THE World's Fair Route. See that your ticket reads **C., H. & D. and Monon Route.**

D. G. EDWARDS, G. P. & T. Agent,
Cincinnati, O.

FOR SALE.

A Rolling Mill, not far from Chicago; Cheap Fuel, Cheap Scrap; Good Machinery, comprising 9 in., 12 in. and 18 in. trains, in first-class condition. Can show a profit of $7 to $10 per ton on all iron made since mill has been in operation. Don't apply unless you mean business. Other engagements reason for selling. Address
"S. F.," No. 1026.
office of *The Iron Age*, 96-102 Reade St., N. Y

AN OLD ESTABLISHED hardware house in New York, whose salesmen cover the entire United States, wants the sole agency of American manufacturers of Chains, Toilet Clippers, Locks, Files, Carpenters' Tools and similar articles. Address
"W. B. G.," No. 105,
office of *The Iron Age*, 96-102 Reade St., New York.

WANTED

Partner to take half interest in established hardware and house furnishing store in Baltimore, Md; $5000 required; want to increase stock is reason for selling. Address "HIRAM," office of *The Iron Age*, 96-102 Reade St., N. Y.

PARTNER WANTED.

A partner with $8000 to engage in the Hardware business in the best city West of Chicago; business established and prosperous. Address "HARDWARE PARTNER," office of *The Iron Age*, 96-102 Reade St., New York.

WANTED.

A second-hand Guide Mill Shear, one that will cut up to 1⅝ inches square. Must be in good condition Address "SHEAR," No. 368, office of *The Iron Age*, 96-102 Reade St., New York.

WANTED.

To furnish reasonable estimates on specialties in light metal work.
CLARK & COWLES, Plainville, Conn.,
Manufacturers of Clock Trimmings, Rivets, Springs, &c.

Collections!

ATTENTION! Merchants and Manufacturers.—We collect your past due accounts. Do not let them remain too long upon your books. Our terms just and fair.
THE HARDWARE BOARD OF TRADE, Ltd.,
4 and 6 Warren street, New York.
JAS. H. GOLDEY, Treas.

FOR SALE.

Good stock of Hardware, invoice $5,000, good store building with living rooms above, valued at $2,500, in a good town in Southwestern Minnesota; only hardware store in the town; good established trade of $15,000 a year. This is a rare chance to go into business. Address
F. A. & A. J. MEACHAM,
Edgerton, Minn.

EUGENE BISSELL, Auctioneer.
E. BISSELL, SON & CO.,
Successors to
HAYDOCK & BISSELL,
WHOLESALE
HARDWARE AUCTIONEERS,
12 Murray St. and 15 Park Place, N. Y.
Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

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206 So. Green St., - - CHICAGO.
Largest wholesale house in America for Mirrors of all kinds, Pictures, Mouldings, Frames, Brackets, Easels, Screens and kindred goods. Large illustrated catalogue sent to Dealers upon application.

BLOWING ENGINE FOR SALE
Vertical pattern, with balanced steam slide valve gear, steam cylinder 14 in. diameter, air cylinder 40 in. diameter, stroke 24 in. 1 to 100 strokes per minute; engine new.
JAMES LEFFEL & CO., Springfield, Ohio

THE ROBERT W. HUNT & CO.
Bureau of Inspection, Tests and Consultation
Rails, Splices and Cars. Analytical and Physical Laboratories. Examination of Iron and Steel Works and advice on Processes.
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by WEST'S New Original-ENTRY LEDGER.
Make the same entry but once. A Ledger in place of a full set of books. Convenient forms for all entries. Easily applied, simple, saves time. West's Self-Proving Balance locates every error. Send 3 2-cent Stamps for illustrated 16-page pamphlet.
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Address for Circular to
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IF YOU WANT
A NIAGARA DYNAMO OR MOTOR
or if you are a dealer and want an Agency send for our Catalogue and Price-List.
LOVELL MFG. CO., LTD., ERIE, PA.

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SITUATIONS WANTED.

Undisplayed Advertisements for Situations Wanted not exceeding fifty words Fifty Cents each insertion. Additional words one cent each.

AS FOREMAN OR SUPERINTENDENT of iron building construction; practical setter, rigger and finisher; is able to take charge of big buildings; can take measurements, make sketches and handle men to advantage; has charge of a big job now; first-class reference. Address "IRON BUILDING," office of *The Iron Age*, 96-102 Reade St., New York.

A SALESMAN, traveling through New York, Pennsylvania, Maryland, District of Columbia and all New England States, would like to represent a few manufacturers in connection with those he has represented for several years past; good references furnished. Address "B.," Box 267, Buffalo, N. Y.

BY A BESSEMER MAN of 17 years' experience in managing Bessemer works; is familiar with the construction and running of Bessemer and rolling mills in general; best reference given. Address "BESSEMER," No. 1116, office of *The Iron Age*, 96-102 Reade St., New York.

BY METAL BOX STRAP SALESMAN with trade in New York and vicinity. Address "BOX STRAP," office of *The Iron Age*, 96 102 Reade St., New York.

A YOUNG MAN, 23, with five years' experience with hardware and machinery manufacturers, desires position of trust in that line; has good education and practical experience in bookkeeping and correspondence, and all kinds of office work; hard worker and can furnish best of references. Address "H. H. W.," Box 1116, office of *The Iron Age*, 96-102 Reade St., New York City.

A COMPETENT SALESMAN with fifteen years' experience, a large and valuable acquaintance in manufacturing interests, and most satisfactory references, resident in Chicago, wishes to represent some Eastern manufacturer in the West. Address "EASTERN MANUFACTURER," office of *The Iron Age*, 59 Dearborn St., Chicago, Ill.

CRANES, ENGINES, ICE MACHINES.—A young man of ten years' experience wishes to engage with a firm desiring to extend its line of business. Address "CRANES," Box 1016, office of *The Iron Age*, 96-102 Reade St., New York.

AN EXPERIENCED, RELIABLE, and successful salesman, 35 years of age, wishes to represent a reliable manufacturer in Chicago and vicinity on commission; for a good line, will provide office and sample room in best part of city. Address COOK CO., office of *The Iron Age*, 96-102 Reade St., New York.

BY A THOROUGHLY EXPERIENCED man in general and builders' hardware, cutlery, guns, etc., as traveling salesman in any of above lines; wholesale house, manufacturer, or manufacturers' agent. Address "CUTLERY," office of *The Iron Age*, 59 Dearborn St., Chicago.

BY A YOUNG MAN, as foreman or agent of bench or machinery foundry; am a practical bench and floor molder, have had six years' experience in running foundry, and one year soliciting trade, am acquainted with all details of the foundry business, advanced in all improvements of the foundry, understand the working of jobbing by the piece, can take hold of shop and instruct boys and guarantee to run shop successfully with them, am familiar with all details of the production of soft, light and medium weight and heavy gray iron castings; am well acquainted with New York trade. Address "BENCH," No 1116, office of *The Iron Age*, 96-102 Reade St., New York.

JANUARY 1, 1894, agency on commission for States of Pennsylvania, New York and Maryland; a full line table cutlery, German pocket cutlery, American pocket cutlery and hardware; all kinds, for manufacturers only; sporting goods line; open for engagement with wide awake manufacturers. Address "OLD TRAVELER," office of *The Iron Age*, 96-102 Reade St., New York.

BY A MAN of large experience, an agency in Boston for a manufacturer or importer; references of the highest order furnished. Address "C.," No. 295 West Chester Park, Boston, Mass, Suite No. 3.

A PRACTICAL MACHINIST, 35 years of age, late master mechanic for large iron firm in Pittsburgh, wishes situation to take charge of rolling mill or steel works machinery; has had 13 years' experience, understands engines, steam hammers, hydraulic work and general rolling mill machinery; strictly sober and steady; best of references given. Address "MASTER MECHANIC," office of *The Iron Age*, 509-510 Hamilton Building, Pittsburgh, Pa.

AS TRAVELING SALESMAN with some reliable stove house for '94; Al references as to character and ability. Address "SAM," office of *The Iron Age*, 96-102 Reade St., New York.

AS SUPERINTENDENT or chief engineer, by a mechanical engineer of 15 years' experience in general engineering, hydraulics, cranes, turbines and water works, sheet, plate, and structural iron work, &c.; any one who wants an energetic man to look after their interests will answer this ad. "HUSTLER," No. 1019, office of *The Iron Age*, 96-102 Reade St., New York.

A YOUNG MAN, 23, wants situation with manufacturing concern, either machinery or hardware, as traveling salesman or in factory; is energetic, well acquainted with Western jobbing hardware and sporting goods trade, familiar with manufacture of hardware specialties and handling of men to advantage. Address "NORRIS," office of *The Iron Age*, 96-102 Reade St., New York.

WANTED.—Manufacturers of hardware and kindred goods who wish to sell in St. Louis and the Southwest to communicate with Room 10, 523 Chestnut Street, St. Louis, Mo., U. S. A.

PIG IRON SALESMAN desires position. Acquainted with New York State and New England trade. Thoroughly up and good salesman. Address "IRON SALESMAN," office of *The Iron Age*, 96-102 Reade street, New York.

EXPERIENCED young hardware salesman of ability and extensive acquaintance wishes to represent manufacturer of hardware specialties on commission in New York, Boston and Philadelphia. Address "SOLID," office of *The Iron Age*, 96-102 Reade St., New York.

EXPORT hardwareman with six years' experience, wholesale and retail, wants position. Has thorough knowledge of Spanish, German and English. References in city. Four years with wholesale house in Mexico. Address "SPANISH," office of *The Iron Age*, 96-102 Reade St., New York.

AS MANAGER or foreman of a wire mill; have a thorough and practical knowledge of the wire trade in all its branches; twenty-five years' experience, twelve years as foreman; have charge of a large mill at present; am a good all-round mechanic, understanding the working of wire mill machinery and the building of annealing furnaces, bluing ovens, &c.; am strictly temperate and can furnish the best of recommendations from past and present employers; firms desiring a man that knows how to practice economy and run a mill on business principles will find it to their advantage to correspond with me. Address "TEMPERED STEEL WIRE," office of *The Iron Age*, 220 So. 4th St., Philadelphia.

A YOUNG MAN, 25, will change position; eight years with well known and one of largest concerns manufacturing builders' hardware (four as bookkeeper and assistant manager); quick, accurate accountant; experienced in able and economical management, all operating prices and complete data; thoroughly familiar with labor, costs, supplies, etc.; hard worker; can superintend; highest references; satisfactory reasons. "BUSINESS," No. 1019, office of *The Iron Age*, 96-102 Reade St., N. Y.

BY AN EXPERIENCED HARDWAREMAN, ten years' experience, three years' on the road; good salesman and stock keeper; West or Southwest preferred; best of references. Address L. W. VIVION, Benton City, Mo.

AS CHEMIST for iron or steel plant; thoroughly experienced in the analysis of iron ores, pig iron and steel; best of references given. Address "D. C.," No. 119, office of *The Iron Age*, 96-102 Reade St., New York.

TRAVELING SALESMAN.—A reliable, energetic and practical man seeks an engagement January 1st with manufacturer of heavy hardware, machinery or machinery supplies; best of references given from present employers. Address "SALESMAN," office of *The Iron Age*, 59 Dearborn St., Chicago.

GENTLEMAN, aged 36, for many years manager of a jobbing house in this city, dealing in a specialty used by the stove and hardware trade throughout the United States and Canada, is open for an engagement from January 1st with a reponsible house requiring the services of a competent and reliable business man as manager, or to fill a similar position of reponsibility; 18 years' practical business experience; thoroughly familar with commercial usages, correspondence, management of salesman, etc. Address "NILO," office of *The Iron Age*, 96-102 Reade St., New York.

BY A SOBER AND INDUSTRIOUS MAN, as guide roller; can furnish first-class references as to ability, character, etc Address "S. & I.," office of *The Iron Age*, 96-102 Reade St., New York.

AS FOUNDRY FOREMAN; 28 years' experience, about half that time as foreman. Address "R. N.," Box 119, office of *The Iron Age*, 96-102 Reade St., New York.

BOOKKEEPER.—A young man, 38 years of age, with 20 years' experience as manager and bookkeeper, desires a position where ability is necessary; is well versed in the iron business; am able financier and a through accountant and will furnish the best of references; willing to go to city or country. Address "BOOKKEEPER," office of *The Iron Age*, 220 So. 4th St., Philadelphia, Pa.

A WELL KNOWN and successful Blast Furnace Superintendent or Founder will be open for engagement after Oct. 1st, 1893. Is thoroughly competent as constructor or in the management. Practical, theoretical and in touch with latest improvements in blast furnace practice. First-class record and references. Address "BLAST FURNACE, No. 921," office of *The Iron Age*, 96-102 Reade street, New York.

RESPONSIBLE POSITION by a graduated chemist and engineer in steel works or furnace plants; reference President Midland Blast Furnace Co. Address C. W. Kolbe, Midland, Mo.

BY A MEMBER of the A. S. M. E., expert in shop management and economical production of machinery, as superintendent or manager; well posted on dynamical, hydraulic and mechanical engineering and inspection of materials. Address "W. O. W.," office of *The Iron Age*, 96-102 Reade St., New York.

HELP WANTED.

Undisplayed Advertisements for Help Wanted not exceeding fifty words One Dollar each insertion. Additional words two cents each.

FOR THE SOUTHERN, Eastern and Western trade, traveling salesmen, to sell on commission to consumers an article used by machinists, engineers, plumbers, &c. Address "C. W. G.," No. 1015, office of *The Iron Age*, 96-102 Reade St., New York.

SALESMEN visiting the jobbing and large retail trade in hardware and house furnishing lines, in the South and West, to sell as a side line, on commission, a first-class specialty. Address "BUCKET BOTTOMS," office of *The Iron Age*, Bank of Commerce Building, St. Louis.

MAN EXPERIENCED in soliciting orders for castings for gray iron foundry; a good opening for the right man. Address "JOBBING," office of *The Iron Age*, 96-102 Reade St., New York.

MANAGER—EDGE TOOLS—The advertisers having a well equipped factory producing edge tools, hammers, &c., wish to arrange with a throughly competent man, having a small capital, to make the goods under contract; full product of factory guaranteed; a good opportunity for the right man. Address "EDGE TOOLS," Box 1116, office of *The Iron Age*, 96-102 Reade St., New York.

SALESMAN traveling in Pennsylvania and the West, and selling to the hardware trade, to carry and sell on commission a small line of goods that sell quickly to every hardware house. Address "HARDWARE," office of *The Iron Age*, 220 S. Fourth St., Philadelphia, Pa.

CUTLERY.—Foreign (German) manufacturer desires representative; goods well known in this country; only first-class traveling salesmen need apply; state experience, amount of sales, &c., &c. "O. K.," Box 1116, office of *The Iron Age*, 96-102 Reade St., New York.

A THOROUGHLY practical mill manager to take full charge of plant making specialties in crucible and open hearth steels; give particulars as to experience and business qualifications; communications strictly confidential. Address P. O. Box 833, Pittsburgh, Pa.

A SOBER, RELIABLE MAN to take charge of cut nail machines and bolt and nut machines. Address COMPANIA INDUSTRIAL MEXICANA, Chihuahua, Mexico.

SALESMEN to sell on commission to the hardware, plumbing and rubber trade the best and cheapest line of lawn sprinklers made; see advertisement in this paper. Address ETTE & HENGER MANUFACTURING CO., St. Louis, Mo

SALESMAN with experience and trade in cutlery and hardware in New York State; state salary expected and where last employed. Address "EXPERIENCE AND TRADE," office of *The Iron Age*, 96-102 Reade St., New York.

SALESMAN traveling the jobbing and large retail trade in the East, one in the West, and one in the South, to handle line of hardware specialties as side line; salary or commission; the line is too small for manufacturer to travel alone. Address "L.," office of *The Iron Age*, 220 S. Fourth St., Philadelphia.

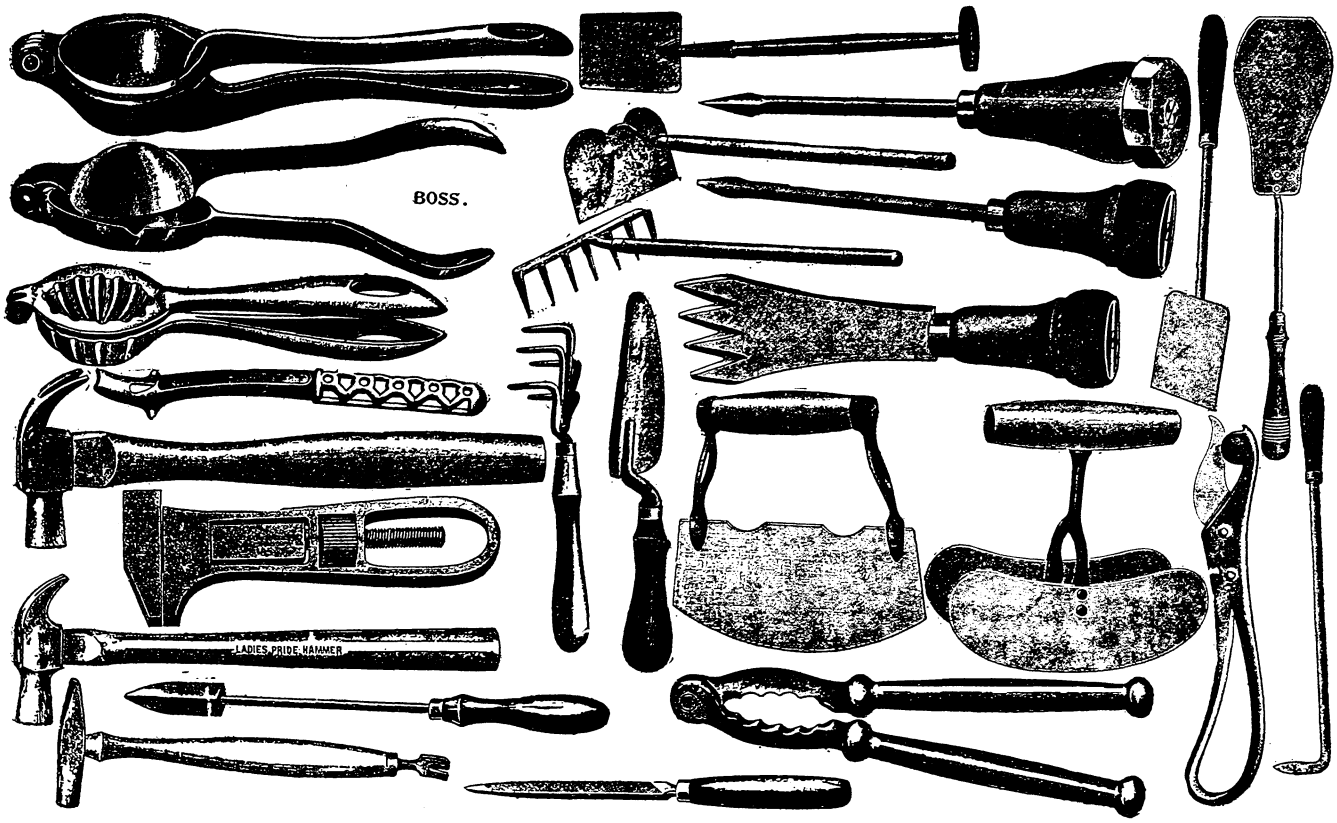
COMPETENT FOREMAN, in wrought iron and wire factory; must be experienced in all its branches; give references and salary expected. Address "WIRE AND IRON WORKER," office of *The Iron Age*, Bank of Commerce Building, St. Louis.

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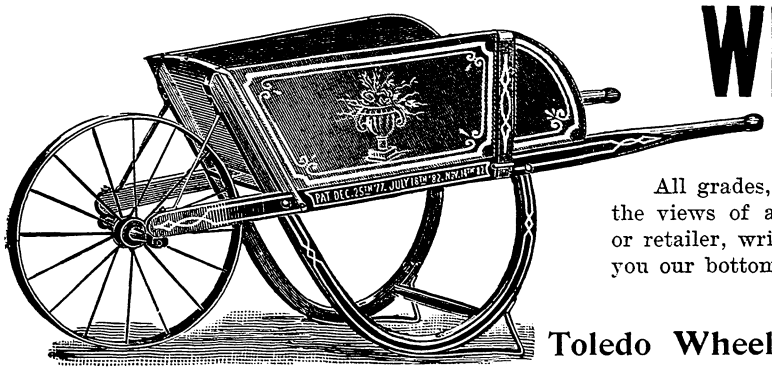
=:= EDWIN HILLS, =:=

Manufacturer of HARDWARE SPECIALTIES,

PLAINVILLE, - - - CONN.



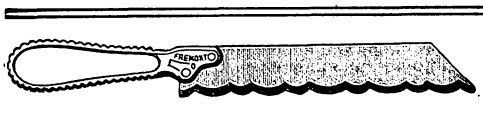
——SEND FOR CATALOGUE AND PRICE-LIST.——



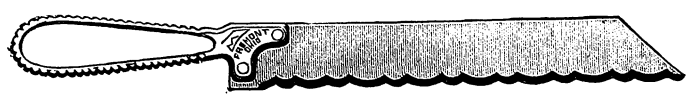
WHEELBARROWS.

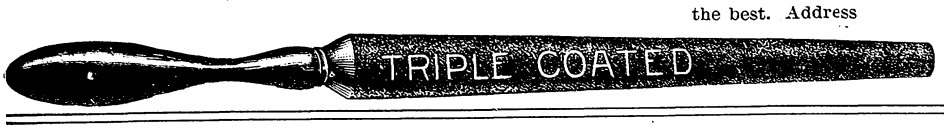
All grades, all styles, all sizes, at prices that will meet the views of any hardware dealer in the country. Jobber or retailer, write us your requirements and we will name you our bottom prices.

Toledo Wheelbarrow Works, = Toledo, Ohio.



Sharp—of Course.





The "Clauss" Bread and Cake Knives are the finest, cut the easiest and wear the longest; facts that we guarantee, remember. As to price write us.

The "Clauss" Knife Sharpener is made purposely for them and is the best. Address

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Controlling the Adams-Blair Process and other Steel and Iron Patents.

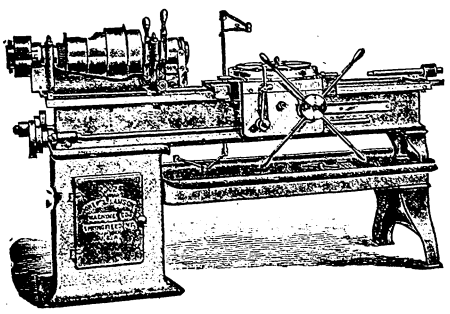
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If not send for

RAPID LATHE WORK.

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MANUFACTURERS OF

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Double Crimped Wire Cloth for Mining Purposes.

All meshes from two to the inch up to 100 mesh made and carried in stock.

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Assays of Ores, Metals and Metallurgical Products of every description. Analysis of Water, Ores, Minerals, Metals, Fuel, and Natural and Industrial Products generally.

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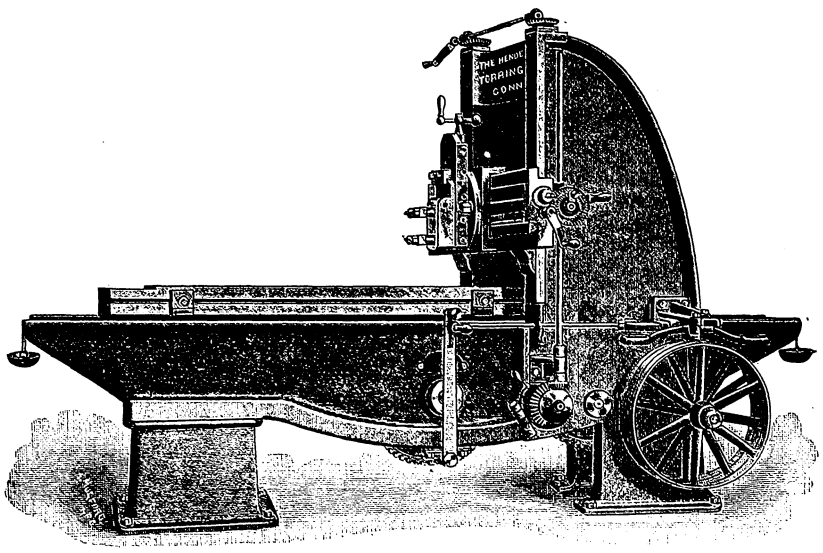
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The Pittsburgh Reduction Co.,

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Offer Aluminum guaranteed equal in purity to the best in the market, at lowest rates obtainable.

ALUMINUM SHEET, WIRE, AND CASTINGS.



Iron Planers at Reduced Prices.

We have on hand a few new planers of this pattern, and in order to dispose of them quickly, we would make a good reduction in price of same. The sizes are 16 inch, 22 inch, 24 inch and 27 inch. If you are in need of a good planer write us for prices on these.

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THE HORIZONTAL BORING MACHINE

IS A SPECIAL TOOL FOR THIS PURPOSE.

SEND FOR PARTICULARS TO

NEWARK MACHINE TOOL WORKS

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THE STEARNS BICYCLES.

E. C. STEARNS & CO.,

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IF SO, THE PRICES WE ARE MAKING ON

OIL HEATERS AND GAS STOVES

WILL INTEREST YOU.

B. & B. Stoves are the Leaders.

B. & B. Combination Oil Heaters and Cook Stoves are a great success, as proven by the many testimonials received from all parts of the country.

Every Stove is mounted on rollers, and can easily be moved from room to room. *They can be used in place of a range in the kitchen or in place of a base-burner in the parlor.* They are thoroughly well adapted to fill all requirements, *combining as they do all the qualities of a first-class Oil Heater and an elegant Parlor Cook Stove.*

If you happen to have one of them upstairs, *the tank can easily be removed and taken down to the kitchen to be filled,* and again replaced in the Stove.

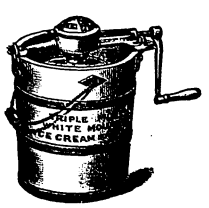
Those who have used the old style Stove with tanks fastened in them as tight as if cast in the iron will appreciate this feature. They can be fitted with our 2-hole, 3-hole or 4-hole Extension Tops for regular 8-inch ware. We want your trade, and if you will give us a chance to quote you prices we will have it.



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W. W. MONTAGUE & CO., San Francisco, General Agents for the Pacific Coast.

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The standard by which the merits of a Freezer are gauged is, how near it comes to being as perfect as the

WHITE MOUNTAIN
ICE CREAM FREEZER.

It always has been, and is still, the best. Try them.

Manufactured by **The White Mountain Freezer Co., Nashua, N. H.**



THE OLD RELIABLE STANDARD FREEZER

has the reputation of being the **BEST ICE CREAM FREEZER** ever introduced. **STRENGTH, DURABILITY, NEATNESS AND EFFICIENCY** are prominent points in the manufacture. Full Size Can, **CEDAR TUB,** Detachable Hinged Crossbar, Self-adjusting Vibratory Scraper, etc.

Write for Illustrated Circular, Price-List and Discounts of **STANDARD, GOOD LUCK, MODEL and MACHINE Freezers.**

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THE "New" Keystone Beater,

FOR
WHIPPING AND **BEATING** EGGS.
MIXING BATTERS, DRINKS, SAUCES, ICINGS, POWDERS, ETC.
CREAMING MELLOW FRUITS, BANANAS, PEACHES, BERRIES, BUTTER & SUGAR.

No. 20 for Family Use.

JAR ENTIRELY COVERED.
No more Spattering.
CAN BE USED ANYWHERE.
Standing or Sitting.
ALWAYS READY FOR USE.
Nothing to be fixed.
SIMPLY PERFECT.

No. 20.—Jar holds 1 quart level full.
Complete Machine securely packed in one single package.
½ dozen packed in case.

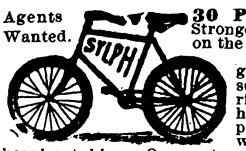
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NORTH BROS. MFG. CO.,

Manufacturers of Hardware Specialties for Household use
American St. and Lehigh Ave., Philadelphia, Pa., U. S. A.



Agents Wanted.

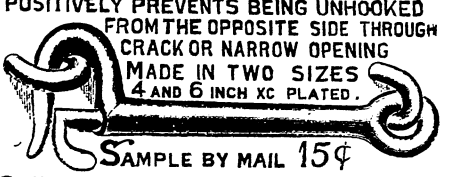


30 POUND SYLPH. Strongest Cycle of its weight on the market.

Guaranteed highest grade, and built for scorchers and hard road riders. By using tubular hubs, front fork, saddle post, etc., we do away with forgings and use heavier tubing. Our system of lap-brazing makes joints as strong as any part of the tubing, and thus we get a lighter and by far stronger machine. Investigate. Catalogue free. **ROUSE-DURYEA CYCLE CO., 146 G St., Peoria, Ill.**

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POSITIVELY PREVENTS BEING UNHOOKED FROM THE OPPOSITE SIDE THROUGH CRACK OR NARROW OPENING



Call for Our Banner Bolt Snap.

This snap has many important advantages over other makes of Bolt Snaps, viz.: It is lighter, the spring is entirely covered and protected from foreign substance and freezing, and is lower in price

Made in all sizes; Round, Loop and Open Eye. **We are headquarters** and the most extensive manufacturers in Saddlery, Coach and General Hardware Specialties.

Covert's Saddlery Works,
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Electric Toy Making, Dynamo Building and Electric-Motor Construction. By T. O'Conor Sloane, A.M., E.M., Ph.D. This work treats of the making at home of electrical toys, electrical apparatus, motors, dynamos, and instruments in general and is designed to bring within the reach of young and old the manufacture of genuine and useful electrical appliances. The work is specially designed for amateurs and young folks. Very fully illustrated..... ..... $1.00

For sale by David Williams, 96-102 Reade St., N. Y.

Hardware Dealers Can Profitably Sell Bicycles.

There is a large trade in Bicycles in all parts of the country and much of that trade naturally belongs to dealers in hardware. Good bicycles meet with a ready sale and pay a fair percentage of profit.

COLUMBIAS

Are the representative high grade machines in America. A Columbia is the easiest machine to sell to the best trade because it is unquestionably the standard wheel of the world.

We want enterprising agents of good standing and solicit correspondence.

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You take no risk on the Quality
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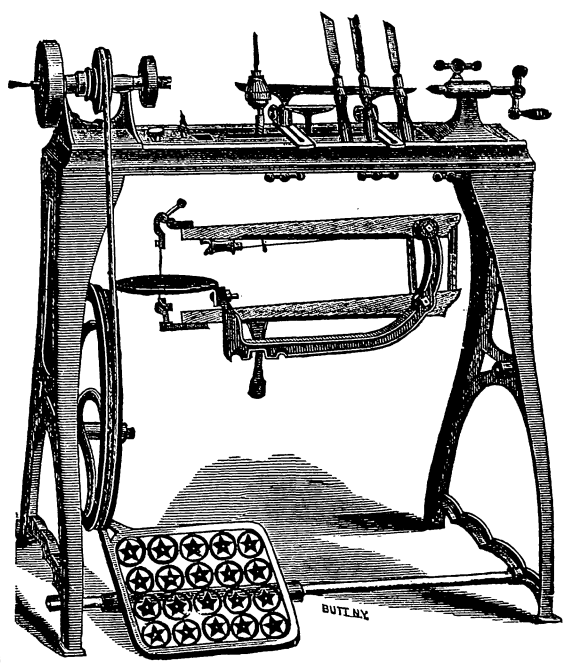
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Many kinds of Scroll Saws have been put on the market by ourselves and other manufacturers during the past twelve years. Of these only a few have proved good enough to remain in demand. The call now is for a well-made, practical machine, and all second-class ones are of slow sale.

Those who want a good Lathe with Scroll-Sawing Attachment and all Tools and Improvements to the very latest moment will buy the Goodell Lathe.

Those who want only a Scroll Saw with Drilling Attachment and Rubber Blower will prefer the Rogers Saw.

These two machines are taking the place of all others, and are now the most in demand throughout the world.

No dealer can make a mistake by laying in a stock of them. About Christmas time they are wanted in every town, and will make business lively at this otherwise dull season.

We also keep a full stock of Designs, Wood, and all other Scroll Sawing goods.

Price of Goodell Lathe, complete, $12.00.

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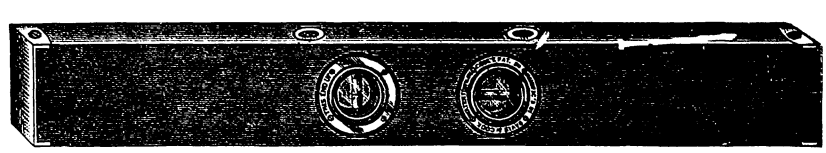
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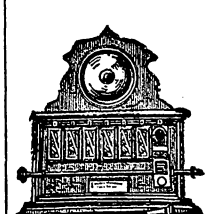
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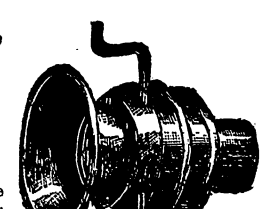
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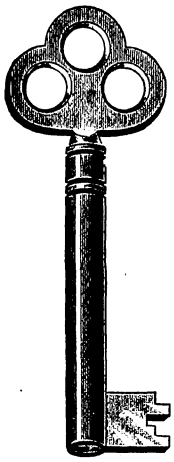
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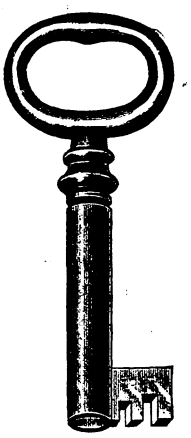
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A complete line of more than 1000 list numbers exclusive of our old and complete line of

YALE CABINET LOCKS.

THE YALE & TOWNE M'F'G CO.,

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THE PEOPLE ask for.

MAKES FRIENDS and MONEY, and
SAVES TIME and TROUBLE.

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LePage's Liquid Glue,

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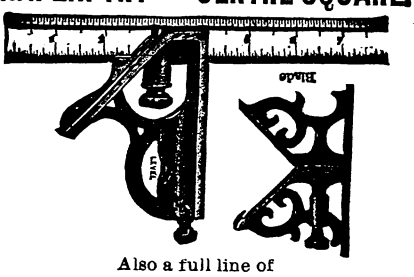
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Made of best forged Tool Steel; are easily and readily adjusted and controlled. Can be made reversible instantly without removing from their work by throwing over the lever in slot of the handle.

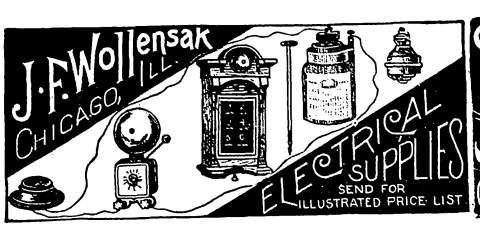
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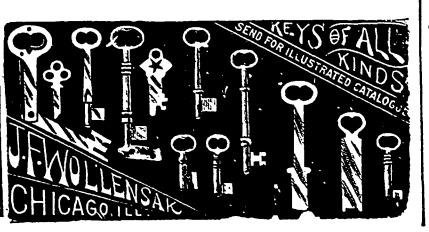
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INTERCHANGEABLE
LOCK-CORNER SHELF BOXES.
Screw Cases, &c.
FOR THE HARDWARE TRADE
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Pumps, Hydraulic Rams, Garden Engines,

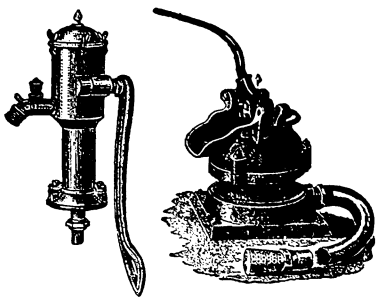
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A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 209. Fig. 381.



or wherever it is desired to raise a large quantity of water by

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The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

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from 3,000 to 4,500 gallons per hour.

These pumps are simple, durable and low priced.

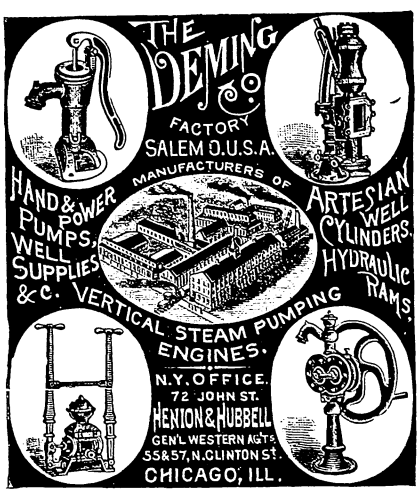
Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.

Send for Circular and Price List.

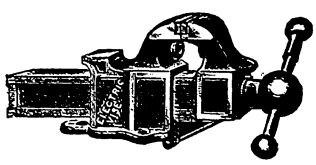
Fig. 145.



C. I. Grindstone Frame.



VISE.

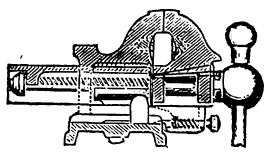


Patented Dec. 27, 1892.

IT HAS QUALITIES THAT ARE UNDISPUTED.

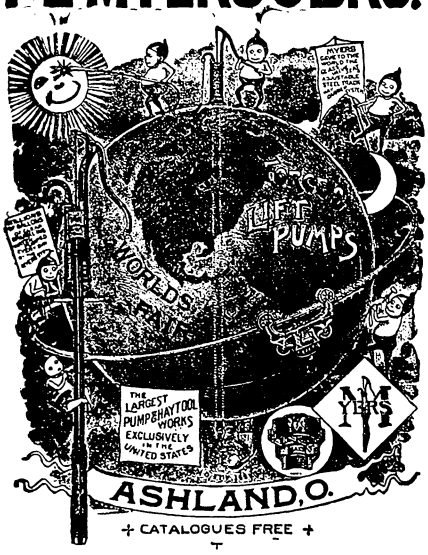
Rapid, Active, Prompt.

One movement in and out, one turn of the hand and the work is secured.



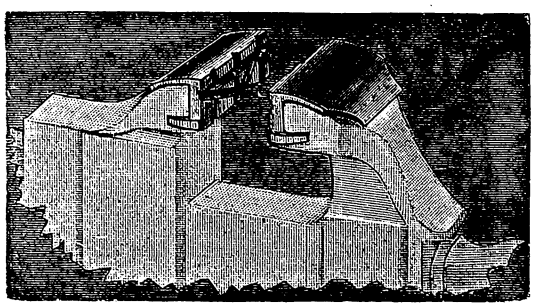
The Capital Machine Tool Co., AUBURN, N. Y.

F. E. MYERS & BRO.



+ CATALOGUES FREE +

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BINGHAM

PATENT VISE JAW CAP

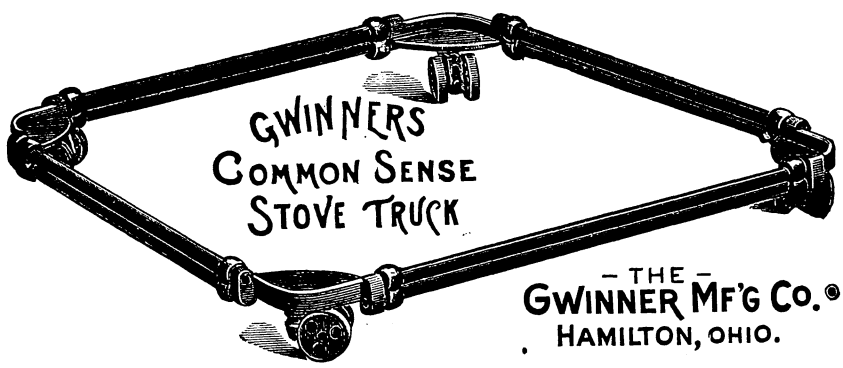
Will Fit any Kind of Vise.

For protecting finished work. Will hold finished rods of any shape without injury.

3½ inch.....per pair, 40 cents.
4 " ..... " " 50 "
4½ " ..... " " 60 "

PRENTISS VISE CO.

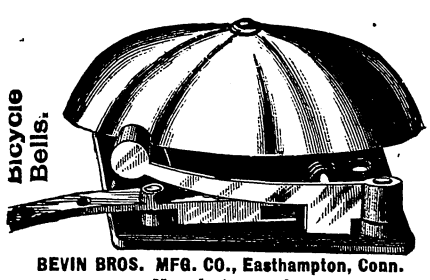
44 Barclay St., New York.



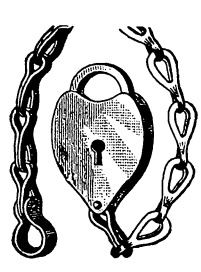
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Made specially to be sold by Hardware Stores.
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Manufacturers of
Sleigh Bells, House Tea, Hand, Gong Bells, &c.



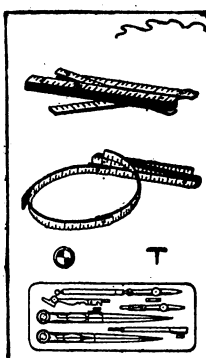
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Especially Low Prices.

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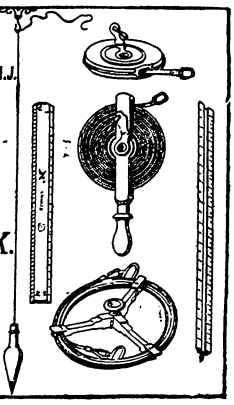
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FACTORIES: HOBOKEN, N.J.

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SUPERIOR QUALITY, LATEST IMPROVED. GREATEST VARIETY.
STEEL · METALLIC · LINEN · POCKET TAPES.
EXCELSIOR BAND CHAINS FOR SURVEYORS; LAND CHAINS, &c.
K&E Co FOLDING POCKET RULES.
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FLAT & TRIANGULAR BOXWOOD SCALES, BEST MADE.
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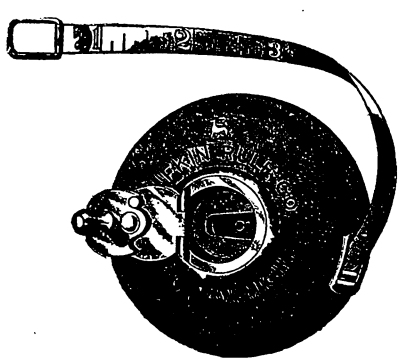
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FOR SALE BY ALL THE LEADING JOBBERS.



"RELIABLE"
Steel Measuring Tapes.

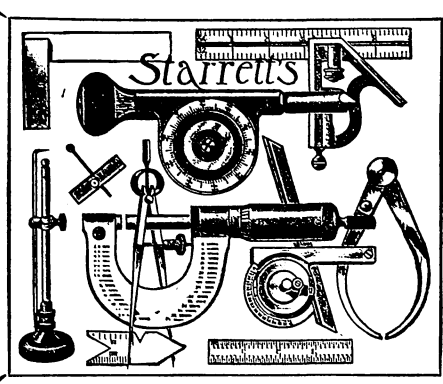
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For all workers in metal or wood Every tool warranted satisfactory

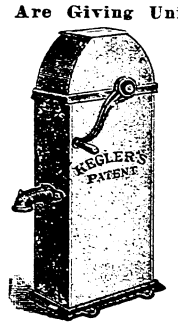
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GALVANIZED IRON
TUBING and CURB,
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Are Giving Universal Satisfaction,



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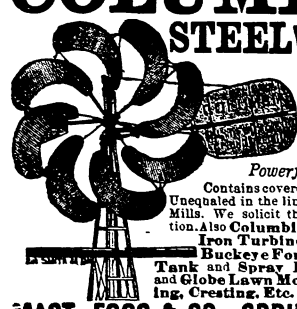
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Tubing weighs less than ½ lb. per ft., is connected by couplings and can be attached to any make of curb.

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New in Principle. Beautiful in Appearance. Powerful in Operation.

Contains covered **Internal Gear.** Unequaled in the line of Pumping Wind Mills. We solicit the closest investigation. Also **Columbia Steel Derricks, Iron Turbine Wind Engines, Buckeye Force & Lift Pumps, Tank and Spray Pumps, Buckeye and Globe Lawn Mowers, Iron Fencing, Cresting, Etc.** Write for circulars.

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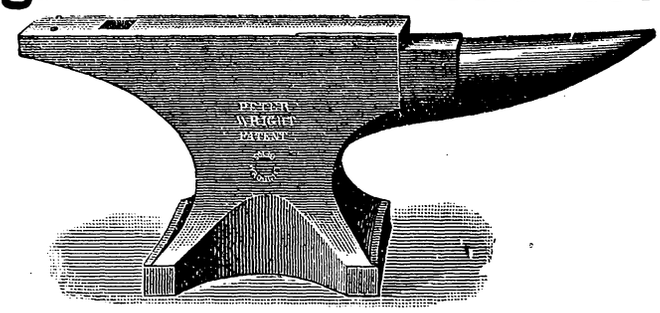
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Peter Wright's Patent Solid Wrought Anvil

PETER WRIGHT PATENT SOLID WROUGHT

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PETER WRIGHT'S SOLID WROUGHT ANVIL Made of Best Scrap Iron! THE BICK FACE AND END ALL IN ONE SOLID PIECE!

You are cautioned in buying to see that each anvil is stamped with the full trade-mark on one side and has the green label affixed to the other.

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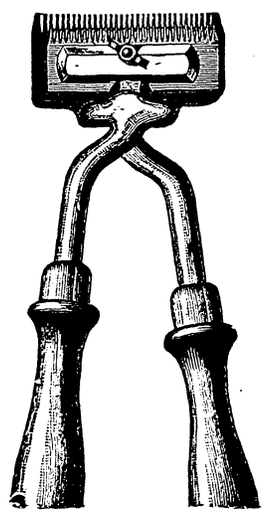
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Headquarters for

Coates' Horse Clipper



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Barber Clippers.

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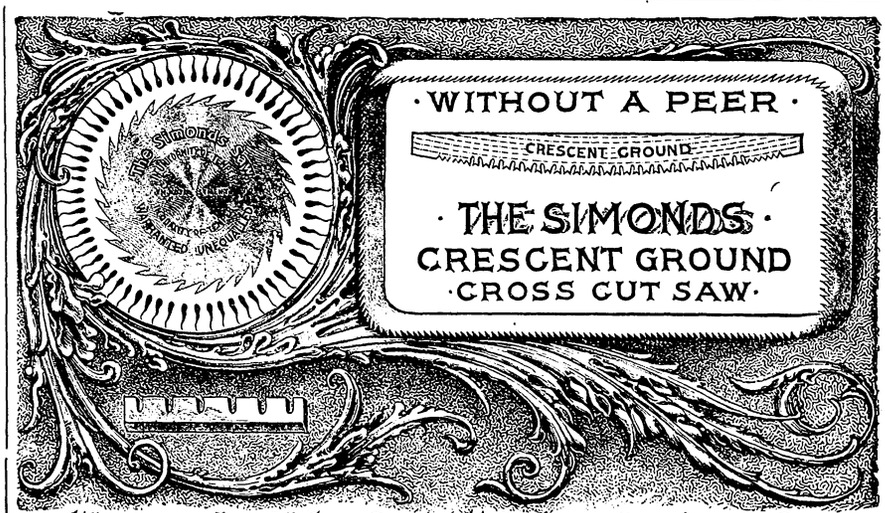
THE "BELL"

AND

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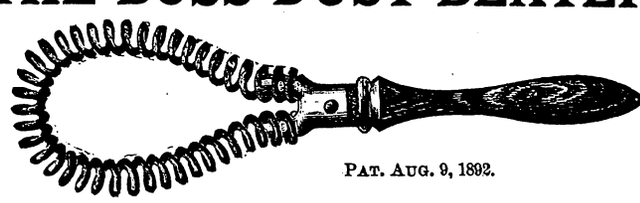
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THE BOSS DUST BEATER.



PAT. AUG. 9, 1892.

NEAT, DURABLE, AND DOES THE BUSINESS.

For removing dust and filth from Clothing, Upholstered Furniture, Rugs and Carpets it is just the thing. Will raise the nap and so improve the appearance. Will not, like other Dust Beaters, leave marks, nor tear the fabric. The coil is of steel wire secured in a malleable iron socket and attached to an enameled wooden handle. Just what everybody wants.

Retail Price, 25 Cents. Sent by Mail, 35 Cents.

PEABODY & PARKS,

Manufacturers, TROY, N. Y.

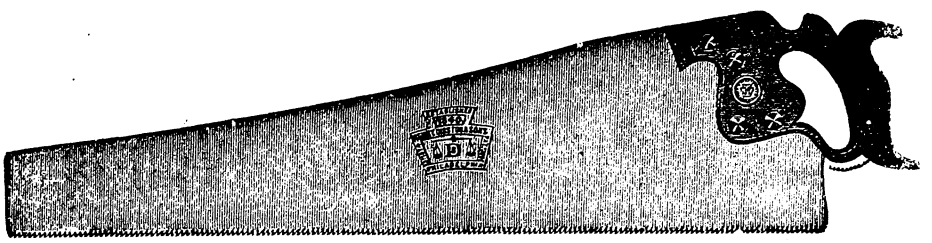
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"If you want a Saw it is best to get one with a name on it which has a reputation.
A man who has made a reputation for his goods knows its value as well as its cost and will maintain it."—HENRY DISSTON.

THE SAWS THAT LEAD THEM ALL

"THE SAW;" HOW TO CHOOSE IT, AND HOW TO KEEP IN ORDER, Sent Free on Receipt of Name and Post Office Address.

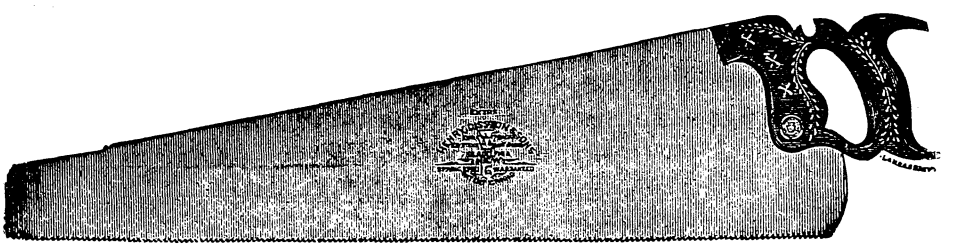
DISSTON & SONS' PATENT D-8 HAND SAW.



This Saw combines all the valuable improvements in Hand Saws that have been made by us of late. The first and most important is the hollow or skew back, the success of which can best be attested by the number sold. The peculiar shape of the butt or heel, coupled with the new method of fastening to the handle, give a full stroke of the blade without fear of catching or hooking in the work; and as the handle is put further on the blade you have a full stop on the proper point and a greater command over your Saw, by reason of being two inches nearer the point, which must give more power.

The Saw being let into the handle on a circle, has a perfect bearing, which, with the new screws, makes it stronger and almost impossible to work loose, and avoids the unsightly gap that is seen on the back of the old style handle. All the above features are patented.

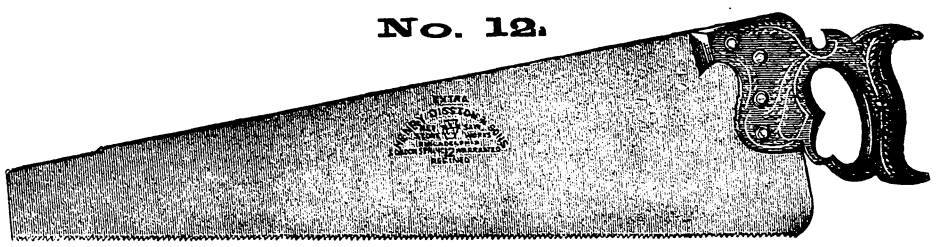
Our New No. 16 Premium Saw.



AN EXTRA FINE SAW IN EVERY RESPECT.

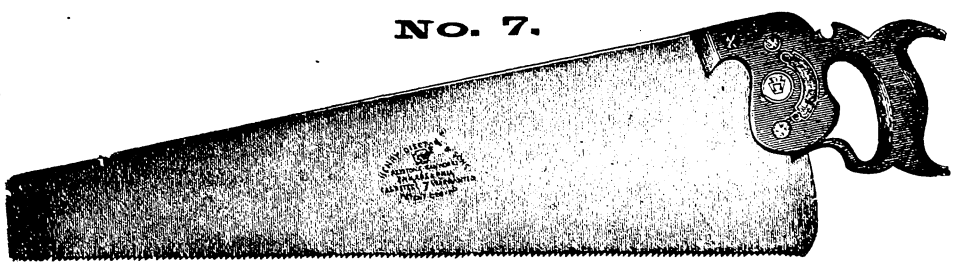
Having the Latest Close up Handle, Spring Steel Blade, Extra Thin Back, Finely Grained, with an Apple Handle and Four Brass Centennial Screws.

No. 12.



DISSTON & SONS' Extra Refined London Spring Steel, Selected and highly Polished Blade, Handle Carved and Polished, 4 Improved Brass Screws, the finest Hand Saw manufactured.

No. 7.



DISSTON & SONS' Cast-Steel, Warranted, Beech Handle, Polished Edge, 4 Improved Screws, Grained Blade.

"POCKET EDITION OF THE SAWYER" and "LUMBERMAN'S HAND BOOK," Sent Free on Receipt of Name and Post Office Address

ASK YOUR DEALER TO ORDER THEM FOR YOU.

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(INCORPORATED),

Keystone Saw, Tool, Steel and File Works, Philadelphia, Pa.

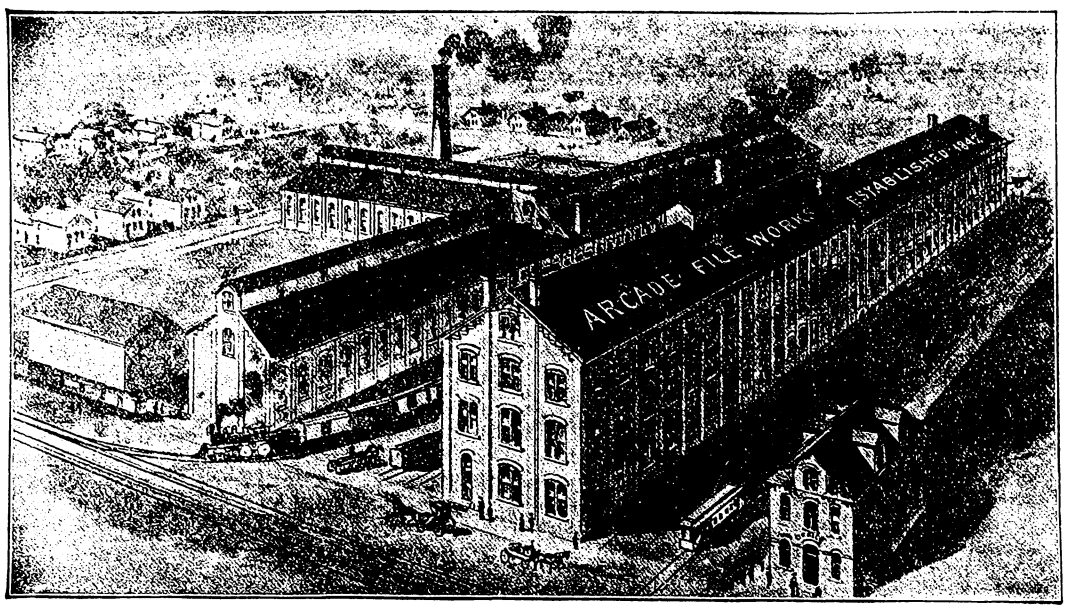
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Samuel W. Allerton, Pres. Courtlandt C. Clarke, Sec. and Treas. Alfred Weed, Vice-Pres. & Gen. Manager.

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ESTABLISHED 1842.

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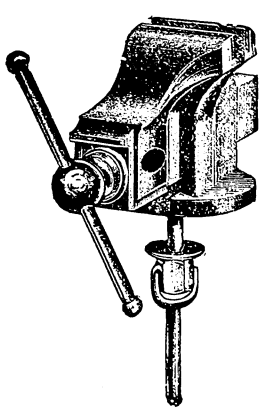
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Works: ANDERSON, IND.

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THE BEST EQUIPPED FILE WORKS IN THE WORLD.

The fact that we alone use the improved File Machinery recently invented by Alfred Weed, and the even heat of natural gas, enables us to produce a file that will cut faster and wear longer than any on the market.



HOLLANDS' OFFSET JAW VISE.

Specially adapted for drill press work where chucks cannot be used and equally good for special or regular bench work.

Hollands Mfg. Co.
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Manufacturers all styles VISES.

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McCaffrey File Co.,

FIFTH and BERKS STS.,
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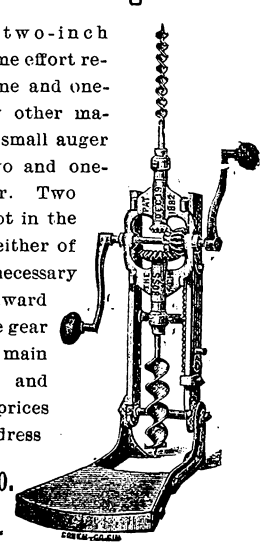
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Manufacture and keep in stock a full line of FILES and RASPS only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.

The Boss 2-speed Boring Machine.

Will operate a two-inch auger with the same effort required in using one and one-half inch in any other machine, and for the small auger have a speed two and one-half times faster. Two augers may be kept in the machine, to use either of which it is only necessary to point it downward by first taking the gear frame out of main frame, inverting and replacing it. For prices and discounts address



Buckeye Mfg. Co.
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BEST CRUCIBLE STEEL.

"TROJAN" HORSE RASPS.

LOWEST IN PRICE.

STRONGEST TOOTH.

BANKER & WHITE, TROY, N. Y.
(Troy File Works.)

LET US QUOTE.

The Taintor Positive Saw Set.

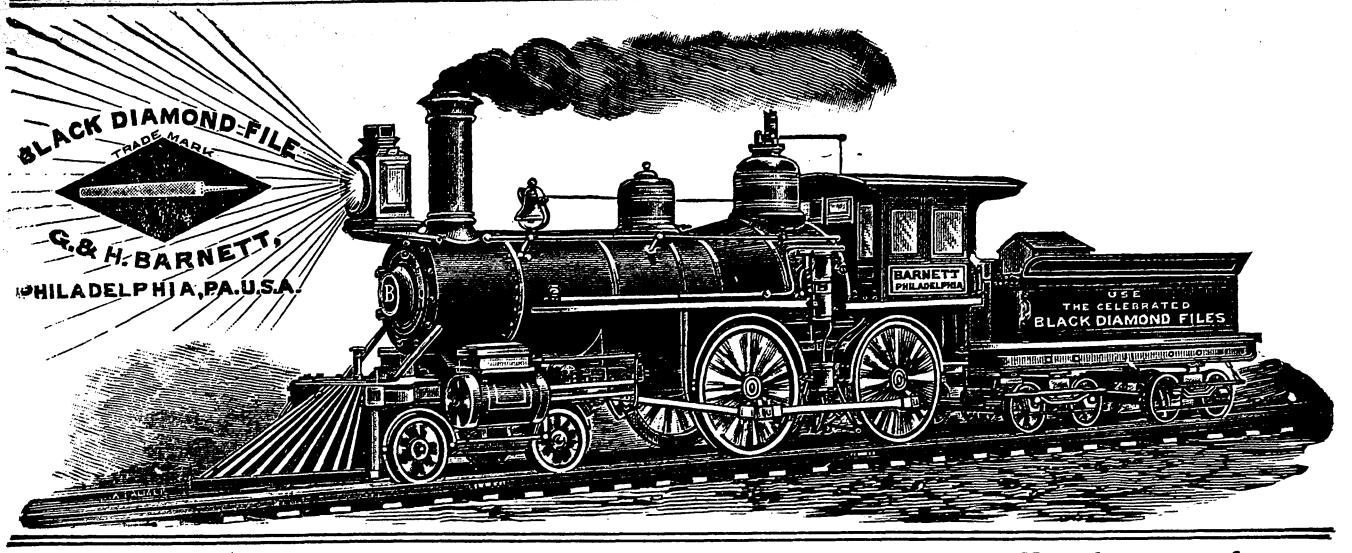
Mechanics are now inquiring for this tool, and Hardware Dealers should have them in stock, or at least have a sample.

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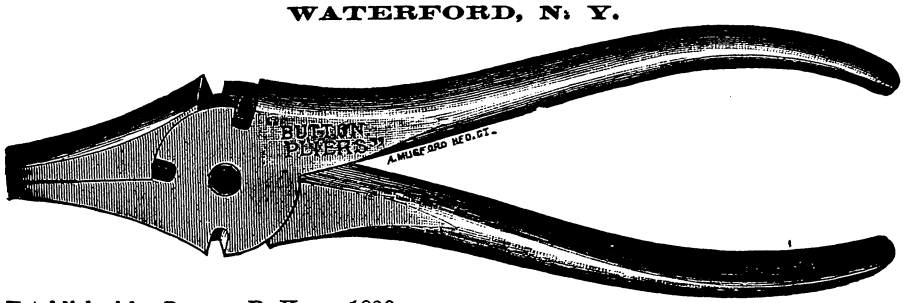
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BUTTON'S

Pat. Wire Cutter

AND PLIER COMBINED.



Specially Adapted for Use on Wire Fence.

Also Manufacturers of BLACKSMITHS' and MACHINISTS' STOCKS and DIES, PLUG and TAPER TAPS, HAND, NUT and SCREW TAPS, PIPE TAPS and REAMERS.

Price-List on Application.

Established by DANIEL B. KING, 1829.

Cronk's Patent Wire Cutter AND Bender.



8 In., $15.00
10 In., 20.00
} Discount,—

This surpasses any Plier in the market for Cutting and Bending Wire, and can also be used in place of Hill's Hog Ringer. Is especially adapted to farmers' use in building Wire Fence, &c.

Our reasons for claiming that we have the best Pliers in the market are:

FIRST.—We use the best Tool Steel and they are nicely finished.

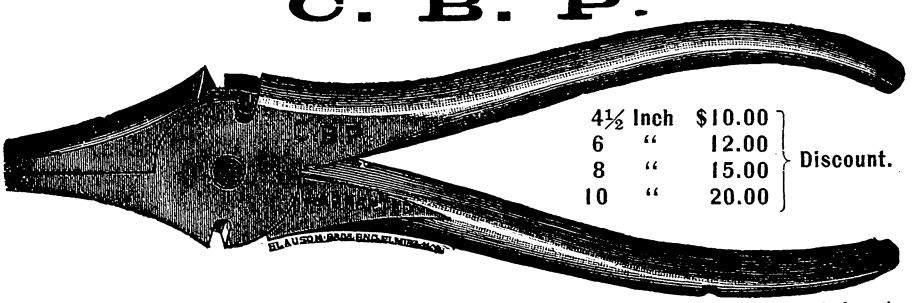
SECOND.—We combine both Flat and Round-Nosed Pliers in one; the concave and convex circles between the handles are used for bending wire in any desired shape.

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FOURTH.—We can cut Barbed Wire, Barb Belt or any kind of Wire used for Fencing purposes. We also claim that we have the only Plier made that the Cutting Jaws cannot be broken.

By passing the Wire through the Pliers it makes a very handy cut and also holds the Wire after it is cut.

C. B. P.



4½	Inch	$10.00
6	"	12.00
8	"	15.00
10	"	20.00

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What we claim for this plier is that it is made from best quality tool steel and is made heavier and stronger than any plier of its kind in the market and the finish is first-class. Also they are made so the jaws are parallel when used on wire from 9 to 14 gauge and will hold the wire solid.

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Skinning, Sticking, Farriers' & Shoe Knives,

Have established and maintained their reputation, for superiority, against all Competitors, from

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and are still in increasing demand. As in the past, it is the unalterable

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—MANUFACTURERS OF—

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ONE HUNDRED AND FIFTY YEARS.

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Established 1836.

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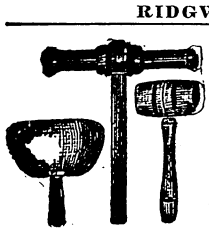
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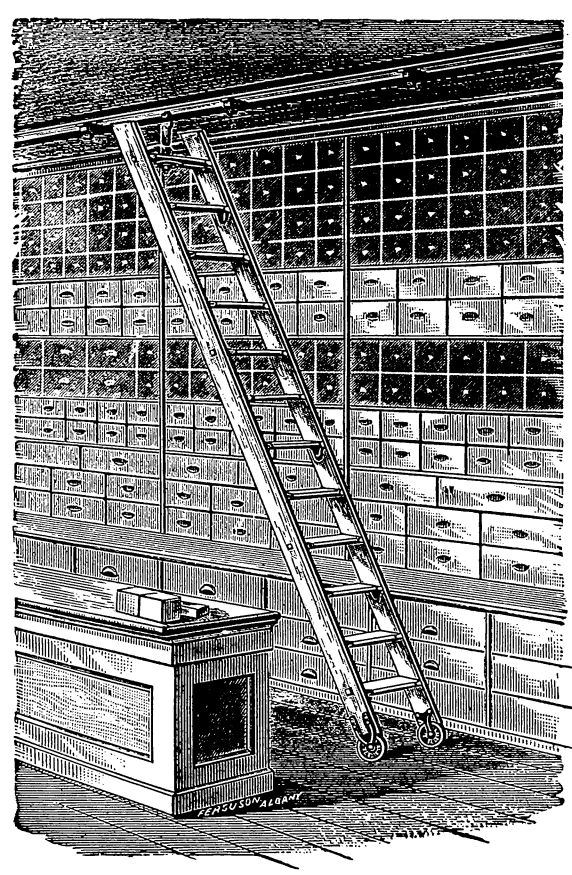
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THE "NOISELESS" STORE LADDER.



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No. 8 X.

The TORREY RAZOR STROPS are known the world over as the standard for excellence in setting a fine edge. We manufacture and carry in stock more than 150 styles.

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"Stamped with the BUCK'S HEAD."

BUCK BROTHERS EXTRA.



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The Most Complete Assortment in the U. S. of

Shank, Socket Firmer and Socket Framing Chisels.

PLANE IRONS.

Buyers are cautioned against any parties who claim a recent connection (or any connection for over 20 years) with Buck Bros., or who represent goods as our make not stamped with the **BUCK'S HEAD** or **BUCK BROTHERS** in full.

Established 1825. **Incorporated 1892.**

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NEWARK, N. J., U. S. A.

New York office, No. 90 Chambers St.

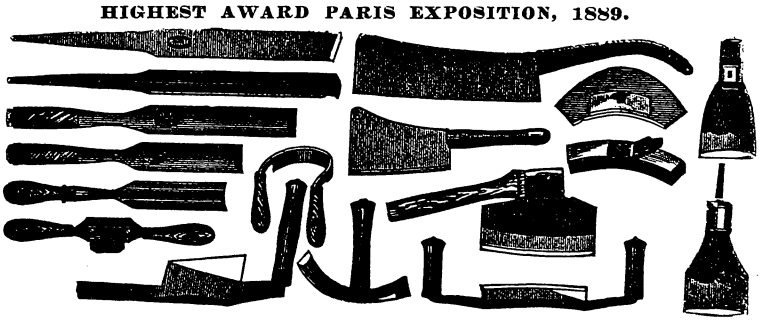
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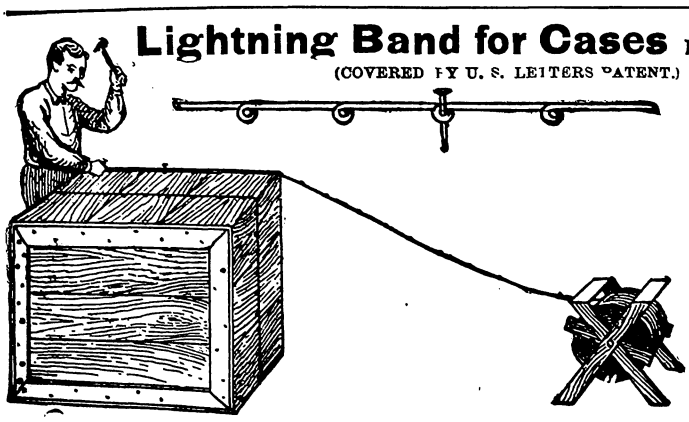
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MANUFACTURERS OF **EDGE TOOLS.**

Coopers', Carpenters' and Ship Tools, Plane Irons, Cleavers, &c. Full Line Chisels.

Lightning Band for Cases AND Crates.

(COVERED BY U. S. LETTERS PATENT.)



Mounted on reels and always ready for use and convenient to handle. Easily and quickly binds shipping cases and crates in a neat, strong and substantial manner.

PRICES:

No. 1, per reel of 2000 ft., $4.50 net.
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Plyers for cutting wire, 50 cents extra.
No. 1 for cases under 300 or 400 pounds, and No. 2 for all heavier cases.

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Sole Manufacturers,
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Commission Hardware,

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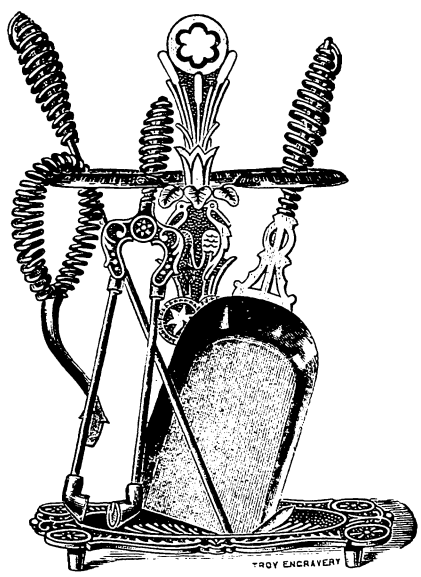
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Knives OR Razors,

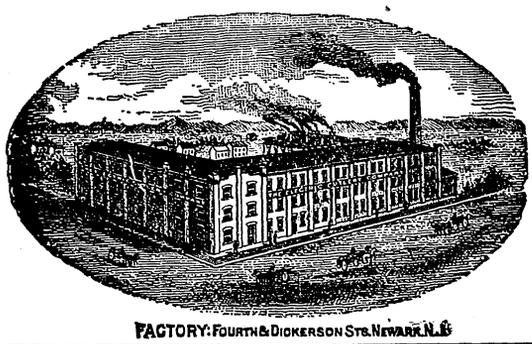
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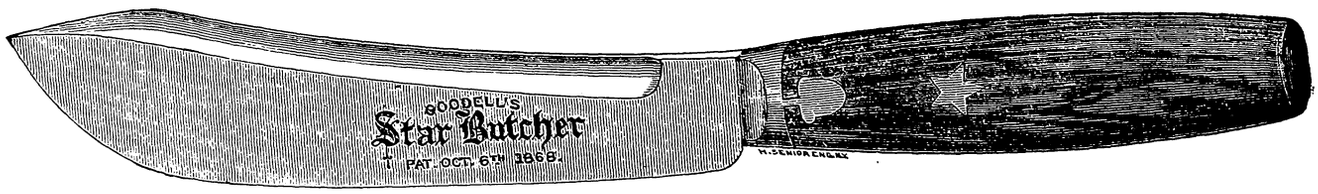


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WE DON'T KNOW HOW TO IMPROVE IT.

Blade is made of steel especially prepared for the purpose, and it is made just right; finish excellent; shape unsurpassed; the handle just fits the hand.

GENERAL APPEARANCE IRREPROACHABLE.

Made in sizes from 5 inch to 8 inch; a strictly first-class butcher knife at a moderate price.

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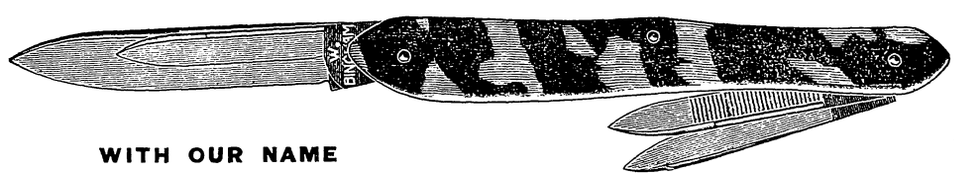
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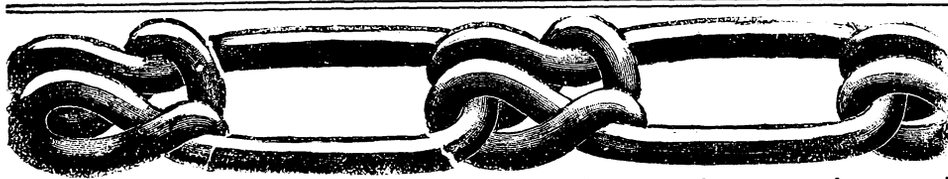
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WITH OUR NAME

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The Bridgeport Chain Co.'s Triumph Chain, made into Halters Traces, Cow Ties, Tie-outs, Kennel Chains, &c.; also cut to lengths for manufacturers' use.

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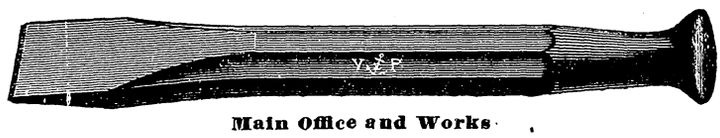
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Manufacturer of



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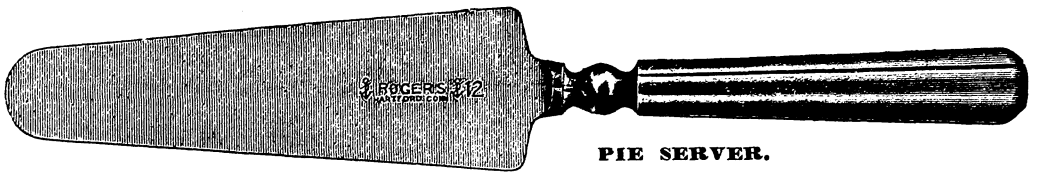
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SILVER PLATED WARE.



PIE SERVER.

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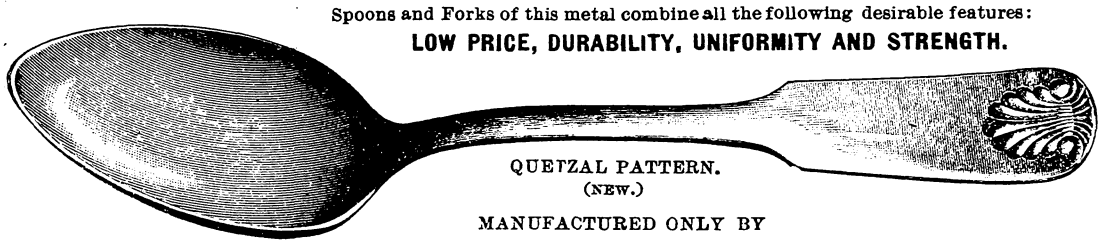
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(NEW.)

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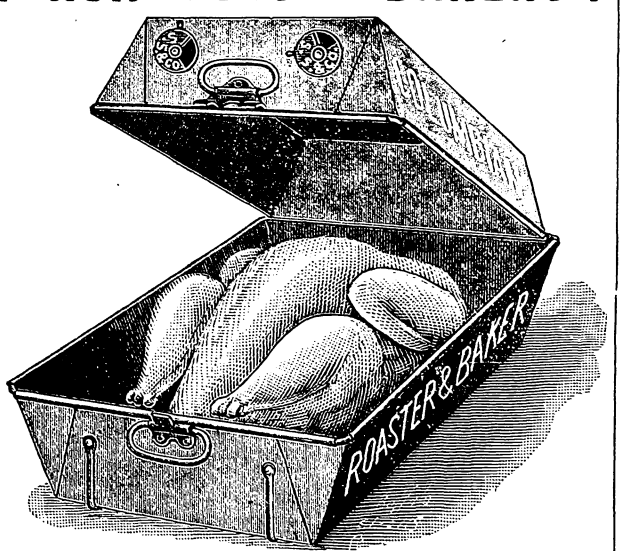
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COLUMBIAN ROASTERS AND BAKERS?

THEY OPEN AT EITHER END.

The fastenings on these pans are made of cast iron, the upper part hollowed to rest on the edge of the pan, forming a hinge. They are alike on both ends, and in combination with the handles form a simple, secure and durable lock. The wires under pan add strength and durability and allow free circulation of air underneath.

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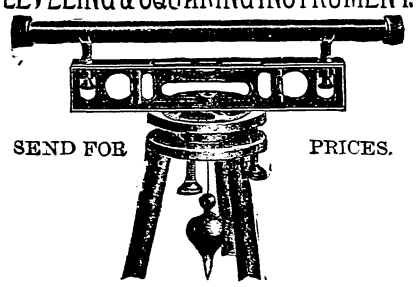
The Drain Cleaner is a hand machine used as a shovel. The dirt pan is made No. 18 Steel 3 inches deep and 12 inches long, with vertical end in rear. It has a decided advantage over other machines in dipping water and dirt. It is also used for letting down tiling in ditches, which is very convenient and saves extra labor of standing and working in muddy ditches. The iron adjusting rod can be used with great rapidity and ease and can be adjusted to pull or push with as quick a motion as may be desired. To use it in any particular shape tighten the set screw.



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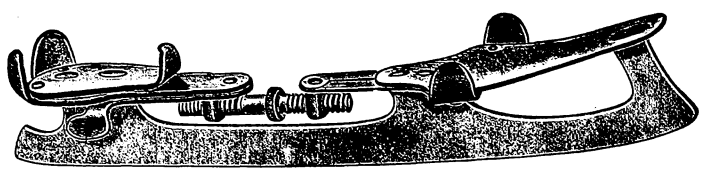
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Headquarters for Winslow Skates.

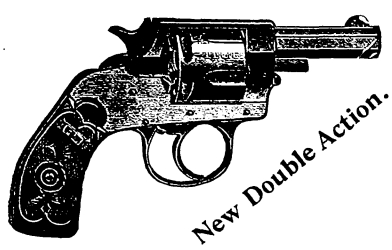
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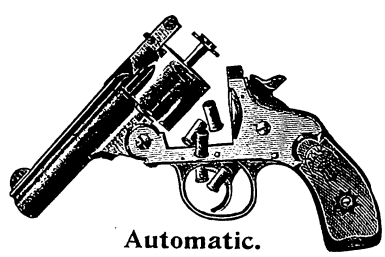


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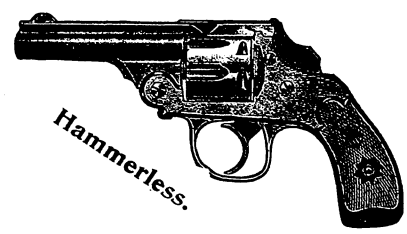
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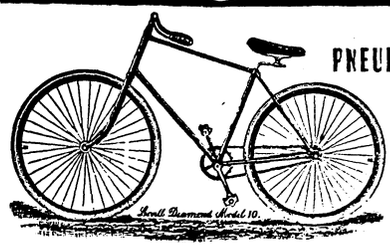
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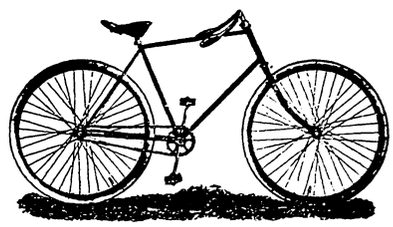
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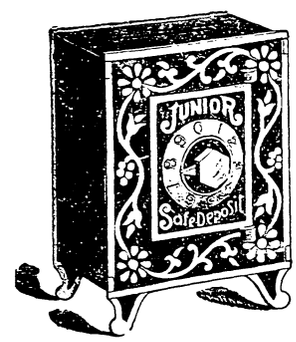


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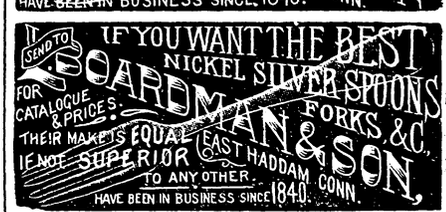


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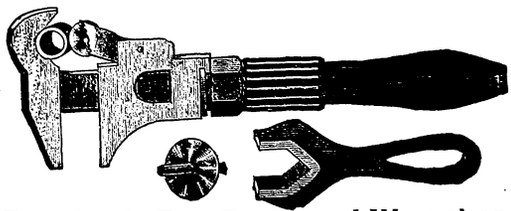




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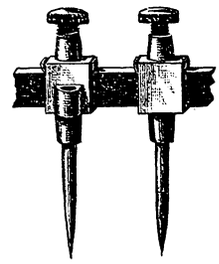
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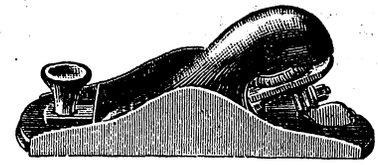




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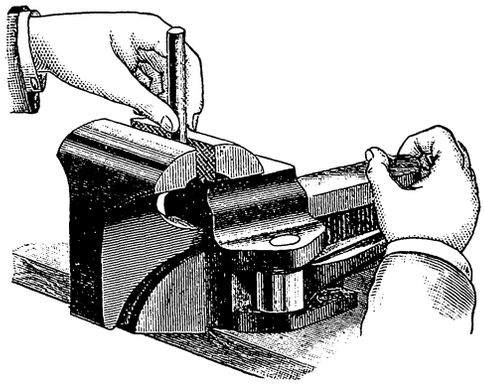




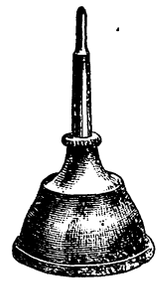


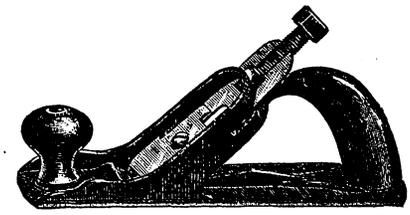


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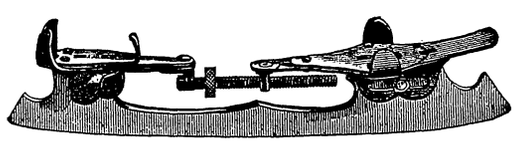
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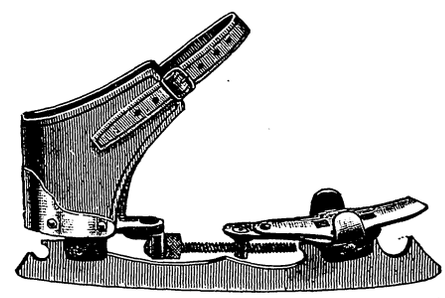
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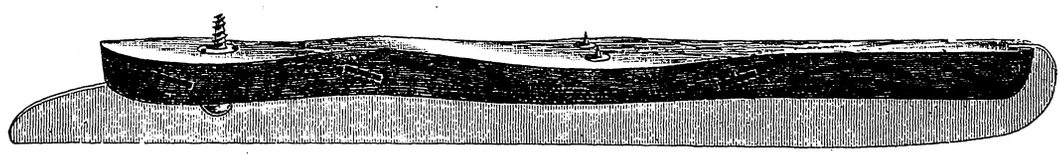
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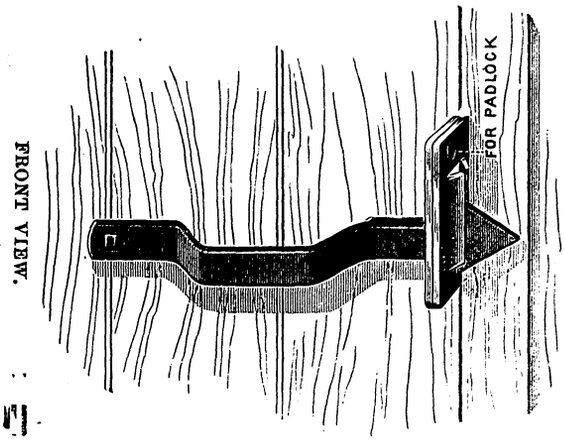
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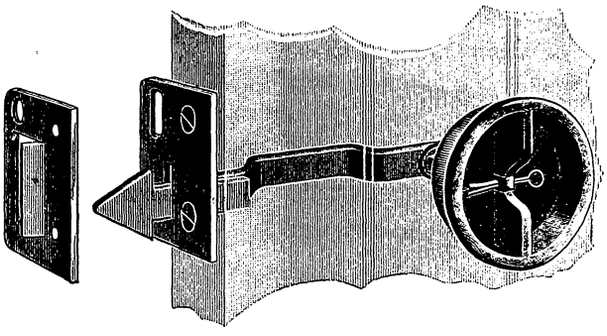
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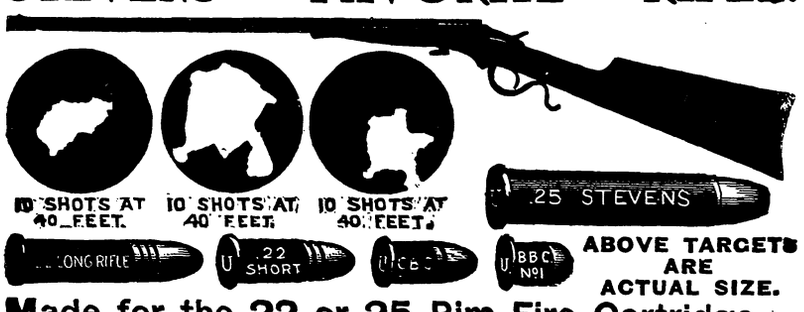
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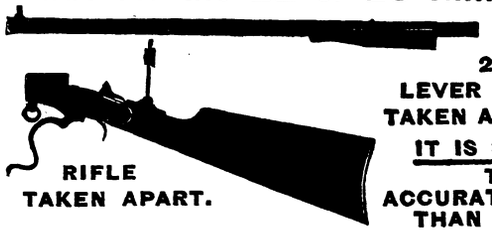
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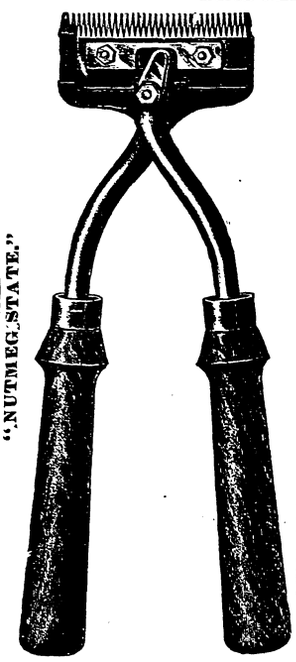
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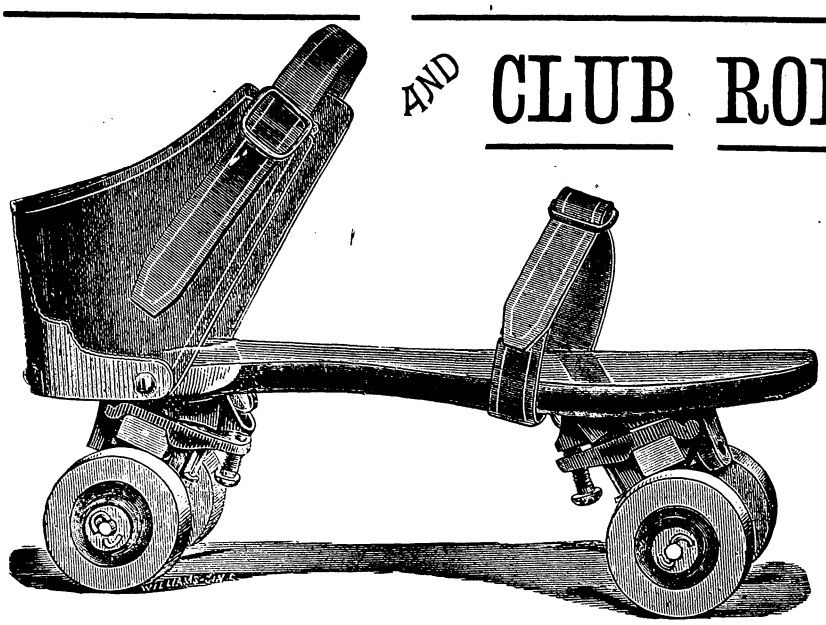
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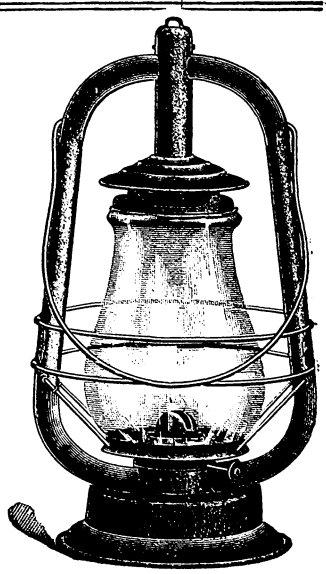


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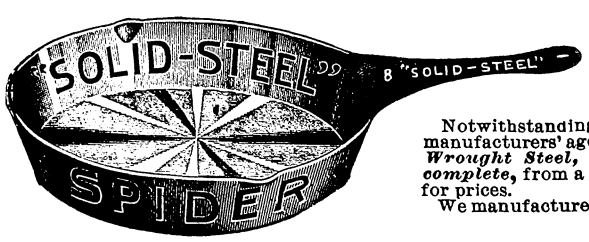
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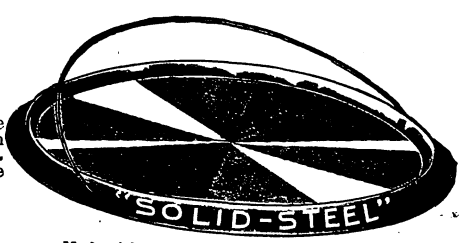


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Best Common Mouse Traps, Steak Hammers, Boot Jacks, Lap Boards, Beacon Hill Pat. Mouse Traps, Mallets, Bung Starters, Hand Screws.

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Light your Streets and Driveways.

The S. G. & L. CO.

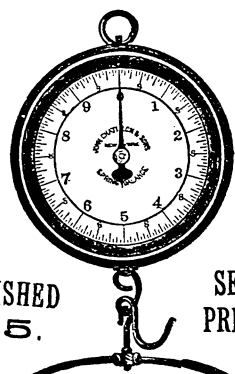
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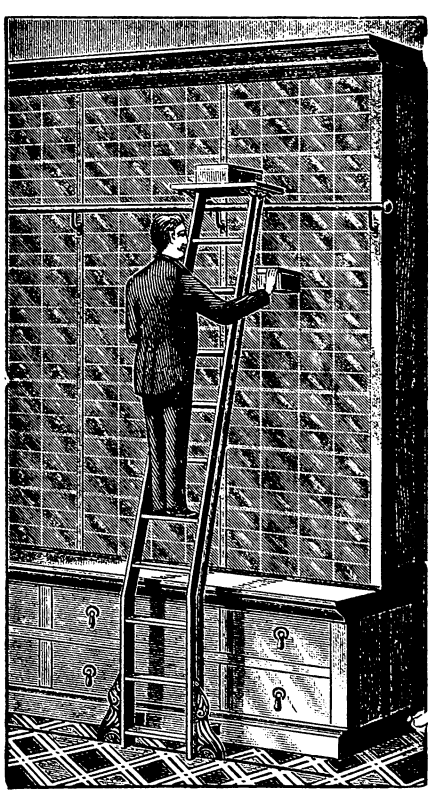
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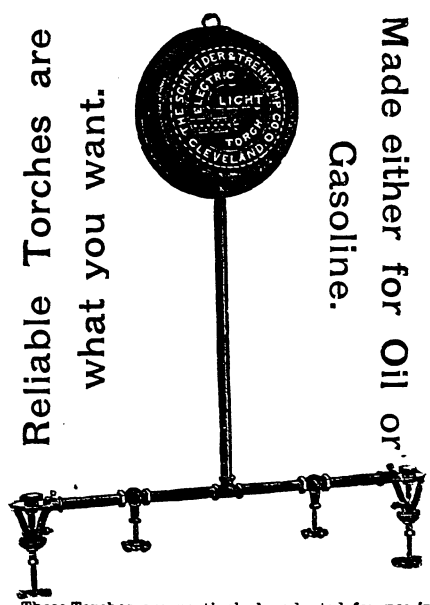
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MANUFACTURERS OF
Improved Adjustable Window Screens.
THE QUEEN ANNE. With box panels; the only screen made and finished alike on both sides.
THE EUREKA. The best cheap extension screen on the market
SCREEN DOORS. Finished all ready to hang Sticks, Corners, Improved Frames, &c.
Write for circular and Price-list.

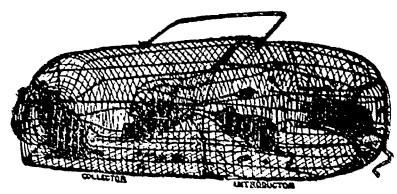
SHEETS,
COOKING UTENSILS,
MEDALS,

Sheets and Rivets for Boats and Coffins.

Bars for Horse Shoes.

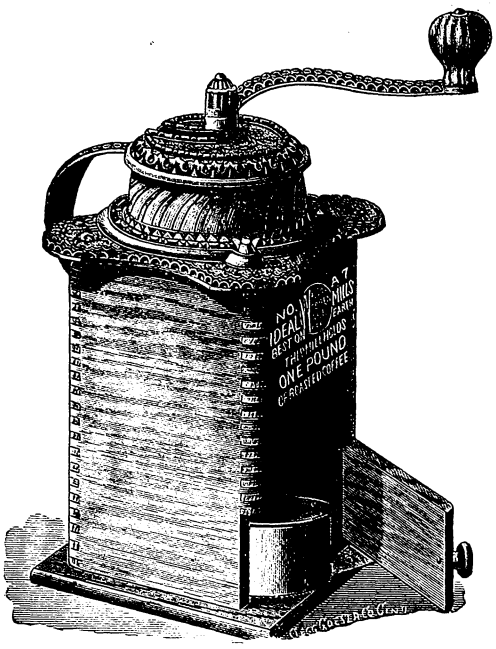
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LEMONT, ILLINOIS.

GENUINE **MARTY** RAT AND MOUSE TRAPS
ALWAYS IN STOCK.



THEY DO THE WORK.
Orders solicited. Prices on application.
BURDITT & WILLIAMS,
20 Dock Square, Boston, Mass.
—SOLE AGENTS AND IMPORTERS.—

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"Ideal"

Coffee Mills are fast becoming the Popular Sellers.

WHY ?

Because they Grind faster, are newer and have a better reputation. We can fit you in size and price.



WADDEL WOODEN WARE WORKS, Wholesale Manufacturers,
COFFEE MILLS, MONEY DRAWERS, ANIMAL TRAPS, &c., GREENFIELD, OHIO.



W. H. Neff, Cowan, Indiana. Says

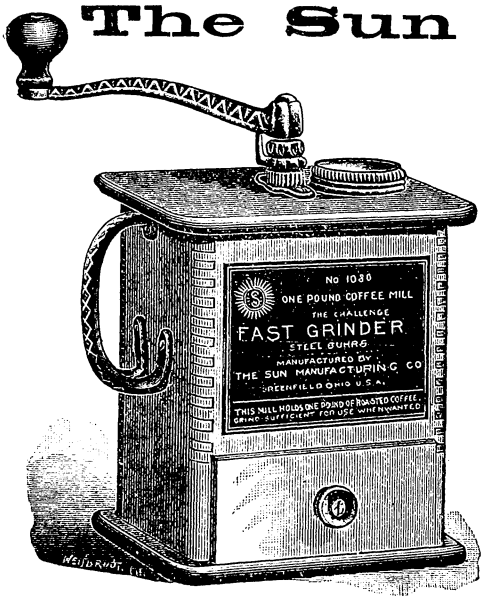
The = Perfection = Washer

is the best on earth. Crowned with laurels wherever introduced. Do you want a Washer for your own use, or do you want to handle the best Washer in the world ? If you do, get the best.

It is conceded to be the best by thousands of families who are using them to their entire satisfaction. So simple and easy to operate, a child ten years old can wash with it. Yet more durable than any washer in the market. It has a Steel Bottom, Metal Catches to hang the rubber on, Rubber Packing between the bottom and sides, which relieves the strain on the bottom by the contraction and expansion of the sides. It is handsomely painted, perfect and complete in every particular. The above statements are facts, and a glance at the Washer will convince any one. For further particulars, call on or address

W. H. NEFF, Manufacturer.

The Sun Manufacturing Co.



Successors to the Jno. M. Waddel Mfg. Co.,

ARE SOLE OWNERS AND MANUFACTURERS OF

Waddel's Improved Coffee Mills,

Cathedral Gong Money Drawer and Surprise Rat Traps.

Beware of Infringements.—We will protect our Patents.

"THE 'SUN' ONLY, SHINES FOR ALL."

A New Name, A New Reputation,

A New Line of Coffee Mills

That under the SUN Brand shine as leaders.

RAPID GRINDERS that will STAND THE WEAR.

STEEL ALLOY BUHRS,

A metal of recent discovery for this purpose used solely and only by the SUN. Warranted to outwear, outgrind and outsell any Coffee Mill ever put on the market.

We Challenge a Competing Test for Rapid Grinding and Wearing Surface.

Our New Line bears the Sun Trade Mark and is labeled **Steel Alloy Buhrs.**

Write for Our Catalogue and New Prices.

Order a Sample Mill.

THE SUN MANUFACTURING CO.,

Greenfield, - Ohio, U. S. A.,

MANUFACTURERS OF

Cash Registers, Money Drawers, Coffee Mills and Wooden Ware Specialties.

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Third and Dauphin Streets, Philadelphia.

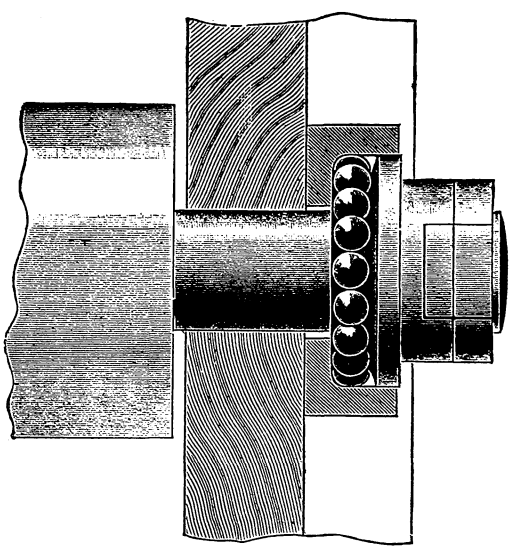
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Branch Office and Warehouse with J. C. McCARTY & Co., 97 Chambers Street, New York.



SOMETHING NEW.

A BALL BEARING WRINGER.

THE CLEVELAND. Patent App'ied for.

Only Successful one Ever Invented.

TURNS SO EASILY CAN BE OPERATED BY A CHILD.

All wearing parts revolve upon balls.

OTHER PARTS OF THE ORDINARY MACHINE IMPROVED.

STEEL SPRING AND CHANGEABLE APRON.

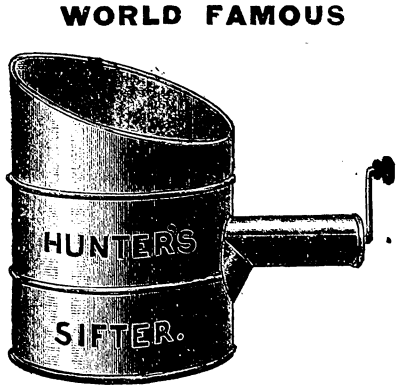
Altogether finest machine on the market. Remember this is not a roller bearing, but is made with balls in the bearings like bicycles, which we also manufacture.

FULLY GUARANTEED.

The Peerless Manufacturing Company,

Cleveland, Ohio.

TWO FEATURES,
"MERIT and QUALITY,"
THAT THE
WORLD FAMOUS



Hunter Sifters

excel in. They can be used for more purposes, last longer and sell quicker than any other make. Why? Simply because the public appreciates a good article. There are others, but *Hunter's Sifters are Best.*

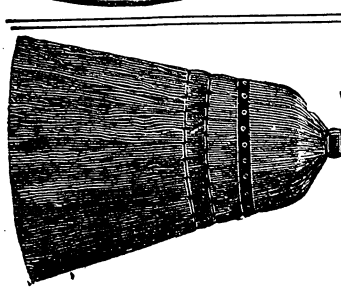
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The FRED J. MEYERS MFG. CO.,

COVINGTON, KY.

F. J. MATTISON, Eastern Agent NEW YORK.

No. 6, CORN BROOM.



JOSEPH LAY & CO.,

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MANUFACTURERS OF

BROOMS AND BRUSHES OF ALL KINDS.

Those of the Heavier Work a Specialty.

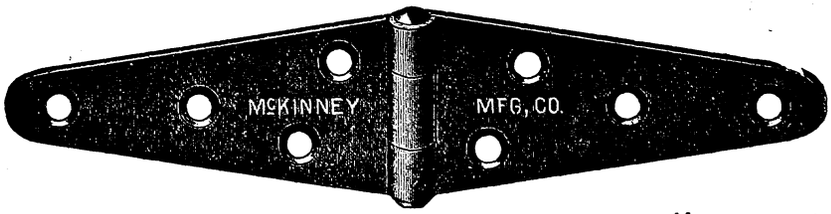
FOR RAILROAD, SHOP, WAREHOUSE, STREET, STABLE, BLOOM, CHILL, CASTING and MOULDERS' BRUSHES, &c., &c.

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WE CLAIM

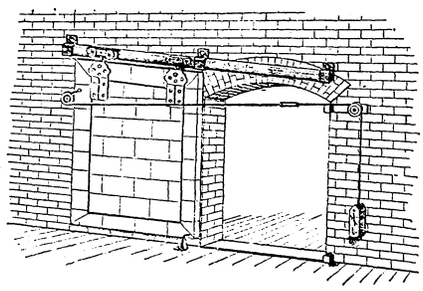
That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

McKINNEY MFG. CO., ALLEGHENY, PA.

Steel  Hinges.

SEND FOR LIST. "NONE BETTER."

BARN, MILL AND FIRE DOOR HANGERS.



Fire Door Hangers. Best in the World. Equipped with Automatic Fire Door Fittings.

HIGHEST AWARD

at WORLD'S FAIR, 1893,

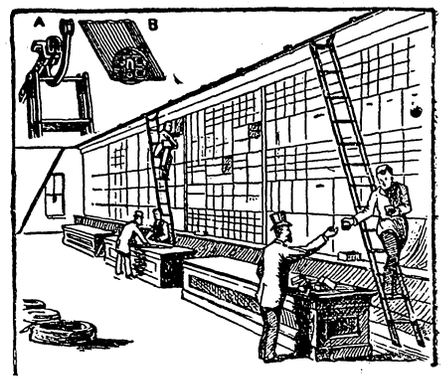
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Parlor, Barn and Fire Door Hangers.

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HOLYOKE, MASS.

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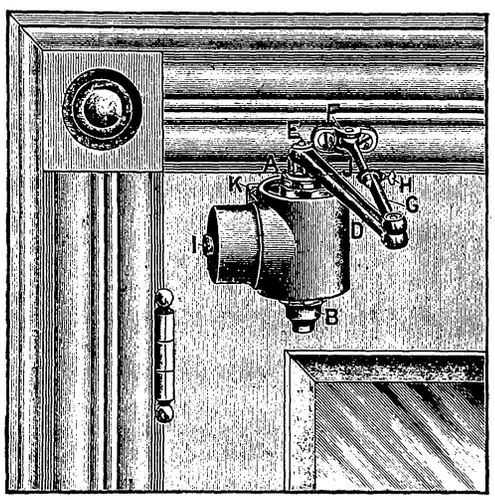


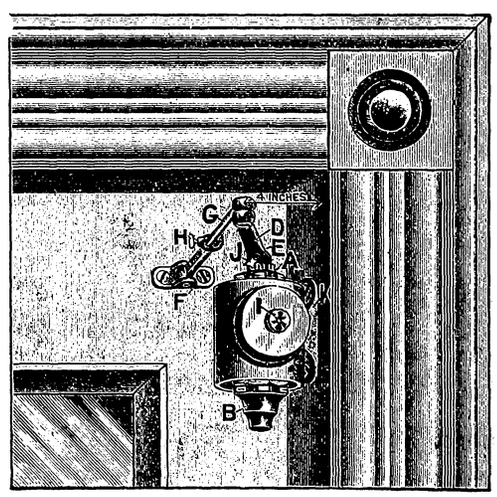
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New Britain, Conn. New York. Philadelphia. Chicago.

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Easily Adjusted and Adapted for all Requirements.





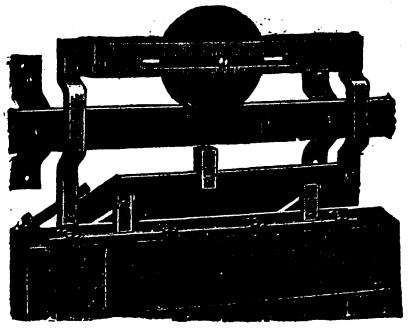
Looks Well, Acts Well, Wears Well.

LIQUID DOOR CHECKS AND SPRINGS,

Fine Builders' Hardware. Wood and Machine Screws.

Catalogues and Prices Furnished on Application.

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LANE'S PATENT NOISELESS STEEL

PARLOR DOOR HANGER.

This Hanger is made of Steel.
The Wheel is also Steel, except the filling or tread.
The Track is of Steel—a single one only.
The Hanger is Anti-Friction.
More nearly Noiseless than any other.
Ease of adjustment.

Can be erected with half the labor others require.
Track will not swell, shrink or warp out of true.
No cutting of doors.
No matching of hardware.
Simplicity in all its parts.
Durability.

ALSO LANE BARN DOOR HANGER AND TRACK. SEND FOR CIRCULARS.

Manufactured by

LANE BROS., Poughkeepsie, N. Y.

JOHN H. GRAHAM & CO., General Agents, 113 Chambers St., New York.

He had in his possession 55 skeleton keys which the police claim would open any door. —*Chicago Tribune.*

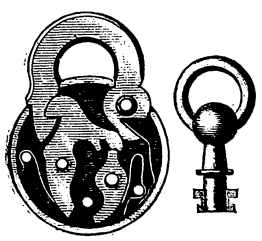
You are selling that kind of a lock every day and your customers think you are selling the best the market affords.

ARE YOU SELLING the best the market affords?

The Craig Locks are guaranteed Sneak Thief Proof.

Send for Catalogue. KEYLESS LOCK CO., I. A. 197 So. Canal St., Chicago, Ill.

PATENT PERFECTION PADLOCK.



Eight Tumblers, Key Turning Both Ways.

Sizes, ¾ inch to 2½ inches, of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, ½ and ⅝ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.
Adopted by the United States Treasury for bonded warehouses.

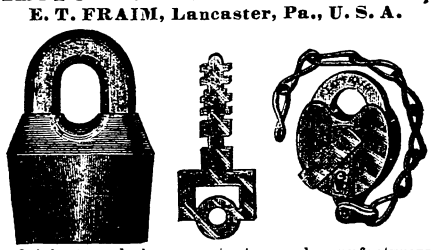
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Send for Price-Lists and Circulars.

ESTABLISHED 1879.

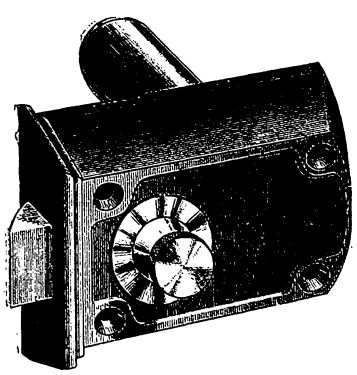
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E. T. FRAIM, Lancaster, Pa., U. S. A.



Originators, designers, patentees and manufacturers of all the leading popular styles of **PADLOCKS**, Key-Locking Scandinavian with our patent Inter-Locking Tumblers; the only reliable lock of this style ever made. **SELF-LOCKING** Scandinavian of the highest type of perfection. Dust Proof Railroad, Freight Car and Switch Padlocks. Brass, Bronze, Steel and Malleable Iron Padlocks for all purposes and in all finishes. 131 different kinds. Write for our new 100-page catalogue.

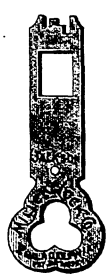
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"JACKSON"

NON-PICKABLE

ALL BRONZE NIGHT LATCH.



Made also of JAPANNED IRON with BRONZE BOLT and ESCUTCHEON.

Reversible. Adjustable. 3 Plated Steel Keys. No springs, except the bolt spring. **Awarded Best Prize** at World's Fair, Chicago. Undoubtedly the best latch extant. All are fully guaranteed. We employ no travelers and no agents. Ask your **Jobber** for our goods. Let us know if our **Cat. No. 511** is not on your file.

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4515 Tacony Street, PHILADELPHIA, PA.

SIMPLEST IN CONSTRUCTION.
EASIEST FITTED.



Cheapest and Best Balance Made.

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SAFEST "VASSAR" LOCKS AND BEST.

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READING HARDWARE COMPANY, READING, PA.

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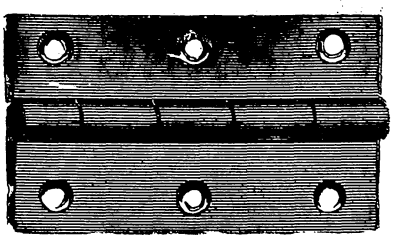
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Cast Brass Butt Hinges

IN STOCK AND FOR SALE BY

W. & J. TIEBOUT,

Nos. 16 & 18 Chambers Street, New York,

MANUFACTURERS OF

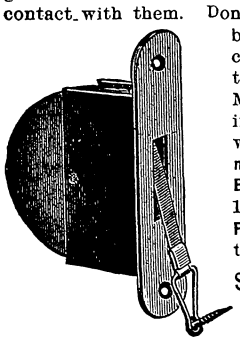
BRASS, GALVANIZED & SHIP CHANDLERY HARDWARE.

A Well Balanced Sash

IS LIKE

A Well Balanced Business Man,

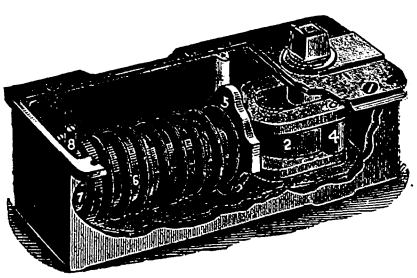
gives satisfaction to those who are brought in contact with them. Don't be inveigled into buying anything called Sash Balances that have no record. Made from light cast iron. Ask your Hardware dealer for Pullman Steel Frame Sash Balance. Warranted 15 years. Only Steel Frame Sash Balance in the world.



SIMPLE, CHEAP AND DURABLE.

PULLMAN SASH BALANCE CO., Rochester, N. Y.

New York Office, 142 Chambers St.
Chicago Office, 235 Lake St.



CHECKING SPRING HINGES

FOR SWING DOORS.

Applied in floor under door. They close the door gently, without noise or violence and stop it at once at the centre. Doors cannot sag, springs do not break or set.

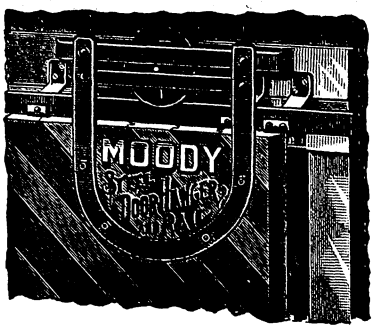
J. BARDSLEY, 149 & 151 Baxter St., New York

Illustrated Price-List on Application.



N. Y. Office, 103 Chambers St., W. H. QUINN, Manager

VICTOR MFG. CO., Newburyport, Mass.



Showing one-half set of hangers attached to door.

STEEL RAIL.

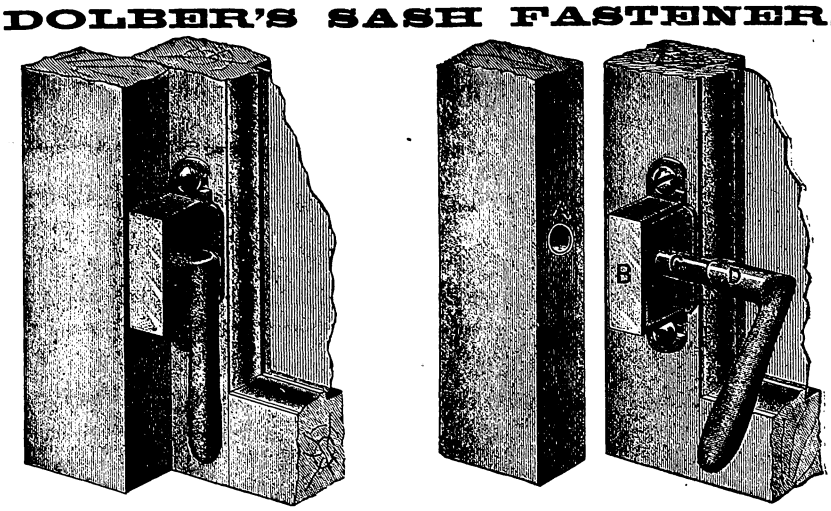


The Only Bracing Bracket Made.

PRICE-LIST.

HANGERS.	Per Doz. prs.
No. 5, to run 6 feet, 3½ in. wheel,	$10.00
No. 6, to run 10 feet, 4½ in. wheel,	15.00
No. 7, to run 15 feet, 5½ in. wheel,	22.00
RAIL, per foot	6¼ cents

DOLBER'S SASH FASTENER.



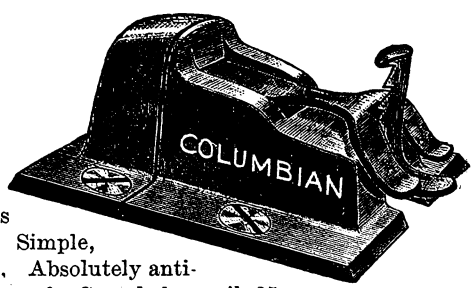
Patented August 1, 1893.

The best device ever invented for fastening outside, storm or double windows, and all similar purposes.

Saves Time, Labor and Expense.

F. V. WOOSTER, Manufacturer, - - 66 Beverly St., BOSTON.

Columbian Sash Lock.



Locks three ways with one motion. Simple, strong and durable. Absolutely anti-rattle and burglar proof. Sample by mail, 35c.

COLUMBIAN SASH & DOOR LOCK CO.,

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THE CLARK MFG. CO.,

Blind Hinges, Gate Hinges, Door Butts,

And other HARDWARE SPECIALTIES

BUFFALO, N. Y.

HARDWARE DEALERS

CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

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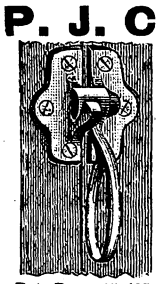
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65 Elizabeth Street,

Write for Prices. **NEW YORK.**

P. J. Conroy & Co.,

Paschall, PHILADELPHIA.



Pat. Dec. 15, '85

"CONROY" Refrigerator Door Fasteners

Have rapidly supplanted all others.

Refrigerator Trimmings.

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3 NICKLE, Silver and Bronze Metallic Figures and Letters, Sizes ½in to 3in. Pattern Letters, Steel Stamps, Brands. Dies &c. Send for Reduced Price List. We make a specialty of the Hardware Trade.

A. A. WHITE & CO., Providence, R.I.

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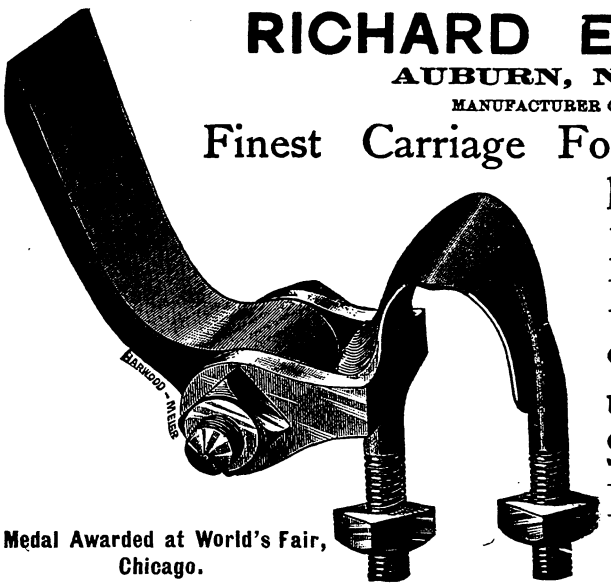


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RICHARD ECCLES,

AUBURN, N. Y.,

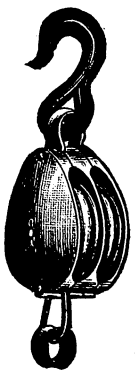
MANUFACTURER OF

Finest Carriage Forgings, Couplings, Clips, King Bolts, Fifth Wheels, &c. Manufacture a full line Special Drop Forgings.

Medal Awarded at World's Fair, Chicago.

Send for New Catalogue for Season 1893-94.

WHY USE WOODEN OR HEAVY STEEL BLOCKS



WHEN THE STEEL AND IRON

TACKLE BLOCKS

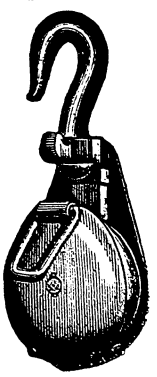
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The Cleveland Block Co.

CLEVELAND, OHIO, U. S. A.,

ARE BETTER IN EVERY WAY.

No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable



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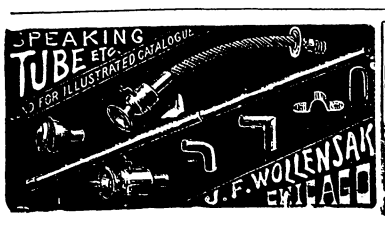
STEEL. WOOD OR IRON

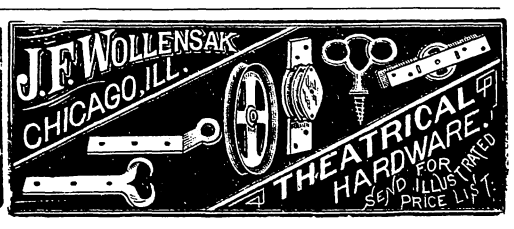
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511-513-515 Water St., TOLEDO, OHIO,

WILL PROVE SATISFACTORY TO USER.







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Pat. Jan. 20, 1880.

Cut One-half Size.

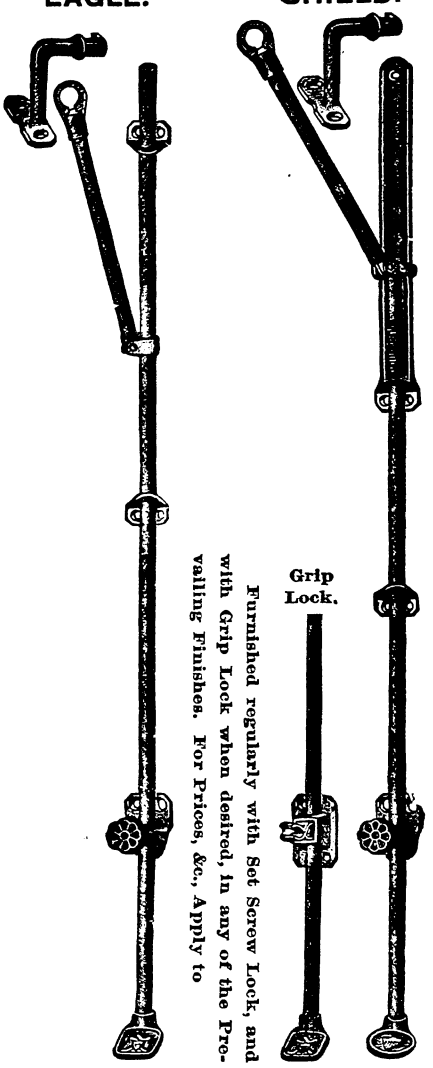
Sample pair sent to any hardware or saddlery firm by addressing

The Frost Thill Spring Co.,

Boston, Mass.

TRANSOM LIFTERS

"EAGLE." "SHIELD."



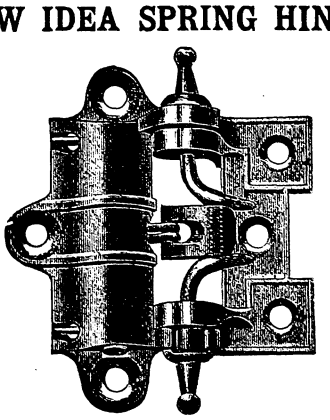
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NEW IDEA SPRING HINGE

Holds the door strongest when closed.



Resistance gradually decreases in opening

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A covered (patented) hold-back Spring Hinge. Full particulars, free Sample and Prices by mentioning this paper.

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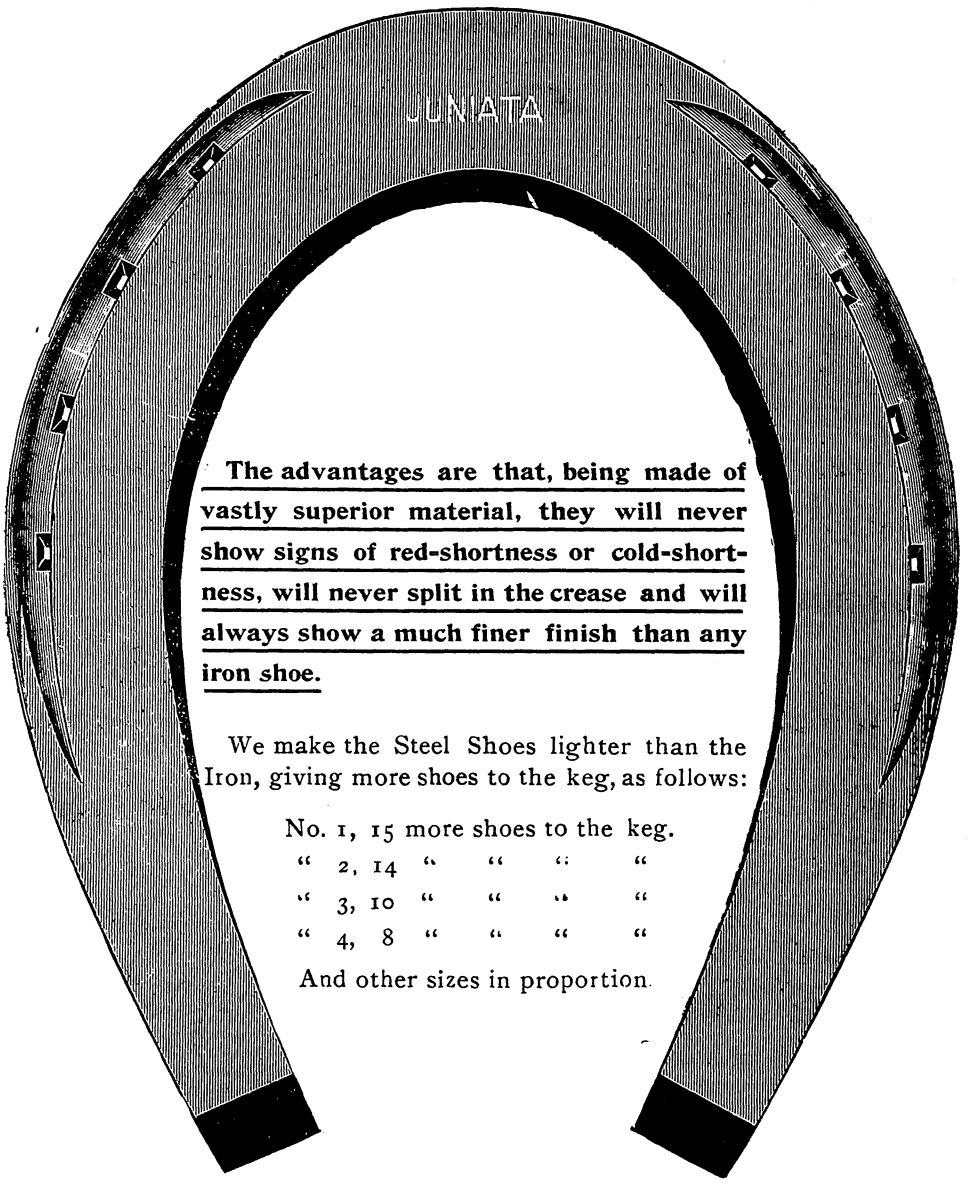
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After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged, and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



The advantages are that, being made of vastly superior material, they will never show signs of red-shortness or cold-shortness, will never split in the crease and will always show a much finer finish than any iron shoe.

We make the Steel Shoes lighter than the Iron, giving more shoes to the keg, as follows:

No. 1, 15 more shoes to the keg.
" 2, 14 " " " "
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And other sizes in proportion.

No. 2 EXTRA SWAGED FRONT.

We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

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JUNIATA IRON AND STEEL WORKS, - - - PITTSBURGH, PA.

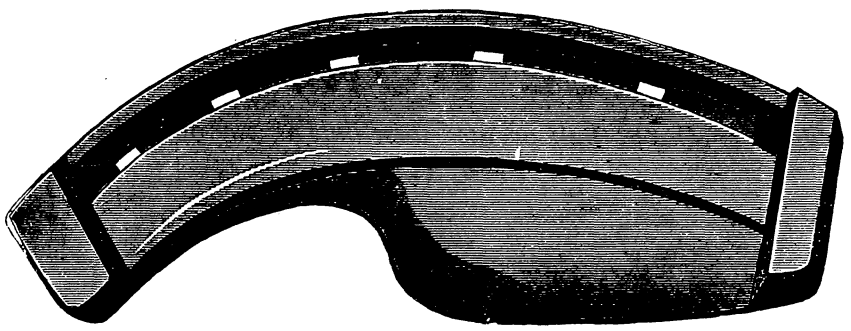
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FORGED OX SHOES.



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Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

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Superior Quality, Shape and Finish.

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JUST TRY THEM and YOU will say they excel all others.

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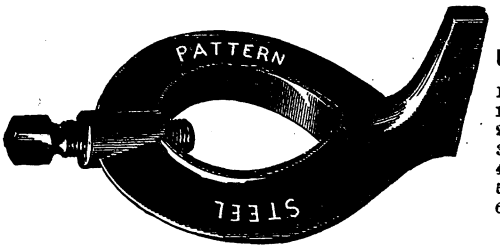
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Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Blank Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

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WITH STEEL SCREWS.

U. S. Standard.			Points Hardened.		
No.	Inch.	Price.	No.	Inch.	Price.
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2	⅜	35	8	2	1 10
3	¾	50	9	2⅛	1 40
4	1	60	10	3	1 50
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Small set of 8, $5.50. Full set of 12, $12.

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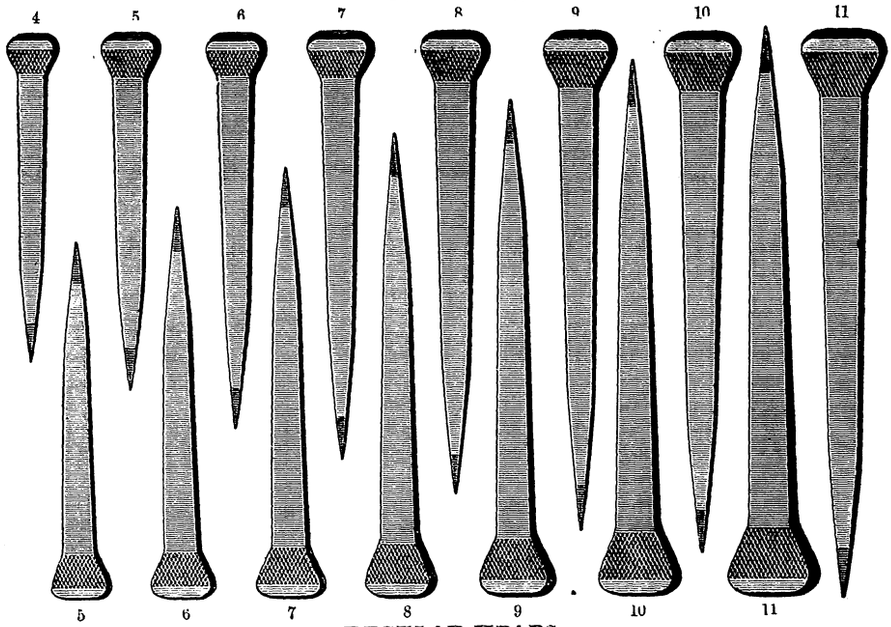
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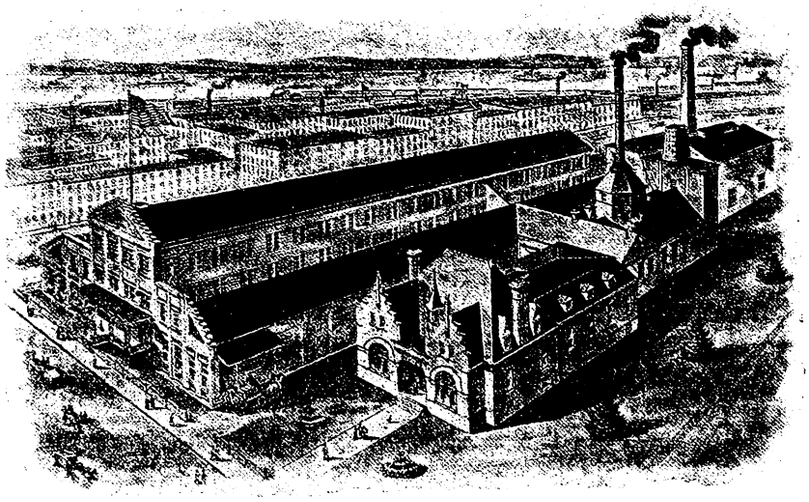
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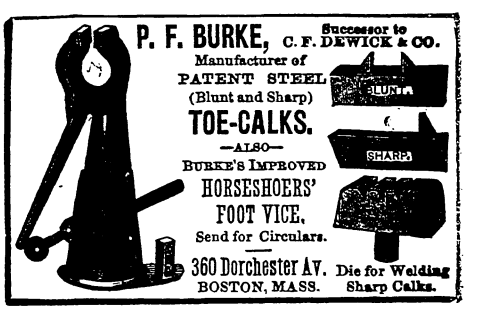
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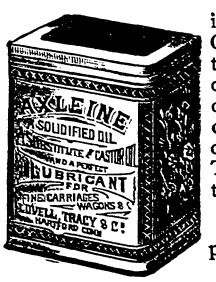
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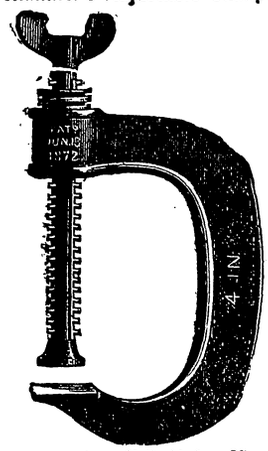
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Case-Hardened Throughout. Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal.
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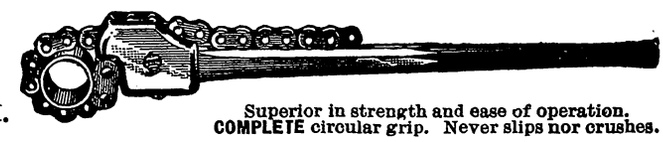
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All parts interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

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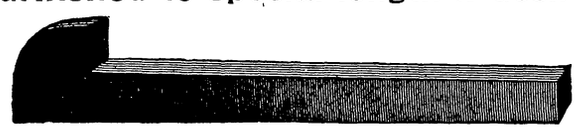


Can be used with one hand and in closer quarters than any other Basin Wrench. Parts Interchangeable.

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(Eleven Sizes, 3-16 in. to 1 in. inclusive.)
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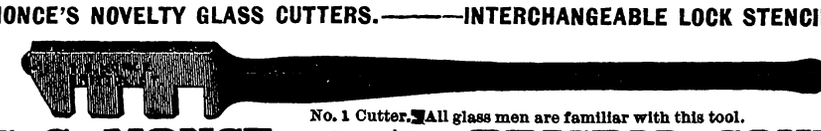


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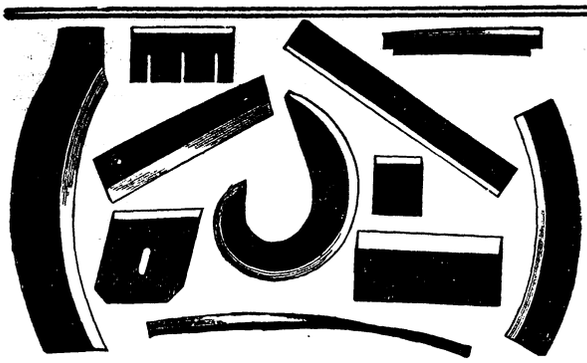
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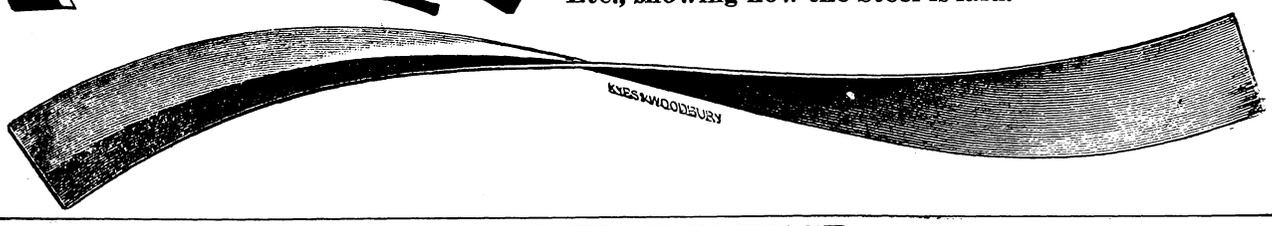
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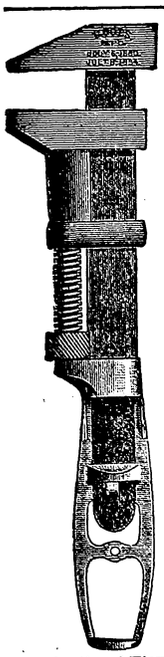
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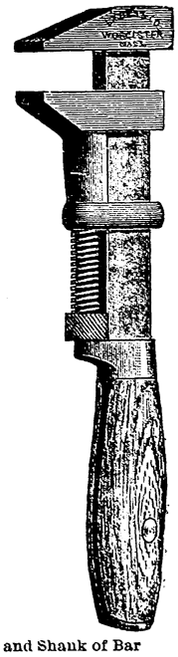
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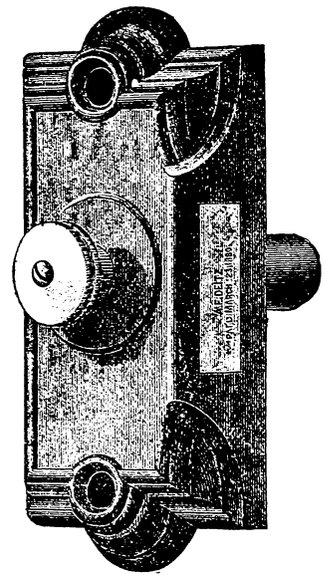
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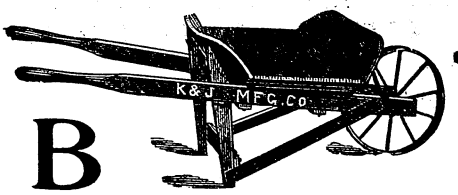
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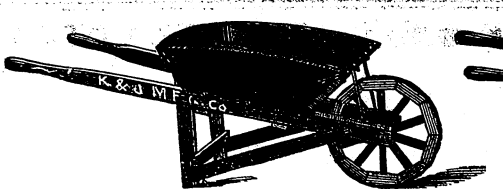
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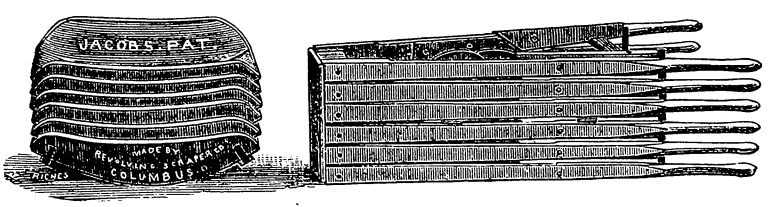
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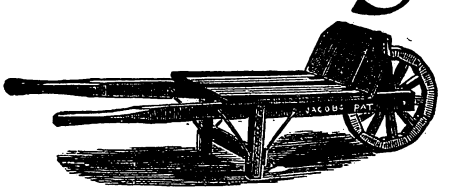
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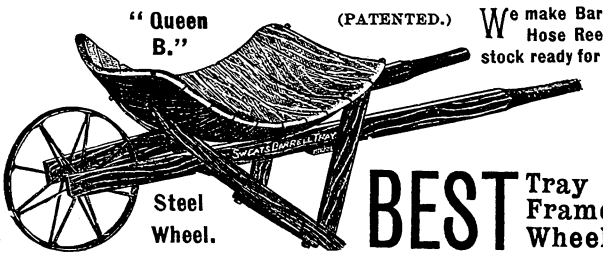
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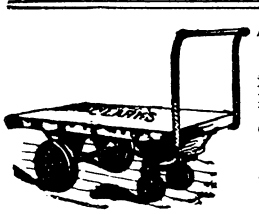


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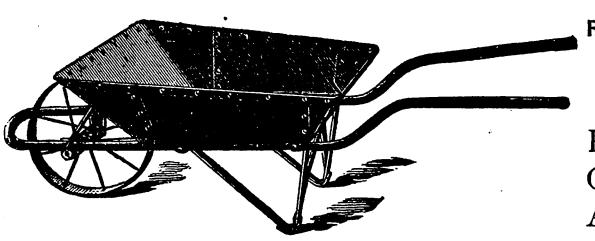


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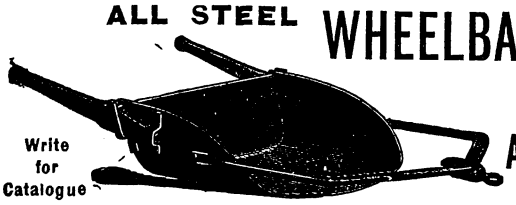
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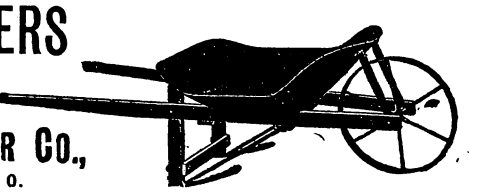
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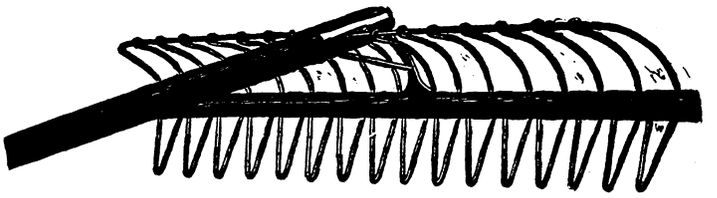
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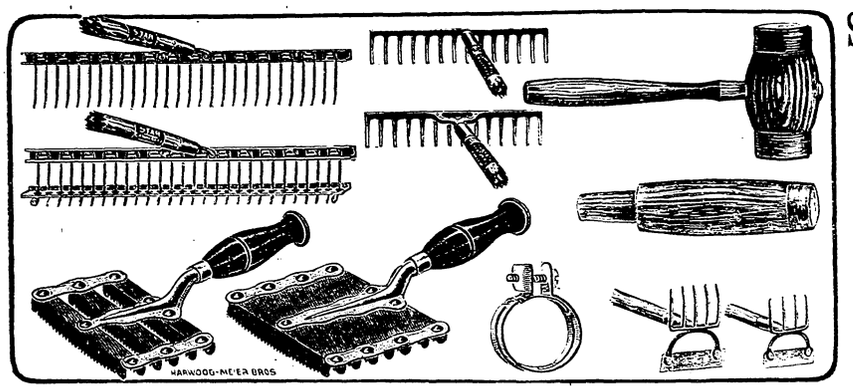
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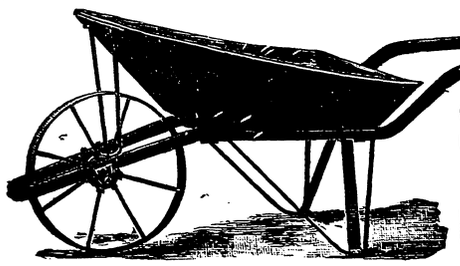
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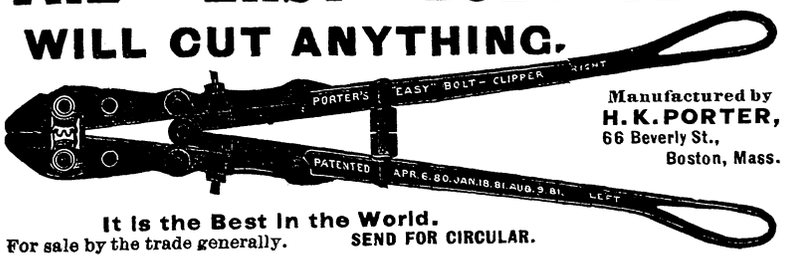
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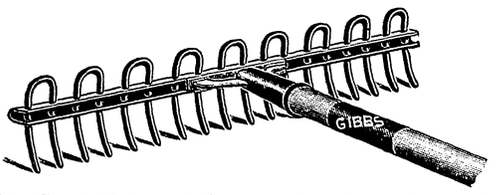
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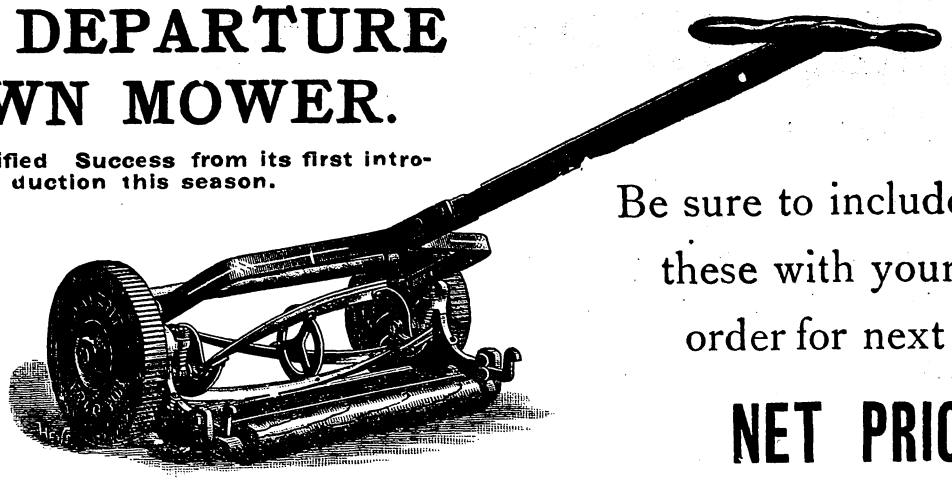
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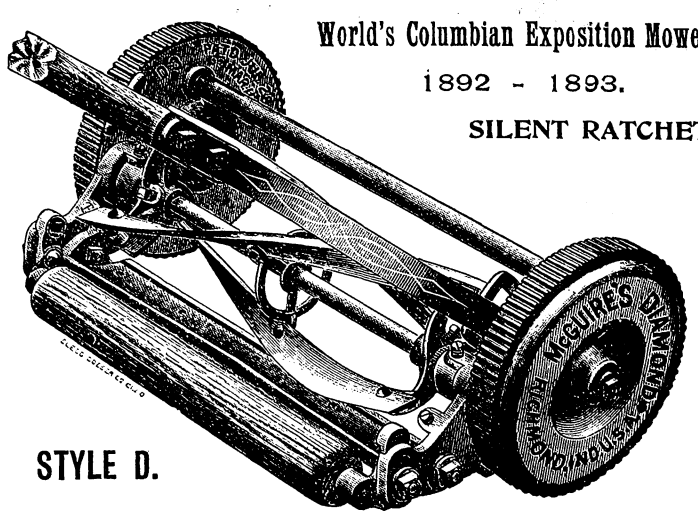
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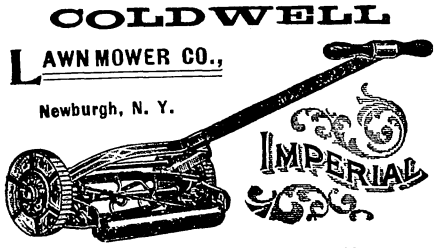
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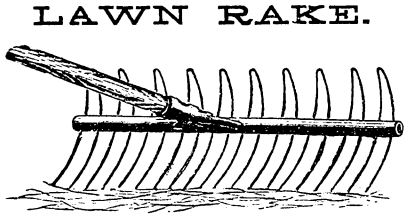
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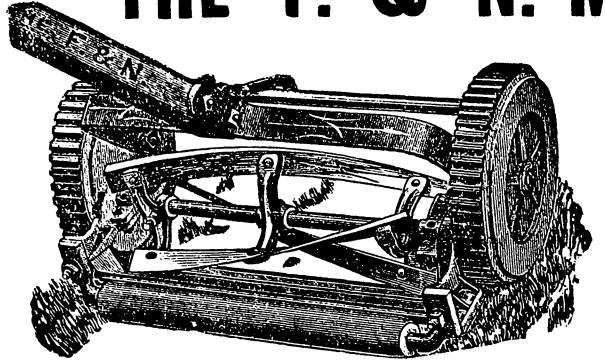
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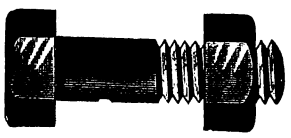
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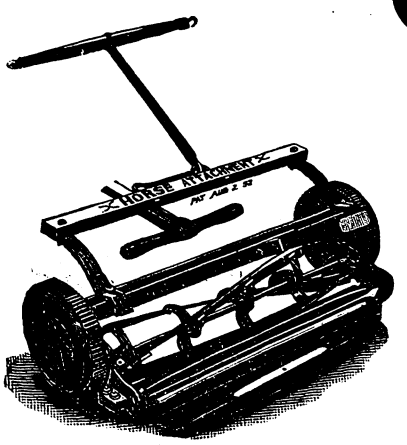
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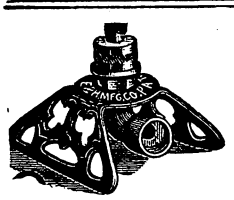
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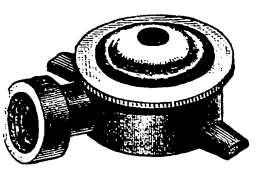
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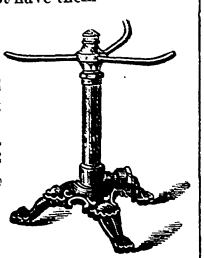


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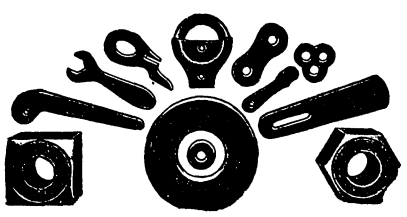
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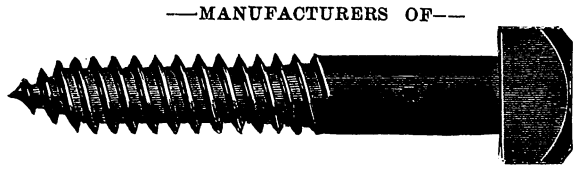
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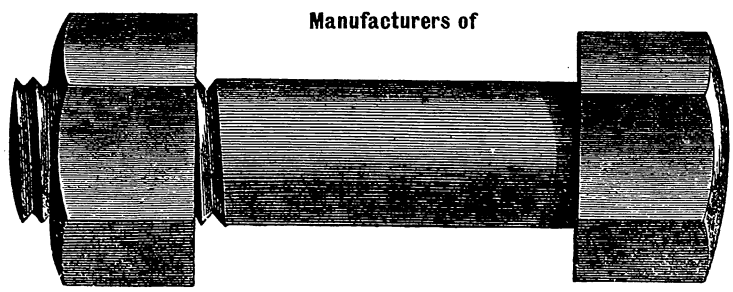
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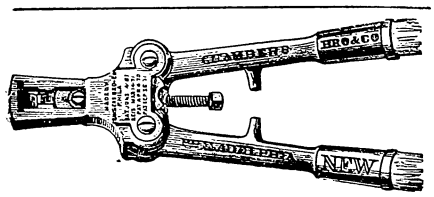


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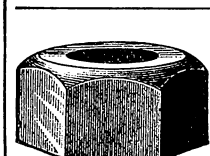
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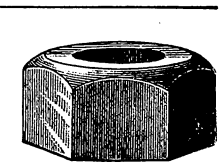
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Marine Review, Cleveland, Ohio.
Williams, David, 96-102 Reade, N. Y.
Wolcott & West, Syracuse, N. Y.

Boring Machines.
Buckeye Mfg. Co., Union City, Ind.

Boxes, Hdw. Shelf, &c.
Green, A H., 22 Park Place, N. Y.
Jones, Jesse & Co., Philadelphia, Pa.

Box Straps and Corners.
Buffalo Specialty Mfg. Co., Buffalo, N. Y.

Brackets.
Atlas Mfg. Co., New Haven, Conn.

Brass, *Manufacturers of.*
Ansonia Brass & Copper Co., N. Y.
Davol, John & Sons, 100 John, N. Y.
Plume & Atwood Mfg. Co., N. Y.
Randolph & Clowes, Waterbury, Conn,
Scovill Mfg. Co., Waterbury, Conn.
Waterbury Brass Co., 296 B'way, N. Y.

Brass Butt Hinges.
Tiebout, W. & J., 16 & 18 Chambers,

Brass Founders.
Best, Fox & Co., Pittsburgh, Pa.
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Cramp, Wm. & Sons, S & E. B. Co., Philadelphia, Pa.
Emory, P. P. Mfg. Co., Springfield, Mass.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Fraim, E. T., Lancaster, Pa.
Haight & Clark, Albany, N. Y.
Keys, W. W. & R. M. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Phila., Pa.
Reeves, Paul S., Philadelphia.

Brass Goods.
Brass Goods Mfg. Co., 88 Chambers,

Bread and Cake Knives.
Clauss Shear Co., Fremont, O.

Bridge Builders.
Berlin Iron Bridge Co., East Berlin, Ct
Boston Bridge Works, Boston, Mass.
Wrought Iron Bridge Co., Canton, O.

Bronze (Tobin).
Ansonia Brass & Copper Co., 19-26 Cliff Street, N. Y.

Brooms and Brushes.
Lay, Jos. & Co., Ridgeville, Ind

Builders' Hardware.
Corbin, P. & F., New Britain, Conn.
Deitz, A. E., 97 Chambers St., N. Y.
Reading Hdw. Co., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Butchers' Steels.
Chatillon, John & Sons, 85-89 Cliff St., N. Y.
Hoffman, C. & A., Philadelphia, Pa.

Butcher and Shoe Knives, *Manufacturers of.*
Chatillon, John & Sons, 85-89 Cliff St., N. Y.
Goodell Co., Antrim, N. H.
Wilson, John, Sheffield, England.

Butts and Hinges.
McKinney Mfg. Co., Alleghany, Pa.
Sabin Machine Co., Montpelier, Vt.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Calipers and Dividers.
J. Stevens Arms and Tool Co., Chicopee Falls, Mass.
Starrett, L. S., Athol, Mass.

Can Makers' Tools and Machines.
Niagara Stamping and Tool Co., Buffalo, N. Y.

Car Axles.
Roberts, A. & P. & Co. Phila.

Carboy Stands.
Hillebrand & Wolf, Philadelphia, Pa.

Car Wheels.
Whitney, A. & Sons, Phila.

Carriage Hardware, *Makers of.*
Covert's Saddlery Works, Farmer, N.Y.
Eccles, Richard, Auburn, N. Y.
Scranton Forging Co., Scranton, Pa.
Smith, H. D. & Co., Plantsville, Conn.
Wilcox & Howe Co., Birmingham, Conn.

Cartridge Reloading Tools.
Ideal Mfg. Co., New Haven, Conn.

Casters, Wheel, &c.
Clark, G. P., Windsor Locks, Conn.

Castings, Iron and Steel.
Ames Sword Co., Chicopee, Mass.
Arcade Malleable Iron Co., Worcester Mass.
Booth, The Lloyd, Co., Youngstown, O.
Burgess & Loxley, Buffalo, N. Y.
The Burr & Houston Co., Brooklyn, N.Y.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Cheney, S. & Son, Manlius, N. Y.
Chester Steel Casting Co., Phila.
Chrome Steel Works, Brooklyn, N. Y
Dayton Malleable Iron Co., Dayton, O.
Ette & Henger Mfg. Co., St. Louis, Mo.
Eureka Cast Steel Co., Chester, Pa.
Flagg, Stanley G. & Co., Phila.
Garland Foundry Co., Cleveland, O.
Haight & Clark, Albany, N. Y.
Hammer & Co., Branford, Conn.
Herrick, J. A., 284 Pearl St., N. Y.
Johnson, I. G. & Co., Spuyten Duyvil.
Mahoning F'dry & Mch. Co., Danville, Pa.
Palmers & De Mooy, Cleveland, O.
Sessions Foundry Co., Bristol, Conn.
Shilling Fdy. Co., Columbus, O.
Spencer's, I. S., Sons, Guilford, Conn.
Standard Fdy. & Mfg. Co., Cleveland, O
Standard Steel Casting Co., Thurlow, Pa.
Taylor Iron & Steel Co. High Bridge, N.J.
Totten & Hogg Iron & Steel Fdry Co., Pittsburgh, Pa.
Union Mfg. Co., 103 Chambers St., N.Y.
Wetherill, Robt. & Co., Chester, Pa.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Conn
Link-Belt Engineering Co., Phila. Pa.
McKay, Jas. & Co., Pittsburgh, Pa,

Chimneys.
Phila. Engineering Works., Phila., Pa

Chisels, *Manufacturers of.*
Buck Bros., Millbury, Mass.
White, L. & I. J. Co., Buffalo, N. Y.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Smith & Egge Mfg. Co., Bridgeport.
Union Mfg. Co., 103 Chambers, N. Y.
Whiton, D. E. Mach. Co., New London, Conn.

Clamps.
Hammer & Co., Branford, Conn.
Le Count, C. W., So. Norwalk, Conn.

Clipping Machines.
Hotchkiss, E. S., Bridgeport, Conn.
McCoy, Jos. F. & Co., 26 Warren St.

Coal.
Barns, C. K. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills.
Sun Mfg. Co., Greenfield, O.
Waddel Wooden Ware Works, Greenfield, O.

Coke.
Barns, C. K. & Co., Philadelphia, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Rainey, W. J., Cleveland, O.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, Francis, Philadelphia, Pa.

Collections.
Hardware Board of Trade (Limited) 4 and 6 Warren, N. Y.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conveying Machinery.
Brown Hoisting & Conveying Machine, Co., Cleveland, Ohio.
Jeffrey Mfg. Co., Columbus, O.
Link Belt Engineering Co., Phila., Pa.

Copper.
Ames Sword Co., Chicopee, Mass.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
New Haven Copper Co., 294 Pearl, N.Y.
Randolph & Clowes, Waterbury, Conn.
Wister, Francis, Philadelphia, Pa.

Coppersmith.
Emory, P. P. Mfg. Co., Springfield, Mass.

Cordage.
Samson Cordage Works, Boston, Mass.

Cork Screws.
Williamson, C. T. Wire Novelty Co Newark, N. J.

Cornice Brakes.
Robinson, J. M. & Co., Cincinnati, O.

Corrugated Furnaces.
Continental Iron Wks, Brooklyn, N.Y

Corrugated Iron.
Cambridge Roofing Co., Cambridge, O
Moseley Iron Bridge & Roof Co., 5 Dey N. Y.

Counting Machines.
Durant, W. N., Milwaukee, Wis.
Osborn, G. Edw. & Co., New Haven, Ct

Coupling.
Almond, T. R., Brooklyn, N. Y.

Coverings, Boiler and Pipe.
Johns, H. W. Mfg. Co., 87 Maiden Lane.

Cranes.
Detroit Foundry Equipment Co., Detroit, Mich.
Halsey, W. S. & Co., Birdsboro, Pa.
Harrington, E. Son & Co., Phila., Pa.
Maris & Beekley Philadelphia, Pa.
Ridgway Craig & Sons, Coatesville, P
Sellers, Wm. & Co., Inc., Phila., Pa.
Yale & Towne Mfg. Co., Stamford Conn.

Cupolas, Hot-Blast.
Colliau, Victor, Detroit, Mich.
Detroit Fdry. Equipment Co., Detroit Mich.

Cutlery Cases.
Torrey, J. R. & Co., Worcester, Mass.

Cutlery, *Importers of.*
Field, Alfred & Co., 93 Chambers St. New York.
Gurney, Fred B., 116 Chambers St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N.Y.

Cutlery, *Manufacturers of.*
Bingham, W. Co., Cleveland, Ohio.
Clauss Shear Co., Fremont, O.
Dame, Stoddard & Kendall, Boston Mass.
Electric Cutlery Co., 113 Chambers, N Y
Goodell Co., Antrim, N. H.
Northampton Cutlery Co., Northampton, Mass.
Schmactenberg Bros., 98 Chambers Street, N. Y.
Wilson, John, Sheffield, England.

Dampers.
Shepard, Sidney & Co., Buffalo, N. Y.

Dies.
Wilson, J. Fred, Worcester, Mass.

Dog Collars.
Chapman Mfg. Co., Meriden, Conn
Union Hardware Co., Torrington, Ct.

Door Checks and Springs.
Corbin, P. & F., New Britain, Conn.

Door Knobs.
Bardsley, J., 149 & 151 Baxter St., N. Y

Door Latches.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.

Drain Cleaners.
Buckeye Mfg Co., Union City, Ind.

Drawing Instruments.
Keuffel & Esser Co., 127 Fulton St., N.Y

Drilling Machines.
Bickford Drill & Tool Co., Cinn., Ohio
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower and Forge Co., Lancaster, Pa.
Colburn, A. M., New Haven, Conn.
Dallett, Thos. H. & Co., Philadelphia.
Dwight Slate Machine Co., Hartford Conn.
Halsey, Jas. T., Philadelphia, Pa.
Hamilton Mch. Tool Co., Hamilton, O.
Herrick & Cowell, New Haven, Conn.
Norton & Jones Machine Tool Wks Plainville, Conn.
Penna. Diamond Drill & Mfg. Co. Birdsboro, Pa.
Quint, A. D., Hartford, Conn
Sellers, Wm. & Co., Inc., Phila., Pa
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O.
Woodward & Rogers, Hartford, Conn.

Drop Forgings.
Belden Mach. Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn
Boone, W. C. Mfg. Co., Boonton, N. J
Eccles, Richard, Auburn, N. Y.
Herbrand Co., Fremont, O.
Merrill Bros., Brooklyn, N. Y
Miner & Peck Mfg. Co., New Haven, Ct
Phila. Drop Forge Co., Philadelphia, Pa.
Scranton Forging Co., Scranton, Pa.
Spiers, J. C. & Co., Worcester, Mass.
Williams, J. H. & Co., Brooklyn, N. Y
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.
Wyman & Gordon, Worcester, Mass.

Drop Presses.
Bliss, E. W. Co., Brooklyn, N. Y
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J.

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Miner & Peck Mfg. Co., New Haven Conn.
Robinson, J. M. & Co., Cincinnati, O.
Stiles & Parker Press Co., Brooklyn N. Y.
Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Dumb Waiters.
Storm Mfg. Co., Newark, N. J.

Dust Beaters.
Peabody & Parks, Troy, N. Y.

Dynamite.
New York Powder Co., 62 Liberty St N. Y.

Dynamos.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Detroit Dynamo Co., Detroit, Mich.
Lovell Mfg. Co., Ltd., Erie, Pa.
Zucker & Levett Chemical Co., 10 to 14 Grand St., N. Y.

Edge Tools. *Makers of.*
Buck Bros., Millbury, Mass.
Buffalo Edge Tool Wks., Buffalo, N. Y.
Plumb, Fayette R., Philadelphia, Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
North Bros. Mfg. Co., Philadelphia.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St., New York
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines.
Colburn Electric Mfg. Co., Fitchburg, Mass.
Hanson & Van Winkle Co., Newark, N. J.

Electro-Platers.
Boardman, L. & Son, East Haddam Ct.

Elevators. *Makers of.*
Link-Belt Engineering Co., Phila., Pa.
Morse, Williams & Co., Phila., Pa.
Salem F'dry & Mch. Co., Salem, Mass.

Emery and Emery Wheels.
Bell, Geo. E., 36 John St. N. Y.
Grant Corundum Wheel Mfg. Co. Worcester, Mass.
N. Y. Belting & Packing Co., Ltd., N. Y.
Northampton Emery Wheel Co
Leeds, Mass.
Norton Emery Wheel Co., Worcester Mass
Sterling Emery Wheel Co., 174 Fulton St., New York.

Enamels.
Nubian Iron Enamel Co., Cragin, Ill.

Engineers and Contractors.
Aiken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amster & Co., Pittsburgh, Pa
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa
Witherow, Jas. P. Co., Pittsburgh; Pa.

Engines, Gas.
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg. N. Y.

Engines, Steam. *Makers of.*
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Erie Engine Works, Erie, Pa.
Lane & Bodley Co., Cincinnati, O.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Phœnix Iron Wks. Co. Meadville, Pa.
Shipman Engine Co., Boston, Mass.
Southwark Foundry and Machine Co. Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.
Sweester, W. A., Brockton, Mass.

Expansion Bolts.
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O

Faucets, Self-Measuring.
Lane Bros., Poughkeepsie, N. Y

Faucets, Wooden. *Makers of.*
Boston & Lockport Block Co., Boston Mass., and Lockport, N. Y.
John Sommer's Son, Newark, N. J.

Feed-Water Heaters.
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N. Y
Harrison Safety Boiler Wks. Phila, Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hartman Mfg. Co., Ellwood City, Pa.
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire & Iron Wks., Milwaukee

Files. *Importers of*
Moss, F. W., 80 John, N. Y.

Files and Rasps, *Manufacturers of*
Arcade File Works, Anderson, Ind
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.

Fire Brick. *Makers of.*
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer B. & Sons, foot E. Houston, St
McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro., Woodbridge.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Fishing Tackle.
Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flour Sifters.
Meyers, F. J. Mfg. Co, Covington, Ky

Flower Stands.
Cincinnati Mfg. Co., Cincinnati, O.

Flue Cleaners.
Mackey, Jas. T., St. Louis, Mo.

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Foreign Periodicals.
Stechert, G. E., 810 Broadway, N. Y.

Forges, Portable, &c.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila. Pa.
Scranton Forging Co., Scranton, Pa.

Foundry Facings.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.

Foundry Riddles.
Estey, W. S. 65 Fulton, N. Y.

Foundry Supplies.
Colliau, Victor, Detroit, Mich.
Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O

Friction Clutches.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.
Evans Friction Cone Co., Boston, Mass

Fruit Presses.
Enterprise Mfg. Co. Philadelphia, Pa.

Gas Producers.
Wood, R. D. & Co. Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast, Henry B. & Co., Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
D. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glass Tubes.
Ashcroft Mfg. Co., 111 Liberty St., N. Y.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.
Supplee Hardware Co,, Phila., Pa.

Grass Hooks.
Bruce & Marks Mfg. Co., Gas City, Ind.

Grinding and Polishing Machines.
Herrick & Cowell, New Haven, Conn.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grindstone Dressing Machinery
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gun Implements.
Union Hdw. Co., Torrington, Conn.

Gunpowder. *Makers of.*
Laflin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich.

Handles.
New York Mallet and Handle Wks. 456 E. Houston St., N. Y.

Hangers, Door.
Coburn Trolley Track Mfg. Co., Holyoke, Mass
Cronk Hanger Co., Elmira, N. Y.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Hotchkiss, E. S. Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Graham, John H. & Co., 113 Chambers,
McCoy, Jos F. Co., 26 Warren St., N. Y
Stokles, Sweet & Lyon, 35 Barclay, N. Y,

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co. New Haven, Conn.
Clark Mfg. Co., Buffalo, N. Y.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Gwinner Mfg. Co., Hamilton, O.
Haines & Zimmerman, Phila. Pa.
Hart, T. C Mfg. Co., Detroit, Mich.
Hilis, Edwin, Plainville, Conn.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
New Britain Hdw. Mfg. Co., New Britain, Conn.
North Bros. Mfg. Co., Philadelphia, Pa
Peabody & Parks, Troy, N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
Weiland, Chas., 149 Chambers St., N. Y
Wilson, J. Fred, Worcester, Mass.

Hardware, Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Bruce & Marks Mfg. Co., Gas City, Ind.
Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co. Cleveland, Ohio.
Copeland & Bacon, 85 Liberty St. N. Y
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hollow Ware, Aluminum.
Illinois Pure Aluminum Co. Lemont, Ill

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, *Makers of.*
Cadwell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt,

Horse and Mule Shoes. *Makers of.*
Bryden Horse Shoe Co., Catasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phœnix Horse Shoe Co., Poughkeepsie N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.

Hose.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N. Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Shavers.
Enterprise Mfg. Co., Philadelphia, Pa.

Injectors.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York
Sherwood Mfg. Co., Buffalo, N. Y.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. Hartford Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y

Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron, *Merchants.*
Barnes, C. K. & Co., Philadelphia, Pa
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Bradley & Co., Philadelphia
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co. 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St. N. Y
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, *Importers.*
Abbott Wheelock & Co. N. Y. and Boston
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet. *Manufacturers of.*
Cambridge Iron & Steel Co., Cambridge Ohio.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladders, Rolling.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.

Ladles.
Detroit Fdy. Equipment Co., Detroit, Mich.

Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.

Lanterns.
Ohio Lantern Co., Tiffin, Ohio.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls N. Y.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mowers.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Champion Mfg. Co., Richmond, Ind.
Coldwell Lawn Mower Co., Newburg N. Y.
Dille & McGuire Mfg. Co., Richmond, Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Mast, Foos & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila. Pa.

Lawn Rakes.
Gibbs Mfg. Co, Canton, Ohio.
Konler, F. E. & Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse N. Y.

Lawn Sprinklers.
Ette & Henger Mfg. Co., St. Louis,
McGowan, John H. Co., Cincinnati O

Lemon Squeezers.
Ripley Mfg. Co., Unionville, Conn.

Letters and Figures, Metallic
White, A. A. & Co., Providence, R. I.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.

Locks & Knobs, *Manufacturers of*
Deitz, A. E., 97 Chambers, N. Y
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg Co. Bridgeport, Conn
Yale & Towne Mfg. Co., Stamford, Conn

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Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Sement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N.Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 13 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N.Y
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila. Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct
Henley Mch. Tool Wks. Richmond Ind.
Hill, Clarke & Co., Boston, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield Vt
Lodge & Shipley Mch. Tool Works, Cincinnati, O.
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists' Supply Co. Rochester, N.Y
Manville, E. J. Mch. Co., Waterbury, Conn
National Machinery Co., Tiffin, Ohio
Newark Mch. Tool Works, Newark, N.J
New Haven Mfg. Co., New Haven, Conn
New York Mach'y Depot, N. Y.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Prentiss Tool & Supply Co., N. Y
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ld., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.
Adt, Jno. & Son, New Haven, Conn.

Machine Knives.
Loring Coes & Co., Worcester, Mass

Machine Screws.
New Britain Hdw. Mfg. Co., New Britain, Conn.

Machine Tools.—*See Machinery.*

Machine Work.
Papping, J., 58th St., & 11th Ave., N.Y. City.

Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y
Starrett, L. S., Athol, Mass.
Vallentine Tool Co., Hartford, Conn.

Machinists' Tools and Supplies.
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.

Mallets.
N. Y. Mallet & Handle Works, N. Y

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St., N.Y.
Lufkin Rule Co., Saginaw, Mich.

Meat Cutters and Stuffers.
Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Instruction.
Correspondence School of Mechanics Scranton, Pa.

Metals.
Fearing, Wm. S., 100 Chambers, N. Y
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
American Metal Co., N. Y.

Metallurgists.
Britton J. Blodgett, Phila.

Milling Machines.
Cin. Milling Mch. Co., Cincinnati, Ohio.

Mincing Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
Darby, Edw. & Sons Phila. Pa.
Leonard, B. E., Scranton, Pa.

Mining Screens.
Harrington & King Perforating Co Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y

Mirrors.
Rice, C. F., Chicago, Ill.

Molding Sand.
Obermayer, S. Co., Cincinnati, O.

Motors, Water and Electric.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington,
Pottstown Iron Co., Pottstown, Pa
Riverside Iron Wks, Wheeling, W. Va.

Neck Yokes.
Johnson, S. C., Racine, Wis.

Nickel Platers' Supplies.
Colburn Electric Mfg. Co., Fitchburg, Mass.
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett Chemical Company. 10 to 14 Grand St., N. Y

Norway Shapes, *Rollers of.*
Rowland, William & Harvey, Frankford, Philadelphia

Novelty Manufacturers.
Franklin, H. H. Mfg, Syracuse, N. Y.

Nut Machines.
Dunham Nut Mch. Co., Unionville, Ct

Nuts, Bolts, &c., *Makers of.*
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R. I
Blake & Johnson, Waterbury, Conn.
Haskell, Wm. H. Co., Pawtucket, R. I.
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Port Chester Bolt and Nut Co., Port Chester, N. Y.
Russell, Burdsall & Ward, Port Chester
Sternbergh, J. H. & Son, Reading, Pa
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R. I.

Oil Cups and Lubricators.
Sherwood Mfg. Co., Buffalo, N. Y.

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
Glazier Stove Co., Chelsea, Mich.

Ores.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Morrison, Robt., St. Louis, Mo.
N. Y. Belting & Packing Co. Ltd., N.Y.

Padlocks.
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Miller Lock Co., Philadelphia, Pa.

Paint.
Dixon, Jos. Crucible Co., Jersey City, N.J

Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O

Paint Cans.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Patent Solicitors.
Howson & Howson, Phila. & Wash'gton.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co. Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., Boston, Mass.
Haik & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

Pile Drivers.
Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast Henry B. & Co., Philadelphia.
Saunder's Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c., *Makers of.*
McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas. *Makers of.*
Cumberland Nail & Iron Co., Phila, Pa
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W Va.
Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.

Planes, *Manufacturers of.*
Stanley Rule & Level Co., N. Y

Plate, Iron and Steel, *Mfrs of*
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa
Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.

Polishing Machines.
Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
La Massena, C. E. & Co., Newark, N.J.

Post Hole Diggers.
Buckeye Mfg. Co., Union City, Ind.
Wister, L & R, & Co., Philadelphia, Pa.

Poultry Nettings.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N, Y
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Wks. Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
Laflin & Rand Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y

Power Hack Saws.
Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Jenkins & Lingle, Bellefonte, Pa.
Long & Allstatter Co., Hamilton, Ohio.

Presses, Dies, &c.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J.
Niagara Stamping & Tool Co., Buffalo, N. Y.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn

Presses, Power. *Makers of.*
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct,
Merriman, A. H., Meriden.
Niagara Stamping and Tool Co., Buffalo, N. Y.
Robinson, J. M. & Co., Cincinnati, O.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
Keystone Clutch Mch. Wks., Phila., Pa.
Lake, J. H. & D. Co., Massillon, Ohio,
Reeves Pulley Co., Columbus, Ind.

Pulley Fixings.
Foley, J. W. & Co., Cincinnati, O.

Pulverizing Mill.
Bradley Fertilizer Co., Boston, Mass.

Pumping Machinery.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Hooker-Colville Steam Pump Co., Chicago, Ill.
Lucas, C. O. & Co., Greenville, Ohio.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa
Valley Pump W'ks, Easthampton, Mass
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, *Makers of.*
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Mast, Foos & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J.
Henderer, A. L., Wilmington, Del.
Long & Allstatter Co., Hamilton, Ohio.
Niagara Stamping and Tool Co. Buffalo, N. Y.
Robinson, J. M. & Co., Cincinnati, O.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
Perry, W. H. & Co., Providence, R. I.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Estey, W. S. 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.
Sun Mfg. Co., Greenfield, O.

Razors.
Electric Cutlery Co., 113 Chambers, N. Y
J. R. Torrey Razor Co., Worcester, Mass

Reels.
Hendryx, A. B. Co., New Haven, Conn

Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.

Rivets.
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Troy, N. Y.
Cobb & Drew, Plymouth, Mass.
Henderson, Jas. S., 165 Greenwich, N.Y.
New England Screw Co., Boston, Mass.
Plymouth Mills, Plymouth, Mass.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Rock Drills.
Sand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd, Co., Youngstown, O.
Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning F'dry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd, Co., Youngstown, O.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh Pa.

Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Johns, H. W Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y

Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa.

Rubber Goods.
Canfield, H. O., Bridgeport, Conn.

Rules, *Manufacturers of.*
Keuffel & Esser Co., 127 Fulton St., N.Y
Lufkin Rule Co., Saginaw, Mich.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Pullman Sash Balance Co., Rochester, N. Y.
Vanderbilt Sash Balance Co., Canandaigua, N. Y.

Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.
Cincinnati Corrugating Co., Piqua, O.

Sash Fasteners.
Wooster, F. V., Boston, Mass.

Sash Locks.
Columbian Sash & Door Dock Co., Wauseon, Ohio.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Portable Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.

Saws, *Makers of.*
Disston, Henry & Sons, Phila., Pa.
Hiles, C. A. & Co., 336-338 Carroll Ave Chicago, Ill.
National Saw Co., 96 Reade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Taintor Mfg. Co., 84-86 Chambers, N

Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N. Y

Scrapers, Road.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.

Screens, Coal and Ore.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Screens, Door and Window.
Queen Anne Screen Co., Burlington, Vt.

Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Capitol Mfg. Co., Chicago, Ill.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.

Screws, *Makers of.*
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
National Screw & Tack Co., Cleveland, Ohio.
New England Screw Co., Boston Mass.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls N. Y

Scythe Stones and Whetstones.
Pike Mfg. Co., Pike Stat'n, N. H.
Cleveland Stone Co., Cleveland, O.

Shafting, *Makers of.*
Cresson, Geo. V., Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Fitzsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc. Phila. Pa.
Stow Co. Mfg, Binghamton, N. Y.

Shaped Iron and Steel,—*Manufacturers of.*
Ætna-Standard Iron & Steel Co. Bridgeport, O.

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Allentown Rolling Mill, Allentown, Pa
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville Pa
Roberts, A. & P. & Co., Phila., Pa.
The Phœnix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn
Heinischs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, *Manufacturers of.*
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh,
Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ld., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch. A. B. & Co., Peoria, Ill.

Sinks.
Douglas, W. & B., Middletown Conn.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Sickels, Sweet & Lyon, 35 Barclay St., N. Y
Union Hardware Co., Torrington, Conn
Winslow, Sam'l, Skate Mfg. Co. Worcester, Mass.

Skates, Roller.
Henley, M. C., Richmond, Ind.
Winslow, Saml., Skate Mfg. Co., Worcester, Mass

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.
Clendenin Bros., Baltimore, Md.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.

Speed Indicators.
Church & Sleight, 109 Fulton St., N. Y.

Spelter.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
Rogers & Hamilton Co., Waterbury, Conn.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y

Springs.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y
Morgan Spring Co., Worcester, Mass
Nourse, Fred. Co., 315 to 319 E. 22d St., N. Y.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt
Tuck Mfg. Co., Brockton, Mass
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Bardsley, J., 149 & 151 Baxter St., N.Y.
Pullman Sash Balance Co., Rochester N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St, New York

Stamping Works.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co. Binghamton N.Y

Steam Gauges.
Ashcroft Mfg. Co., 111 Liberty St., N.Y
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., *Makers of.*
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y
Trethewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Camden, N.J.

Steam Separators.
Goubert Mfg. Co., 32 Cortland St N. Y.
Harrison Safety Boiler Wks. Phila. Pa

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.

Steel Figures and Alphabets.
Krogsrud, W., 61 Fulton N. Y.
Wolff, C. H., 177 William St., N. Y.

Steel Importers.
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 9 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa
Boker, Hermnan & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Elken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 9 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburg Pa
Moss, F. W., 83 John N. Y
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co. High Bridge, N.J
Wordlaw, S. & C., Sheffield, Eng
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn

Steel, *Manufacturers' Agents.*
Barnes, C. K. & Co., Philadelphia, Pa
Corning, Edw, & Co., 29 B'way, N. Y
Frasse Co., 19 Warren St., New York.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, *Manufacturers of.*
Bethlehem Iron Co., S. Bethlehem, Pa
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville Pa
Riverside Iron Wks., Wheeling, W. Va

Steel, Tool.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill,
Croissant, M., Albany, N. Y.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunder's Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y

Stove Pipe Thimbles.
Cheney, S. & Son Manlius, N. Y

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.
Gwinner Mfg. Co., Hamilton, O.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse N. Y.

Strops.
Electric Cutlery Co. 113 Chambers, N.Y
J. R. Torrey & Co., Worcester, Mass.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co. La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation. Boston. Mass
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland O.
Phillips, E. & Sons, South Hanover
Plymouth Mills, Plymouth, Mass.
Trefant, W. E., Whitman, Mass

Tank Heaters.
Hunt, Helm & Ferris, Harvad, Ill,

Taps and Dies.
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tinning Process.
Sands, Thomas, Nashua, N. H.

Tin Plate Machinery.
Lloyd Booth Co., Youngtown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St.,

Tire Upsetters.
Butts & Ordway, Boston, Mass,

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N.Y.

Tools.
Brown, R. H. & Co., New Haven, Conn.
Frasse Co., 19 Warren St., New York.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.
Tower & Lyon, 95 Chambers St., N. Y.

Tools, Blacksmith and Wheelwrights.
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R. Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasolene.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.

Transom Lifters.
Wollensak, J. F. Chicago, Ill.

Tree Protectors.
McCallip Fence & Wire Wks., Columbus, Ohio.

Trucks. *Manufacturers of.*
Berger Bros., Philadelphia, Pa.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co. Lansing Mich.

Tubes, Seamless Drawn Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.
Leng's John S. Son & Co., 4 Fletcher St., New York.
Shelby Steel Tube Co., Shelby, O.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills. *Makers of.*
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 56 John N. Y.
Mason Regulator Co., Boston, Mass.

Ventilating Fans.
Huyett & Smith Mfg. Co., Detroit, Mich

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vises.
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Tower & Lyon, 95 Chambers St., N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.

Washing Machines.
Neff, W. H., Cowan, Ind.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Wheelbarrows.
Akron Tool Co., Akron, O.
Amer. Steel Scraper Co., Sidney, Ohio.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Sweatt Mfg Co., Minneapolis, Minn.
Toledo Wheelbarrow Works, Toledo, Ohio.

Whips.
American Whip Co., Westfield, Mass.

Window Cord, *Makers of.*
Samson Cordage Works, Boston. Mass

Wire, *Manufacturers of.*
Consolidated Steel & Wire Co., St. Louis, Mo.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co. Worcester, Mass

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Wks. Milwaukee Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.
Cronk Hanger Co, Elmira, N. Y.
King., J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.

Wire Door Mats.
Hartman Mfg. Co., Elwood City, Pa.
Horrock, Joshua, 45 Cliff St., N. Y.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods, *Manufacturers of.*
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros. Cortland, N. Y.
Williamson, C. T. Wire Novelty Co, Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester Mass.
Waterbury Mch. Co., Waterbury, Conn

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wire Nails.
Consolidated Steel & Wire Co., St. Louis, Mo.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle Pa.
Phillips, E. & Sons, South Hanover Mass
Phillips, Townsend & Co., Phil., Pa.
Plymouth Mills, Plymouth, Mass.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City

Wire Rods, Steel.
Consolidated Steel & Wire Co., St. Louis, Mo.
New Castle Wire Nail Co., New Castle Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y

Wire Rope, Iron and Steel *Makers.*
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Wood-Working Machinery.
Seneca Falls Mfg. Co., Seneca Falls, N.Y

Wrenches, *Manufacturers of.*
Bemis & Call Hardware & Tool Co, Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn
Capitol Mfg. Co., Chicago, Ills.
Coes Wrench Co., Worcester, Mass
Gendron Iron Wheel Co., Toledo, O.
Keystone Mfg. Co., Buffalo, N. Y.
Tower & Lyon, 95 Chambers St., N. Y.
Trimont Mfg. Co., Roxbury, Mass
Williams, J. H., Brooklyn, N. Y.

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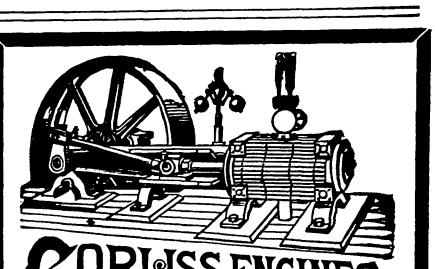
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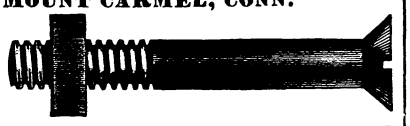
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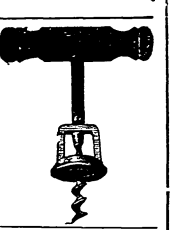
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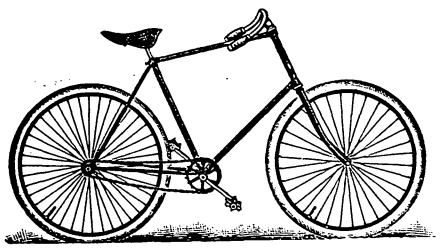
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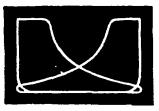
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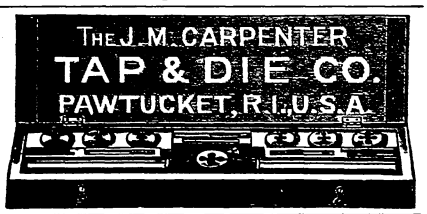
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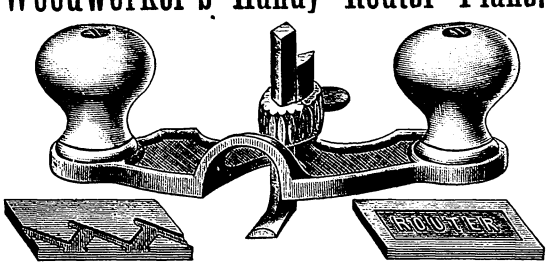
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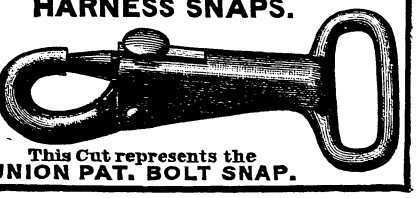
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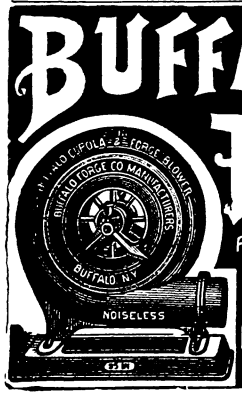


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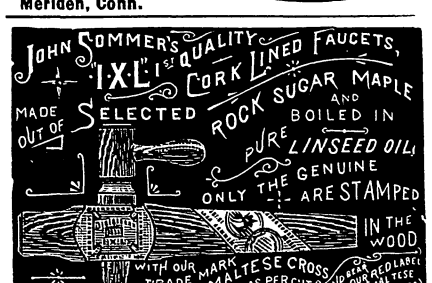


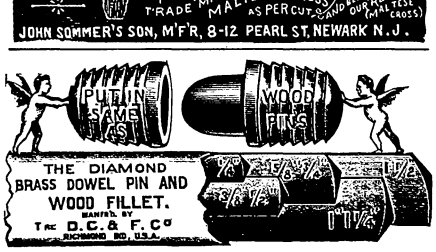
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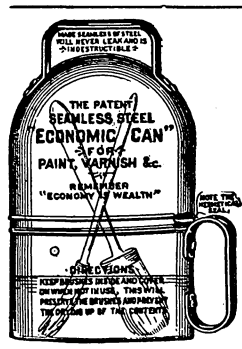


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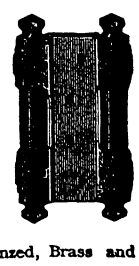
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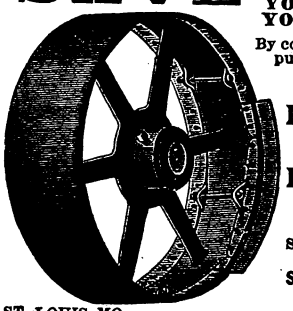
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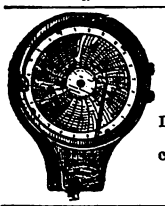
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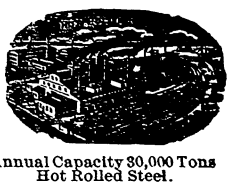
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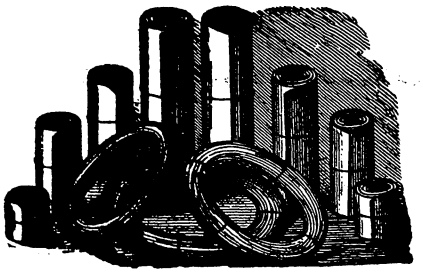
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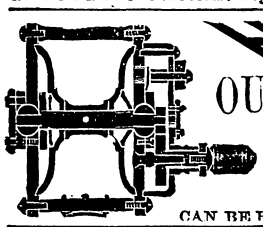
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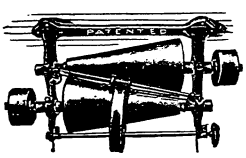


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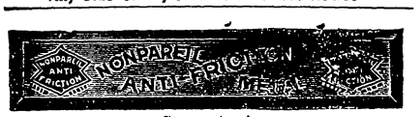


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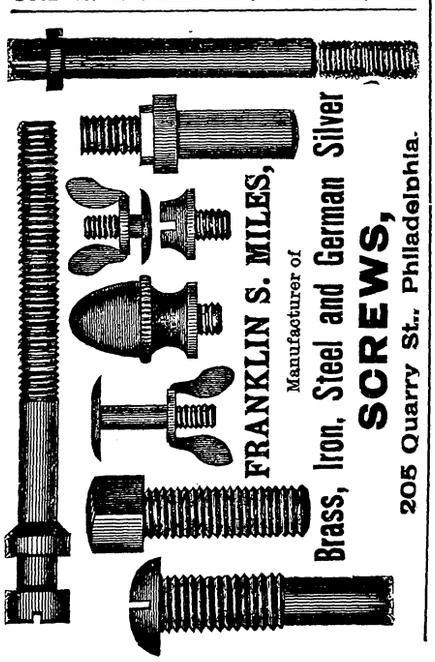
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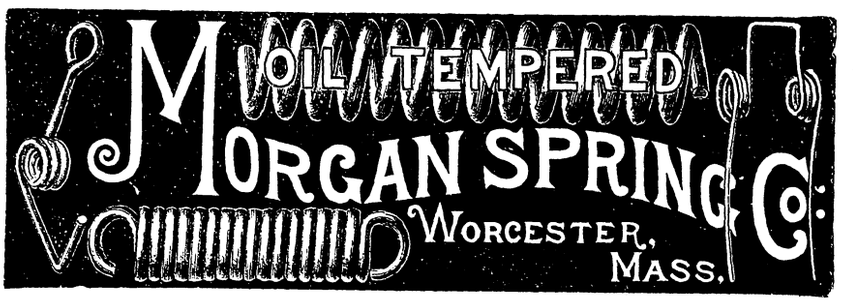
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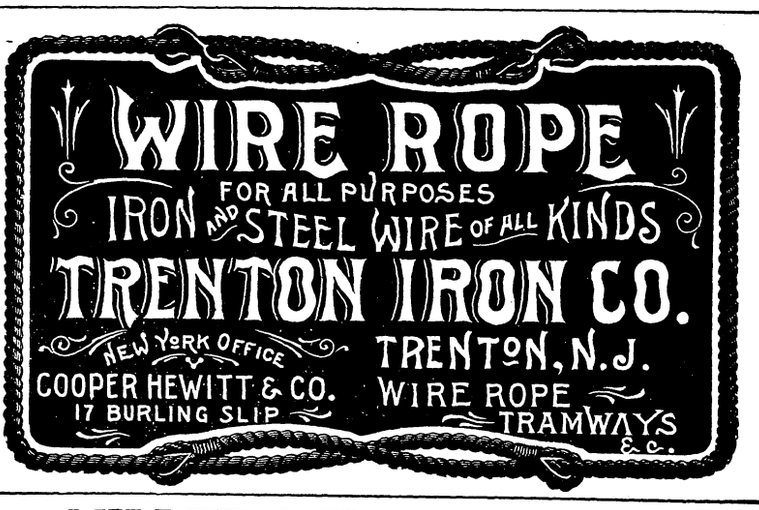
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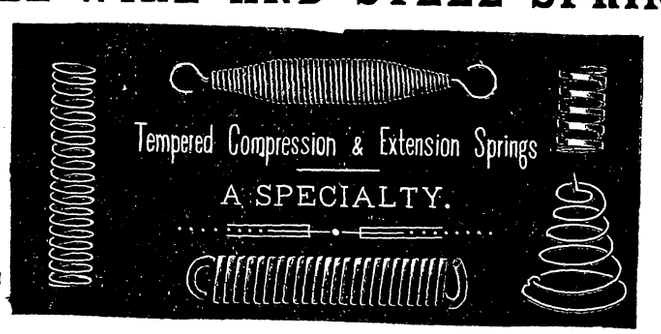




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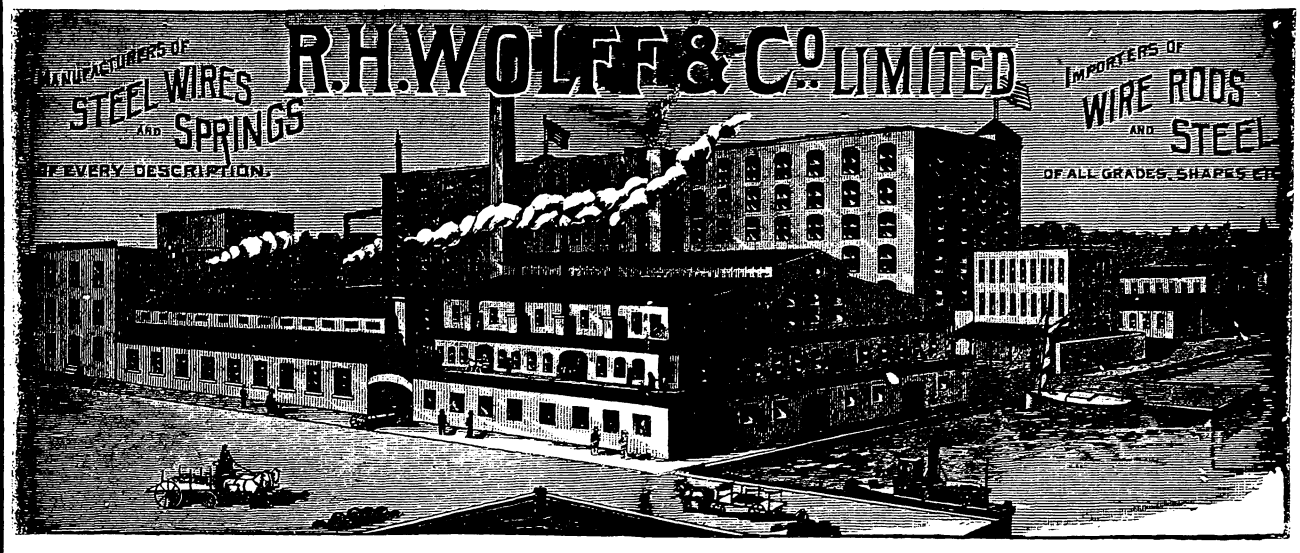
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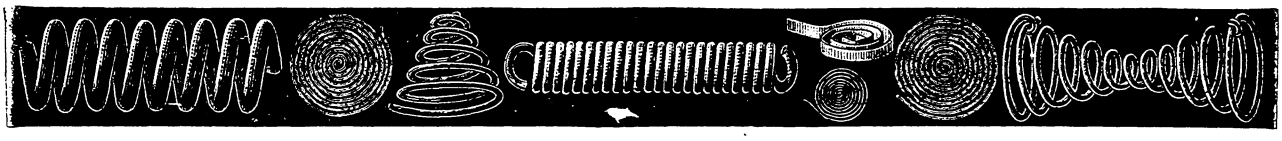
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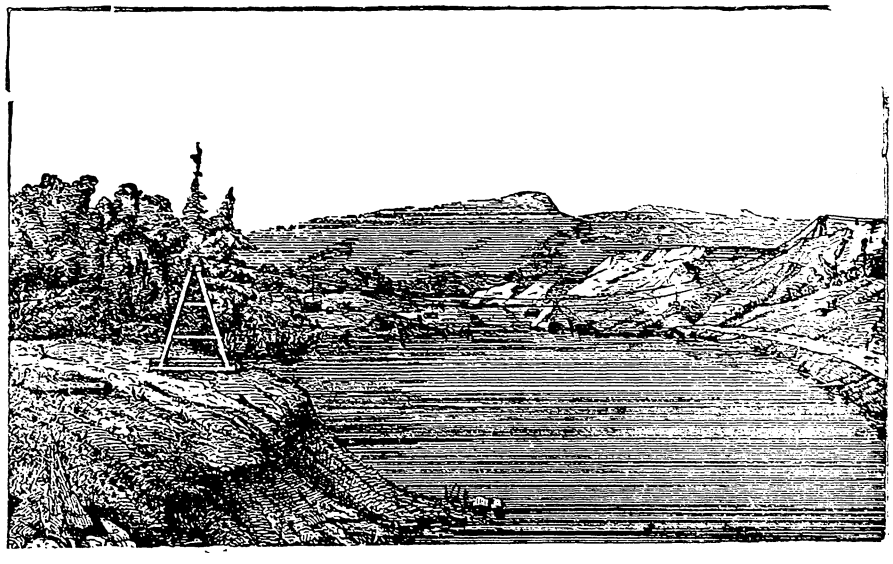
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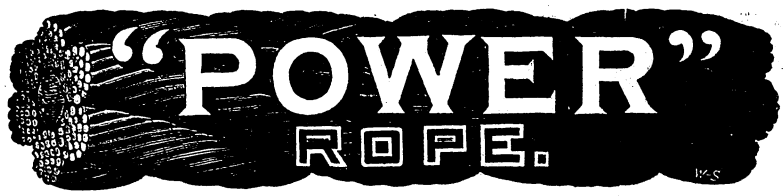


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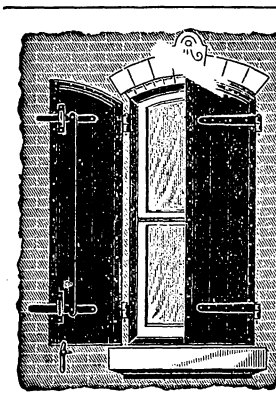


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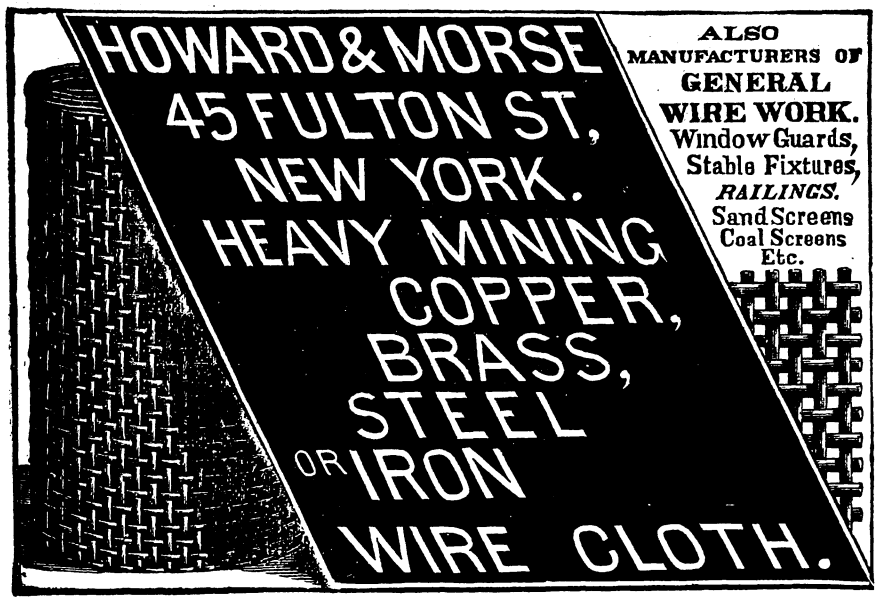
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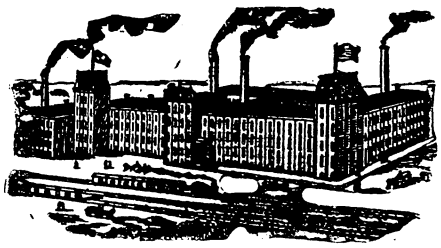
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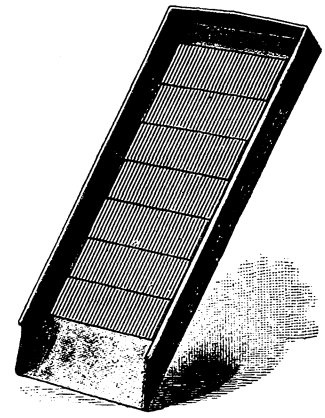
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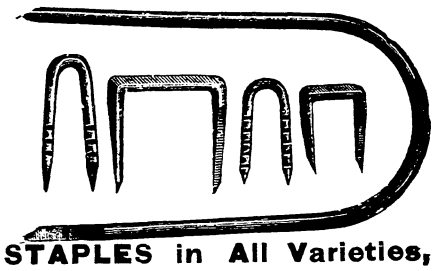


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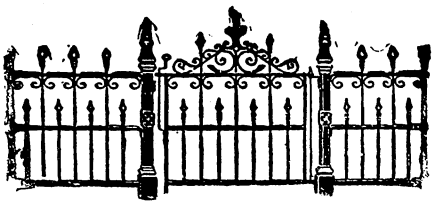
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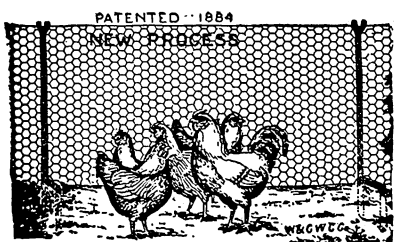
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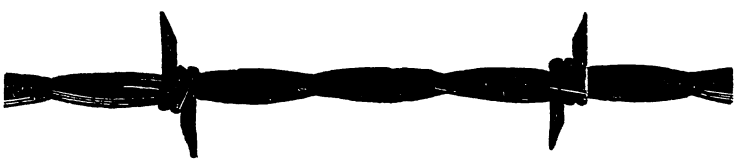
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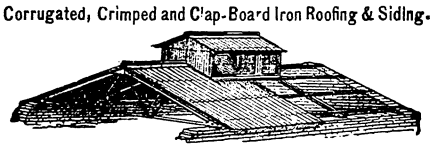
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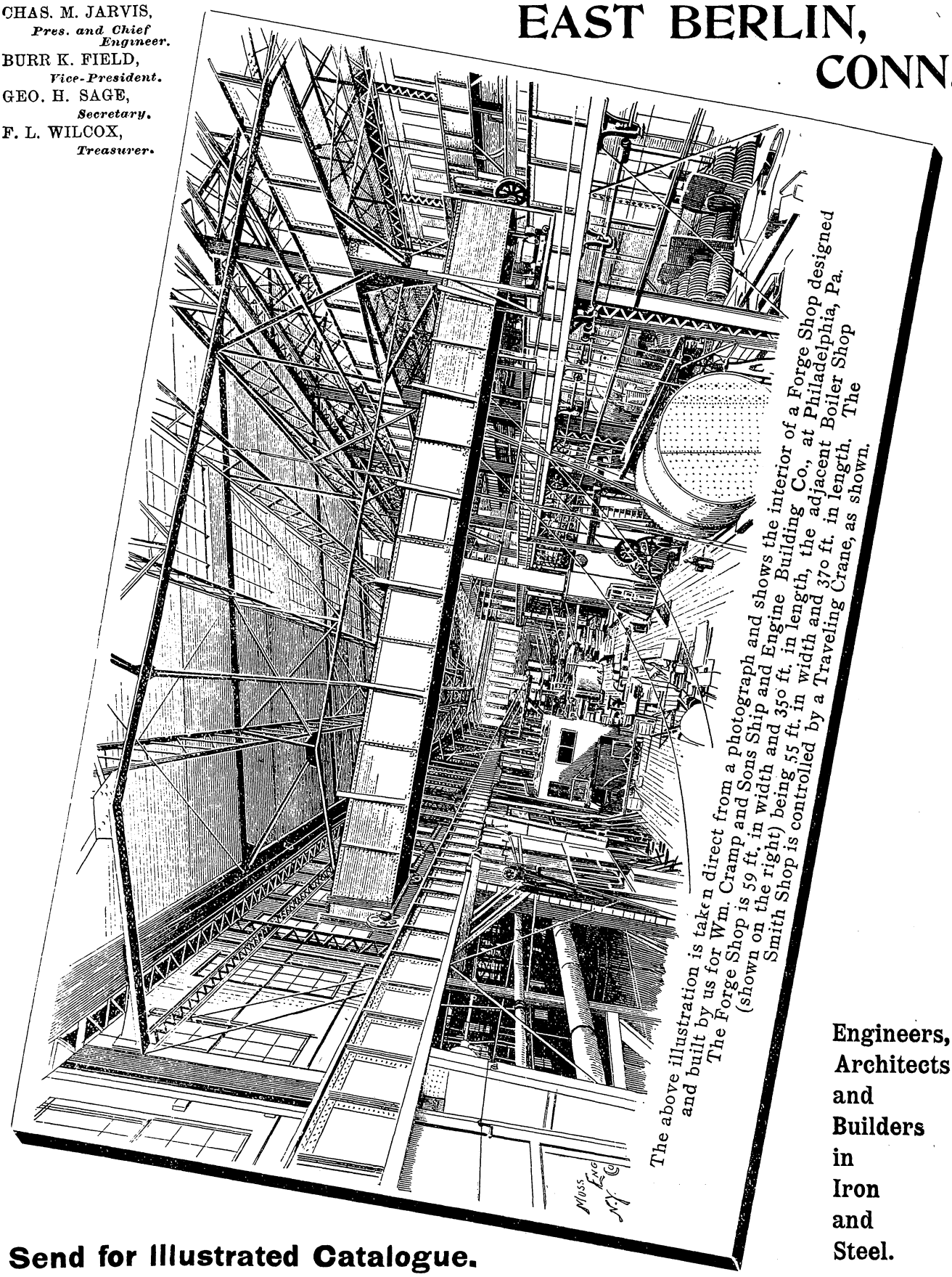
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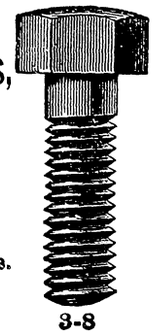
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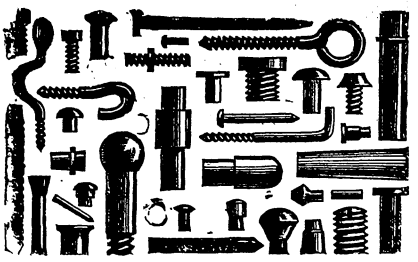
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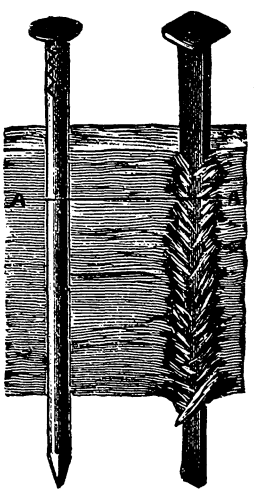
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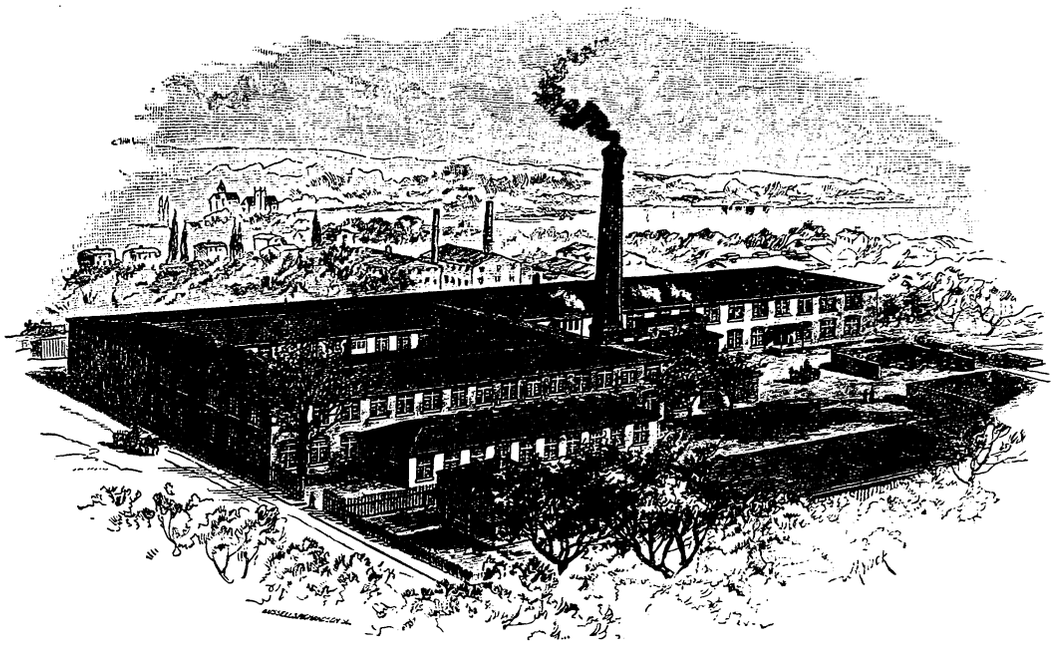
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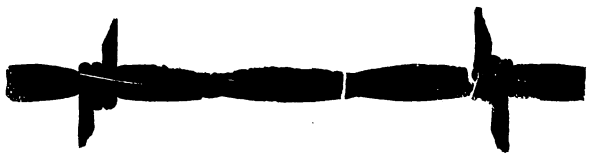
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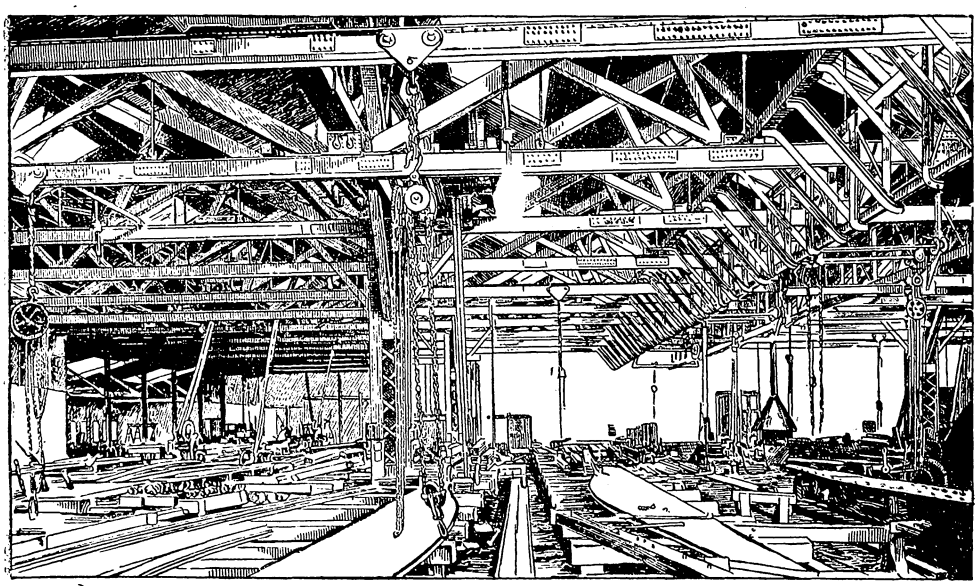
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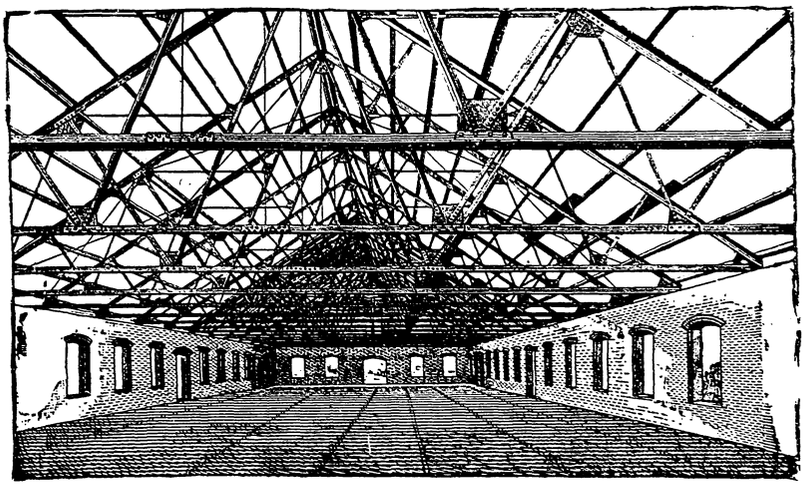
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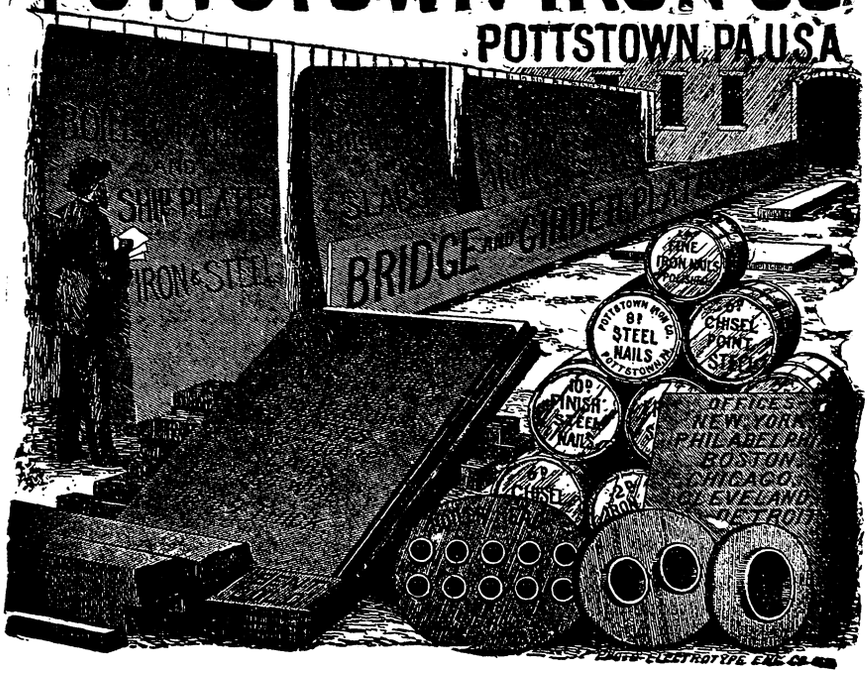
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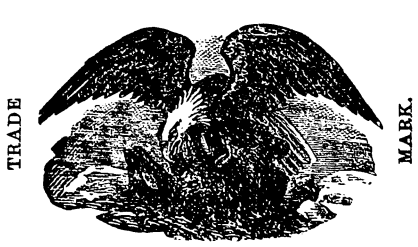
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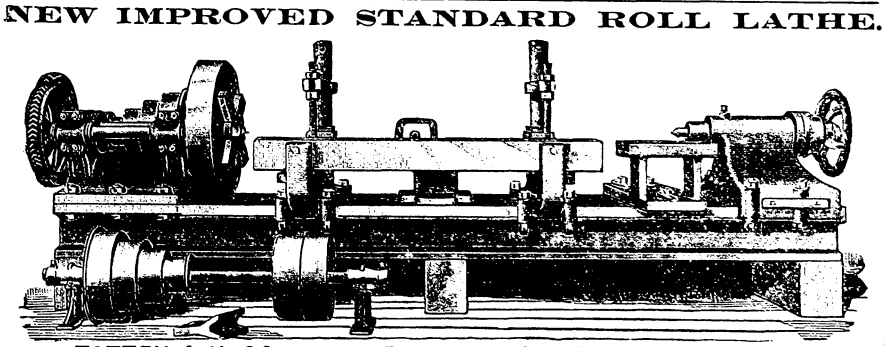
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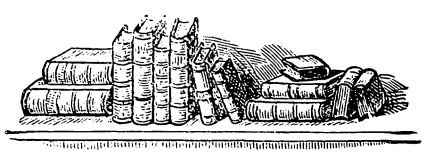
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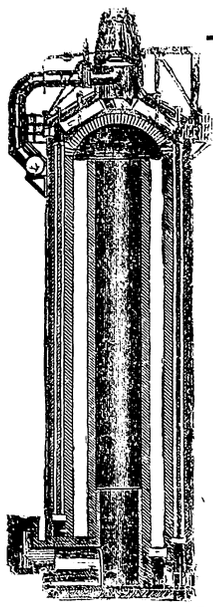
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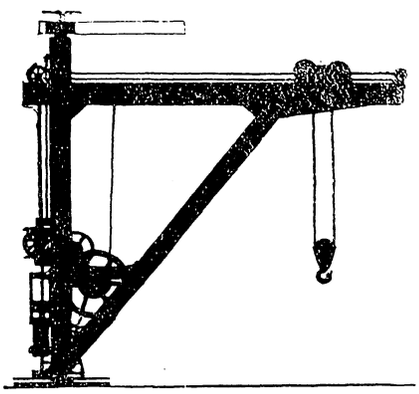
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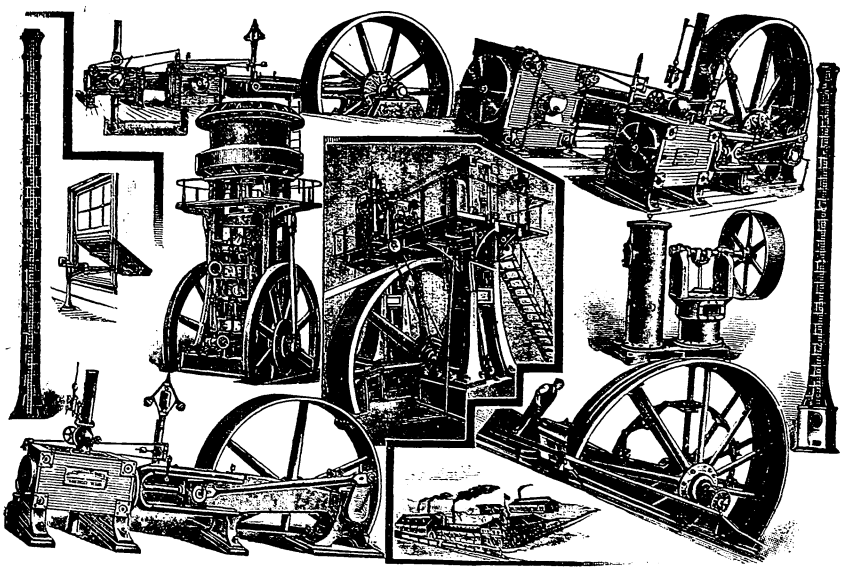
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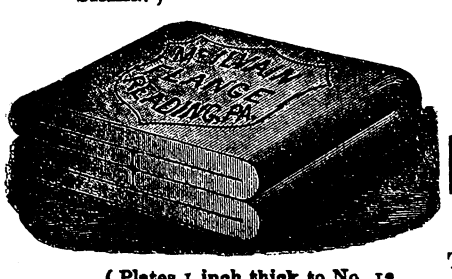
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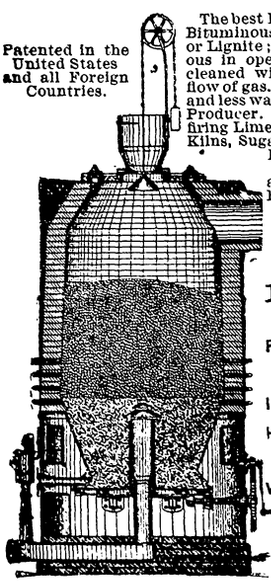
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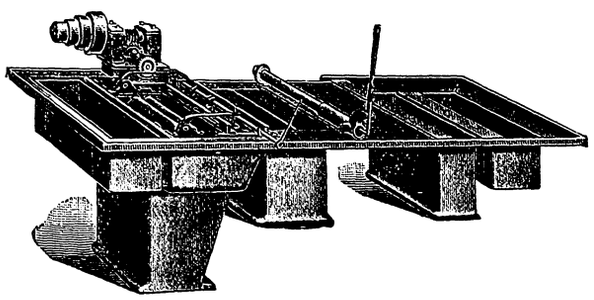
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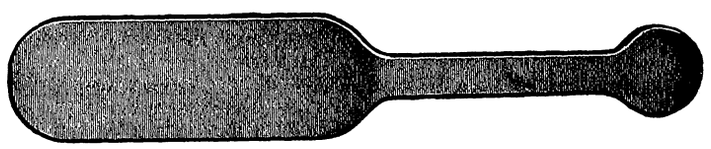
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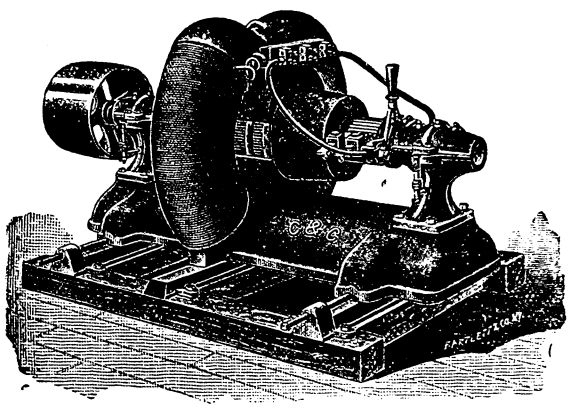
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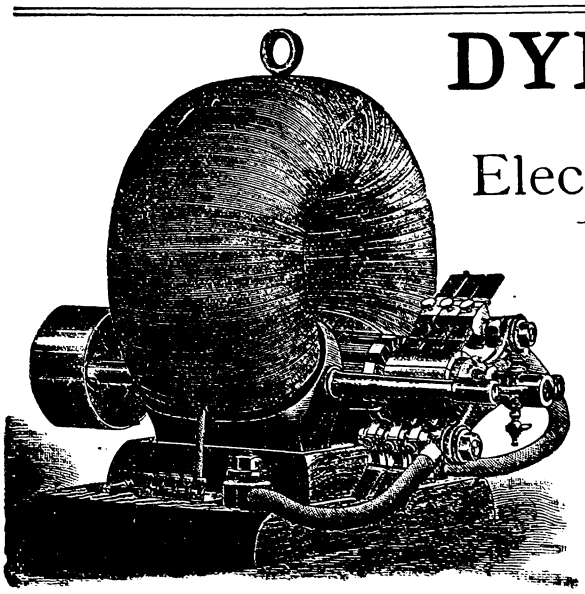
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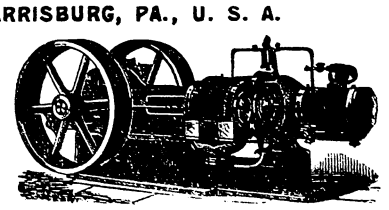
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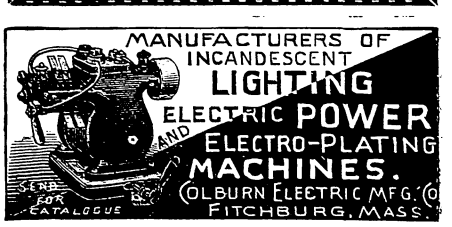
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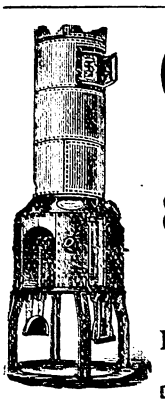
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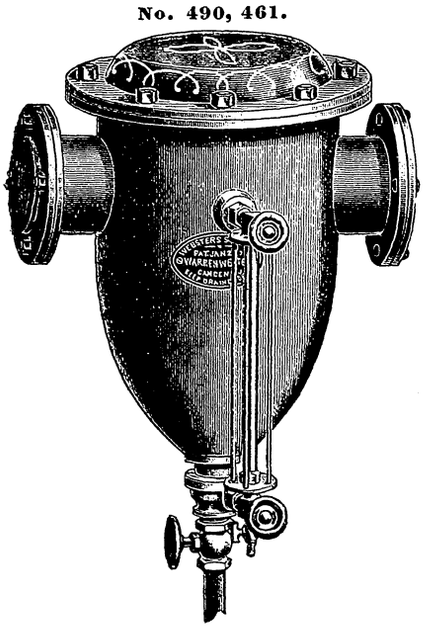
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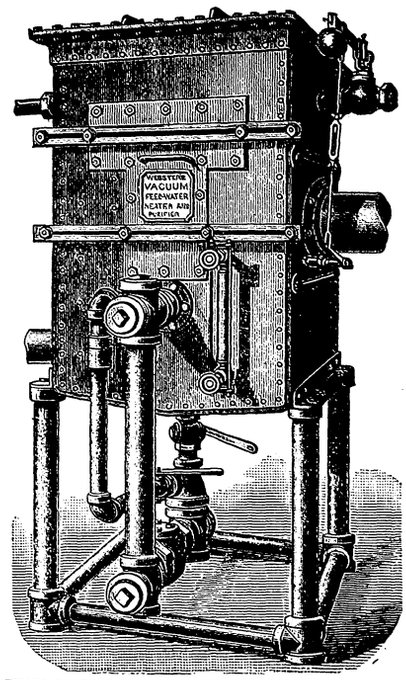
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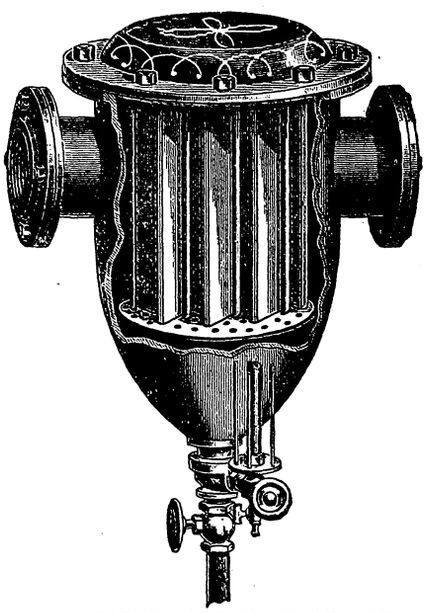
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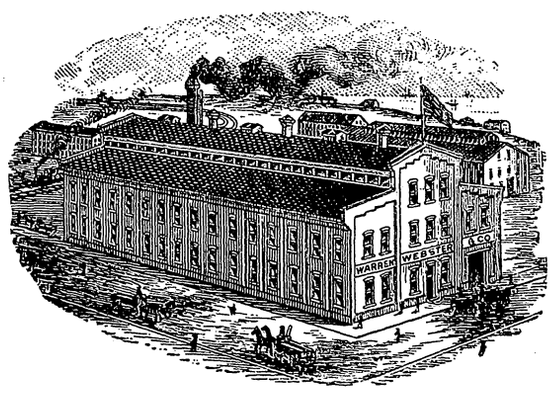
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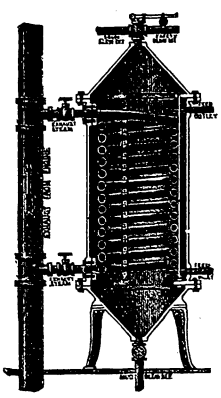
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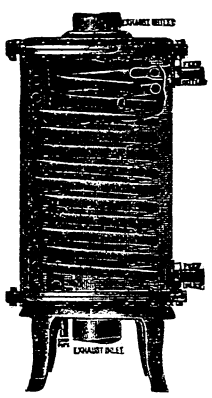
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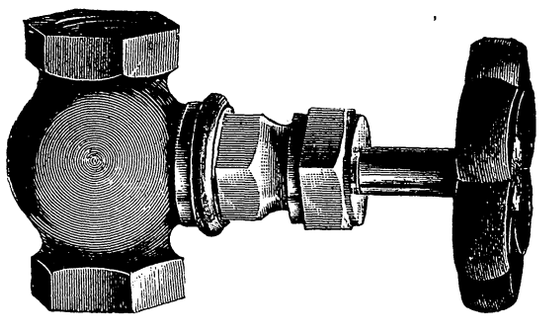
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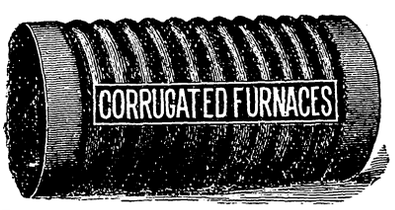
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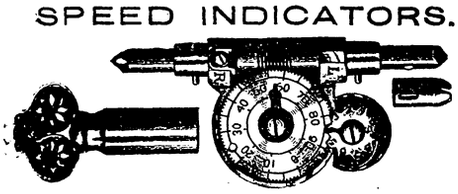
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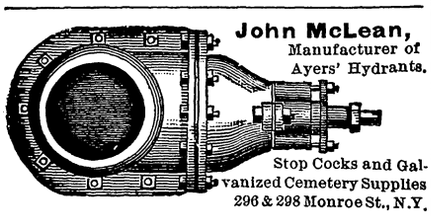
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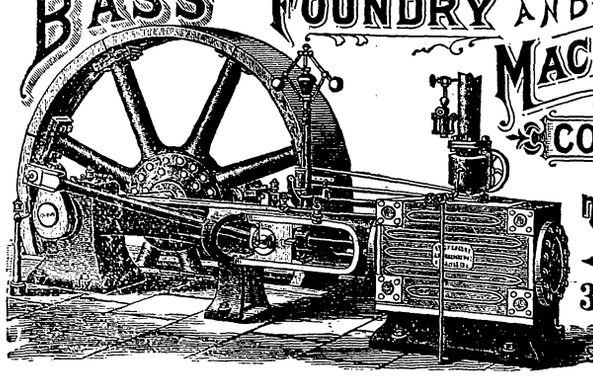
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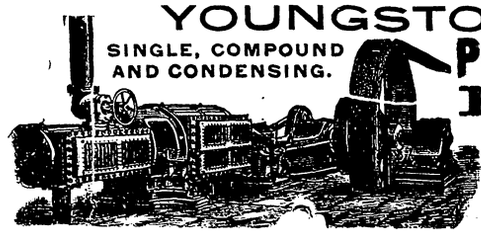
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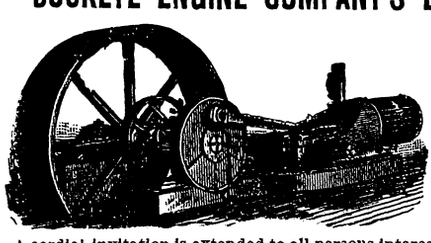
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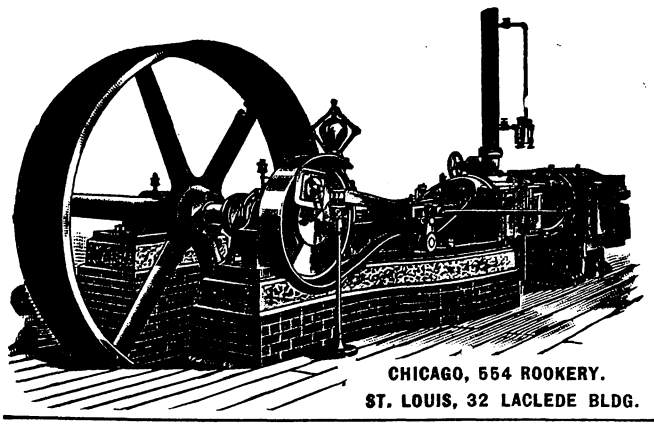
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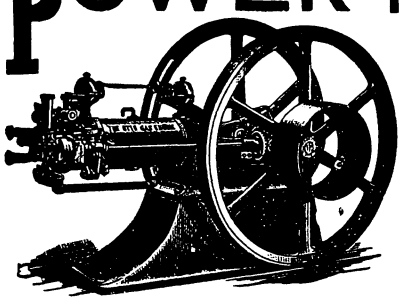
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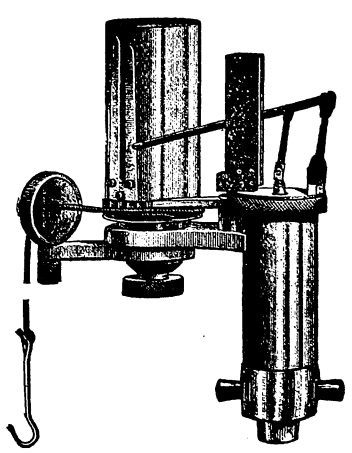
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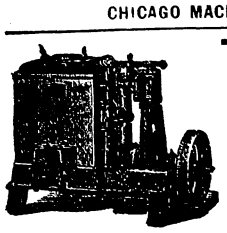
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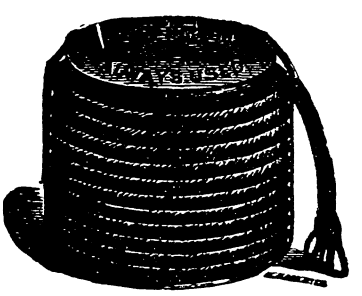
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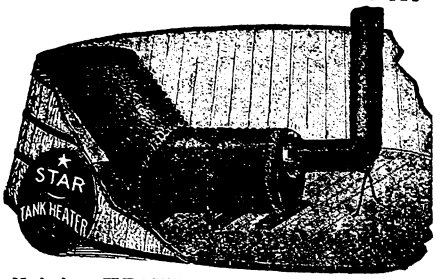
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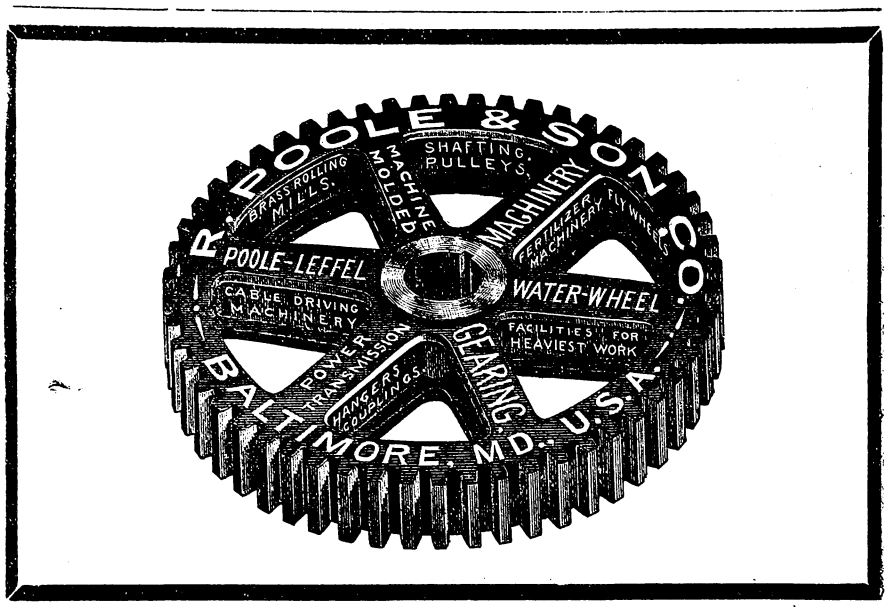
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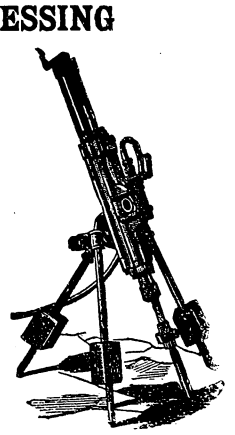
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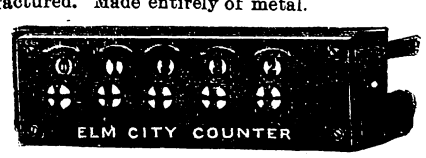


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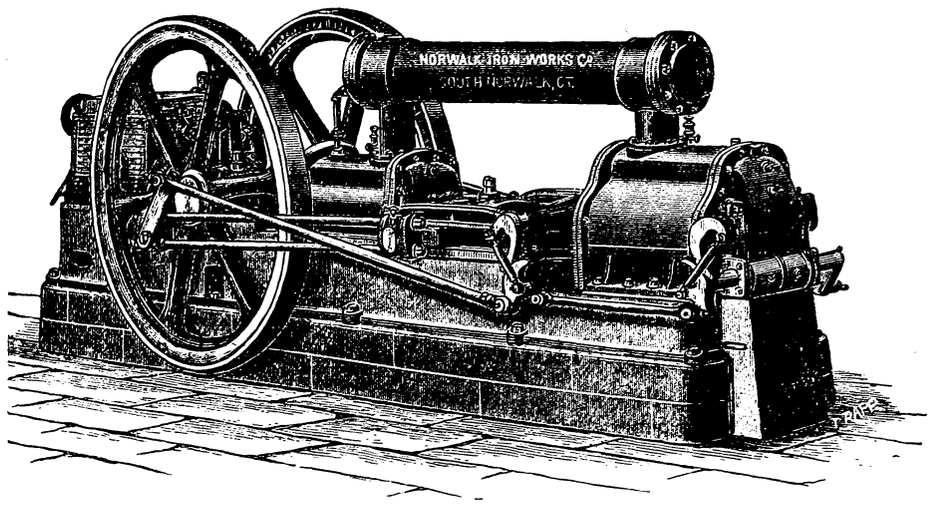
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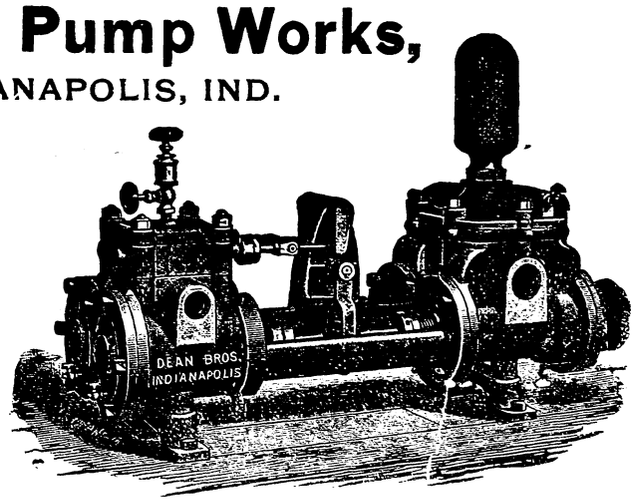
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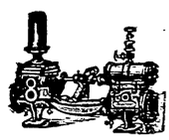




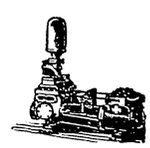
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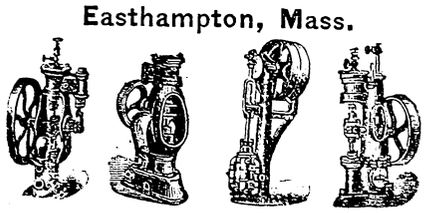


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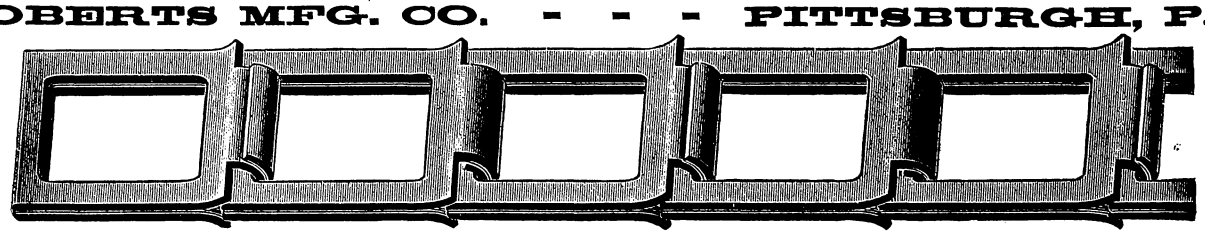
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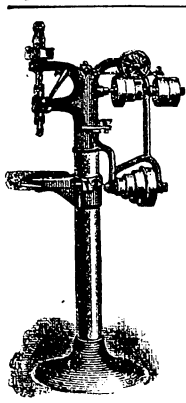
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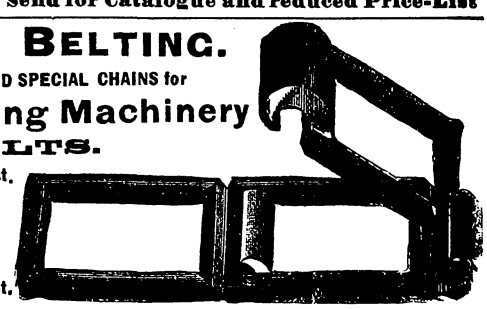
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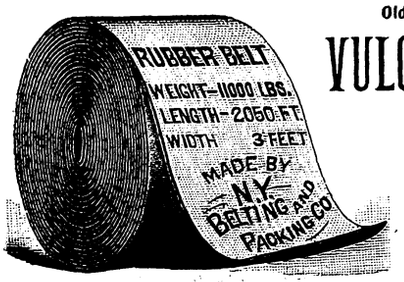
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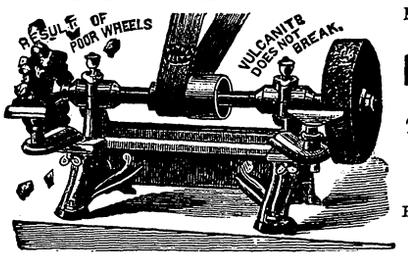
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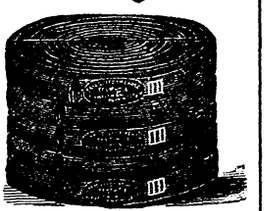


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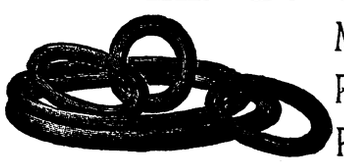
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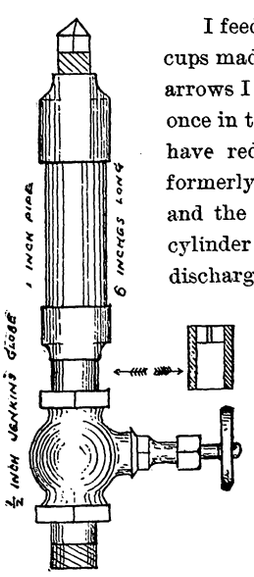
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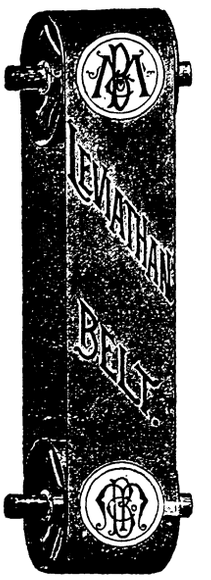
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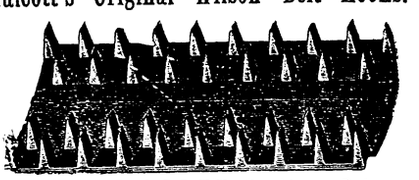
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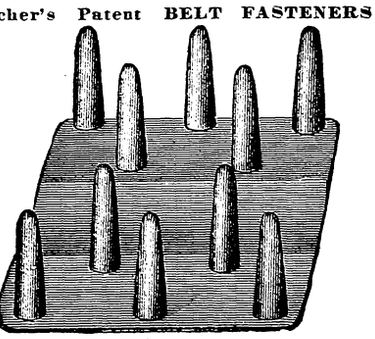
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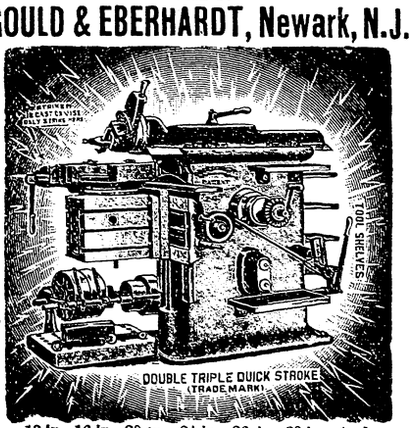
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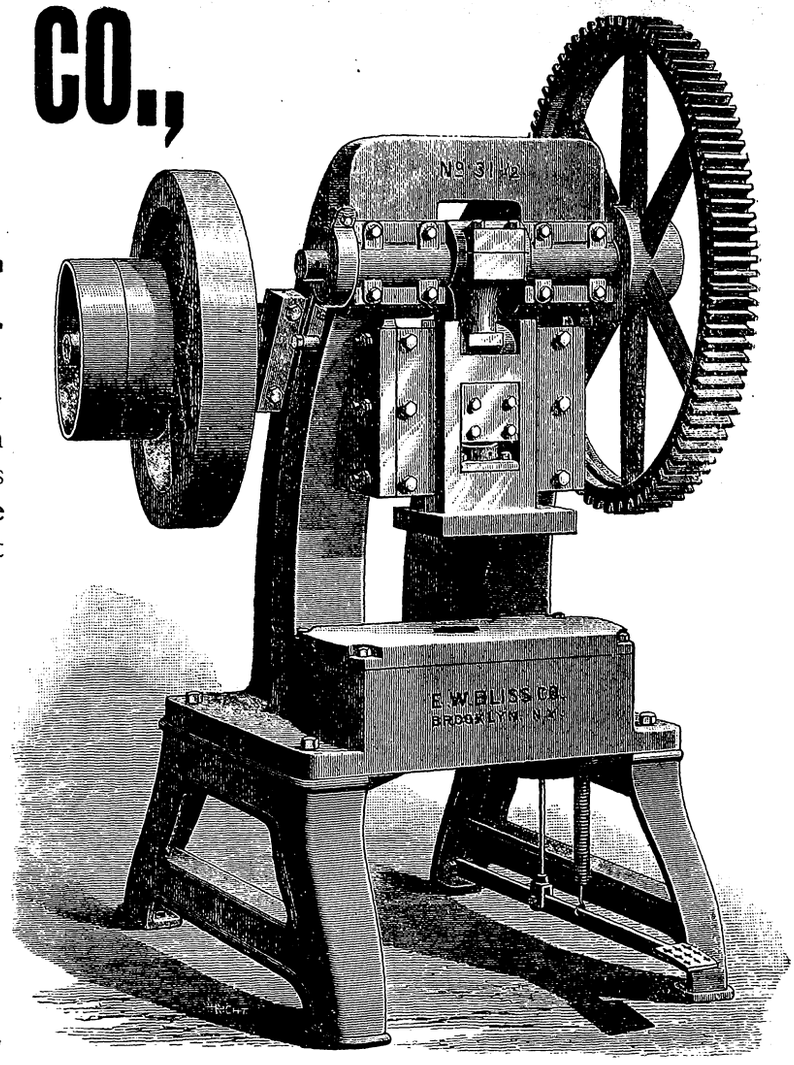
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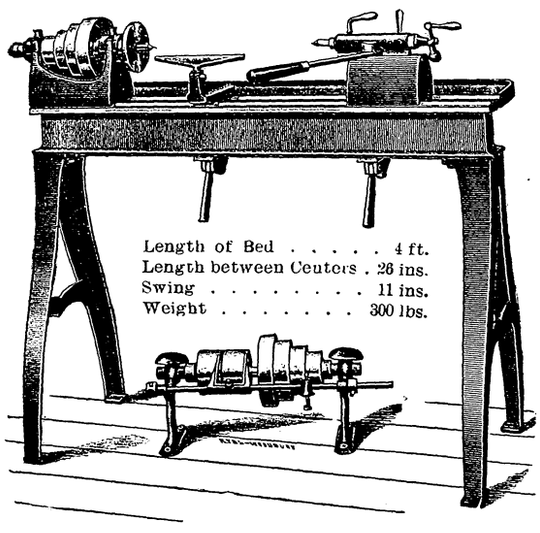


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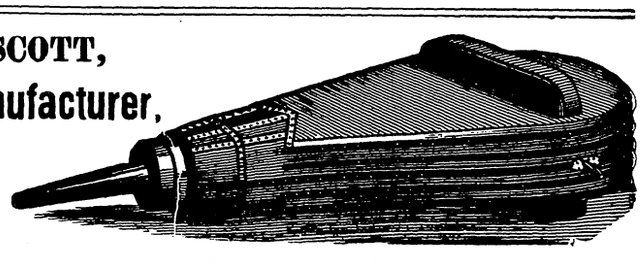
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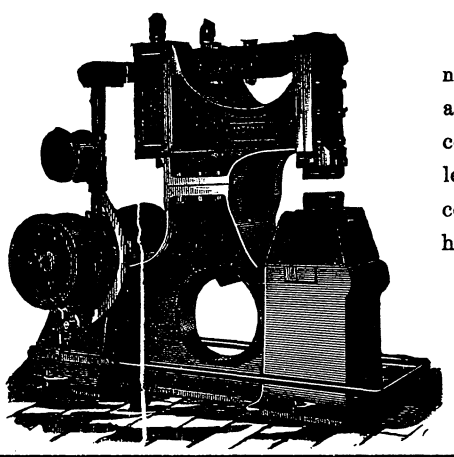
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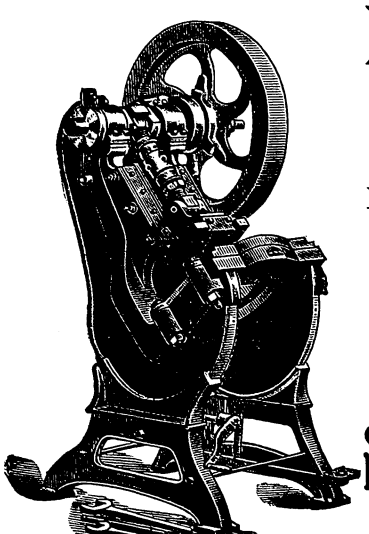


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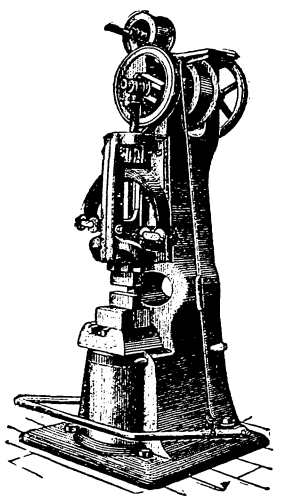
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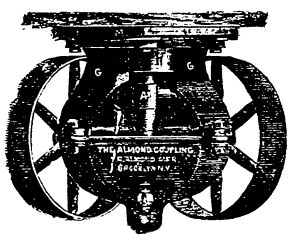
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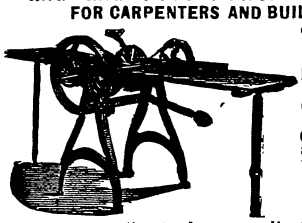
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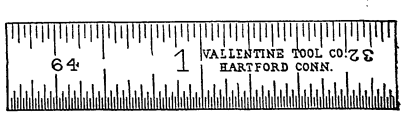
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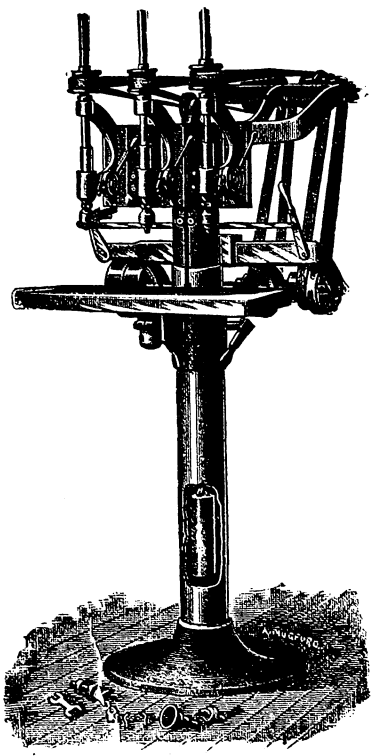


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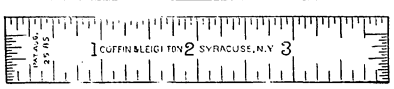
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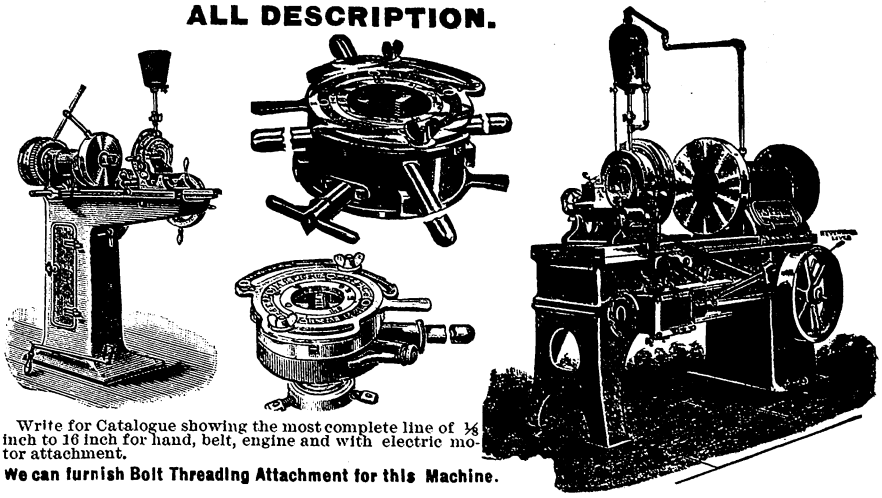
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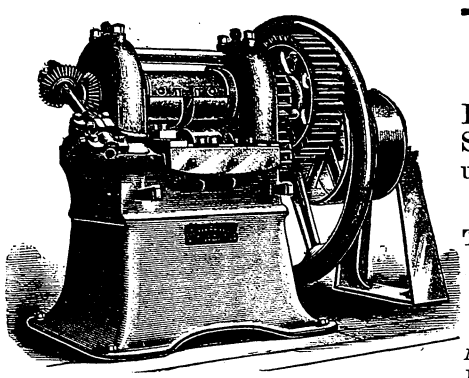
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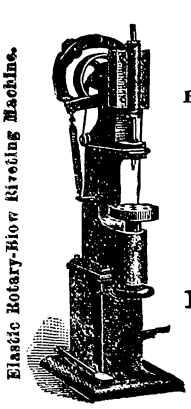
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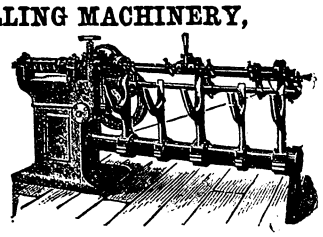
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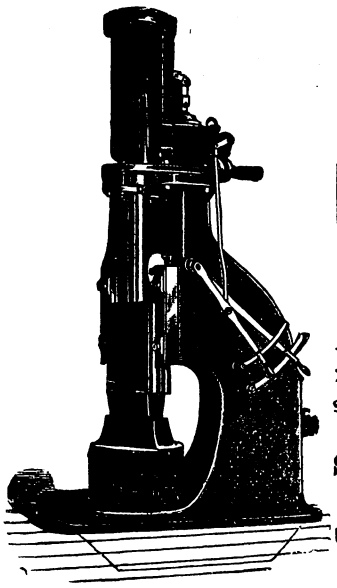


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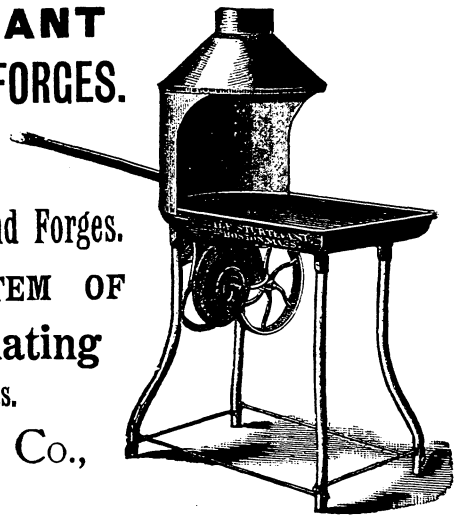
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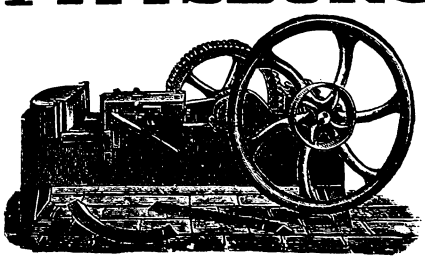
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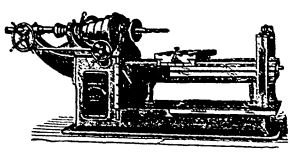
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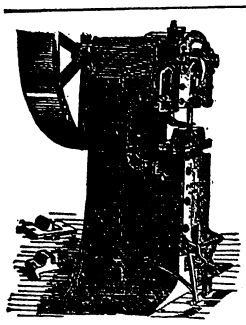
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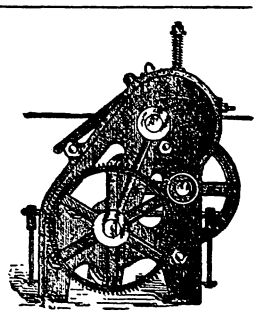
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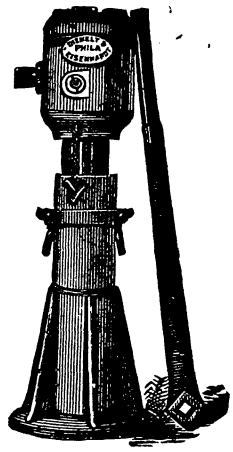


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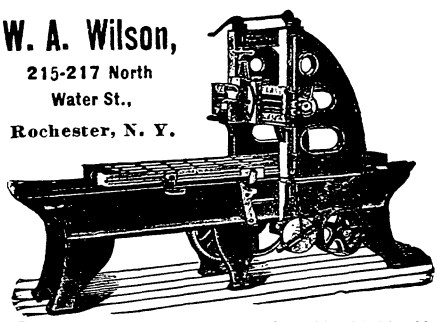
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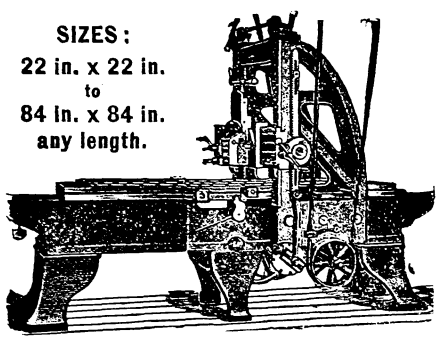
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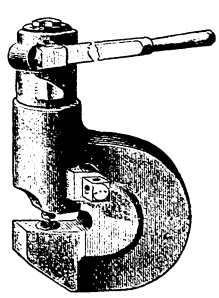
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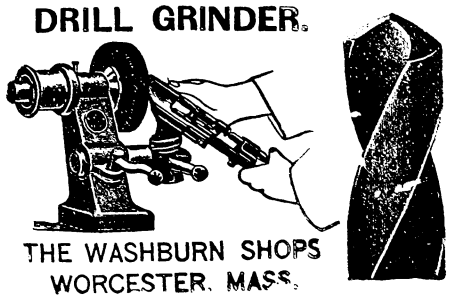
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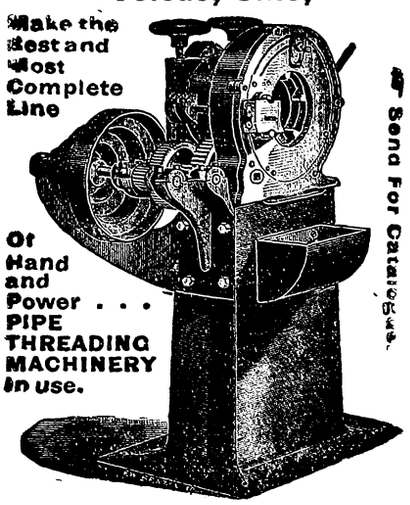


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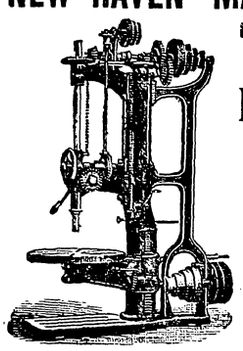
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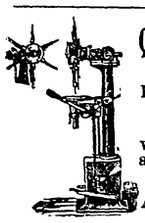
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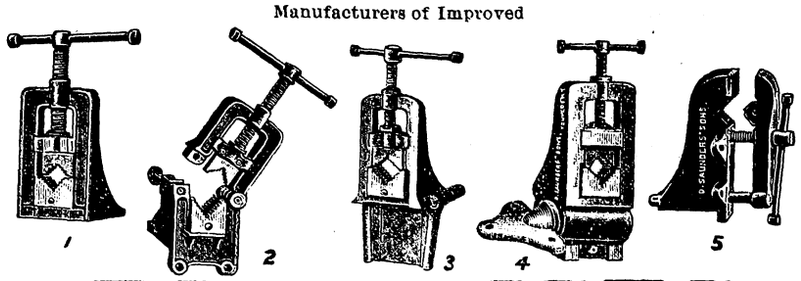
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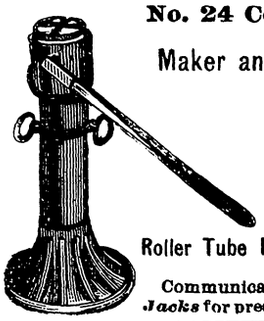
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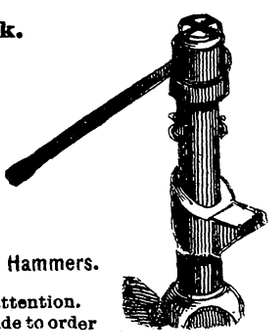


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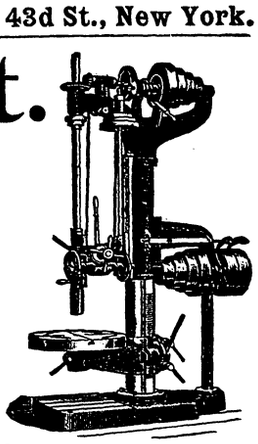
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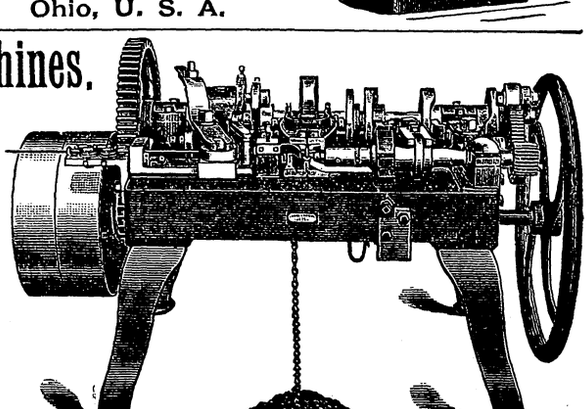
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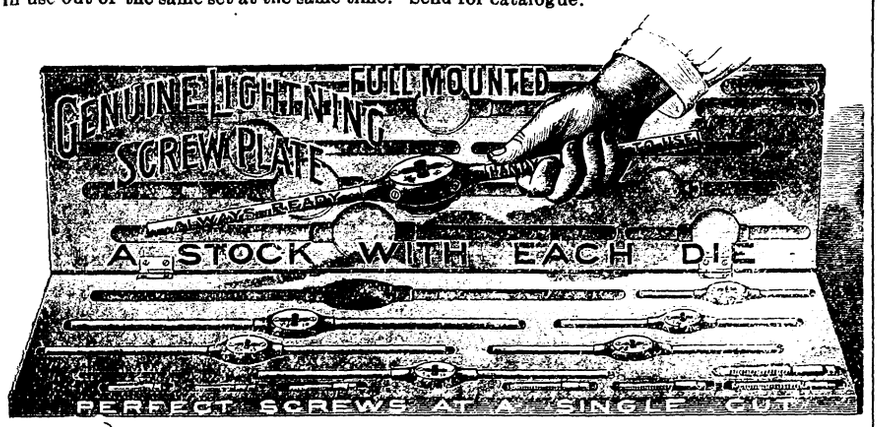
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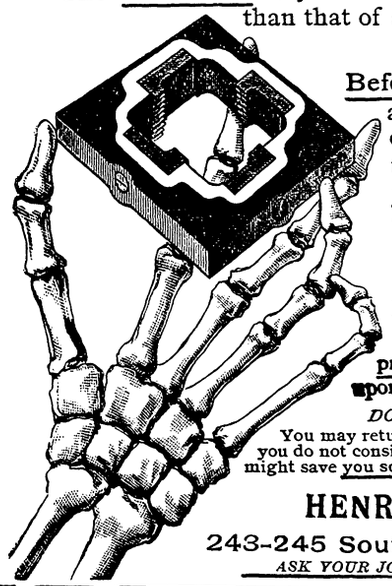
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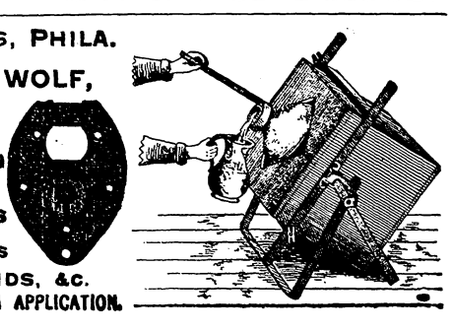
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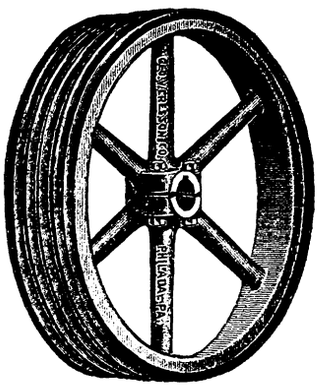
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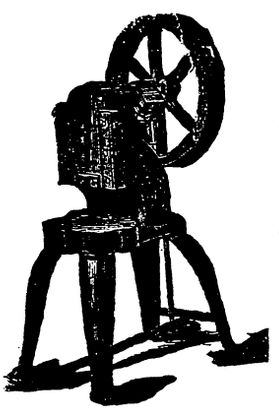
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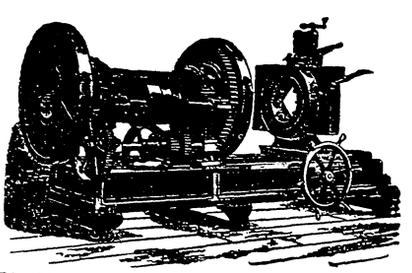


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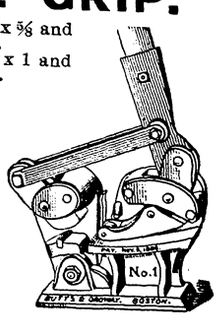
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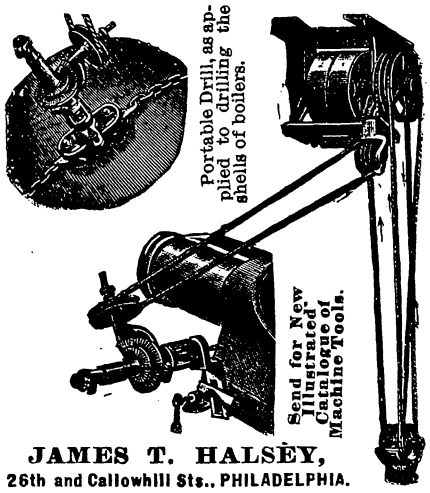
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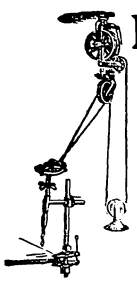
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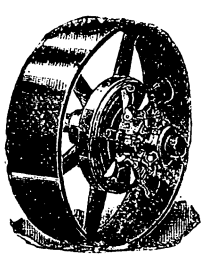
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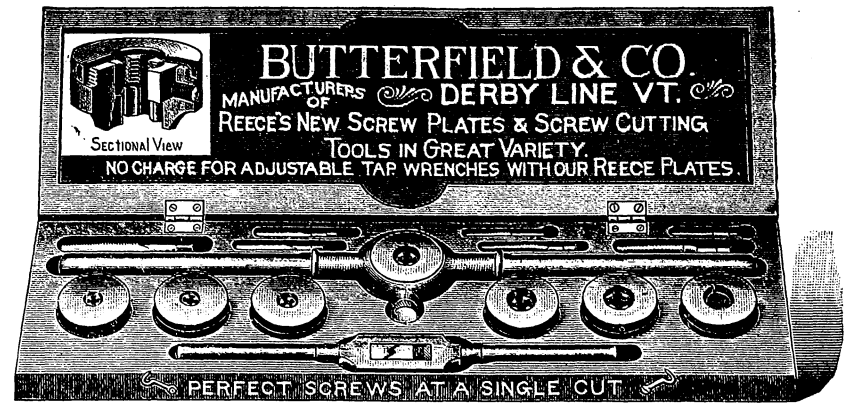
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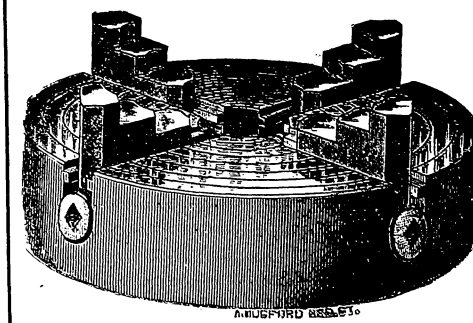
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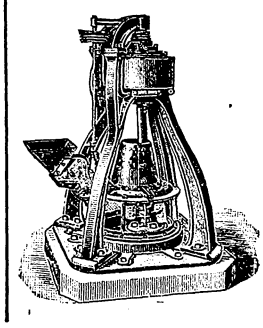
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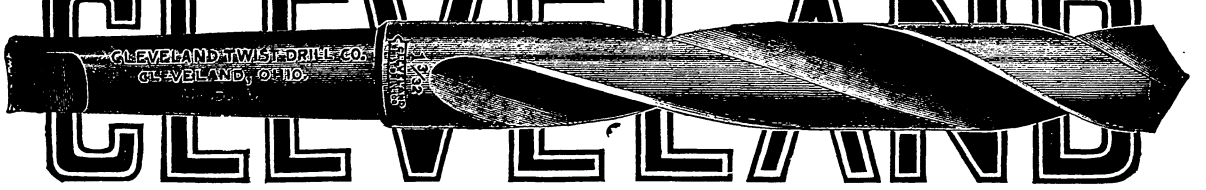
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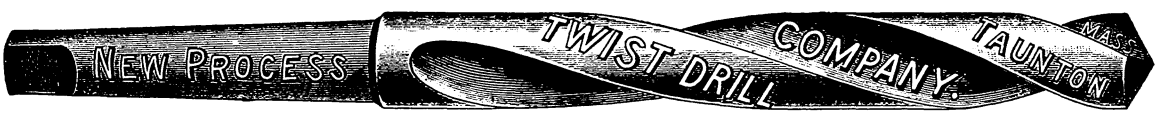
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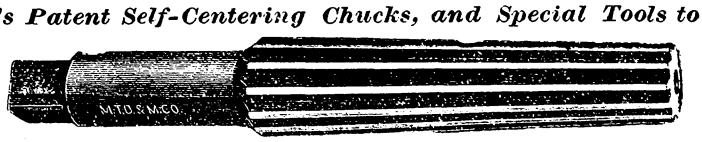
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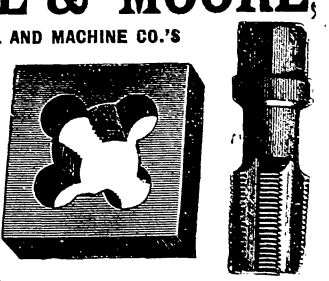


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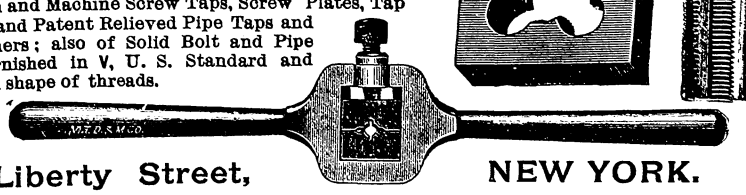
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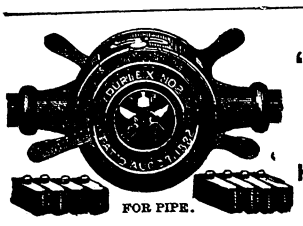




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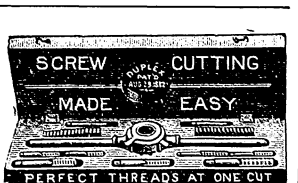
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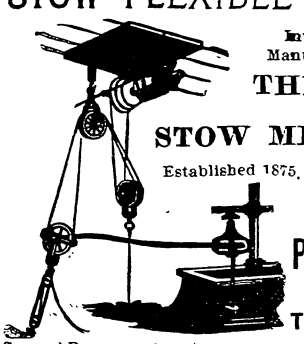
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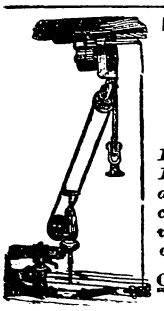
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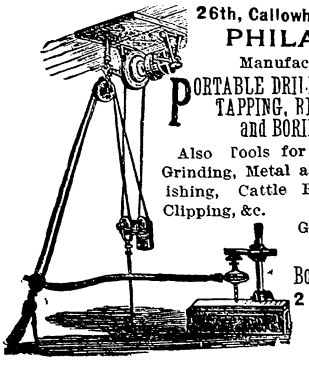
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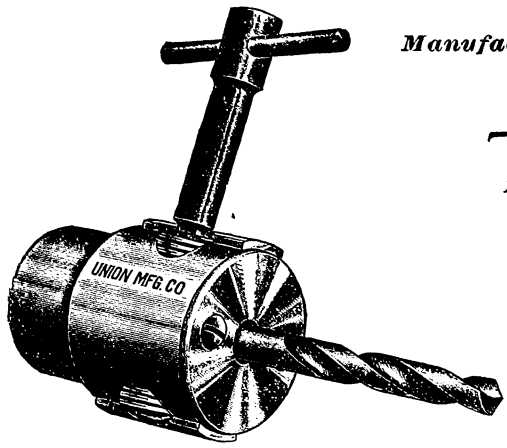
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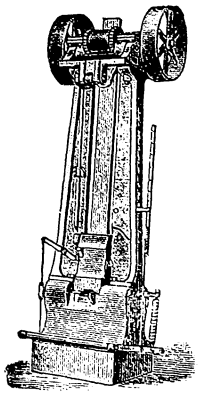
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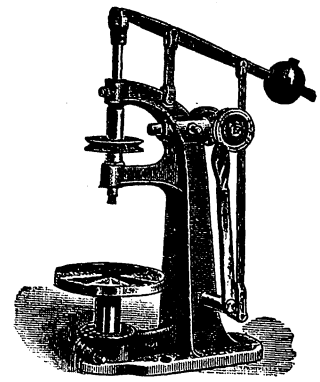
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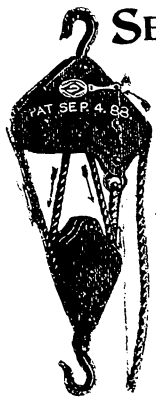
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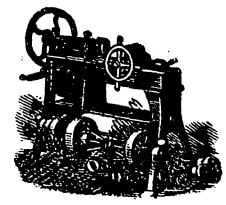


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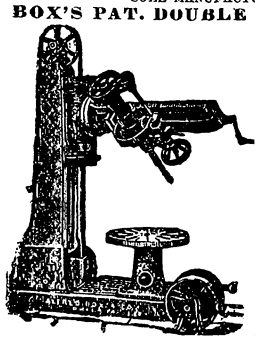
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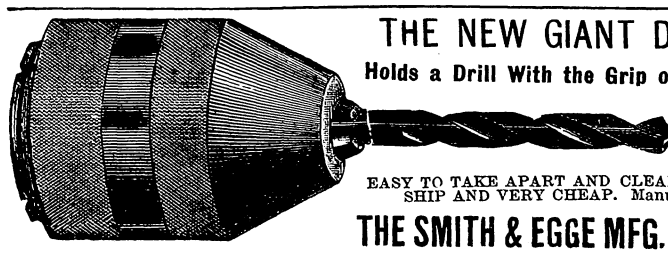
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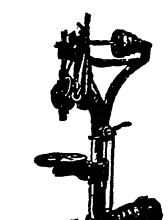
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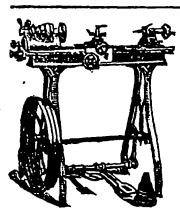
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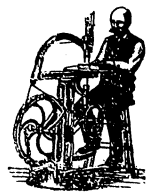
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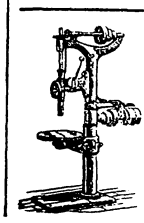
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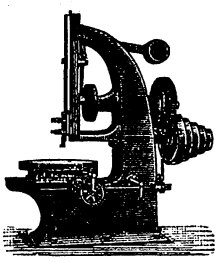
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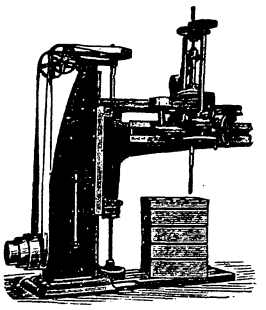
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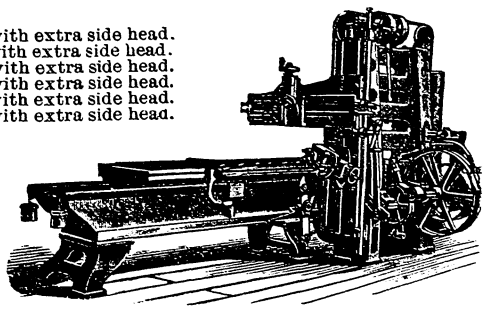
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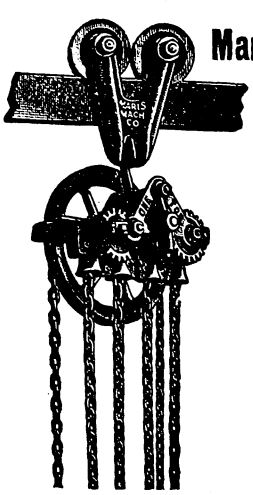
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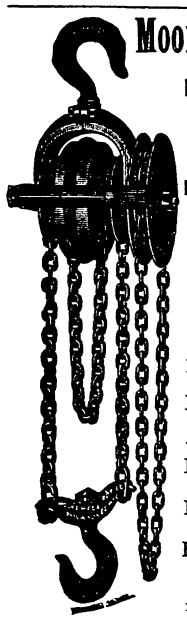
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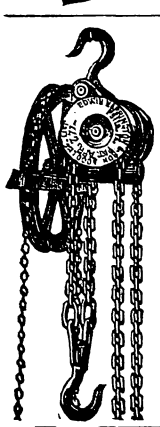
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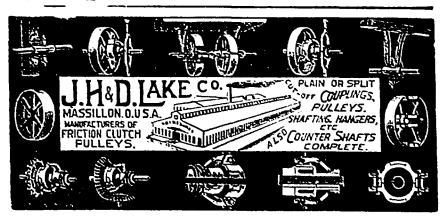
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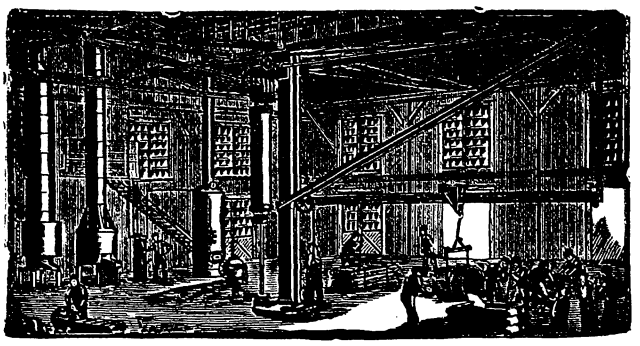
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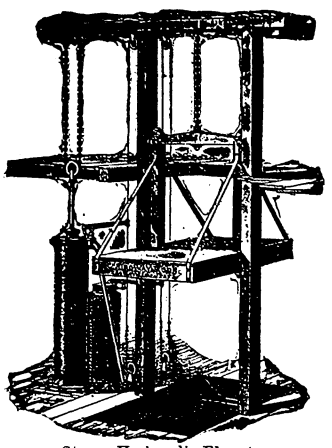
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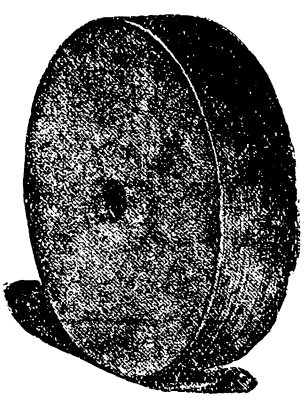
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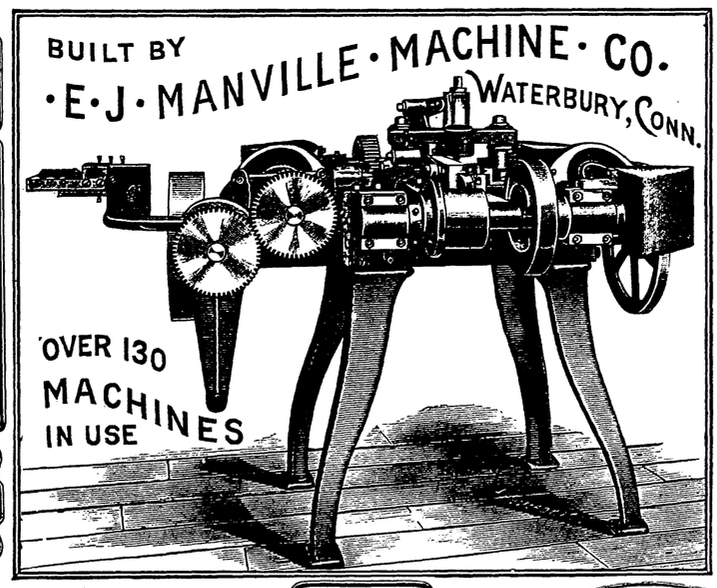
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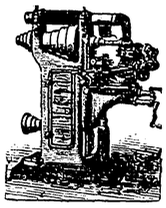
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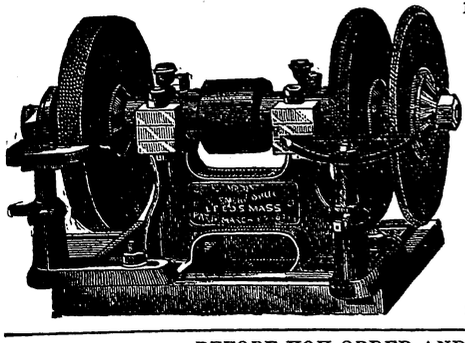




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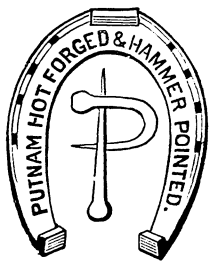
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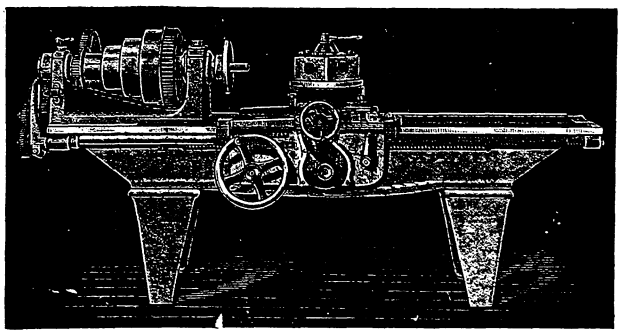
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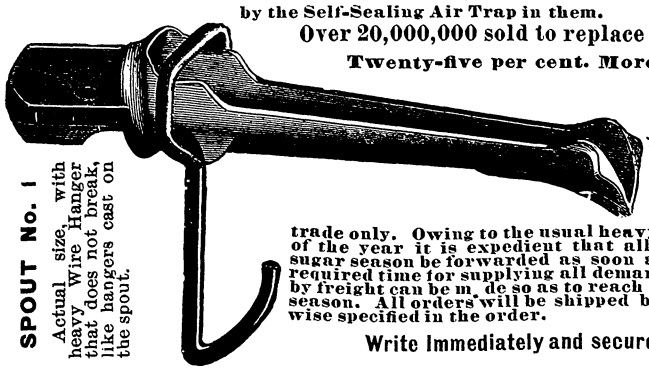
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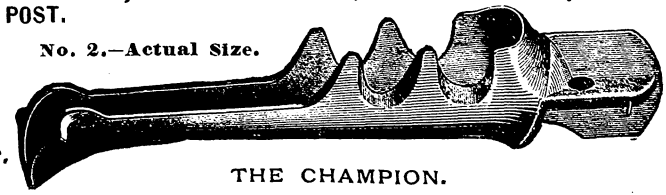
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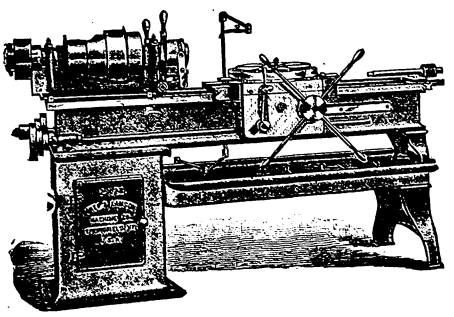
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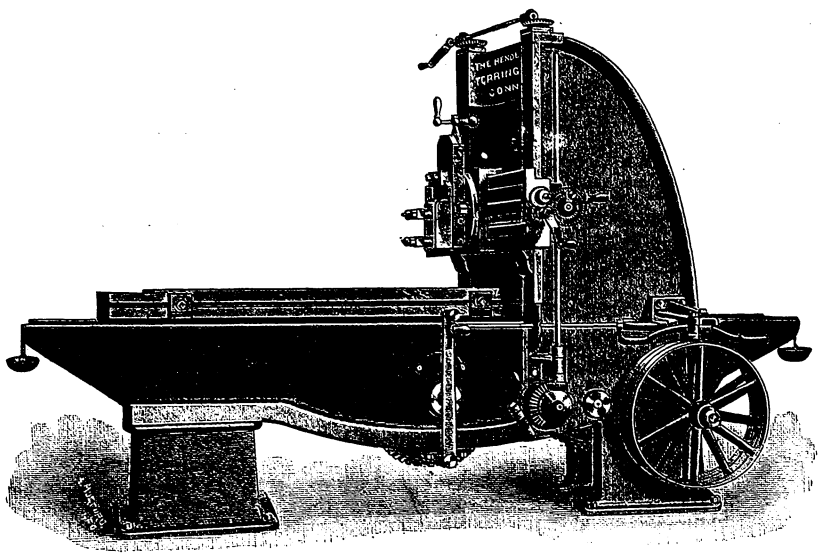
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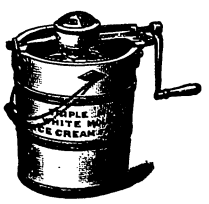
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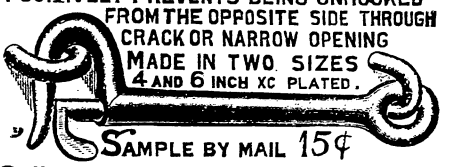
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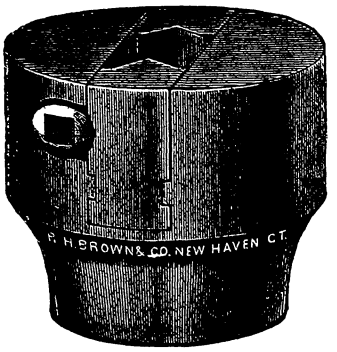
THE STANLEY WORKS, New Britain, Conn. 79 Chambers St N. Y.



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REID DRILL CHUCKS.



THREE SIZES.

No. 0 takes any drill from 0 to 1-2 inch inclusive.
No. 1 " " " " 0 " 3-4 " "
No. 2 " " " " 0 " 1 " "

They are the strongest and most durable made. Drill absolutely in the center. No twisting or bending necessary if drill is straight. Can be fitted to hollow spindle lathes for working long rods.

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R. H. BROWN & CO., - New Haven, Conn.

You take no risk on the quality
We make only the best.

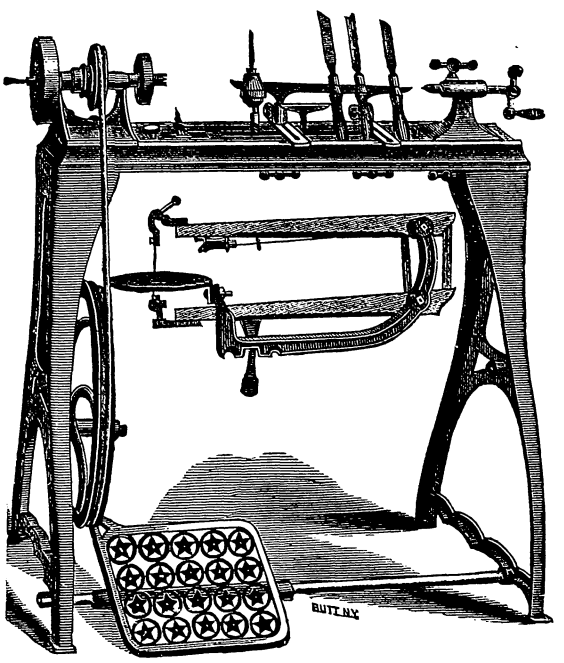


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HAIR FELTING for covering Boilers, Steam and Water Pipe, and lining Refrigerators.

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143 MILK STREET, BOSTON.
382 LAKE STREET, CHICAGO.

HOLIDAY GOODS.



Many kinds of Scroll Saws have been put on the market by ourselves and other manufacturers during the past twelve years. Of these only a few have proved good enough to remain in demand. The call now is for a well-made, practical machine, and all second-class ones are of slow sale.

Those who want a good Lathe with Scroll-Sawing Attachment and all Tools and Improvements to the very latest moment will buy the Goodell Lathe.

Those who want only a Scroll Saw with Drilling Attachment and Rubber Blower will prefer the Rogers Saw.

These two machines are taking the place of all others, and are now the most in demand throughout the world.

No dealer can make a mistake by laying in a stock of them. About Christmas time they are wanted in every town, and will make business lively at this otherwise dull season.

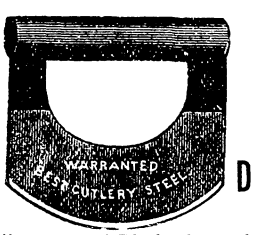
We also keep a full stock of Designs, Wood, and all other Scroll Sawing goods.

Price of Goodell Lathe, complete, $12.00.

Price of Rogers Saw, complete, $3.50.

MILLERS FALLS CO.,
No. 93 Reade Street, New York.

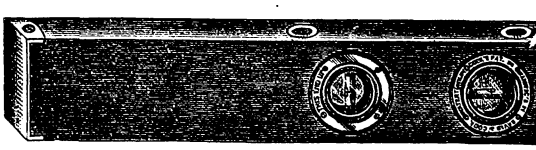
THE GEM
SOLID STEEL MINCER



Single and Double Blades.

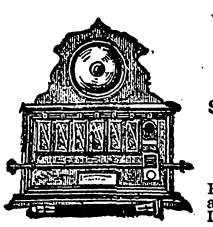
Handle and Blade Formed in one piece.
Always Clean. Indestructible.
No Rivets to Wear Loose.
No Wooden Handle to Shrink, Swell, Loosen, Split, or Fill with Rancid Grease.

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TROY, N. Y.

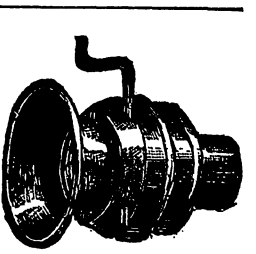


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Made in Wood and Iron. Every Level Fully Guaranteed.
Inquire at your nearest hardware store for them. If not in stock, send to
TAKE NO OTHER.
DAVIS & COOK,
WATERTOWN, N. Y

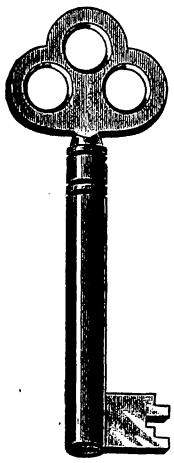


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204 FULTON STREET, NEW YORK,
Manufacturers of
SPEAKING TUBES, WHISTLES, ORAL, ELECTRIC MECHANICAL AND PNEUMATIC ANNUNCIATORS AND BELLS.
Complete outfits of Speaking Tubes, Whistles Electric, Mechanical and Pneumatic Bells. A full line always in stock. Send for new catalogue. Factory, DeKalb ave. near Knickerbocker Brooklyn, N. Y



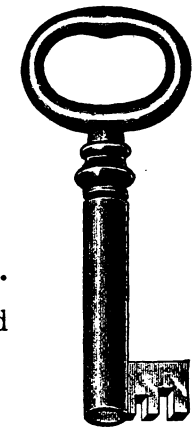
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A complete line of more than 1000 list numbers exclusive of our old and complete line of

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THE YALE & TOWNE M'F'G CO.,

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THE DEALER who sells what
THE PEOPLE ask for.

MAKES FRIENDS and MONEY, and
SAVES TIME and TROUBLE.

The people ask for

LePage's Liquid Glue,

And the people are right.

It is the strongest and best glue made. It has been imitated, but never equalled. Be sure to get what you order and ACCEPT NO SUBSTITUTES.

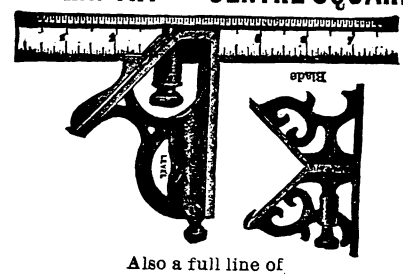
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Made of best forged Tool Steel; are easily and readily adjusted and controlled. Can be made reversible instantly without removing from their work by throwing over the lever in slot of the handle.

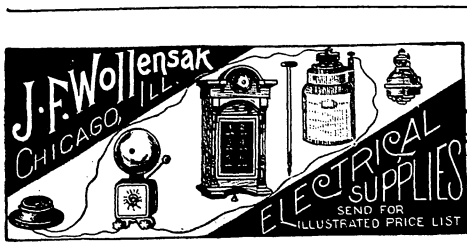
The Set of Combination Tools No. 1 includes the wrench, two sockets, one for screw-driver, bit or reamer shank, with wood handle, and one socket for drill shank and feed nut. The jaws on this wrench open from 3-16 to 1¼ inches.

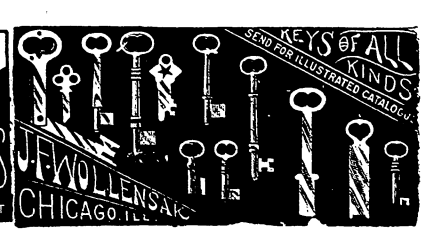
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Screw Cases, &c.
FOR THE HARDWARE TRADE
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92 Park Place, New York.





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WE MAKE ONLY

The Very Highest Grade
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Branch Warehouses: 85 and 87 John St., New York; 197 Lake Street, Chicago, Ill.

THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

Pumps, Hydraulic Rams, Garden Engines,

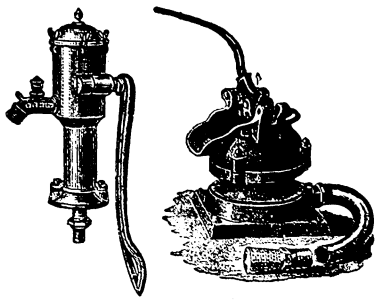
Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines in the World.

DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 209. Fig. 381.



or wherever it is desired to raise a large quantity of water by

hand power.

The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

CAPACITY

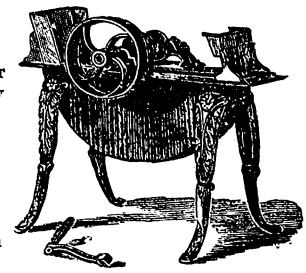
from 3,000 to 4,500 gallons per hour.

These pumps are simple, durable and low priced.

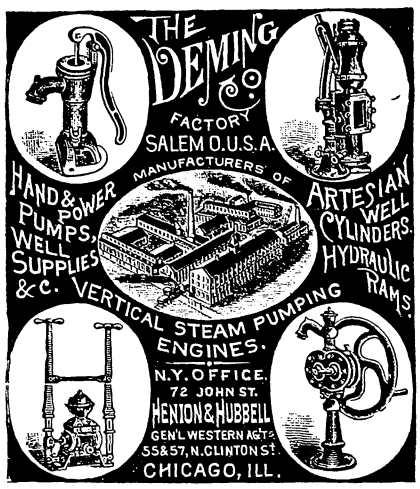
Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.

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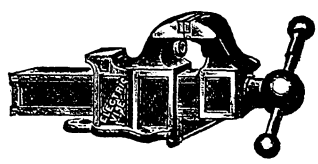
Fig. 145.



C. I. Grindstone Frame.



VISE.

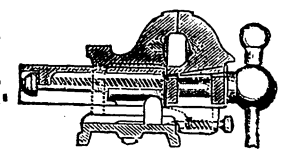


Patented Dec. 27, 1892.

IT HAS QUALITIES THAT ARE UNDISPUTED.

Rapid, Active, Prompt.

One movement in and out, one turn of the hand and the work is secured.



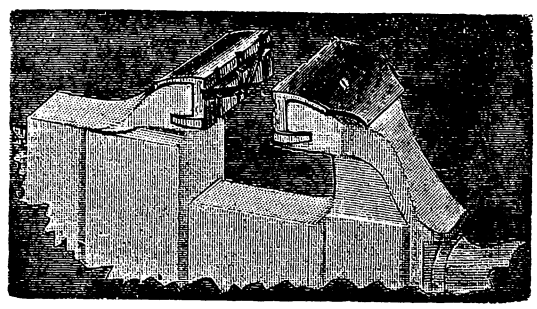
The Capital Machine Tool Co., AUBURN, N. Y.

F.E.MYERS & BRO.



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Ashland Pump and Hay Tool Works.



BINGHAM

PATENT VISE JAW CAP

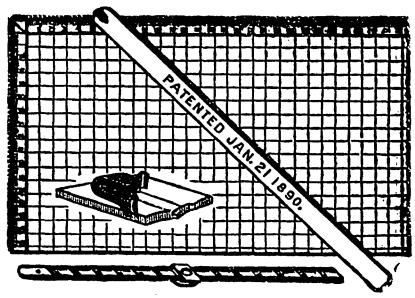
Will Fit any Kind of Vise.

For protecting finished work. Will hold finished rods of any shape without injury.

3½ inch.....per pair, 40 cents.
4 " ..... " " 50 "
4½ " ..... " " 60 "

PRENTISS VISE CO.

44 Barclay St., New York.



The Canton Glass Board.

Cuts any Fraction of an Inch by Eighths.

Unequaled for accuracy and quick work in cutting square or at any angle. Saves breakages, &c.

—ALSO—

IMPROVED TRAMMEL RULE for Cutting Circles

From 3 inches up to 48 inches, Segments, Gothic Shapes, &c.

Send for Circular.

The Canton Saw Co., Canton, Ohio.

The New York Safety Dumb Waiter.
"The Manhattan Dumb Waiter."
"The Improved Humphrey Hand Elevator."
Made specially to be sold by Hardware Stores. Thousands in use. Catalogues on application.

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NEWARK, NEW JERSEY.
Formerly of Poughkeepsie, New York.

THE SCIENTIFIC SWEEP MILL

FOR TWO HORSES.

Grinds EAR CORN and SMALL GRAINS.

Special Cob Breaking Device and peculiar dress of Grinders. Gives BETTER WORK, MORE OF IT, WITH LESS WORK TO TEAM than others. Send for catalogue of this and

POWER MILLS.

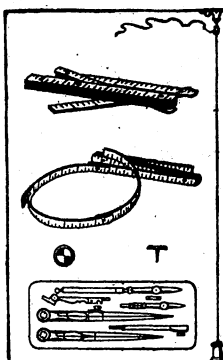
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FULLY GUARANTEED.

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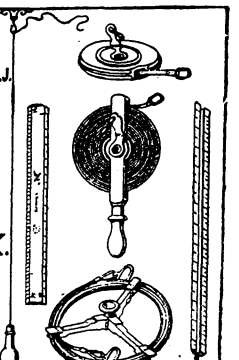
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SUPERIOR QUALITY, LATEST IMPROVED. GREATEST VARIETY.
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FLAT & TRIANGULAR BOXWOOD SCALES, BEST MADE.
PLUMB BOBS, THUMB TACKS, DRAWING INSTRUMENTS.
PRICE LISTS & QUOTATIONS PROMPLY SENT.



HIGHEST GRADE PLATED WARE MADE.

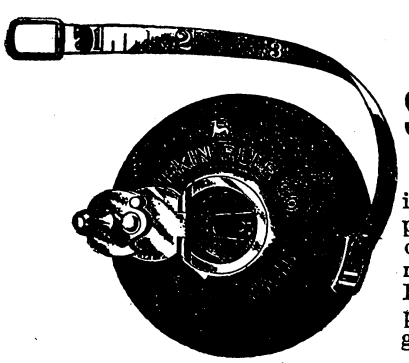
THE MAJESTIC.
Design Patented August 29th, 1893.



All our goods Sectional Plated on parts most exposed to wear.

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"RELIABLE"
Steel Measuring Tapes.

Entirely new. Handle or crank when closed is perfectly flush with leather case. Opens by pressing button on opposite side and folds out double, giving increased leverage. Best and most convenient steel tape on the market. Fully guaranteed. Will send samples on approval. We carry a complete stock of our goods at our New York Office, 20 Murray St.

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IRON INSTEAD OF WOOD.
GALVANIZED IRON
TUBING and CURB,
— FOR —
CHAIN PUMPS,
(Kegler's Patent)
Are Giving Universal Satisfaction,



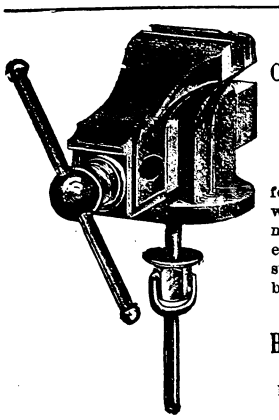
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They do not rust and accumulate filth—always clean. Extreme lightness is combined with strength and durability. No freezing. No waste of water by reason of enlarged reservoir at top of tubing. No annoying wheel at bottom. Easy to handle.

Tubing weighs less than ½ lb. per ft., is connected by couplings and can be attached to any make of curb.

Send for Catalogue.

Bellevue Pump Co., Bellevue, Iowa.



HOLLANDS' OFFSET JAW VISE.

Specially adapted for drill press work where chucks can not be used and equally good for special or regular bench work.

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Manufacturers all styles VISES.



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Manufacturers of
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Berger's Celebrated Pail Ears, Sauce Pan Handles, Eave Trough Hangers, Pipe Fasteners, Hooks, Straps and Barrel Trucks, &c., &c. Send for Prices and Catalogue.
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The National Saw Co.,

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Wheeler, Madden & Clemson Mfg. Co., Middletown, N. Y. Woodrough & McParlin, Cincinnati, O. Woodrough & Clemson, Boston, Mass. Monhagen Steel Works, Middletown, N. Y. Richardson Brothers, Newark, N. J. Harvey W. Peace Co., Brooklyn, N. Y. Pennsylvania Saw Co., Philadelphia, Pa.

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SAWS

Warranted Better than the Best

ENGLISH ANVIL

Face in one piece of BEST TOOL CAST STEEL, PERFECTLY WELDED, perfectly true, of hardest temper, and never to come off or "settle." Horn of tough *untempered steel*, never to break or bend. *Only Anvil made in the United States fully warranted as above.*

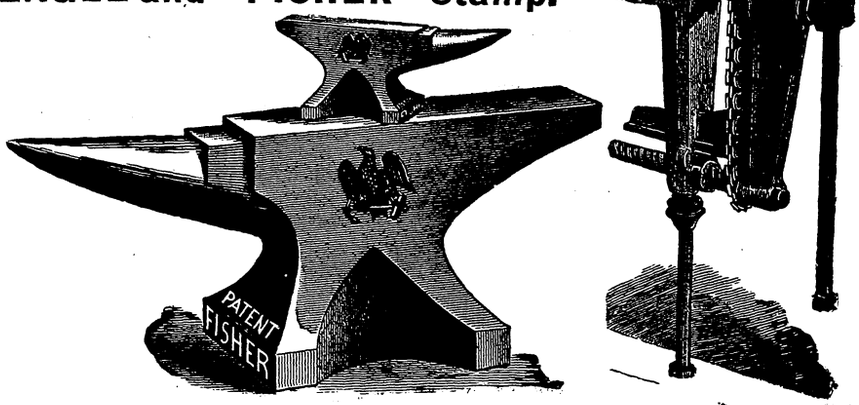
FISHER DOUBLE-SCREW VISE

IS FULLY WARRANTED STRONGER THAN ANY OTHER LEG VISE, AND ALWAYS PARALLEL. Is the best Vise for Machine Shops and Blacksmiths, and for all heavy work. ACCURATE AND DURABLE. Send for Circular.

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CIRCULAR, BAND, BUTCHER, BUCK

SAWS

MANUFACTURED BY

C. A. HILES & CO.,

336-338 Carroll Ave. CHICAGO.

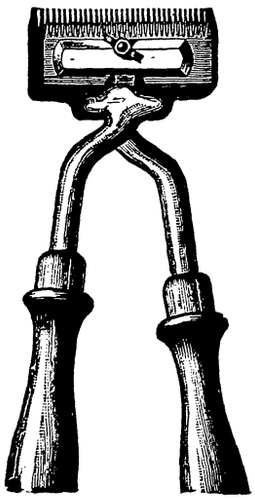
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Headquarters for

Coates' Horse Clipper



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Barber Clippers.

ALSO

THE "BELL"

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Horse Clippers.

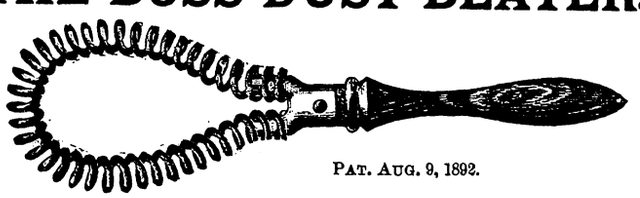
At prices to suit the times.



Simonds Mfg. Co. Simonds Saw Co.

FITCHBURG, MASS. CHICAGO, ILL. SAN FRANCISCO CAL. PORTLAND, ORE.

THE BOSS DUST BEATER.



PAT. AUG. 9, 1892.

NEAT, DURABLE, AND DOES THE BUSINESS.

For removing dust and filth from Clothing, Upholstered Furniture, Rugs and Carpets it is just the thing. Will raise the nap and so improve the appearance. Will not, like other Dust Beaters, leave marks, nor tear the fabric. The coil is of steel wire secured in a malleable iron socket and attached to an enameled wooden handle. Just what everybody wants.

Retail Price, 25 Cents. Sent by Mail, 35 Cents.

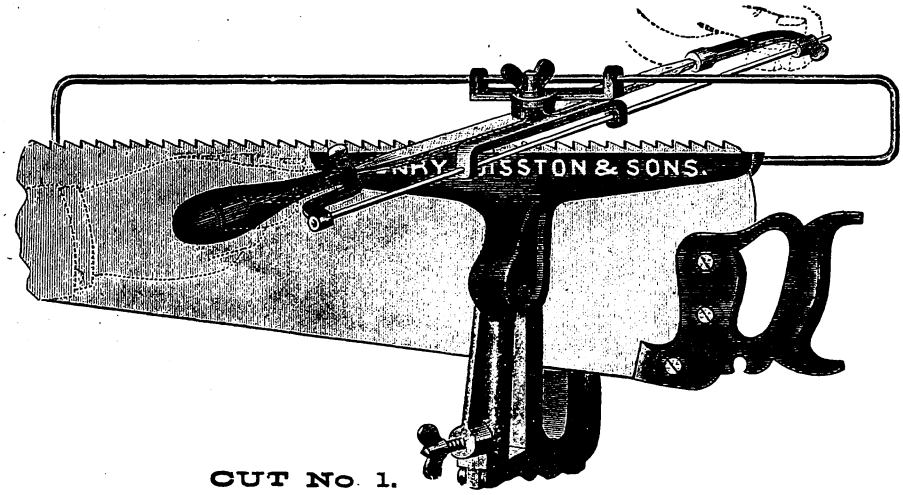
PEABODY & PARKS,

Manufacturers, TROY, N. Y.

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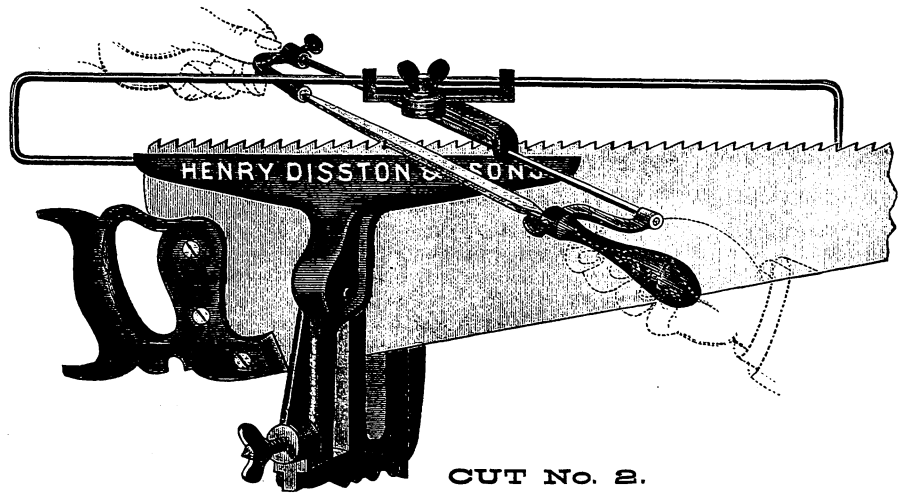
DISSTON'S Improved Saw Clamp
AND FILING GUIDE.

ESPECIALLY DESIGNED TO ASSIST THOSE NOT SKILLED IN THE ART OF SAW FILING TO FILE A SAW CORRECTLY.



CUT No. 1.

Cut No. 1 shows a saw and the attachment in proper position for filing the first side; and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



CUT No. 2.

To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth. Always keep the file as nearly horizontal as possible.

This filing guide is sold only attached to our No. 3 Improved Clamp or Vise, and not sold separately. We recommend this as the best saw clamp on the market, being quickly and easily adjusted, and not liable to get out of order.

Write for price including No. 3 Clamp, Filing Guide, File and Handle complete. Packed one in a wooden box

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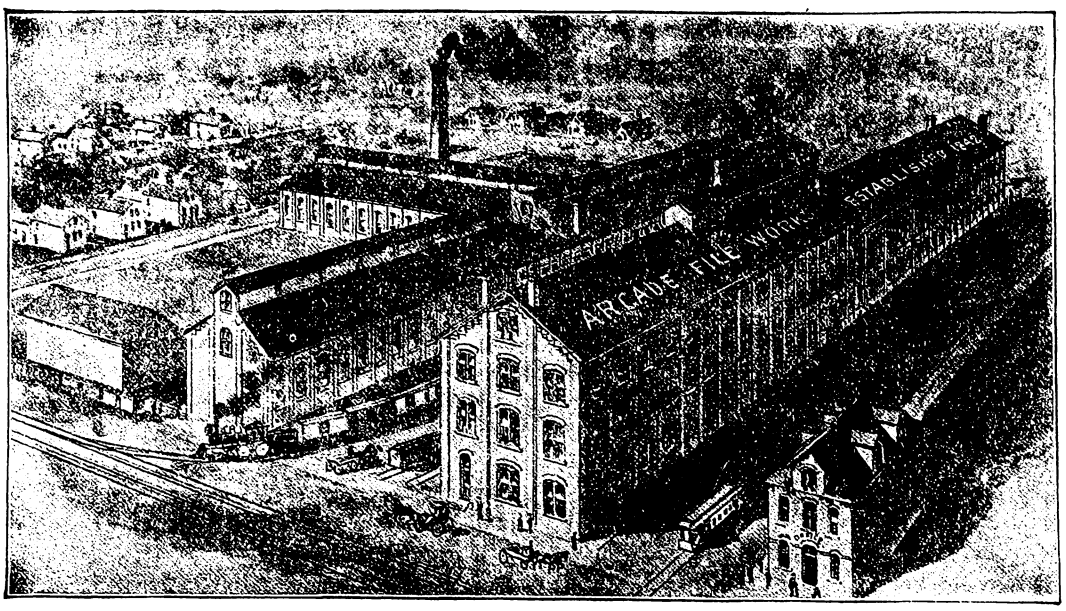
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Just Published.—THIRD REVISED EDITION.

THE IRON AGE STANDARD HARDWARE LISTS

FOR USE IN PRICE BOOKS.

Compiled by R. R. WILLIAMS, Hardware Editor of The Iron Age.

This pamphlet contains the principal standard Hardware price-lists in as clear and compact an arrangement as possible, so as to permit their being advantageously cut out and inserted in the price book. In order to make them adapted to this use they are printed on thin and tough paper of fine quality and on only one side of the paper.

Saucepans and Round Boilers.

	Plain	Turned.	Tin'd or En'd.
Pints.			
1	$0.30	.35	.39
1½	.32	.37	.44
2	.35	.39	.48
3	.42	.47	.56
Quarts.			
2	.50	.56	.63
2½	.53	.59	.68
3	.55	.62	.73
4	.60	.68	.84
5	.65	.75	.96
6	.70	.81	1.11
7	.75	.84	1.21
Gallons.			
2	.85	.96	1.31
2½	1.05	1.18	1.56
3	1.20	1.35	1.70

The success of the effort to give the lists in small space is illustrated in many of the lists, in which a clear and condensed arrangement is secured. For instance, the wrench list occupies but 3 inches by ¼ inch, while the list of Stove Hollow Ware, in very small space, gives the list prices on a large and important line of goods which often occupy several pages in catalogues. In several lists, such as Strap and T Hinges and Butts, a new arrangement is adopted, which is regarded as presenting these lists in a very convenient as well as condensed form.

As is obvious from the lists herewith reproduced, the shape and size of the different lists varies greatly, the aim being to give each list the smallest and most convenient arrangement possible. None of the lists are, however, more than 3½ x 6 inches in size, very few of them being as large as this and most of them very much smaller. In use it is intended that they shall be trimmed closely before they are inserted in price books, when they may be attached either by one edge close to the hinge of the book, as will, perhaps, be most convenient with the larger lists, permitting the use of the entire page for memoranda, or the smaller lists may be pasted on the page in connection with the entries in regard to discounts, freights, &c. Many of the lists are so compact in arrangement as when thus inserted to leave ample room for recording quotations.

Stove Hollow Ware. Ground and Unground.

POTS, KETTLES, ETC. (CAST IRON.)

No.....	6	7	8	9	10	11
Pots.....	$0.65	.75	.85	1.00	1.25	1.75
Kettles.....	.55	.65	.70	.85	1.00	1.40
T Kettles.....	.75	.80	.90	1.00	1.25	....
Spiders.....	.27	.30	.35	.40	.50	.60
Griddles Round	.22	.25	.27	.30	....	....
" Long..	.40	.50	.60	.75	....	....

SCOTCH AND YANKEE BOWLS.

No ...	1	2	3	4	5	6
Scotch Bowls..	$0.35	.40	.45	.50	.60	.70
Yankee Bowls.	.35	.45	.55	.65	.75	.90

Wrenches. Standard List.

Inches.	6	8	10	12	15	18	21
Black...	$9.00	$10.00	$12.00	$14.00	$24.00	$30.00	$36.00
Bright..	10.00	11.00	14.00	16.00	26.00	32.00	38.00

Some merchants use this pamphlet for reference, checking off invoices, etc., as it gives the leading lists in a more convenient form than they can otherwise be obtained. The lists are, however, intended primarily to be cut out and inserted in price books, and *can be used in connection with any of The Iron Age Hardware Price Books.*

Glue Pots. Tinned or Enameled

No. 4/0....	$4.50	No. 2	$8.40
3/0....	5.00	3.....	10.26
2/0....	5.50	4	12.42
0	6.00	5.....	14.58
1	6.75	6.	16.94

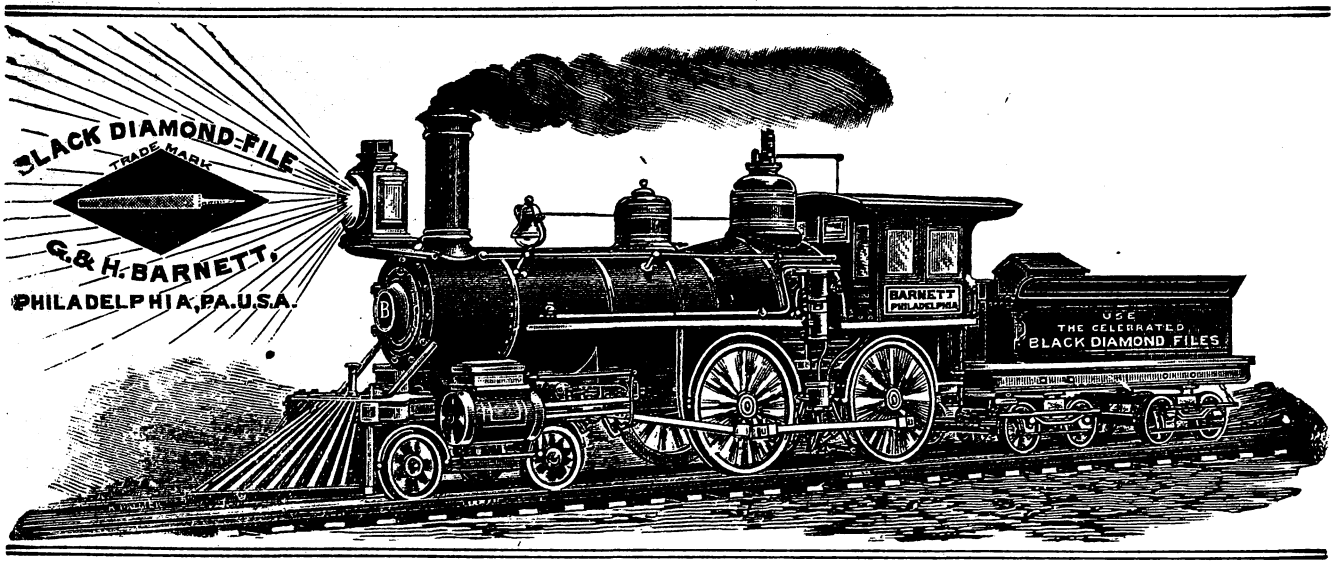
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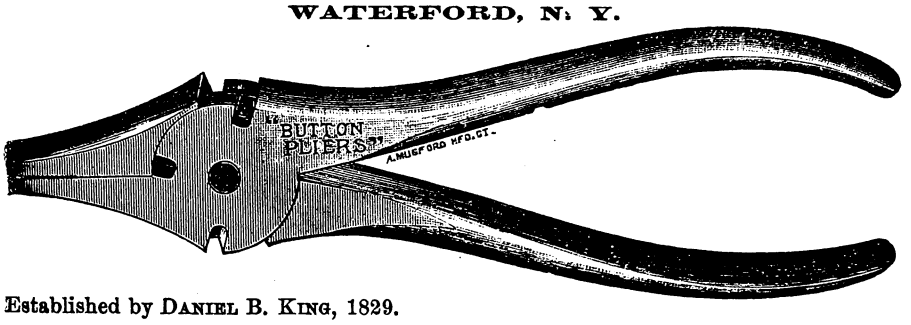
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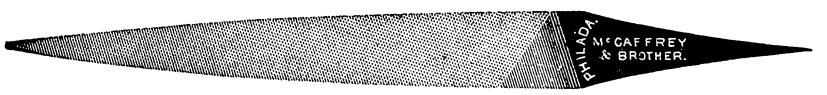
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Mechanics are now inquiring for this tool, and Hardware Dealers should have them in stock, or at least have a sample.

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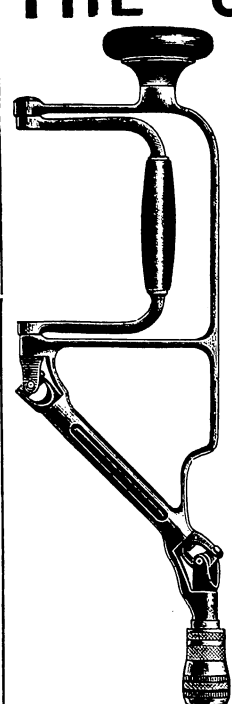
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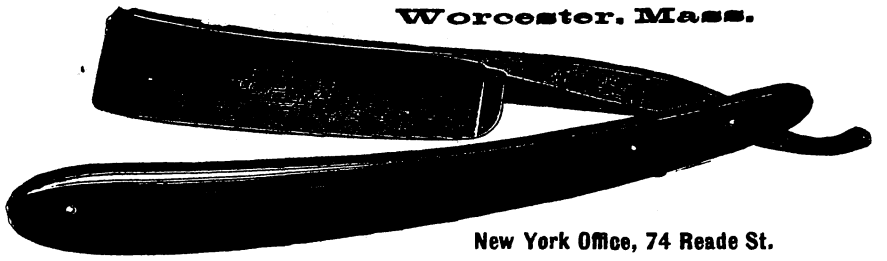
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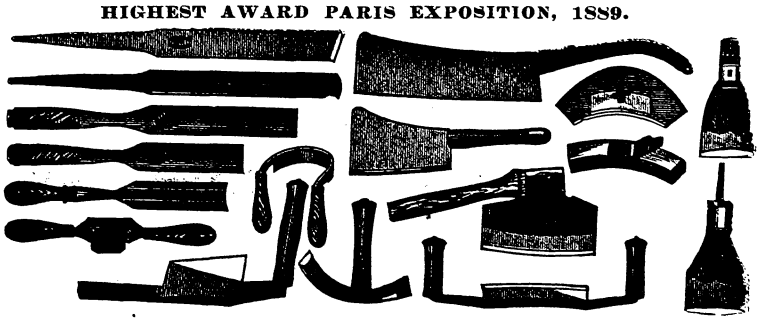
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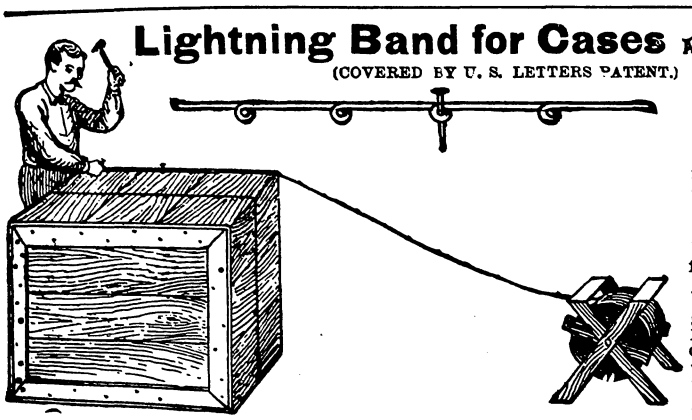
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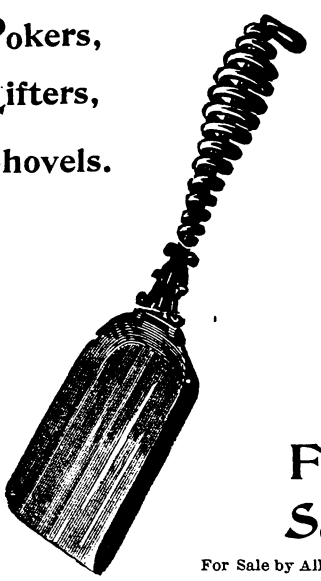
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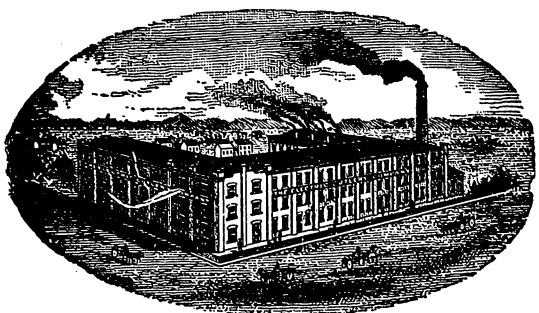
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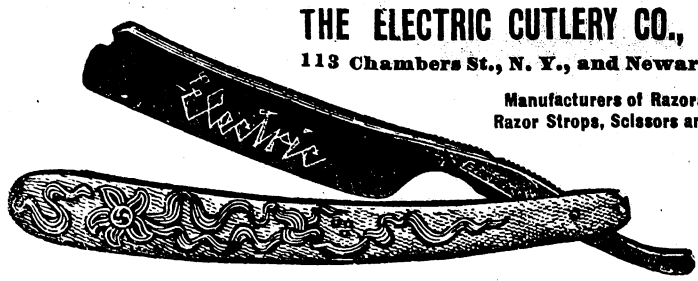
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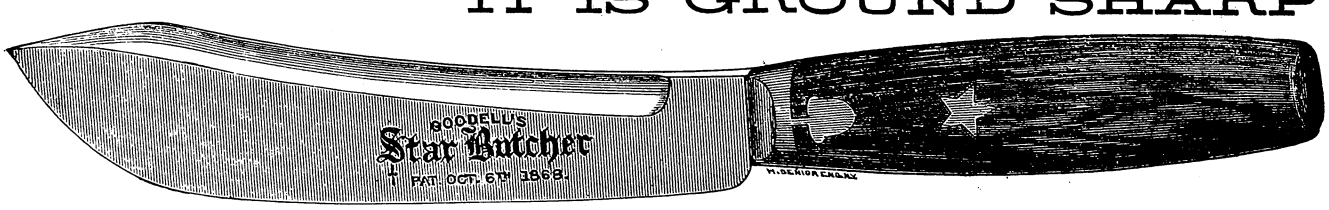
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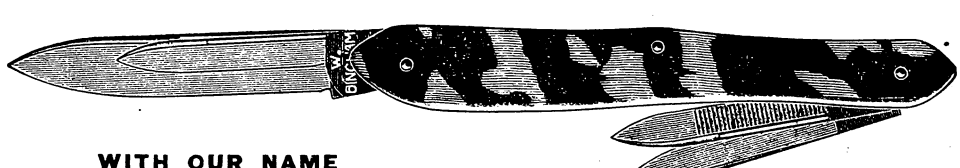
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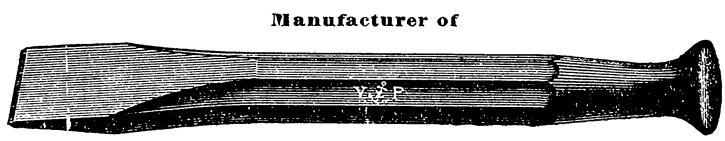
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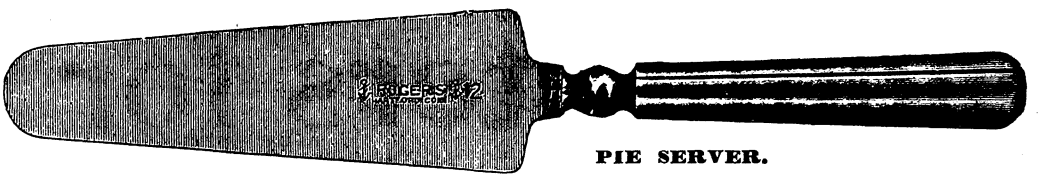
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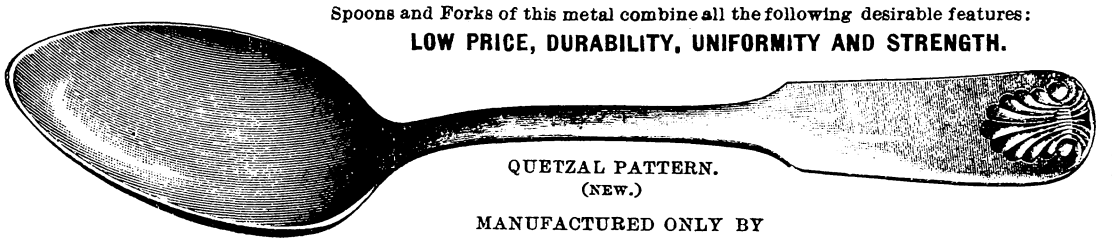
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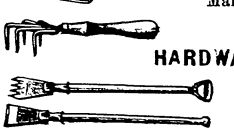
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Makers of a large line of

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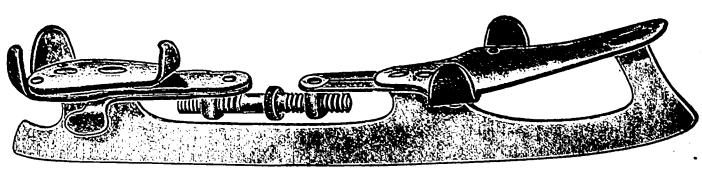
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Headquarters for Winslow Skates.

Obtain our Prices before Ordering Elsewhere.

1893-94 Catalogue Now Ready.

The SAMUEL WINSLOW SKATE MFG. CO., Worcester, Mass. U.S.A.



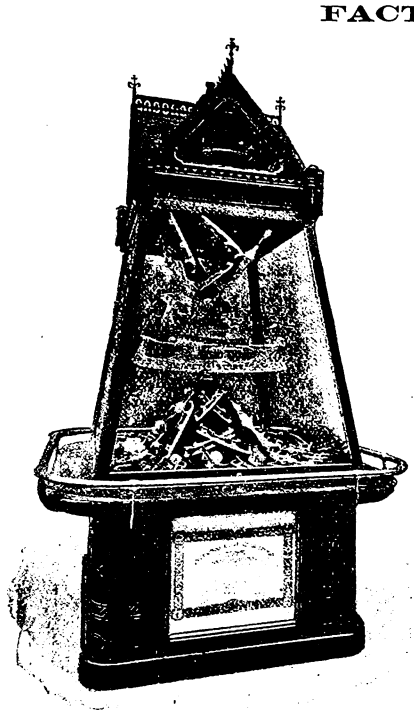
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BARNEY & BERRY,

MANUFACTURERS OF

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FACTORY AT SPRINGFIELD, MASS.



ONLY AWARD AT
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CHICAGO, 1893.
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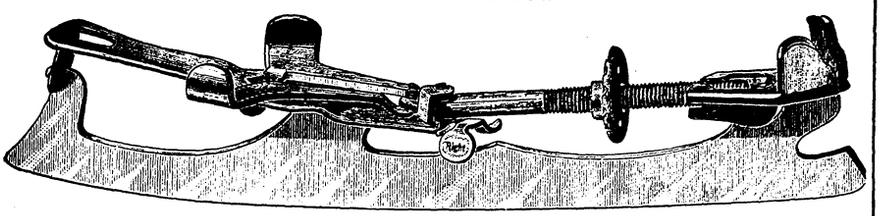
New York Office, 114 Chambers St.
Philadelphia Office, 5th and Commerce Sts.
New England Office, 115 Broad St., Boston, Mass.

Catalogue Free showing 50 styles and grades of finish.

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THE LONG REACH SKATE

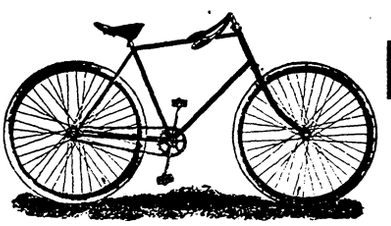
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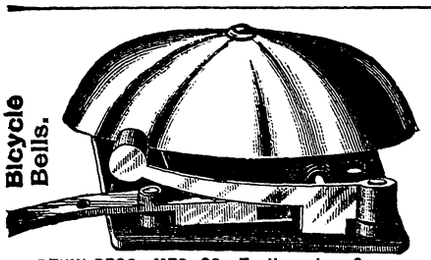
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Wholesale Hardware and Tinners' Stock.

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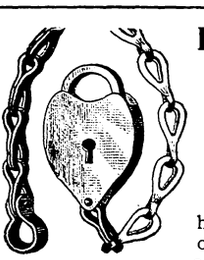
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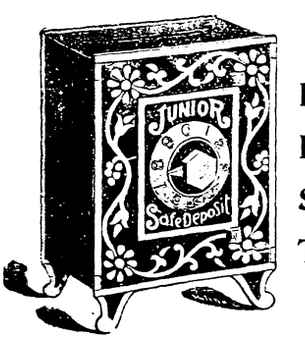
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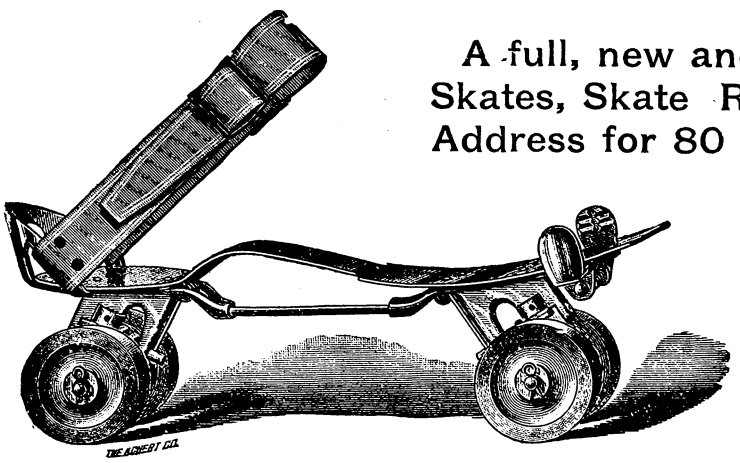






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A full, new and complete stock of Roller Skates, Skate Repairs and Rink Supplies. Address for 80 page catalogue and prices,

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If you did not always make money on improved goods at improved prices. The O. L. Company can give you another opportunity. You cannot afford to remain ignorant even for the balance of this very year of what they can do for you. Get sample small order and be surprised. They make the whole line. The Surprise Tubular is to day the greatest Lantern in the world, and the sole manufacturers are the

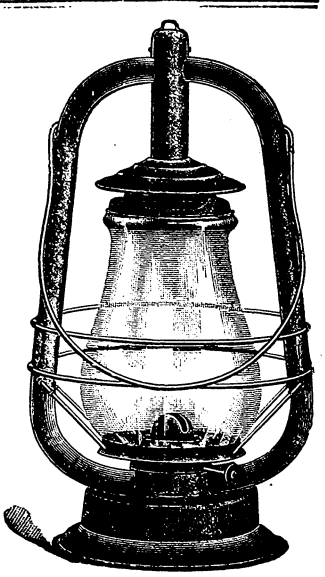
OHIO LANTERN CO.,

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W. W. PRYOR & CO,

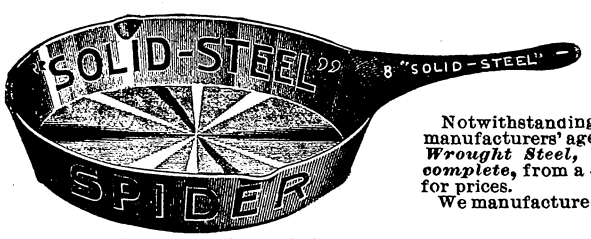
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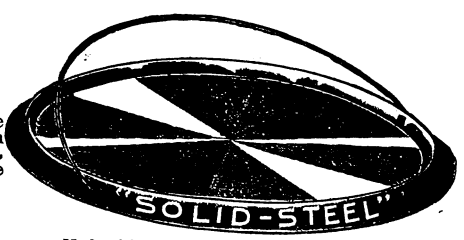


No Seams, no Rivets in "Solid-Steel" Ware.

BRILLIANT FINISH.

Notwithstanding the claims made by some manufacturers' agents, *our* spiders are made from *Wrought Steel, Without Seams or Rivets, complete*, from a *single piece of metal.* Write for prices.

We manufacture our own goods.



Made either with Bails or Solid Handles.

The Cleveland Stamping & Tool Co., Cleveland, O.

We do Light and Heavy Stamping and Blanking. Also build Dies and Stamping Machinery.

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Also makers of a large line of popular

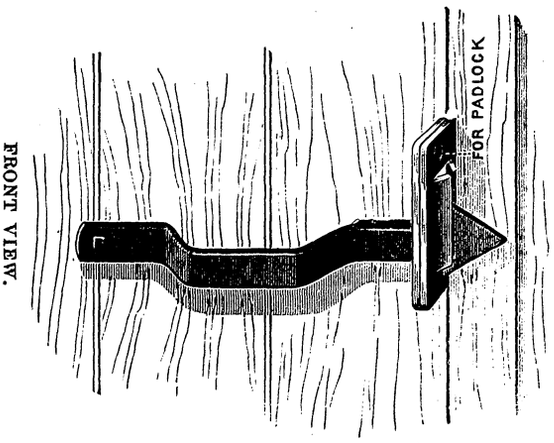
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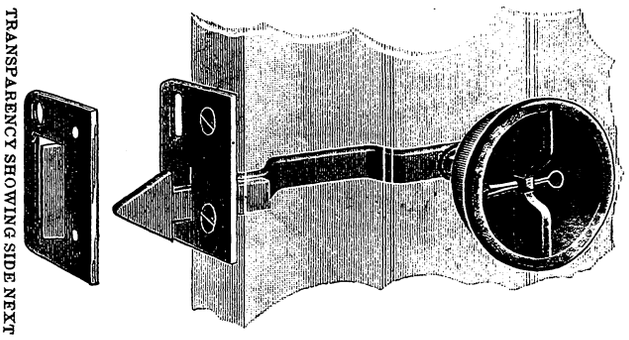
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MADE OF STEEL.



IT IS DESIGNED especially for sliding doors. It is strong, durable and practically unbreakable. It is adapted for either right or left edge of door. It may be applied to either the inside or outside of door. It is also adapted for use on double door. It has no exposed screws or bolts that can be tampered with from the outside.

1 DOZEN IN BOX. LIST, $4.00 PER DOZEN.



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STEVENS' "FAVORITE" RIFLE.



ABOVE TARGETS ARE ACTUAL SIZE.

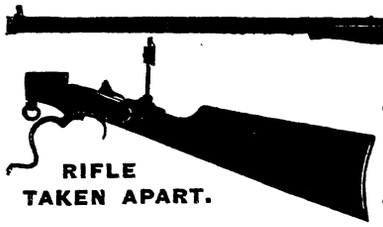
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22-INCH BARREL.

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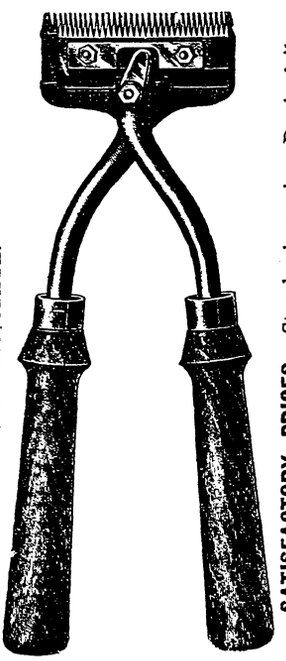
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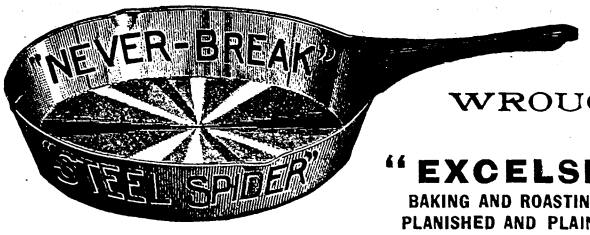
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Also Machinists' Tool Chests, empty. Illustrated Catalogue and prices furnished on application.

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"NEVER-BREAK"

WROUGHT STEEL COOKING UTENSILS.

MIRROR POLISHED—TINNED—PORCELAINED.

"EXCELSIOR" BAKING AND ROASTING PANS, PLANISHED AND PLAIN STEEL.

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No. 3 Globe Street Lamp.

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The S. G. & L. CO.

Tubular Globe Street Lamp

IS THE Best Street Lamp Manufactured.
Equal to the best Gas Light.
Will not Blow Out in the Strongest Wind.
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Automatic Extinguisher.
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Will Burn Four Hours for One Cent.

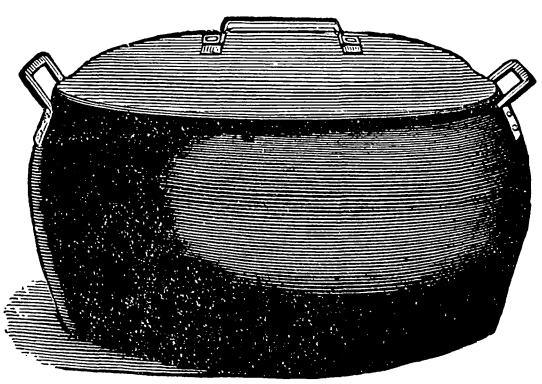
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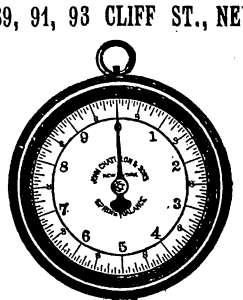
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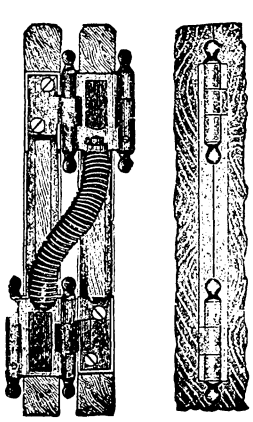
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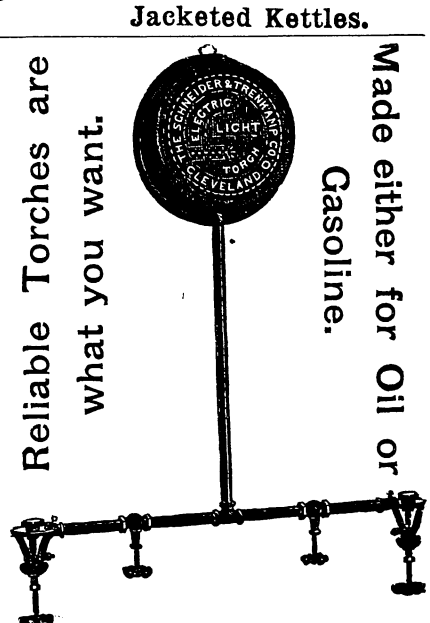


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DOORS.	1 Jap'ed Pair.	21 Nickel Plated Pair.	31 Bronze Plated Pair.	41 Real Bronze Pair.	51 Polished Brass, Pair.
⅞ to 1 in.	$1.20	$3.00	$3.00	$7.25	$7.25
1⅛ to 1¼ in.	1.50	3.75	3.75	8.00	8.00
1⅜ to 1½ in.	2.50	5.50	5.50	10.75	10.75
1¾ to 2 in.	4.00	7.50	7.50	18.00	18.00
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2¾ to 3½ in.	10.00	14.00	14.00	36.00	36.00

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Reliable Torches are what you want.



Made either for Oil or Gasoline.

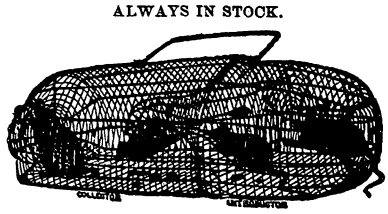
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ALWAYS IN STOCK.



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SOLD BY ALL HARDWARE DEALERS. SEND FOR CATALOGUE.

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"SHUT DOWN! What's the Matter?"

"BELT BROKE AGAIN!"

"See here, Mr. Foreman, if you don't have fewer stoppages I'll——"

"Stop, Mr. Proprietor, the fault is yours. Quit buying belts that crack, peel, open between plies, stretch and break, and I'll give you a smooth run. You think it economy to buy cheap belts from Worthless & Co. Why! the time lost and trouble and annoyance caused by shut-downs would pay the difference between good and bad belts ten times over. Why don't you buy Cleveland's 'Shield High Grade,' sold by Reliable & Co.? It has an established reputation, has been thoroughly tested, and is in use in all the large mills and elevators here. You take no chances on it. Besides, a strong warrantee is indelibly branded upon it, such as no manufacturer would dare put on a poor belt. You remember that threshing machine man, whose engine we repaired, said he had a Cleveland High Grade Belt in use over five years, and if it will stand such severe work, it certainly will ours."

Trade  Mark.

LABEL INDELIBLY STAMPED ON EVERY 30 FEET OF BELT.

We are the only manufacturers who indelibly stamp a warrantee on each and every belt (see copy of label) and it remains as long as the belt lasts; and who give a written guarantee (see fac-simile). Our threshing machine belts have made a wonderful record, and our endless belts have given splendid service, the splice being as strong as the solid part of the belt. Suction Hose for Portable Engines and all other purposes.

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We Guarantee *our "Shield High Grade" Belt to be made of best long staple, 30 & 32-oz. cotton duck; To be the most durable, because it is made of best materials, by special machinery; To be the best selling belt, because it has the best reputation, a cleaner record of long service, and because its warrantee is stronger, bolder, broader than any other, and is irrevokable, protecting both dealer and consumer. We further guarantee that, should any belt, under fair and reasonable service, fail or give out from any defect in material or manufacture, to replace same free of charge, on return to us.*

Witness *our hand and seal.*



Cleveland Rubber Works

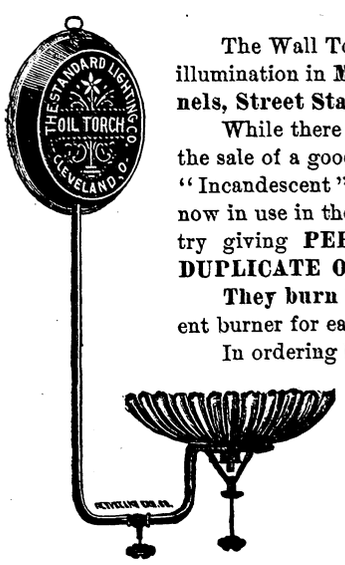
Of the Mechanical Rubber Co.

CLEVELAND RUBBER WORKS

OF THE MECHANICAL RUBBER CO., CLEVELAND, OHIO.

LIGHT YOUR DARK SHOPS CHEAPLY.

Give your men plenty of Light and they will do double work.



The Wall Torch has been used for several years as a means of illumination in **Mills, Foundries, Machine and Car Shops, Tunnels, Street Stands, Band Stands, Smith Shops,** etc.

While there are many cheap, inferior torches made which injure the sale of a good article, and condemn the **Torch** in general, our "Incandescent" Wall Torches are recognized as the best, and are now in use in the largest manufacturing establishments in the country giving **PERFECT SATISFACTION,** as is evidenced by the **DUPLICATE ORDERS** we receive from year to year.

They burn 150° Coal Oil, or 74° Naphtha, requiring a different burner for each.

In ordering be careful to state which is desired.

Price, for Single Torch, complete, $2 each.

SPECIAL PRICE QUOTED FOR QUANTITIES.

THE STANDARD LIGHTING CO.,

100 to 118 Perkins Ave., - - - - Cleveland, Ohio.



Dangler Electric Torches

FOR GASOLINE OR OIL.

14 JETS OF LIGHT

3 to 6 INCHES LONG.

FOR lighting manufacturing establishments, such as Rolling Mills, Foundries, Machine Shops, Engine Rooms, &c., &c., with a convenient, portable, brilliant, steady light, and by cheaper means than by Coal Gas

SOLE MANUFACTURERS,

The Dangler Stove & Mfg. Co.,

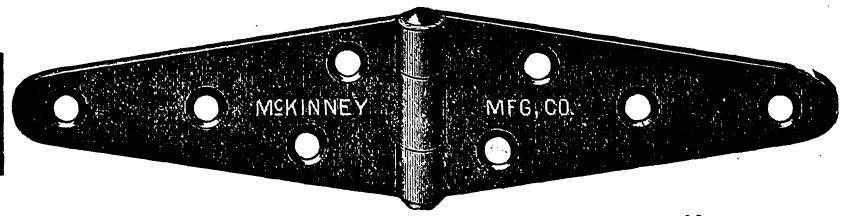
Cleveland, Ohio.

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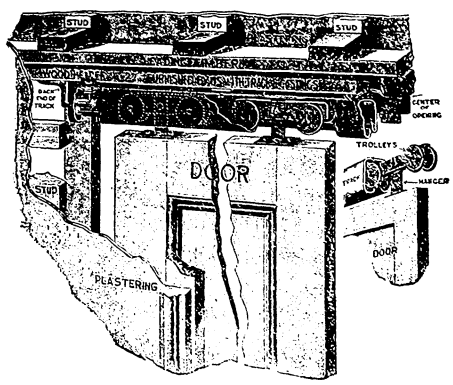
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That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

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Steel  Hinges.

SEND FOR LIST. "NONE BETTER."



PARLOR DOOR HANGERS

The adjustment is in the Track and not in the Hanger, as in other fixtures.

Track can be taken out of Pocket and replaced without defacing walls after house is finished.

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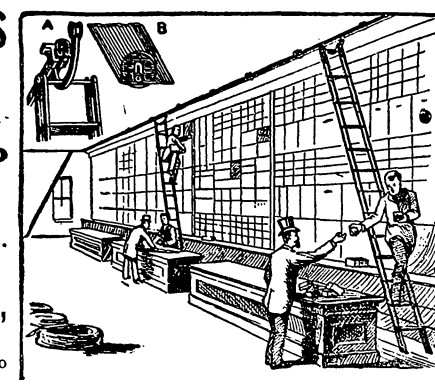
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SEND FOR CATALOGUE.

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We make four styles of **Rolling Ladders** to reach shelving of any height.

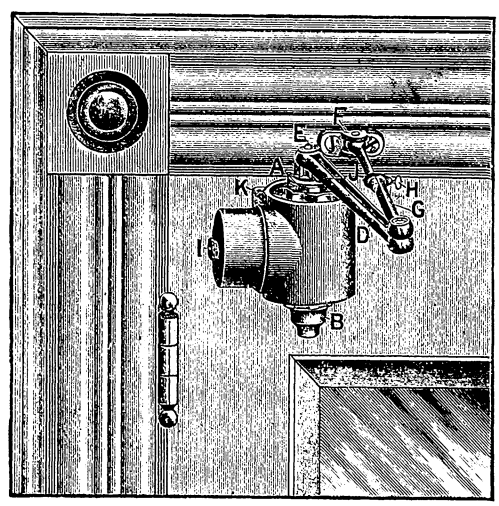


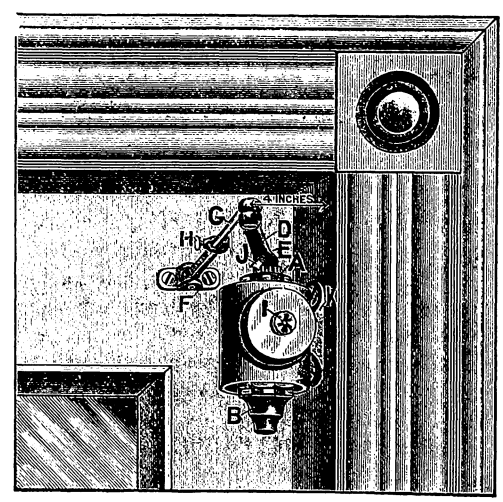
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Easily Adjusted and Adapted for all Requirements.





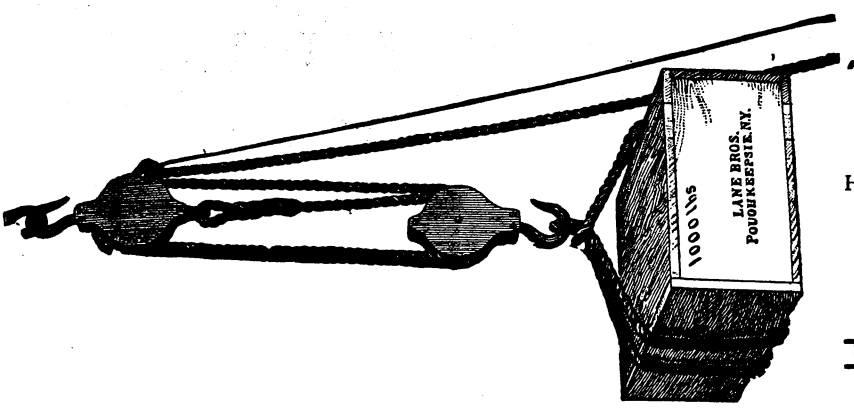
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LIQUID DOOR CHECKS AND SPRINGS,

Fine Builders' Hardware. Wood and Machine Screws.

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TACKLE BLOCKS,

Anti-Friction Steel Bushings,

Holds the load at any point, and always sure.

SEND FOR CIRCULAR.

For sale by the Hardware trade.

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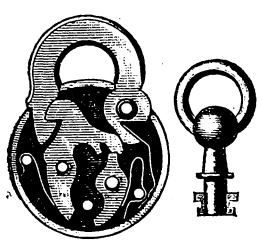
You are selling that kind of a lock every day and your customers think you are selling the best the market affords.

ARE YOU SELLING the best the market affords?

The Craig Locks are guaranteed Sneak Thief Proof.

Send for Catalogue. **KEYLESS LOCK CO., I. A. 197 So. Canal St., Chicago, Ill.**

PATENT PERFECTION PADLOCK.



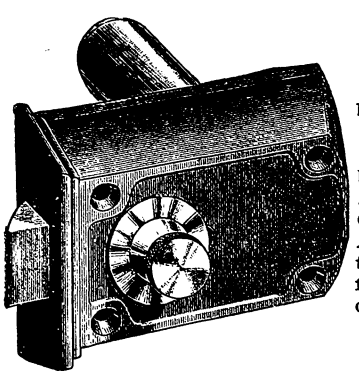
Eight Tumblers, Key Turning Both Ways.

Sizes, ¾ inch to 2½ inches, of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, ½ and ⅝ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.

Adopted by the United States Treasury for bonded warehouses.

AMES SWORD CO., Chicopee, Mass.

Send for Price-Lists and Circulars.



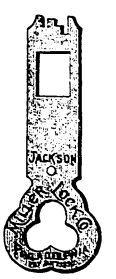
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ALL BRONZE NIGHT LATCH.

Made also of JAPANNED IRON with BRONZE BOLT and ESCUTCHEON.

Reversible. Adjustable. **3** Plated Steel Keys. No springs, except the bolt spring. **Awarded Best Prize** at World's Fair, Chicago. Undoubtedly the best latch extant. All are fully guaranteed. We employ no travelers and no agents. Ask your **Jobber** for our goods. Let us know if our **Cat. No. 11** is not on your file.



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SAFEST "VASSAR" LOCKS AND BEST.

ARTISTIC BRONZE HARDWARE

READING HARDWARE COMPANY, READING, PA.

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CLOTHES WRINGERS.

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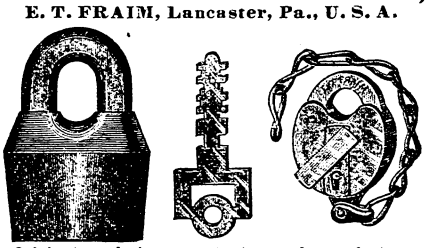
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Originators, designers, patentees and manufacturers of all the leading popular styles of **PADLOCKS,** Key-Locking Scandinavian with our patent Inter-Locking Tumblers; the only reliable lock of this style ever made. **SELF-LOCKING** Scandinavian of the highest type of perfection. Dust Proof Railroad, Freight Car and Switch Padlocks. Brass, Bronze, Steel and Malleable Iron Padlocks for all purposes and in all finishes. 131 different kinds. Write for our new 100-page catalogue.

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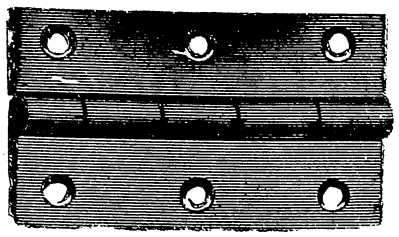
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IN STOCK AND FOR SALE BY

W. & J. TIEBOUT,

Nos. 16 & 18 Chambers Street, New York,

MANUFACTURERS OF

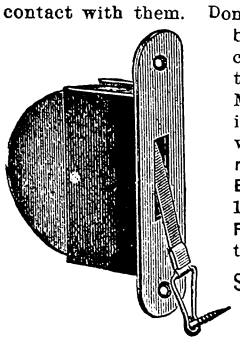
BRASS, GALVANIZED & SHIP CHANDLERY HARDWARE.

A Well Balanced Sash

IS LIKE,

A Well Balanced Business Man,

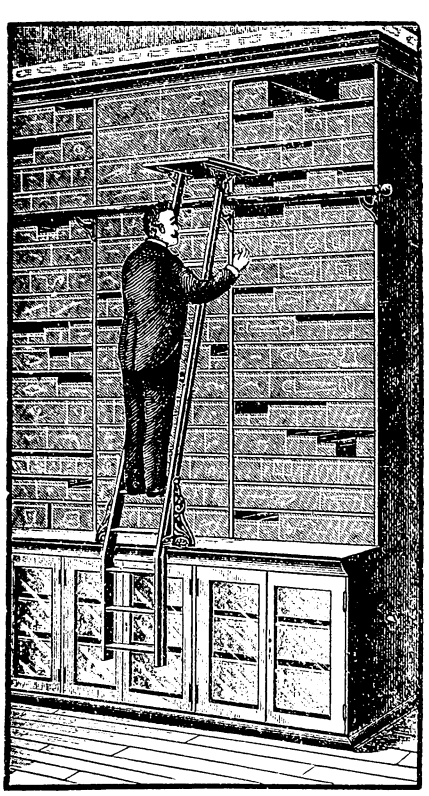
gives satisfaction to those who are brought in contact with them. Don't be inveigled into buying anything called Sash Balances that have no record. Made from light cast iron. Ask your Hardware dealer for **Pullman Steel Frame Sash Balance.** Warranted 15 years. Only **Steel Frame** Sash Balance in the world.



SIMPLE, CHEAP AND DURABLE

PULLMAN SASH BALANCE CO., Rochester, N. Y

New York Office, 142 Chambers St.
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THE BICYCLE STEP LADDER.

The Newest, Neatest, Simplest, Easiest Operated and Safest Store Ladder made.

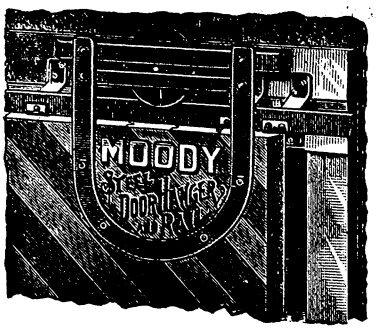
Ladders are not *Suspended*, but *Supported* from below on wheels. Move easier with operator on than others when empty. Highly finished, and very handsome. Made in different grades and prices to suit.

Send for illustrated catalogue and prices.

See this space next week for other styles.

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Showing one-half set of hangers attached to door.

STEEL RAIL.

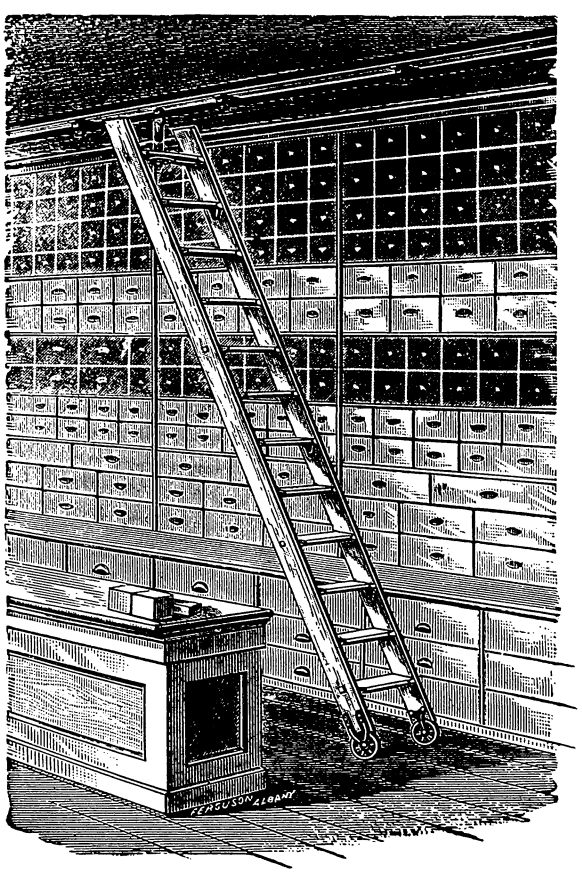


The Only Bracing Bracket Made.

PRICE-LIST.

HANGERS.	Per Doz. prs.
No. 5, to run 6 feet, 3½ in. wheel, -	$10.00
No. 6, to run 10 feet, 4½ in. wheel, -	15.00
No. 7, to run 15 feet, 5½ in. wheel, -	22.00
RAIL, per foot.....	6½ cents

THE "NOISELESS" STORE LADDER.



The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by

M. CROISSANT,

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STRAP HINGES

6, 8 and 10 Heavy.

Snap Price, 50 and 4-10%, delivered.

JAMES MANN & SONS, Buffalo, N. Y.

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CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

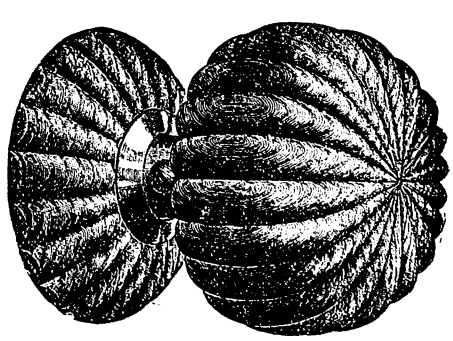
to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

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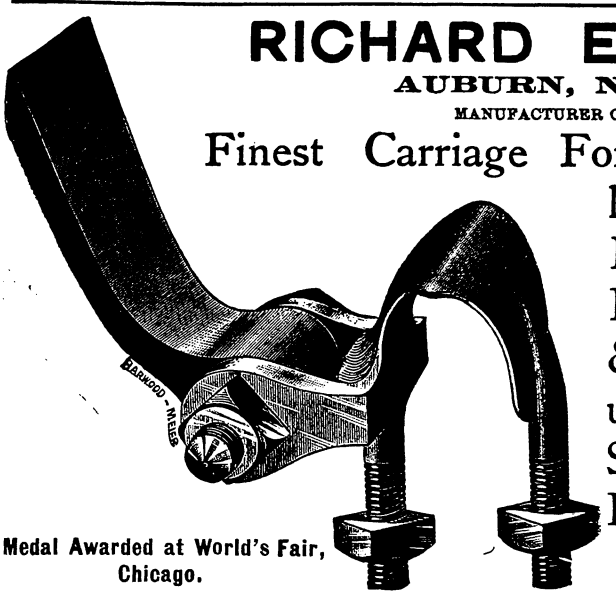
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RICHARD ECCLES,

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MANUFACTURER OF

Finest Carriage Forgings, Couplings, Clips, King Bolts, Fifth Wheels, &c. Manufacture a full line Special Drop Forgings.



Medal Awarded at World's Fair, Chicago.

Send for New Catalogue for Season 1893-94.

WHY USE WOODEN OR HEAVY STEEL BLOCKS

WHEN THE STEEL AND IRON

TACKLE BLOCKS

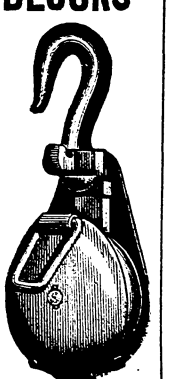
—MADE BY—

The Cleveland Block Co.

CLEVELAND, OHIO, U. S. A.,

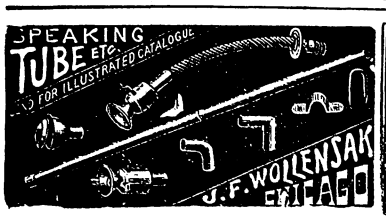
ARE BETTER IN EVERY WAY.

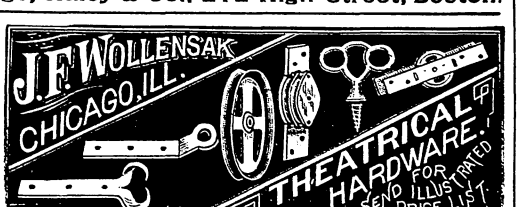




No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

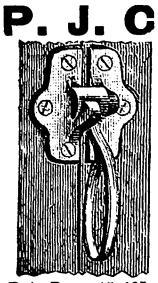
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P. J. Conroy & Co.,

Paschall, PHILADELPHIA.



Pat. Dec. 15, '85

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Refrigerator Door Fasteners

Have rapidly supplanted all others.

Refrigerator Trimmings.

THE QUEEN ANNE SCREEN CO.,
Burlington, Vt.,

MANUFACTURERS OF

Improved Adjustable Window Screens.

THE QUEEN ANNE. With box panels; the only screen made and finished alike on both sides.
THE EUREKA. The best cheap extension screen on the market.
SCREEN DOORS. Finished all ready to hang Sticks, Corners, Improved Frames, &c.
Write for circular and Price-list.

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We make a specialty of the Hardware Trade.
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FROST'S ANTI-RATTLER

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Cut One-half Size.

Sample pair sent to any hardware or saddlery firm by addressing

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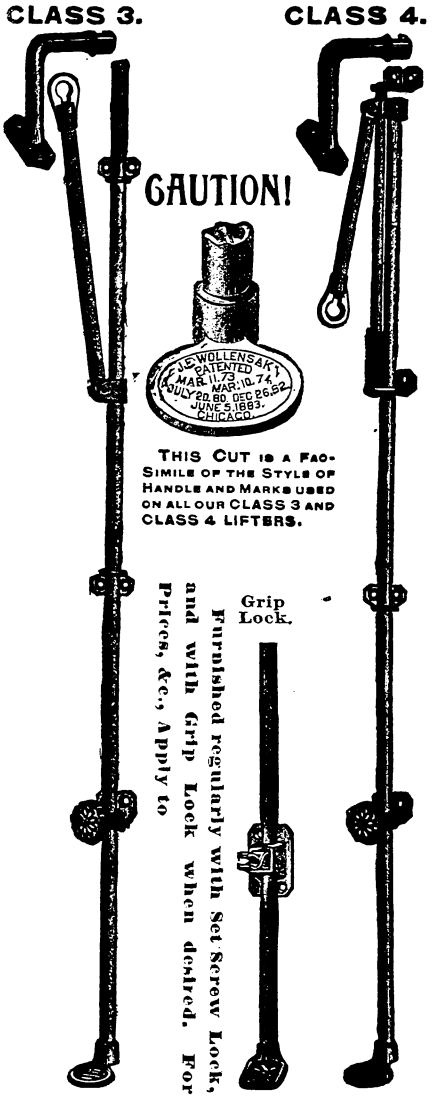
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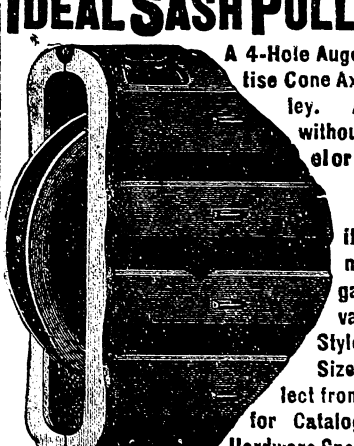
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CLASS 3. CLASS 4.



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IDEAL SASH PULLEY.



A 4-Hole Auger Mortise Cone Axle Pulley. Applied without chisel or Screws Each Pulley its own marking gauge. A variety of Styles and Sizes to Select from. Ask for Catalogue of Hardware Specialties

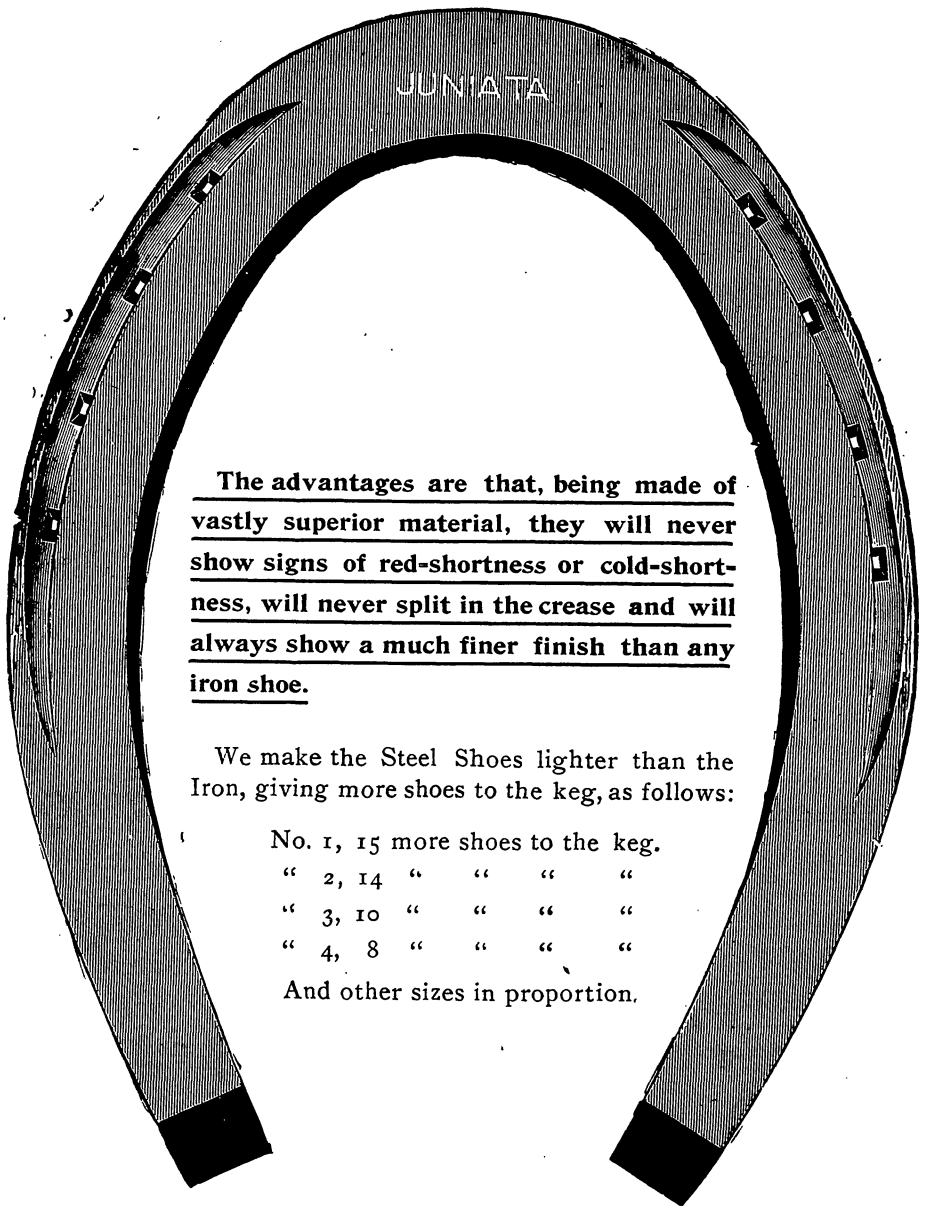
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SHOENBERGER & CO., PITTSBURGH, PA.,

After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged, and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



The advantages are that, being made of vastly superior material, they will never show signs of red-shortness or cold-shortness, will never split in the crease and will always show a much finer finish than any iron shoe.

We make the Steel Shoes lighter than the Iron, giving more shoes to the keg, as follows:

No. 1, 15 more shoes to the keg.
" 2, 14 " " " "
" 3, 10 " " " "
" 4, 8 " " " "

And other sizes in proportion.

No. 2 EXTRA SWAGED HIND.

We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

We would also call your attention to our Improved Steel Toe Calk, equal to any in the market. To secure the best wearing qualities use sand or borax in welding on a calk and cool off at a dark red, or still better, cool off without plunging in water. We make sizes numbers 1, 2, 3, 4, 5 and 6, packed in 25-pound boxes.

Write to us for information and prices, or apply to jobbers and dealers, who sell them everywhere.

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JUNIATA IRON AND STEEL WORKS, - - - PITTSBURGH, PA.

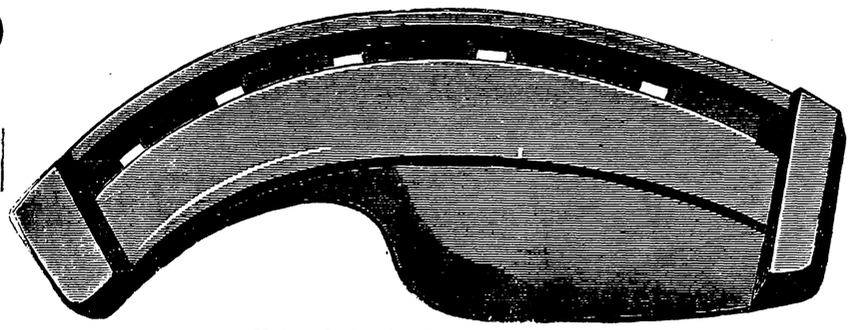
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SCRANTON FORGING CO.,

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CARRIAGE HARDWARE AND SPECIAL DROP FORGINGS.

FORGED OX SHOES.



Made under Deeble's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

IT IS JUST RIGHT.

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HORSE AND MULE SHOES.

Superior Quality, Shape and Finish.

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Horse and Mule Shoes of the Perkins Pattern.

SPECIALTIES:—X L Steel Shoes, Toe Weight Shoes and Goodenough Shoes.

Works at Valley Falls, R. I. Office, 31 Exchange Place, Providence, R. I.

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THE NEW DIAMOND STATE HORSE AND MULE SHOES.

JUST TRY THEM and YOU will say they excel all others.

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DIAMOND STATE IRON CO.

WILMINGTON, DELAWARE.

Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Blank Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

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LE COUNT'S HEAVY STEEL DOG,

With Steel Screws. U. S. Standard and the points hardened.



1	⅝	$0 40		13	2¼	$1 35	
2	⅞	50		14	2⅜	1 45	
3	⅝	60		15	3	1 60	
4	¾	60		16	3½	1 80	
5	⅞	70		17	4	2 10	
6	1	70		18	4½	2 75	
7	1⅛	80		19	5	3 25	
8	1¼	80		Full set of 19, $23.60.			
9	1⅜	95		20 (extra)	5½	4 00	
10	1½	95		21	6	5 00	
11	1¾	1 10		22	7	6 00	
12	2	1 20		23	8	7 00	

One small set of 8, by ¼ in. to 2 in.... 6 25

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When ordering, state as above, whether a full set, or a set of 12, or small set of 8, is wanted.

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HORSE SHOES.

"Burden Best"

Iron

Boiler Rivets.

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HORSE SHOES.

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Standard Horse Shoe Co.,

Manufacturers of

HORSE AND MULE SHOES.

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HIGHEST AWARD

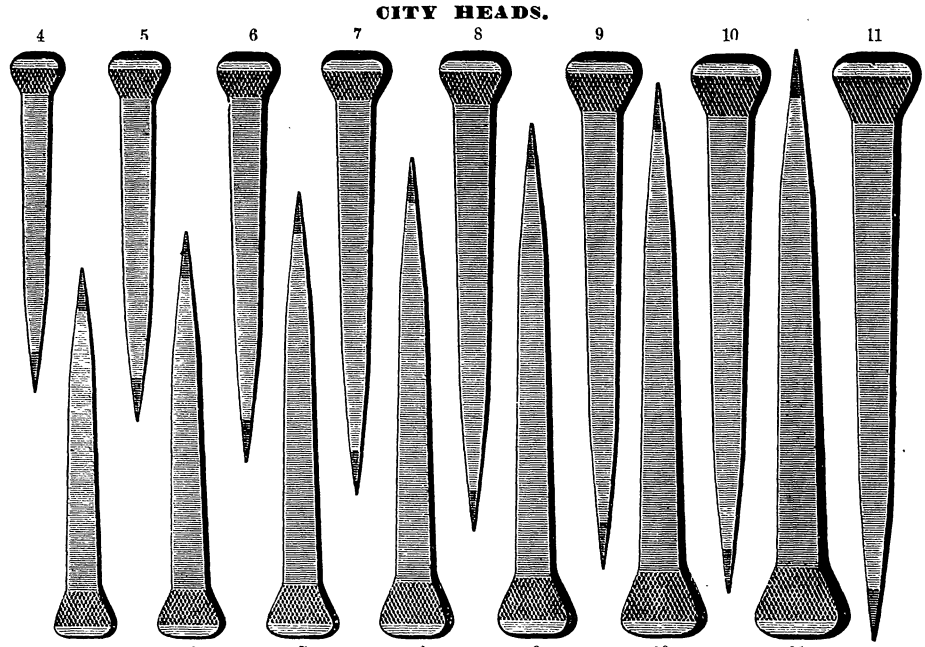
AT

WORLD'S COLUMBIAN EXHIBITION.

CAPEWELL HORSE NAILS.

"Tensile strength one-half greater than that of any other nail made."

CITY HEADS.



REGULAR HEADS.

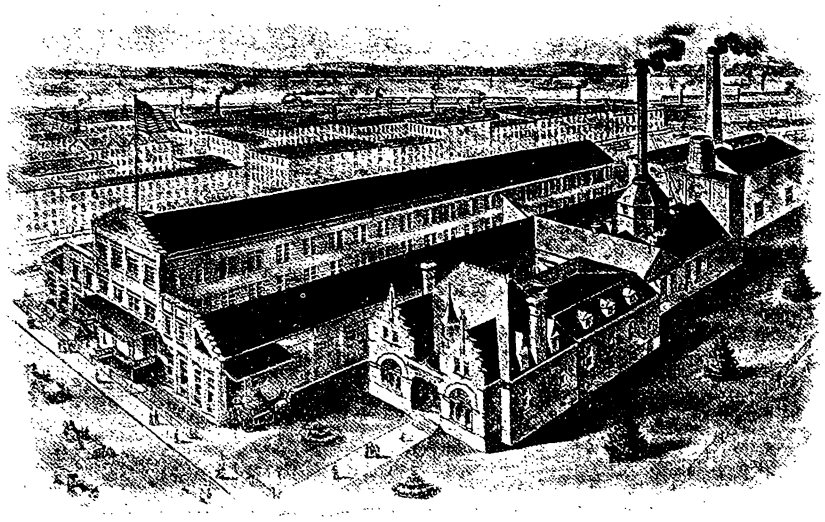
The Capewell Patent Corrugated Horse Nail.

Needs no Clinching.



Made in All Sizes.

"The Coming Nail to be Used."—JOHN KIERNAN,
Chief Farrier and Instructor in Horseshoeing, U. S. Army.



The Capewell Horse Nail Co.,

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MANUFACTURERS OF THE BEST QUALITY

CARRIAGE MAKERS' HARDWARE,

MANUFACTURE THE LARGEST VARIETY OF

FORGED CARRIAGE IRONS

Of Best Material and Workmanship.

Send for Price and Illustrated List of

CHAMPLAIN



Manufactured by the NATIONAL HORSE NAIL CO.,

VERGENNES, VERMONT.

All Sizes. All Patterns. All Warranted. Sold Everywhere.

J. C. McCARTY & CO., Agents. New York.

OLD DOMINION FORGED HORSE SHOES -SIZES- Richmond, Va.

Elegant Iron.
Beautiful Shape.

HORSE SHOES,
Light, Medium and Heavy.

MULE SHOES,
Light, Medium and Heavy.

Illustrated booklet and prices to all parts of the world on application.

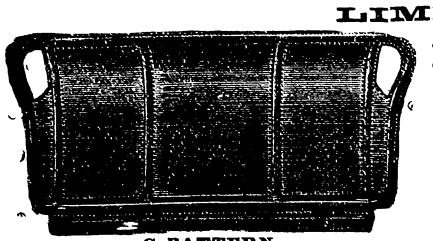
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ARTHUR B. CLARKE, President.

Chicago Office, 45 La Salle St. Richmond, Va., U. S. A.

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LIMITED, Manufacturers of

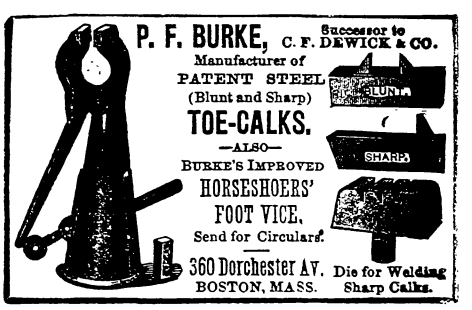


C PATTERN.

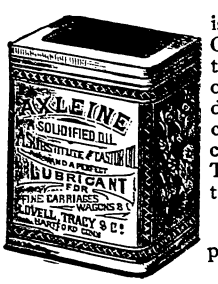
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is a fine quality of Axle Grease put up in square tin boxes containing one pound; beautifully decorated in assorted colors; designed especially for the Hardware Trade. Showy and attractive shelf goods.

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CRESCENT HORSE SHOE AND IRON CO.

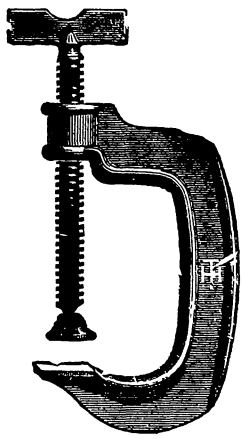
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SCALES OF ALL KINDS.

Patented Articles of
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NEW pattern Heavy Screw Clamps. Strongest in the market.



HAMMER'S MALLEABLE IRON OILERS, 3 Sizes.
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MALLEABLE IRON CASTINGS of superior quality, and Hardware Specialties in Malleable Iron made to order.

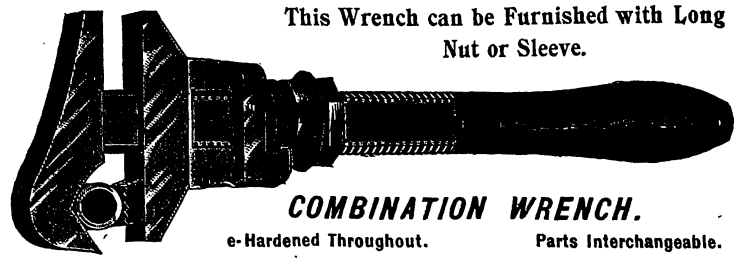
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Manufacturers of
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(Schlenker's Patent),
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MANUFACTURERS OF
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This Wrench can be Furnished with Long Nut or Sleeve.

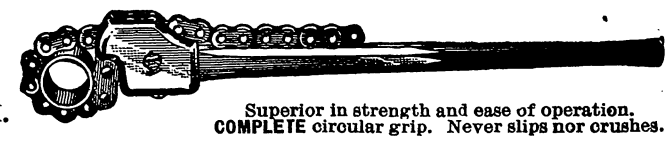
COMBINATION WRENCH.
Case-Hardened Throughout. Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal.
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TRIMO PIPE WRENCH,
Forged Steel
All parts interchangeable.
Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

TRIMO CHAIN PIPE WRENCH.



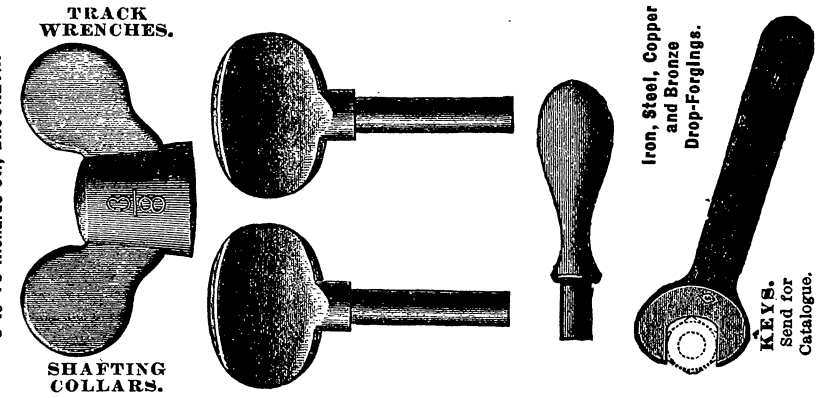
Superior in strength and ease of operation. COMPLETE circular grip. Never slips nor crushes.

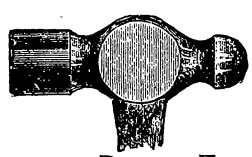


Can be used with one hand and in closer quarters than any other Basin Wrench. Parts Interchangeable.

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TRIMONT MFG. CO., ROXBURY MASS.

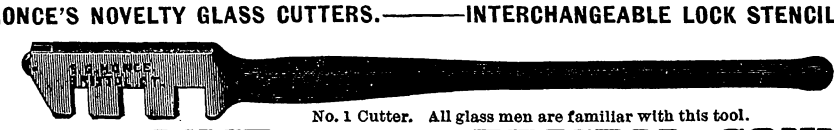
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9 to 15 Richards St., BROOKLYN.





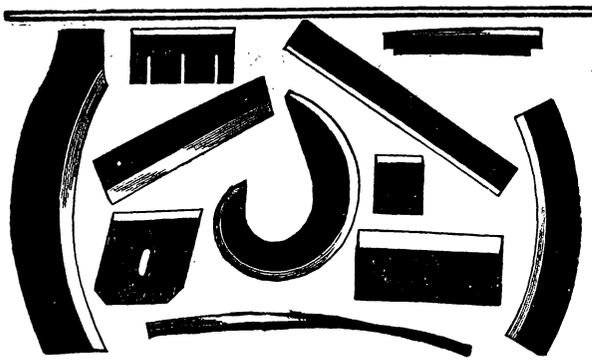
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SUPERIOR TO ALL OTHERS IN DESIGN, MATERIAL, TEMPER AND FINISH.
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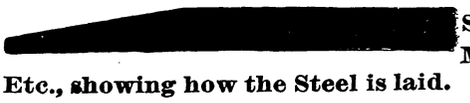


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End view of Plated Stock for Dies, Lawn Mower Knives, Blades Etc., showing how the Steel is laid.



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The Hercules Screw Driver and Tack Claw (Patented).

This Screw Driver is made from one piece of special cast steel, in all sizes, from 1½ in. to 12 in. The blade is well polished, carefully tempered, and every screw driver is subjected to a severe test and warranted. Handles Japanned with the best quality baking Japan.

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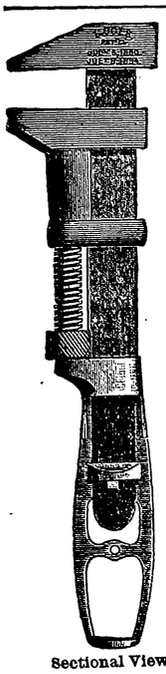
PATENT

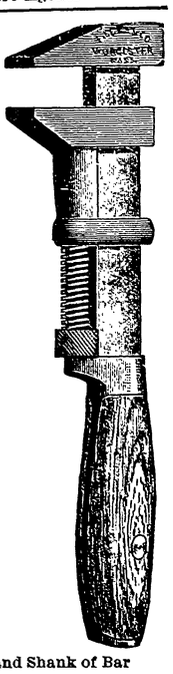
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Established in 1839. Patented July 6, 1880.

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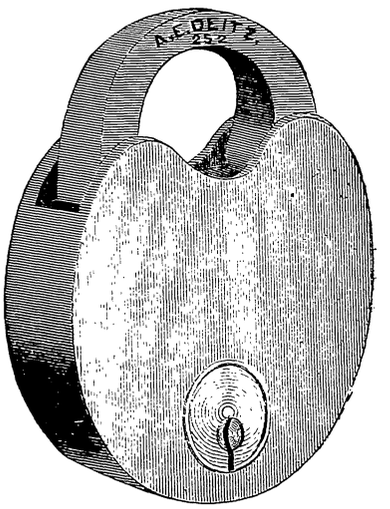
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No Soldering

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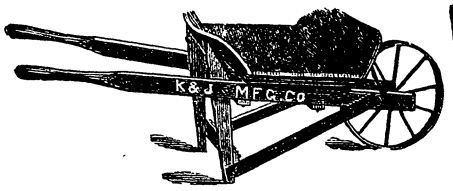
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HARDWARE AND GENERAL AGENT.

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60 PRINCE WILLIAM ST., ST. JOHN, NEW BRUNSWICK.

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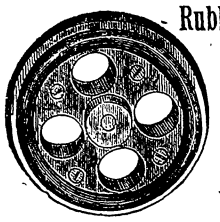


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Had Daniel known of the variety of barrows we make and particularly their excellent qualities, this definition would probably have been much more extensive. OUR CAT. TELLS ALL.

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Rubber and Iron Wheels

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NEW CONCRETE MIXING MACHINES.

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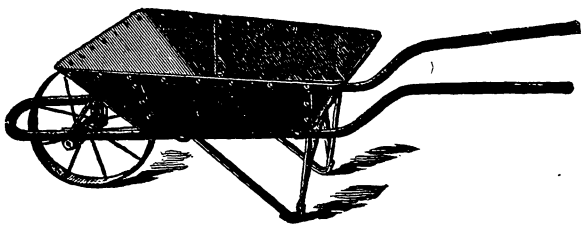
615 & 617 Commerce St., Phila.

Send for circular and list of references.

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Also McNeil's Patent Balanced Charging Barrows, Automatic Dump.

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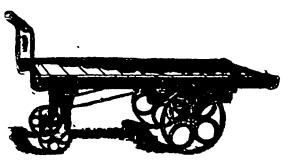
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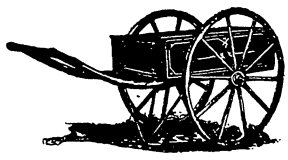
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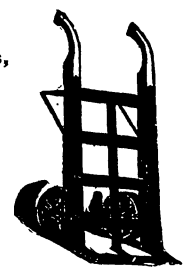
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All Wrought Steel Center Neck Yoke.



The Strongest, Lightest, Cheapest Yoke on the Market.

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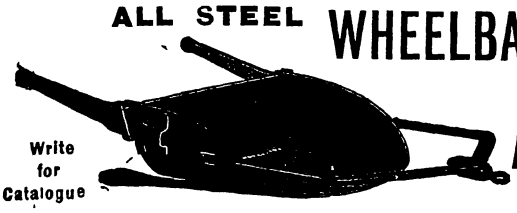
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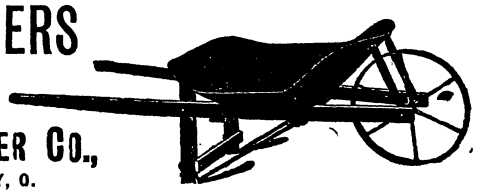


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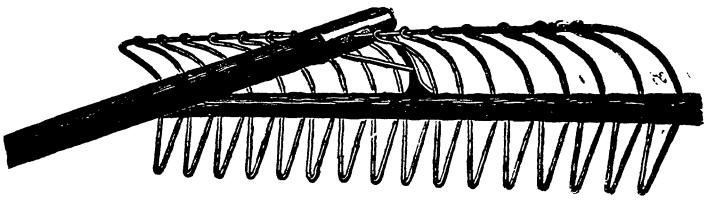
a dollar from a customer, neither would we sell you an inferior barrow at a high price, for it would amount to the same. An honest barrow honestly made is what we offer. If you want such write



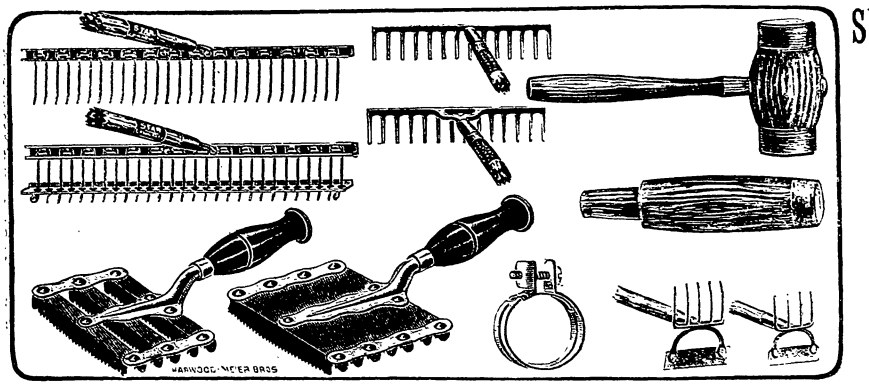
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LAWN RAKES. The "GEM" AND "DAVIS."

Both good and each the best. If you have not stocked up, better do so at once. Our prices are low.



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SURPLESS, DUNN & ALDER,

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3 HIGHEST AWARDS.

WORLD'S COLUMBIAN COMMISSION.

OFFICE OF THE

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CHICAGO, ILL., U. S. A., Sept. 1, 1893.

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J. M. SAMUELS,
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Imperial, High Wheel, Standard, New York, Horse Mower.

GREAT CARE should be exercised in purchasing **"LAWN RAKES,"** as improperly constructed Rakes **tear** and **injure** the lawn. **Our makes do not.**

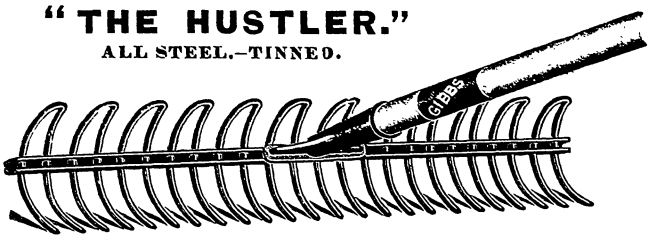
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WE CAN SUIT YOU ON BOTH POINTS.

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ALL STEEL.—TINNED.



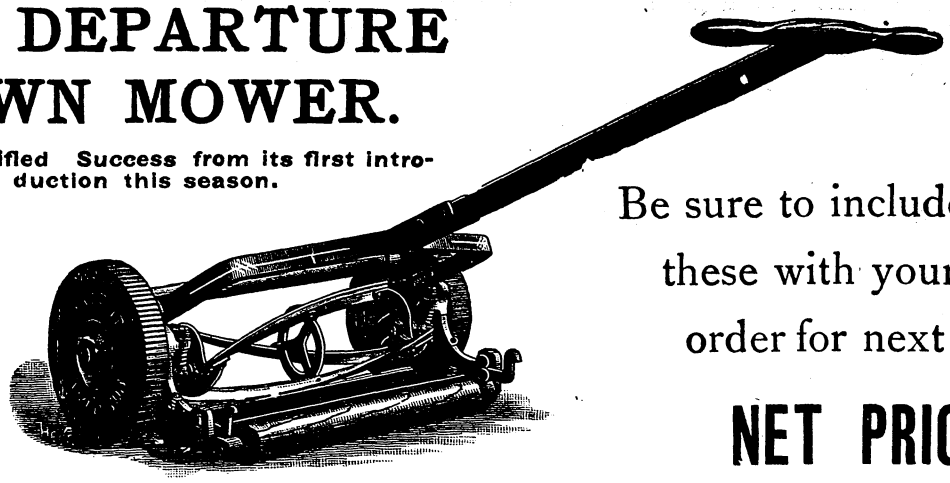
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An Unqualified Success from its first introduction this season.



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NET PRICES.

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McGuire's ♦ Diamond.

PRICE LIST.

Wheels, 8 Inches High. Cutter, 5½ Inches Diameter.

LENGTH.	LIST.
10 Inch	$13.00
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18 "	17.00

PHOSPHOR BRONZE JOURNAL BEARINGS. BEST QUALITY STEEL.

This is the Mower contracted for by the Chief of Construction at the Columbian Exposition; was used on the lawns at the World's Fair grounds during the preparatory season of 1892, and being approved by the Landscape Architects, was adopted exclusively for 1893.
If you wish a first-class Mower in all respects, one that is fully warranted,

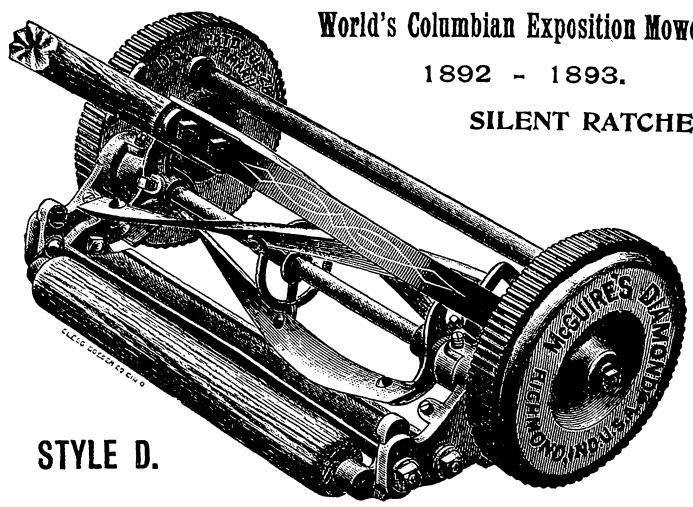
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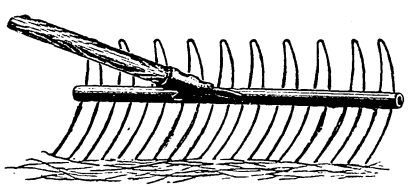


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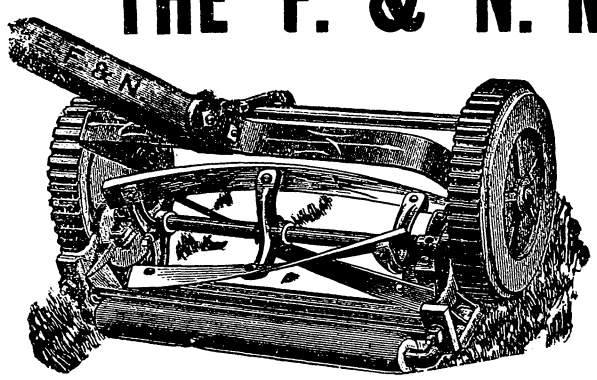
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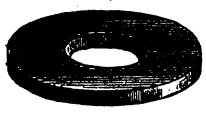
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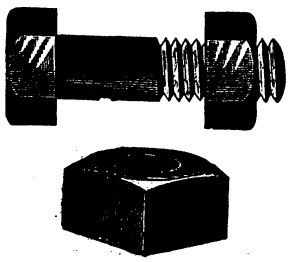
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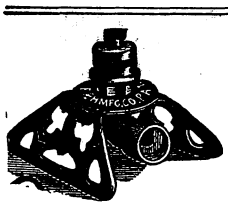
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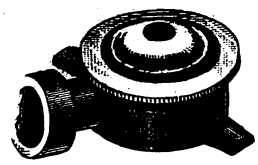
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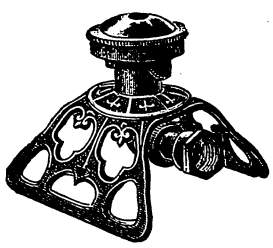
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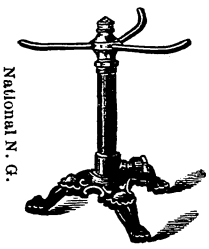


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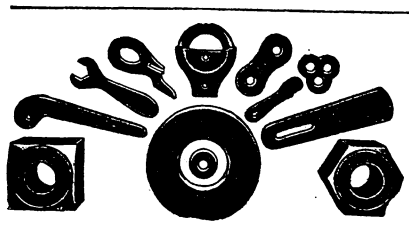
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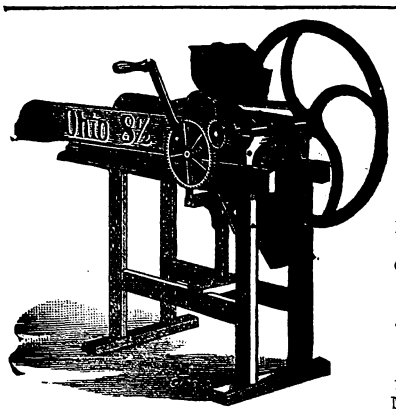
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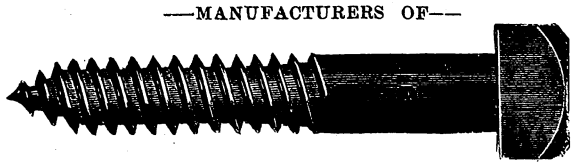
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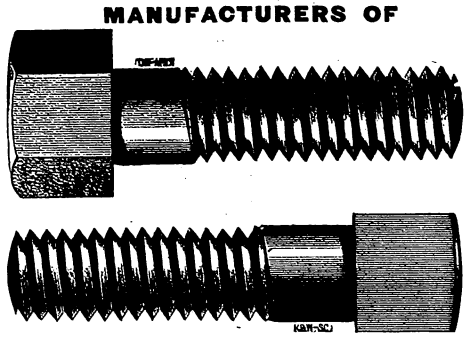
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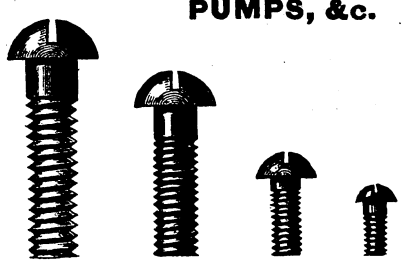
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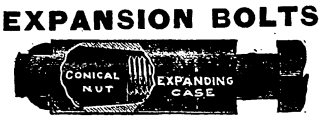




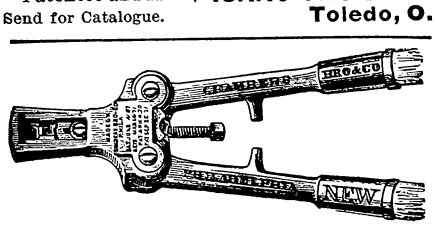
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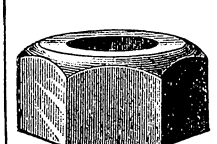
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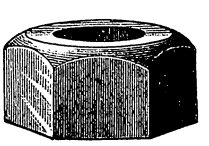


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Yale & Towne Mfg. Co., Stamford Conn.

Cupolas, Hot-Blast.
Byram & Co., Detroit, Mich.
Colliau, Victor, Detroit, Mich.
Detroit Fdry. Equipment Co., Detroi Mich.

Cutlery Cases.
Torrey, J. R. & Co., Worcester, Mass.

Cutlery, *Importers of.*
Field, Alfred & Co., 93 Chambers St. New York.
Gurney, Fred B., 116 Chambers St., N. Y.
Sickles, Sweet & Lyon, 35 Barclay, N.Y.

Cutlery, *Manufacturers of.*
Bingham, W. Co., Cleveland, Ohio.
Dame, Stoddard & Kendall, Boston Mass.
Electric Cutlery Co., 113 Chambers, N Y
Goodell Co., Antrim, N. H.
Northampton Cutlery Co., Northampton, Mass.
Schmactenberg Bros., 98 Chambers Street, N. Y.
Wilson, John, Sheffield, England.

Dies.
Wilson, J. Fred, Worcester, Mass.

Die Forgings and Castings.
Bliss, E. W. Co., Brooklyn, N. Y.

Dog Collars.
Chapman Mfg. Co., Meriden, Conn.

Door Checks and Springs.
Corbin, P. & F., New Britain, Conn.

Door Knobs.
Bardsley, J., 149 & 151 Baxter St., N. Y

Door Latches.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.

Drawing Instruments.
Keuffel & Esser Co., 127 Fulton St., N.Y

Drilling Machines.
Bickford Drill & Tool Co., Cinn., Ohio
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower and Forge Co., Lancaster, Pa.
Colburn, A. M., New Haven, Conn.
Dallett, Thos. H. & Co., Philadelphia.
Dwight Slate Machine Co., Hartford Conn.
Halsey, Jas. T., Philadelphia, Pa.
Hamilton Mch. Tool Co., Hamilton, O.
Norton & Jones Machine Tool Works Plainville, Conn.
Penna. Diamond Drill & Mfg. Co. Birdsboro, Pa.
Quint, A. D., Hartford, Conn
Sellers, Wm. & Co., Inc., Phila., Pa
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O,

Drop Forgings.
Belden Mach. Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn
Boone, W. C. Mfg. Co., Boonton, N. J
Eccles, Richard, Auburn, N. Y,
Merrill Bros., Brooklyn, E. D.
Miner & Peck Mfg. Co., New Haven, Ct
Phila. Drop Forge Co., Philadelphia, Pa.
Scranton Forging Co., Scranton, Pa.
Spiers, J. C. & Co., Worcester, Mass.
Williams, J. H. & Co., Brooklyn, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
Wyman & Gordon, Worcester, Mass.

Drop Presses.
Bliss, E. W. Co., Brooklyn, N. Y
Crosby, G. A. & Co., Chicago, Ill.

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Miner & Peck Mfg. Co., New Haven Conn.
Stiles & Parker Press Co., Brooklyn N. Y.
Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel-Foundry and Machine Co., Waterbury, Conn.

Dumb Waiters.
Storm Mfg. Co., Newark, N. J.

Dust Beaters.
Peabody & Parks, Troy, N. Y,

Dynamite.
New York Powder Co., 62 Liberty St N. Y.

Dynamos.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Lovell Mfg. Co., Ltd., Erie, Pa.
Zucker & Levett Chemical Co., 10 & 14 Grand St., N. Y.

Edge Tools. *Makers of.*
Buck Bros., Millbury, Mass.
Buffalo Edge Tool Wks., Buffalo, N.Y.
Plumb, Fayette R., Philadelphia, Pa
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
North Bros. Mfg. Co., Philadelphia.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St., New York
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines.
Colburn Electric Mfg. Co., Fitchburg, Mass.
Eddy Electric Mfg. Co., Windsor, Conn

Electro-Platers.
Boardman, L. & Son, East Haddam Ct.

Elevators. *Makers of.*
Link-Belt Engineering Co., Phila., Pa
Morse, Williams & Co., Phila., Pa.
Salem Fdry & Mch. Co., Salem, Mass.

Emery and Emery Wheels.
Bell, Geo. E, 36 John St. N. Y.
Grant Corundum Wheel Mfg. Co. Worcester, Mass.
N. Y. Belting & Packing Co., Ltd., N. Y
Northampton Emery Wheel Co Leeds, Mass.
Norton Emery Wheel Co., Worcester Mass.

Enamels.
Nubian Iron Enamel Co., Cragin, Ill

Engineers and Contractors.
Aiken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amsler & Co., Pittsburgh, Pa
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa
Witherow, Jas. P. Co., Pittsburgh; Pa.

Engines, Gas.
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg. N. Y.

Engines, Steam. *Makers of.*
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Erie Engine Works, Erie, Pa.
Harrisburg Fdy. & Machine Works Harrisburg, Pa.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Phœnix Iron Wks. Co. Meadville, Pa.
Shipman Engine Co., Boston, Mass
Southwark Foundry and Machine Co. Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.
Sweester, W. A., Brockton, Mass.

Expansion Bolts.
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O

Faucets, Self-Measuring.
Lane Bros., Poughkeepsie, N. Y

Faucets, Wooden. *Makers of.*
Boston & Lockport Block Co., Boston Mass., and Lockport, N. Y.
John Sommer's Son, Newark, N. J.

Feed-Water Heaters.
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N.Y
Harrison Safety Boiler Wks. Phila, Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Hartman Mfg. Co., Ellwood City, Pa.
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire & Iron Wks., Milwaukee

Files. *Importers of*
Moss, F. W., 80 John, N. Y.

Files and Rasps, *Manufacturers of*
Arcade File Works, Anderson, Ind
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.

Fire Brick. *Makers of.*
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer B & Sons, foot E. Houston, St
McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro., Woodbridge.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Fishing Tackle.
Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flue Cleaners.
Mackey, Jas. T., St. Louis, Mo.

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Foreign Periodicals.
Stechert, G. E., 810 Broadway, N. Y.

Forges, Portable, &c.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Foos Mfg. Co., Springfield, Ohio.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila. Pa.
Scranton Forging Co., Scranton, Pa.

Foundry Facings.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.

Foundry Riddles.
Estey, W. S. 65 Fulton, N. Y.

Foundry Supplies.
Colliau, Victor, Detroit, Mich.
Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O

Friction Clutches.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.
Evans Friction Cone Co., Boston, Mass

Fruit Presses.
Enterprise Mfg. Co. Philadelphia, Pa.

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Gas Producers.
Wood, R. D. & Co. Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast, Henry B. & Co., Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
D. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston, Mass.
Poole, Robt. & Son Co., Baltimore, Md.

Glass Boards.
Canton Saw Co., Canton, O.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glass Tubes,
Ashcroft Mfg. Co., 111 Liberty St., N.Y.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.
Supplee Hardware Co., Phila., Pa.

Grass Hooks.
Bruce & Marks Mfg. Co., Gas City, Ind.

Grinding Mills.
Foos Mfg. Co., Springfield, O.

Grinding and Polishing Machines.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grindstone Dressing Machinery
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gunpowder, *Makers of.*
Laflin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich.

Handles.
New York Mallet and Handle Wks. 456 E. Houston St., N. Y.

Hangers, Door.
Chicago Spring Butt Co., Chicago. Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Hotchkiss, E. S. Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Clarke Thomas, St. John, New Brunswick.
Graham, John H. & Co., 113 Chambers,
McCoy, Jos F. Co., 26 Warren St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N. Y,

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co. New Haven. Conn.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Haines & Zimmerman, Phila., Pa.
Hart, H. C Mfg. Co., Detroit, Mich.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Philadelphia, Pa
Peabody & Parks, Troy, N. Y.
Weiland, Chas., 149 Chambers St., N. Y
Wilson, J. Fred, Worcester, Mass.

Hardware, Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Bruce & Marks Mfg. Co., Gas City, Ind.
Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co. Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Stuart & Peterson Co., Phila., Pa.

Hollow Ware, Aluminum.
Illinois Pure Aluminum Co. Lemont, Ill

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, *Makers of.*
Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt,
Putnam Nail Co., Neponset, Boston, Mass.

Horse and Mule Shoes. *Makers of.*
Bryden Horse Shoe Co., Catasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phœnix Horse Shoe Co., Poughkeepsie N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.

Hose.
Cleveland Rubber Works, Cleveland, O.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N. Y

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Shavers.
Enterprise Mfg. Co., Philadelphia, Pa.

Injectors.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. Hartford Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y

Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron, *Merchants.*
Barnes, C. K. & Co., Philadelphia, Pa
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Bradley & Co., Philadelphia
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co. 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St, N. Y
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, *Importers.*
Abbott Wheelock & Co. N. Y. and Boston
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet. *Manufacturers of.*
Cambridge Iron & Steel Co., Cambridge Ohio.
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladders, Rolling.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.

Ladles.
Detroit Fdy. Equipment Co., Detroit, Mich.

Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.

Lamps.
Standard Lighting Co., Cleveland, O.

Lanterns.
Ohio Lantern Co., Tiffin, Ohio.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls N. Y.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mowers.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Coldwell Lawn Mower Co., Newburg, N. Y.
Dille & McGuire Mfg. Co., Richmond, Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Mast, Foos & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila. Pa.

Lawn Rakes.
Gibbs Mfg. Co., Canton, Ohio.
Konler, F. E. & Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse N. Y.

Lawn Sprinklers.
Ette & Henger Mfg. Co., St. Louis,
Gibbs Mfg. Co., Canton, Ohio.
McGowan, John H. Co., Cincinnati, O.

Leather Pasts.
Greene, J. Frank & Co., 276 Water St. New York.

Lemon Squeezers.
Ripley Mfg. Co., Unionville, Conn.

Letters and Figures, Metallic
White, A. A. & Co., Providence, R. I.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.

Locks & Knobs, *Manufacturers of*
Deitz, A. E., 97 Chambers, N. Y
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg Co. Bridgeport, Conn
Yale & Towne Mfg. Co., Stamford, Conn

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Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N.Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N.Y.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila. Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield Vt
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co., Rochester, N.Y
Manville, E. J. Mch. Co, Waterbury, Conn
Newark Mch. Tool Works, Newark, N.J
New Haven Mfg. Co., New Haven, Conn
New York Mach'y Depot, N. Y.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Prentiss Tool & Supply Co., N. Y
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ld., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.
Adt. Jno. & Son, New Haven, Conn.

Machine Knives.
Loring Coes & Co., Worcester, Mass.
Loyd, John, 558-562 Water St., N. Y.

Machine Tools.—*See Machinery,*

Machine Work.
Papping, J., 58th St., & 11th Ave., N.Y. City.

Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y
Starrett, L. S., Athol, Mass
Vallentine Tool Co., Hartford, Conn.

Machinists' Tools and Supplies.
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.

Mallets.
N. Y. Mallet & Handle Works, N. Y.

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St., N.Y.
Lufkin Rule Co., Saginaw, Mich.

Meat Cutters and Stuffers.
Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Instruction.
Correspondence School of Mechanics Scranton, Pa.

Metals.
Fearing, Wm. S., 100 Chambers, N. Y
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
American Metal Co., N. Y.

Metallurgists.
Britton J. Blodgett, Phila.

Milling Machines.
Cin. Milling Mch. Co., Cincinnati, Ohio.

Mincing Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
Darby, Edw. & Sons Phila. Pa.
Leonard, B. E., Scranton, Pa.

Mining Screens.
Harrington & King Perforating Co Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y

Mirrors.
Rice, C. F., Chicago, Ill.

Models. *Makers of*
Franklin, H. H. Mfg. Co., Syracuse, N. Y.

Molding Sand.
Obermayer, S. Co., Cincinnati, O.

Motors, Water and Electric.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington, Pottstown Iron Co., Pottstown, Pa
Riverside Iron Wks, Wheeling, W. Va.

Neck Yokes.
Johnson, S. C., Racine, Wis.

Nickel Platers' Supplies.
Colburn Electric Mfg. Co., Fitchburg, Mass.
Eddy Electric Mfg. Co., Windsor, Conn
Zucker & Levett Chemical Company. 10 to 14 Grand St., N. Y

Norway Shapes, *Rollers of.*
Rowland, William & Harvey, Frankford, Philadelphia

Novelty Manufacturers.
Franklin, H. H. Mfg., Syracuse, N. Y.

Nut Machines.
Dunham Nut Mch. Co., Unionville, Ct

Nuts, Bolts, &c., *Makers of.*
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R. I
Blake & Johnson, Waterbury, Conn.
Haskell, Wm. H. Co., Pawtucket, R. I
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Port Chester Bolt and Nut Co., Port Chester, N. Y.
Russell, Burdsall & Ward, Port Chester
Sternbergh, J. H. & Son, Reading, Pa
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R. I.

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
Glazier Stove Co., Chelsea, Mich.

Ores.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Morrison, Robt., St. Louis, Mo.
N. Y. Belting & Packing Co. Ltd., N.Y.

Padlocks.
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Miller Lock Co., Philadelphia, Pa.

Paint.
Dixon, Jos. Crucible Co., Jersey City, N.J
Garry Iron & Steel Roofing Co., Cleveland, O.

Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O

Paint Cans.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Patent Solicitors.
Howson & Howson, Phila. & Wash'gton.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co. Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., Boston, Mass.
Halk & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pilling & Crane, Philadelpnia, Pa.
Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

File Drivers.
Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast Henry B. & Co., Philadelphia.
Saunder's Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y,

Pipes, Fittings, &c., *Makers of.*
McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas. *Makers of.*
Cumberland Nail & Iron Co., Phila, Pa
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W Va.
Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.

Planes, *Manufacturers of.*
Stanley Rule & Level Co., N. Y

Plate Bending Rolls.
Schneekloth, H. A., 630 W. 28th St., N.Y

Plate, Iron and Steel, *Mfrs of*
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa,
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa
Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.

Polishing Machines.
Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
La Massena, C. E. & Co., Newark, N.J.

Post Hole Diggers.
Gibbs Mfg. Co., Canton, Ohio.
Wister, L & R. & Co., Philadelphia, Pa.

Poultry Nettings.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y
N. J. Wire Cloth Co., Trenton, N. J. "Silver Finish."
Tyler Wire Wks. Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
Laflin & Rand Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y.

Power Hack Saws.
Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Jenkins & Lingle, Bellefonte, Pa.

Presses, Dies, &c.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn

Presses, Power, *Makers of.*
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
Keystone Clutch Mch. Wks., Phila., Pa.
Lane, J. H. & D. Co., Massillon, Ohio,

Pulverizing Mill.
Bradley Fertilizer Co., Boston, Mass,

Pumping Machinery.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Hooker-Colville Steam Pump Co., Chicago, Ill.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa
Valley Pump Wks, Easthampton, Mass
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, *Makers of.*
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Mast, Foos & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Henderer, A. L., Wilmington, Del.
Schneekloth, H. A., 630 W. 28th St., N. Y
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
Perry, W. H. & Co., Providence, R. I.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Estey, W. S. 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.

Razors.
Electric Cutlery Co., 113 Chambers, N. Y
J. R. Torrey Razor Co., Worcester, Mass

Reels.
Hendryx, A. B. Co., New Haven, Conn

Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.

Rivets.
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Troy, N. Y.
Cobb & Drew, Plymouth, Mass.
Henderson, Jas. S., 165 Greenwich, N. Y.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton Pa.

Riveting Machines.
Adt. Jno. & Sons, New Haven, Conn.

Roasters and Bakers.
Silver & Co., Brooklyn, N. Y.

Rock Drills.
Sand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd, Co., Youngstown, O.
Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning F'dry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd, Co., Youngstown, O.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh Pa.

Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Cincinnati Corrugating Co., Piqua, O.
Johns, H. W Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y

Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa.

Rubber Goods.
Canfield, H. O., Bridgeport, Conn.

Rules, *Manufacturers of.*
Keuffel & Esser Co., 127 Fulton St., N. Y
Lufkin Rule Co., Saginaw, Mich.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sap Spouts.
Stelle, Chas. C., Brooklyn, N. Y.

Sash Balances.
Pulman Sash Balance Co., Rochester, N. Y.
Vanderbilt Sash Balance Co., Canandaigua, N. Y.

Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.
Cincinnati Corrugating Co., Piqua, O.

Sash Locks.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Portable Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.

Saw Filing Machines.
Disston, Henry & Sons, Philadelphia, Pa.

Saws, *Makers of.*
Disston, Henry & Sons, Phila., Pa.
Hiles, C. A. & Co., 336-338 Carroll Ave Chicago, Ill.
National Saw Co., 96 Reade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Taintor Mfg. Co., 84-86 Chambers, N

Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N. Y.

Scrapers, Road.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.

Screens, Coal and Ore.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Screens, Door and Window.
Queen Anne Screen Co., Burlington, Vt.

Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Capitol Mfg. Co., Chicago, Ill.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.

Screws, *Makers of.*
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
National Screw & Tack Co., Cleveland, Ohio.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls N. Y

Scythe Stones and Whetstones.
Pike Mfg. Co., Pike Stat'n, N. H.
Cleveland Stone Co., Cleveland, O.

Shafting, *Makers of.*
Cresson, Geo. V., Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Fitzsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc. Phila. Pa.
Stow. Co. Mfg, Binghamton, N. Y.

Shaped Iron and Steel,—*Manufacturers of.*
Ætna-Standard Iron & Steel Co., Bridgeport, O.

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Allentown Rolling Mill, Allentown, Pa
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville Pa
Roberts, A. & P. & Co., Phila., Pa.
The Phœnix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn
Heinischs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, *Manufacturers of.*
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh, Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ld., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch. A. B. & Co., Peoria, Ill.

Sinks.
Douglas, W. & B., Middletown, Conn.

Skates. Ice.
Barney & Berry, Springfield, Mass.
Dame, Stoddard & Kendall, Boston, Mass.
Lovell, Jno. P. Arms Co., Boston, Mass.
Sickels, Sweet & Lyon, 35 Barclay St., N. Y.
Winslow, Sam'l, Skate Mfg. Co. Worcester, Mass.

Skates. Roller.
Barney & Berry, Springfield, Mass.
Henley, M. C., Richmond, Ind.
Winslow, Saml., Skate Mfg. Co., Worcester, Mass

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.
Clendenin Bros., Baltimore, Md.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.

Speed Indicators.
Church & Sleight, 109 Fulton St., N. Y.

Spelter.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
Rogers & Hamilton Co., Waterbury, Conn.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y

Springs.
Cary, Alanson. 240-242 W. 29th St., N.Y
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y
Morgan Spring Co., Worcester, Mass
Nourse, Fred. Co., 315 to 319 E. 22d St., N. Y.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Bardsley, J., 149 & 151 Baxter St., N.Y.
Chicago Spring Butt Co. Chicago, Ill.
Pullman Sash Balance Co., Rochester N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St. New York.

Stamping Works.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co. Binghamton N.Y

Steam Gauges.
Ashcroft Mfg. Co., 111 Liberty St., N.Y
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., *Makers of.*
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Camden, N.J.

Steam Separators.
Goubert Mfg. Co., 32 Cortland St N. Y.
Harrison Safety Boiler Wks. Phila. Pa

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.

Steel Figures and Alphabets.
Kroegrud, W., 61 Fulton, N. Y.
Wolff, C. H., 177 William St., N. Y.

Steel Importers.
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 91 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa
Boker, Hermnan & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Elken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 91 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburg Pa
Moss, F. W., 83 John N. Y
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co. High Bridge, N.J
Wardlaw, S. & C., Sheffield, Eng
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn

Steel, *Manufacturers' Agents.*
Barnes, C. K. & Co., Philadelphia, Pa
Corning, Edw, & Co., 29 B'way, N. Y
Frasse Co., 19 Warren St., New York.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, *Manufacturers of.*
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville Pa
Riverside Iron Wks., Wheeling, W. Va

Steel, Tool.
Frankford Steel Co., Philadelphia. Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston. Mass.
La Belle Steel Co., Pittsburgh, Pa.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Croissant, M., Albany, N. Y.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunder's Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y

Stove Pipe Thimbles.
Cheney, S. & Son Manlius, N. Y

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse N. Y.

Strops.
Electric Cutlery Co. 113 Chambers, N.Y
J. R. Torrey & Co., Worcester, Mass.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co. La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation. Boston. Mass
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland O.
Phillips, E. & Sons, South Hanover.
Trufant. W. E., Whitman, Mass.

Tank Heaters.
Hunt, Helm & Ferris, Harvad, Ill,

Taps and Dies.
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila.

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tin Plate Machinery.
Lloyd Booth Co., Youngtown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St.,

Tire Upsetters.
Butts & Ordway, Boston, Mass,

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N.Y.

Tools.
Britton, Horace E., Stoughton, Mass.
Brown, R. H. & Co., New Haven, Conn.
Frasse Co., 19 Warren St., New York.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.

Tools, Blacksmith and Wheelwrights.
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R. Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasolene.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
Standard Lighting Co., Cleveland, O.

Transom Lifters.
Wollensak, J. F. Chicago, Ill.

Trucks. *Manufacturers of.*
Berger Bros., Philadelphia, Pa.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co. Lansing Mich.

Tubes, Seamless Drawn Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes. Waterbury, Conn.

Tubes, Steel.
Leng's John S. Son & Co., 4 Fletcher St., New York.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills. *Makers of.*
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 56 John N. Y.
Mason Regulator Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vises.
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Weather Strips.
Thomas, Jno. H. Mfg. Co., Piqua, Ohio.

Wheelbarrows.
Akron Tool Co., Akron, O.
Amer. Steel Scraper Co., Sidney, Ohio.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.

Whips.
American Whip Co., Westfield, Mass,

Window Cord, *Makers of.*
Samson Cordage Works, Boston, Mass

Wire, *Manufacturers of.*
Consolidated Steel & Wire Co., St. Louis, Mo,
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y
Wright & Colton Wire Cloth Co. Worcester, Mass

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Wks. Milwaukee Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.
Higganum Hdw. Co., Higganum, Conn
King, J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.

Wire Door Mats.
Hartman Mfg. Co., Elwood City, Pa.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods, *Manufacturers of.*
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros, Cortland, N. Y.
Williamson, C. T. Wire Novelty Co. Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester Mass.
Waterbury Mch. Co., Waterbury, Conn

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wire Nails.
Consolidated Steel & Wire Co., St. Louis, Mo.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle Pa.
Phillips, E. & Sons, South Hanover Mass
Phillips, Townsend & Co., Phil., Pa.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City

Wire Rods. Steel.
Consolidated Steel & Wire Co., St. Louis, Mo.
New Castle Wire Nail Co., New Castle Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y

Wire Rope, Iron and Steel *Makers.*
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Wood-Working Machinery.
Seneca Falls Mfg. Co., Seneca Falls, N.Y

Wrenches, *Manufacturers of.*
Bemis & Call Hardware & Tool Co. Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn
Capitol Mfg. Co., Chicago, Ills.
Coes Wrench Co., Worcester, Mass.
Keystone Mfg. Co., Buffalo, N. Y.
Trimont Mfg. Co., Roxbury, Mass.
Williams, J. H., Brooklyn, N. Y.

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12, 16 AND 20 GAUGE.

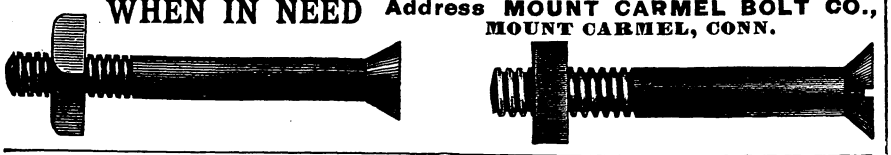
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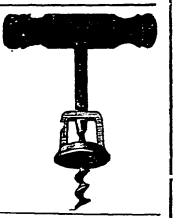
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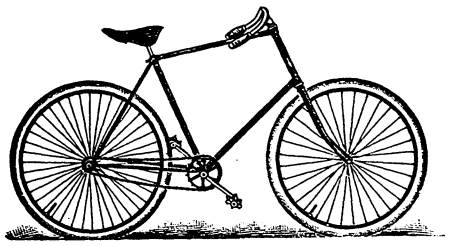
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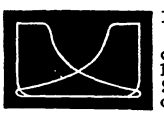
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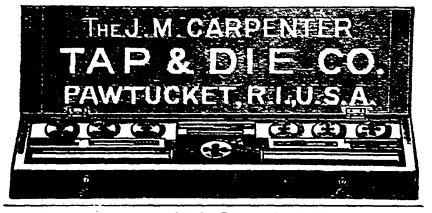
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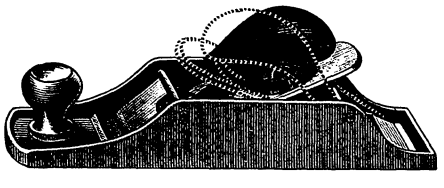
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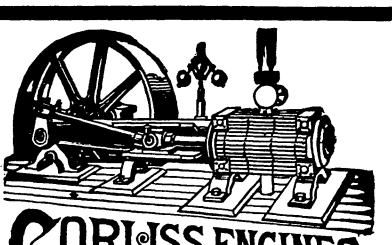
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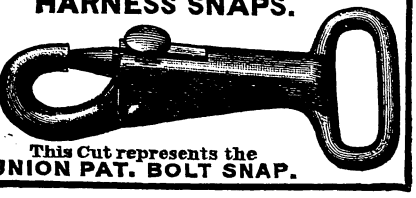
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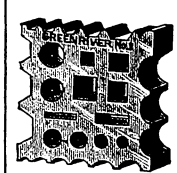
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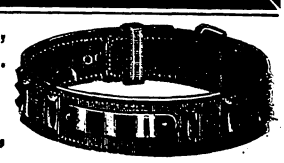
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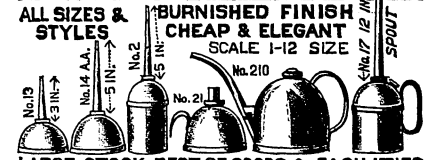


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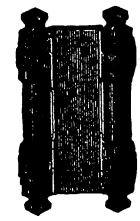
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Vol. LII: No. 22. *New York, Thursday, November 30, 1893.* $4.50 a Year, including Postage. Single Copies, Ten Cents.

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Advertising and Subscription Rates " 1013

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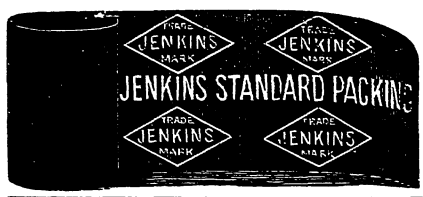
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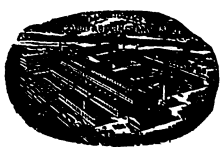


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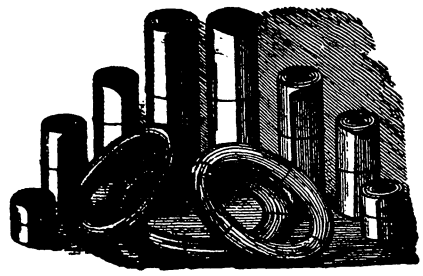
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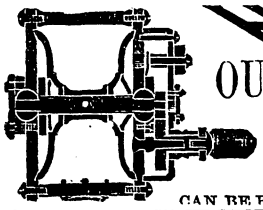
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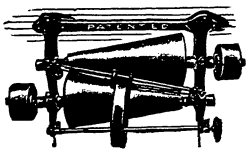
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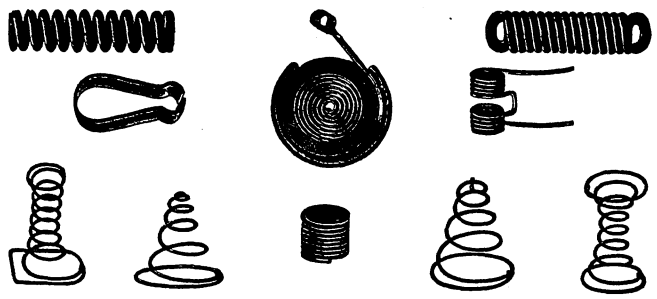
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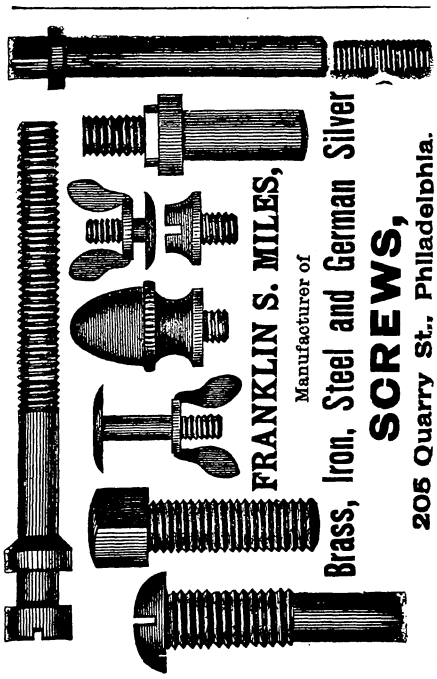


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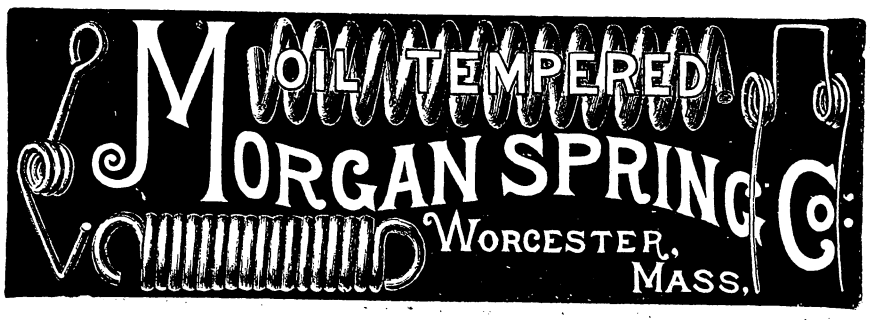
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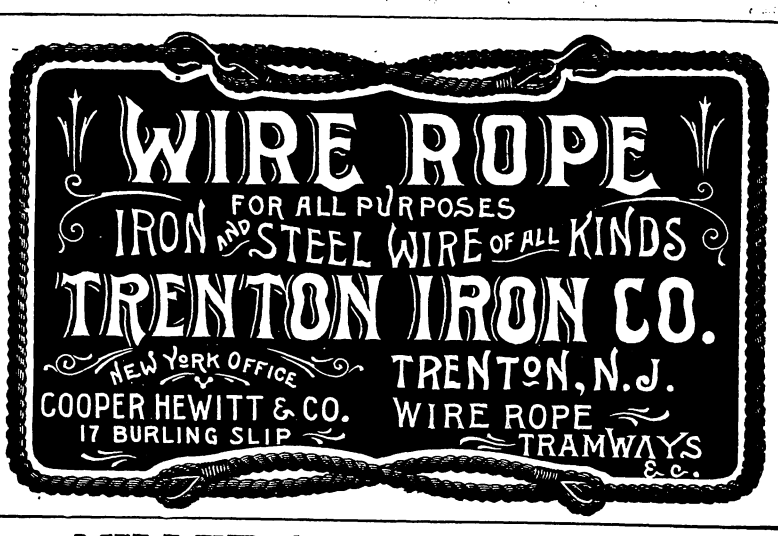
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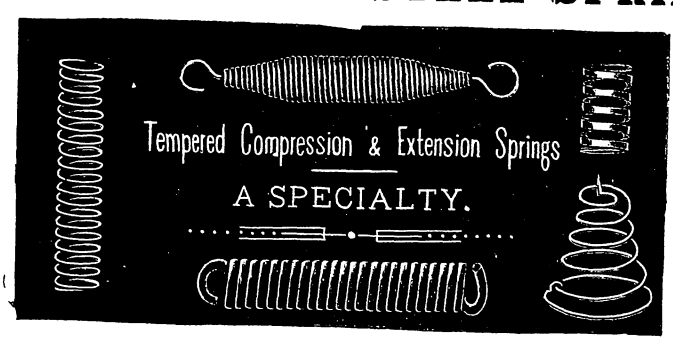


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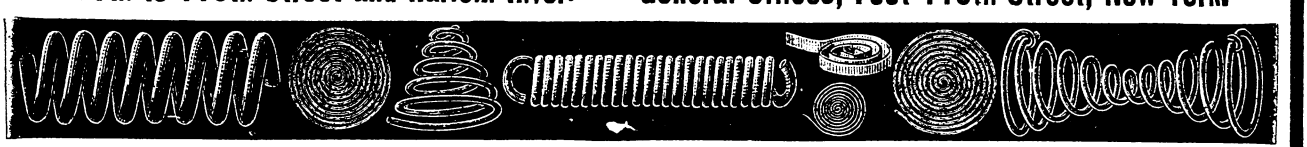
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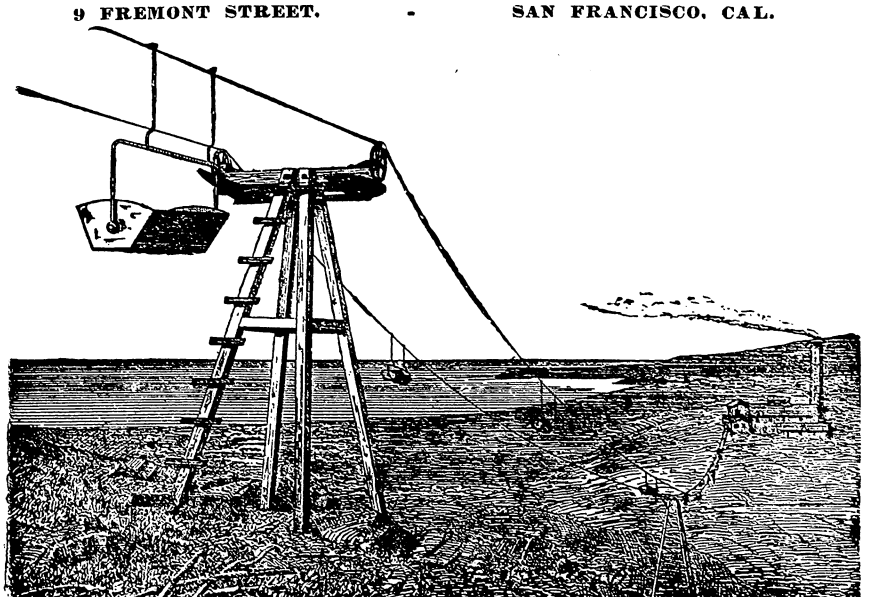
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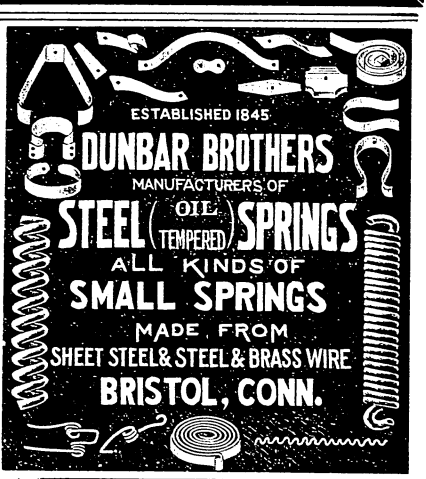
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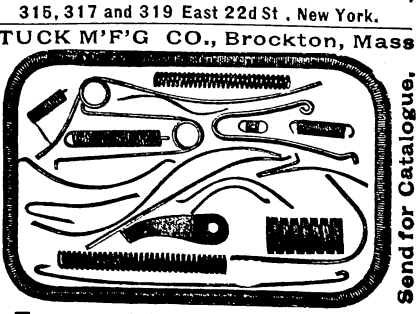
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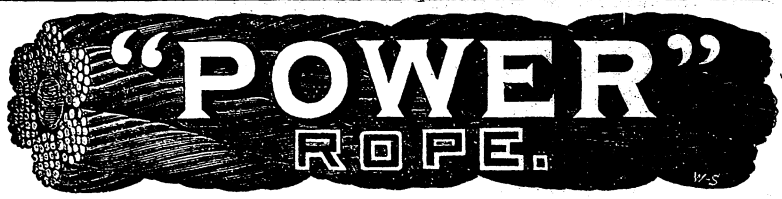


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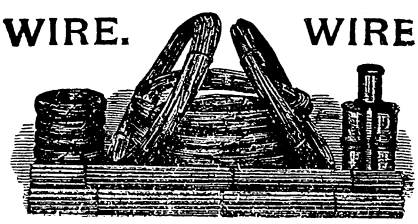
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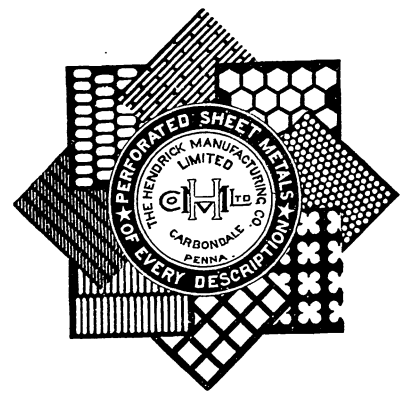
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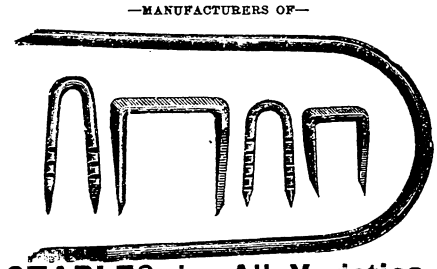
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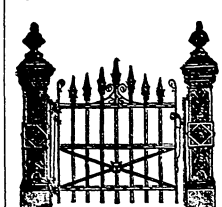
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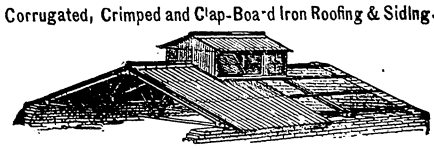
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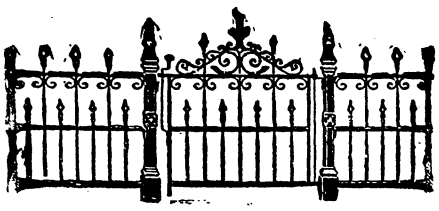
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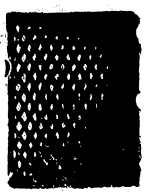


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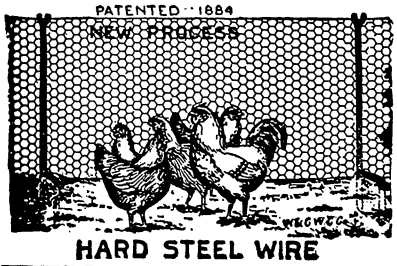
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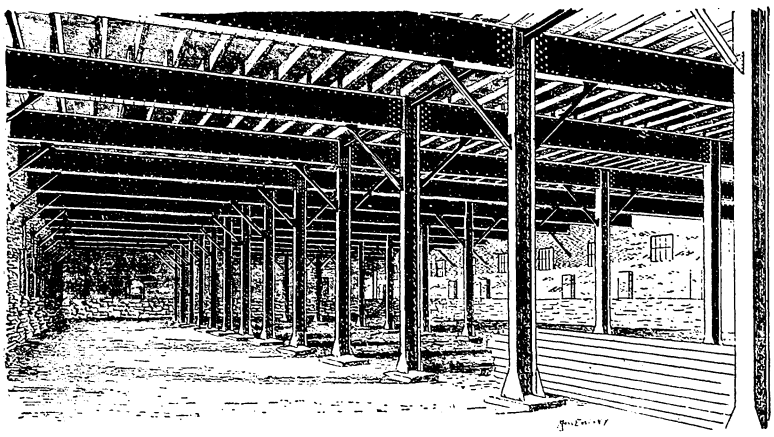
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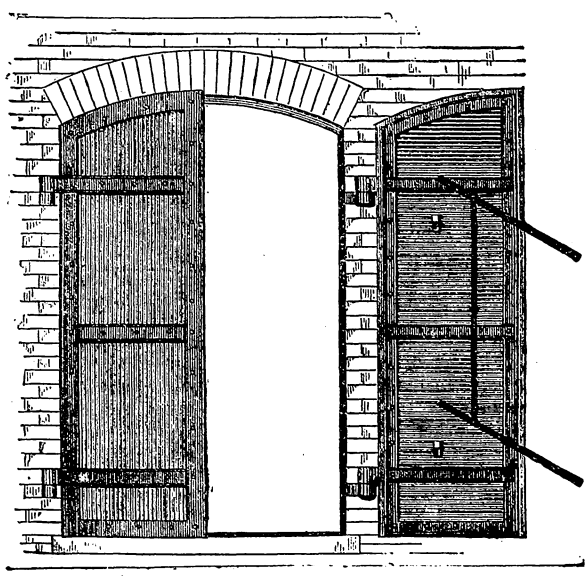
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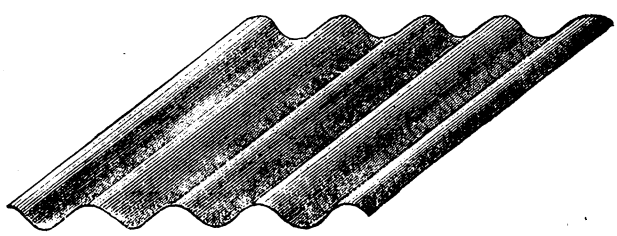
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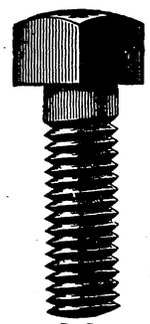
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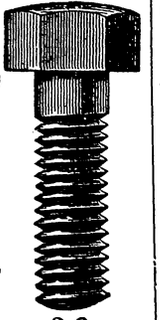
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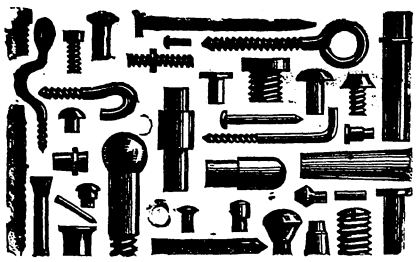
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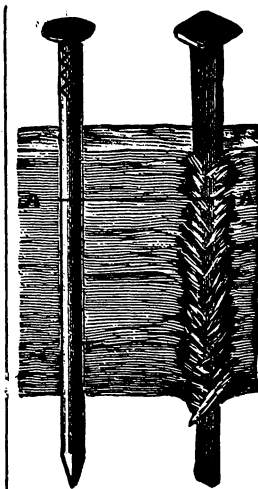
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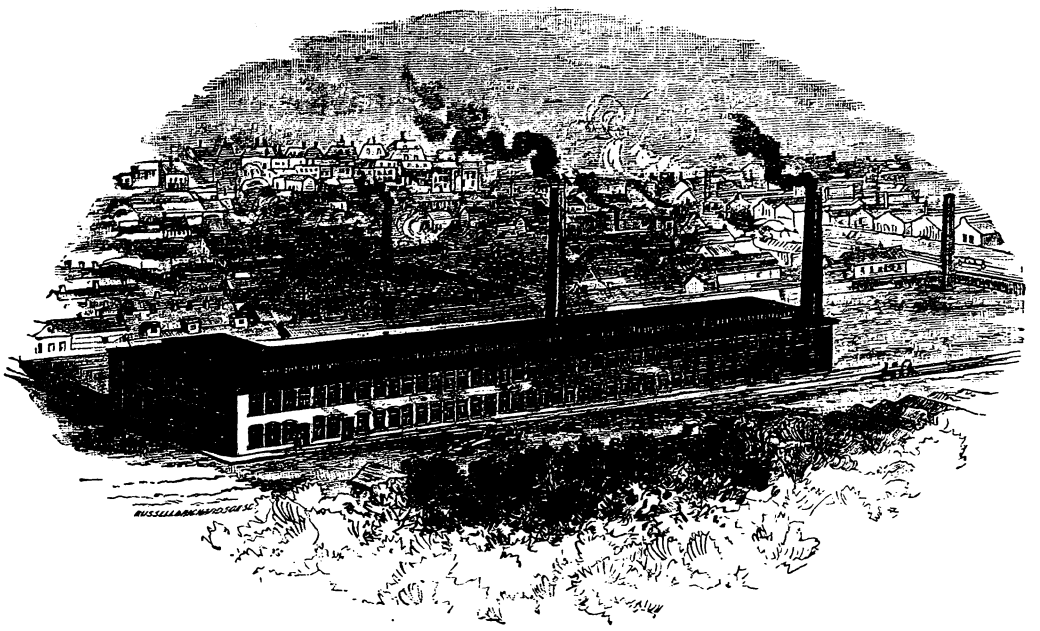
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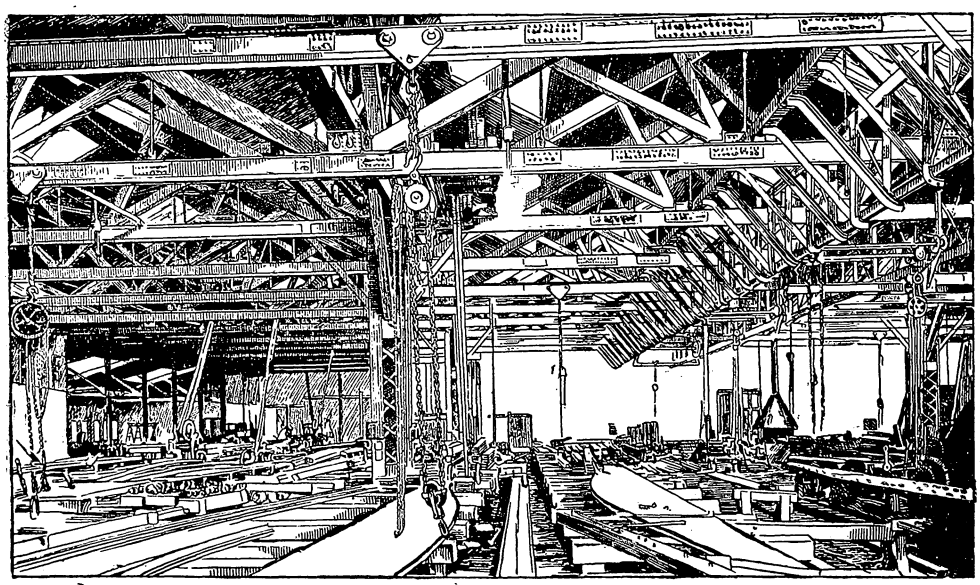
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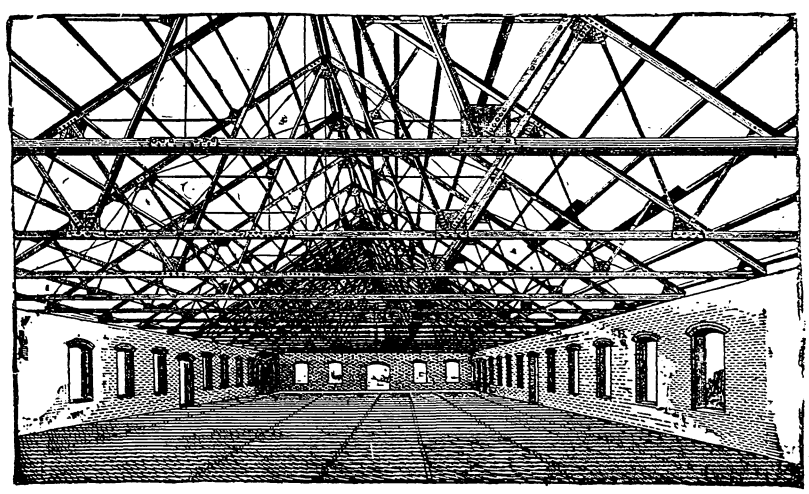
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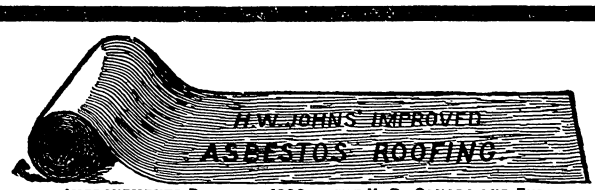
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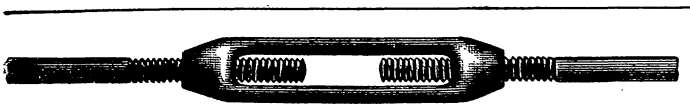
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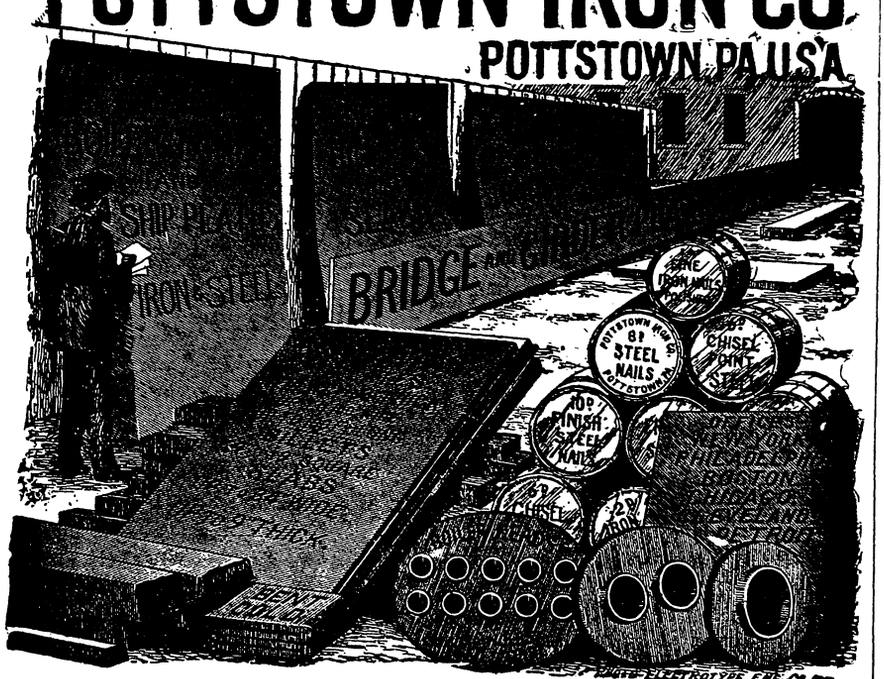
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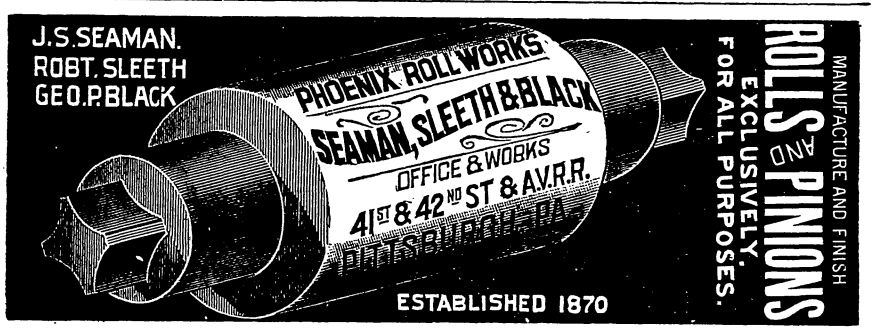
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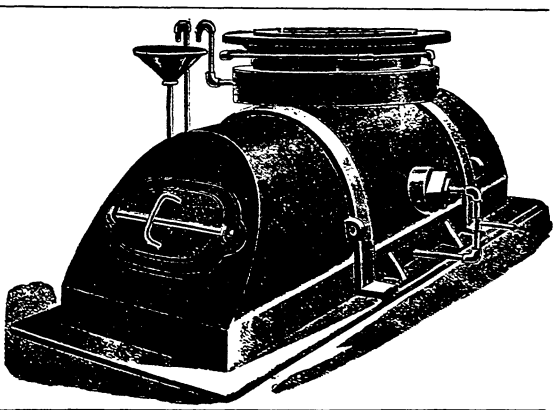
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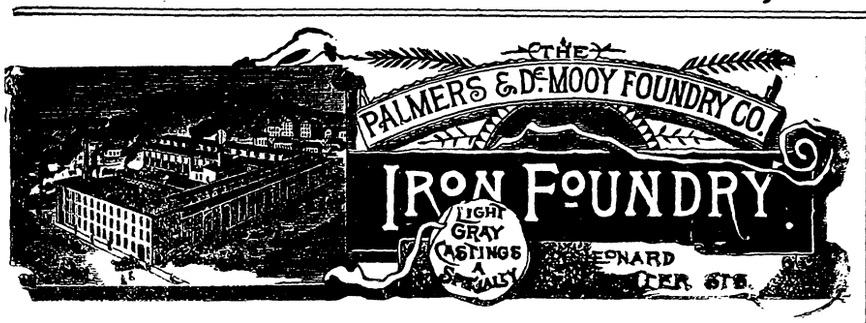
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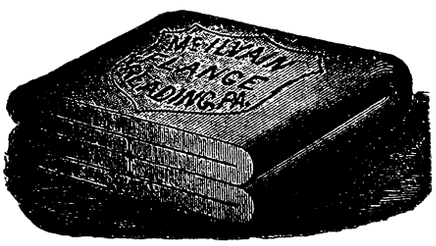
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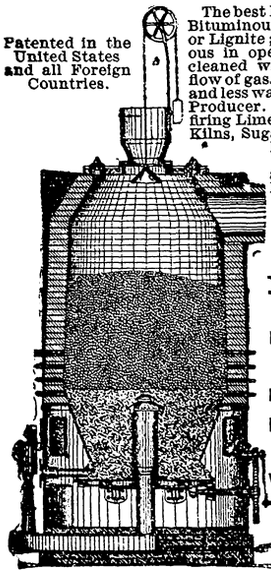
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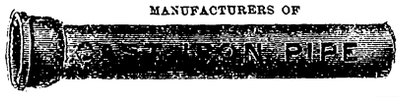
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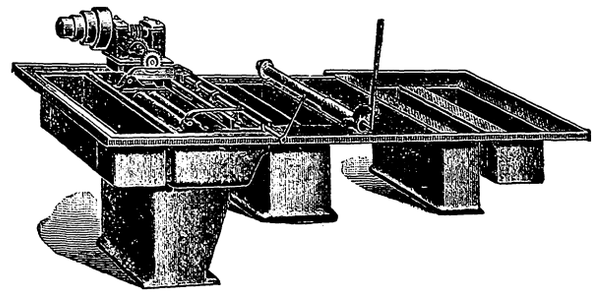
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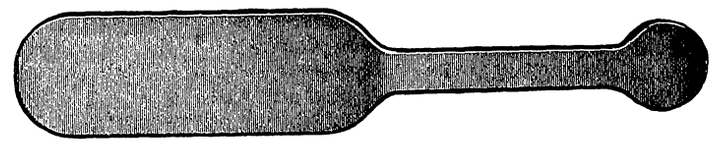
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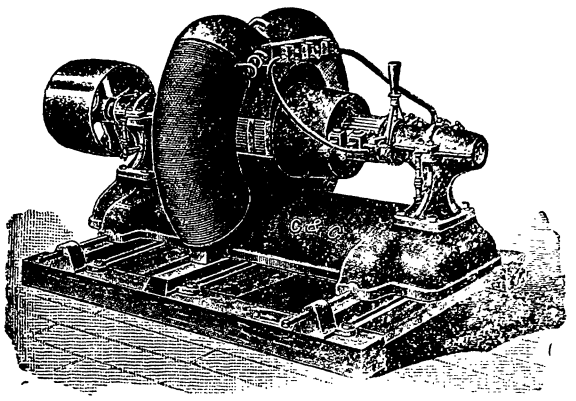
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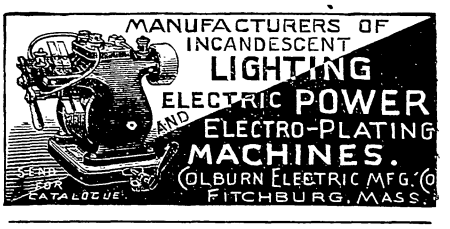
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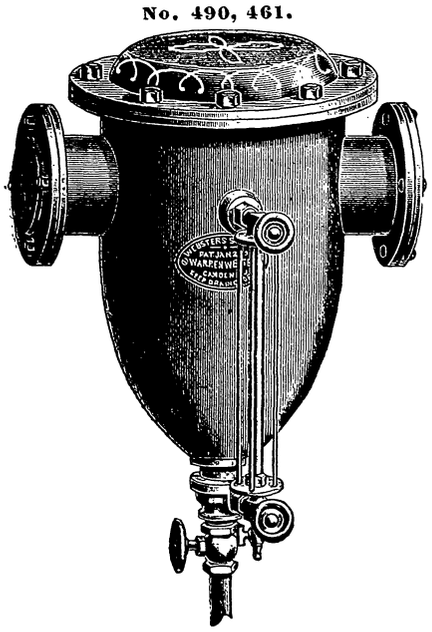
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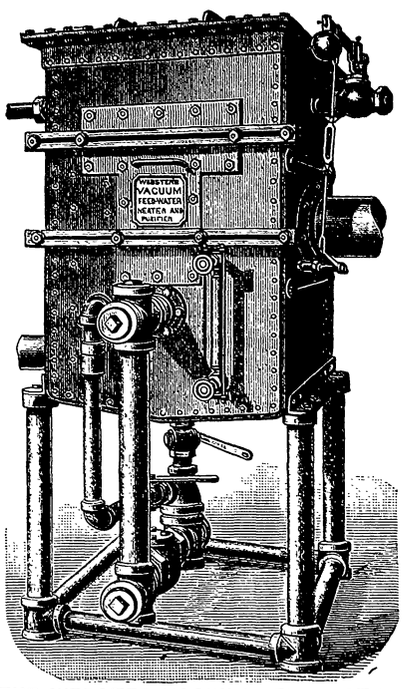
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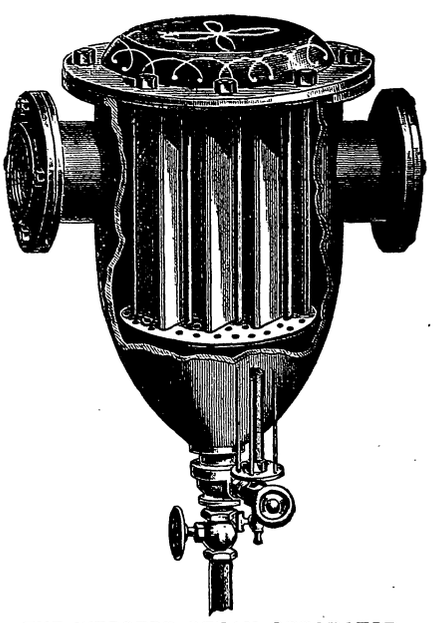
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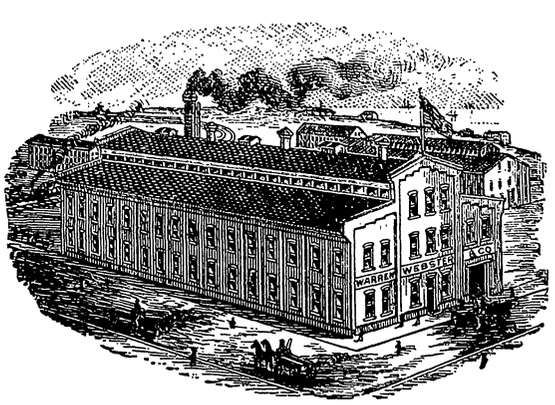
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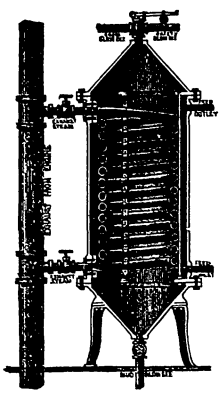
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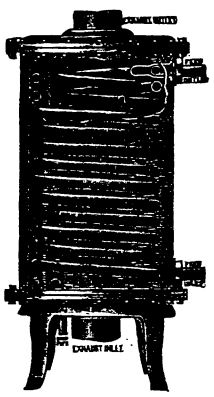
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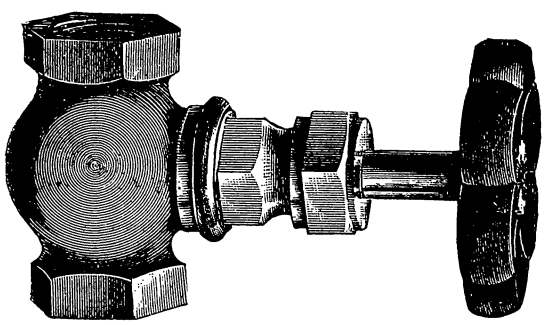
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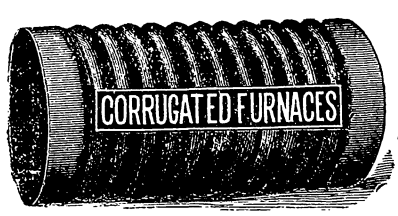
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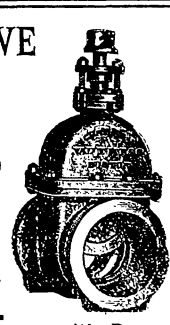
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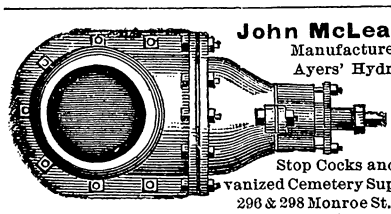
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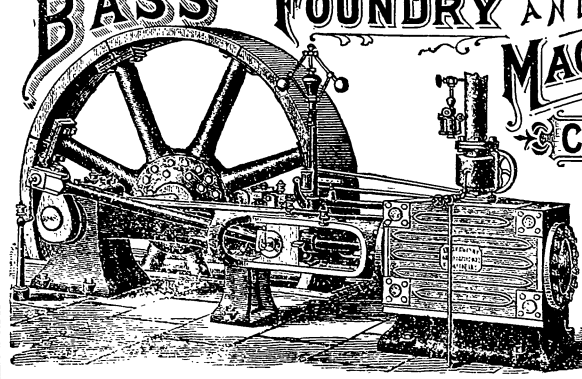
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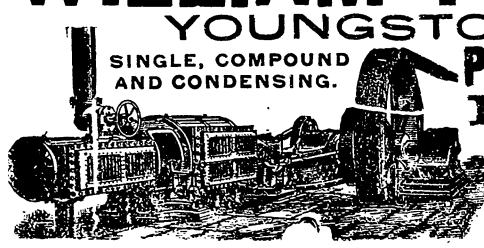
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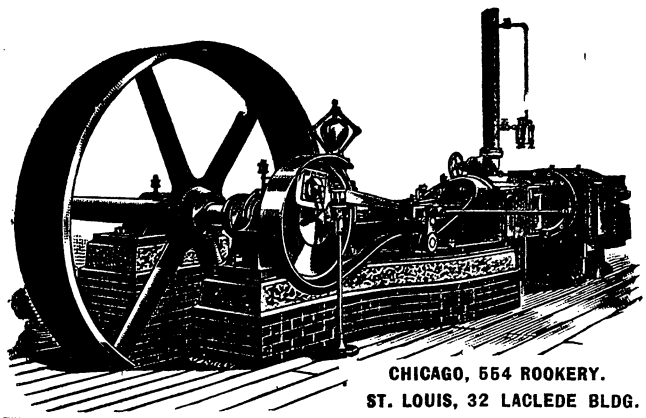
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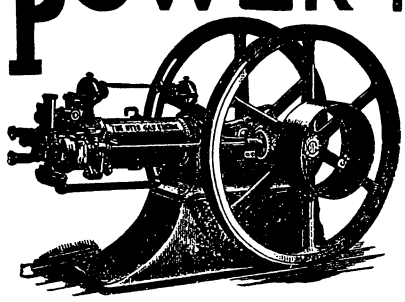
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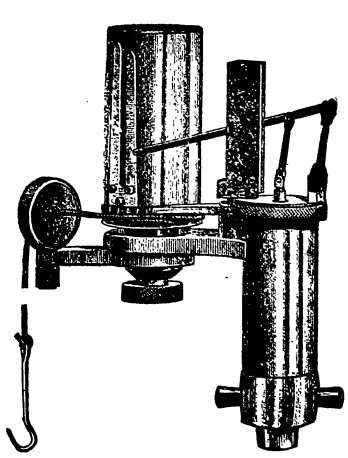
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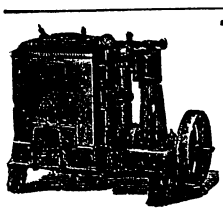
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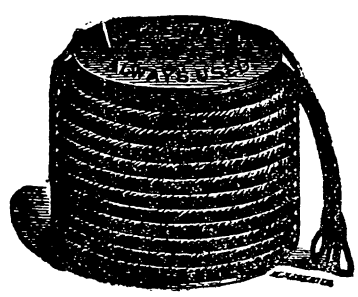
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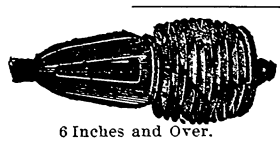
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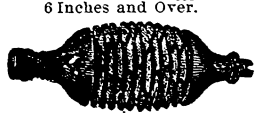
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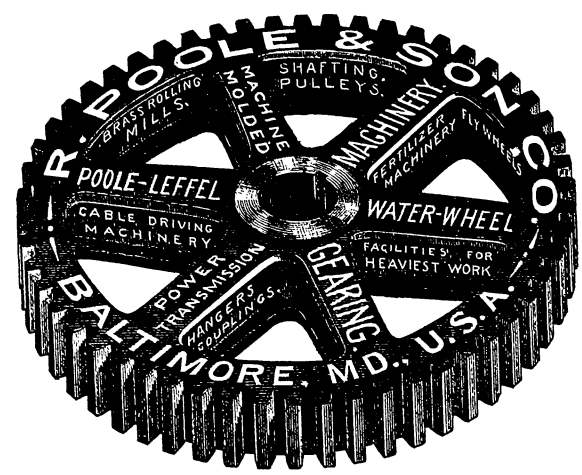
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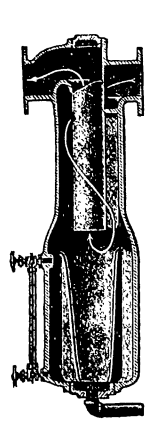
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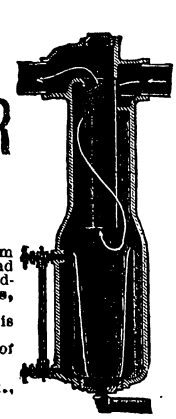
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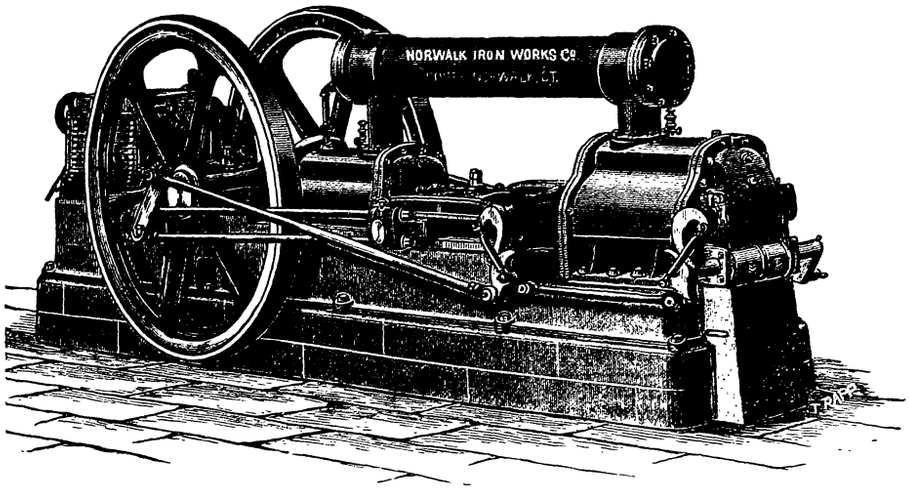
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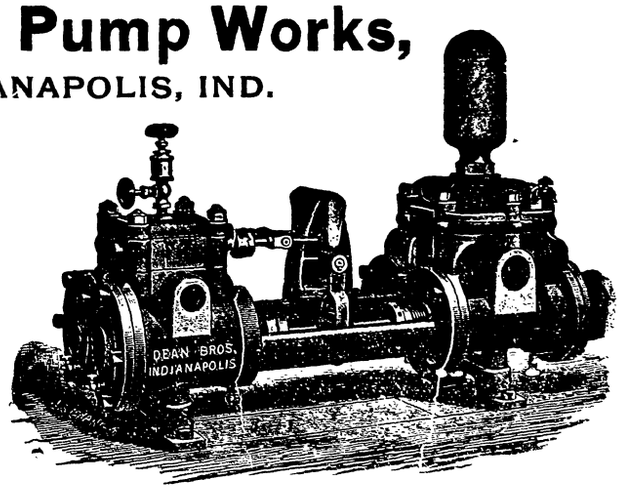
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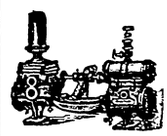
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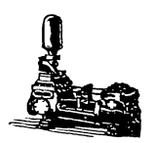
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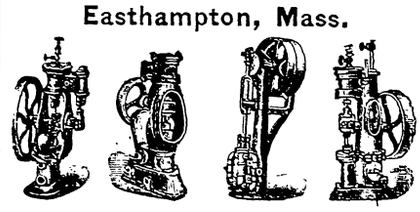


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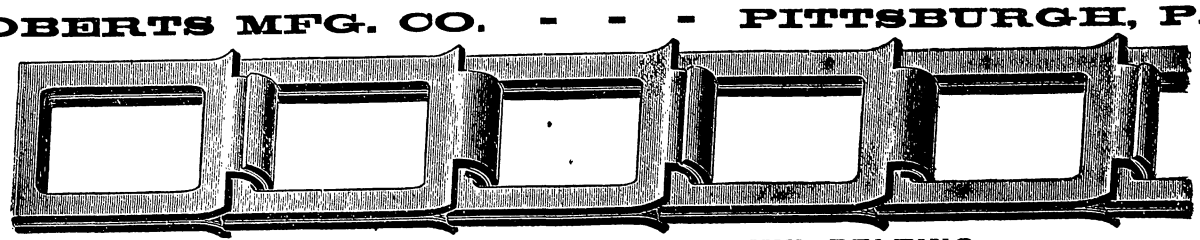
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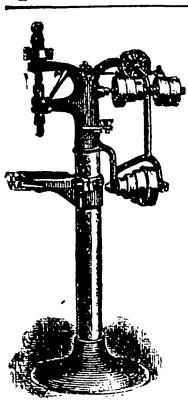
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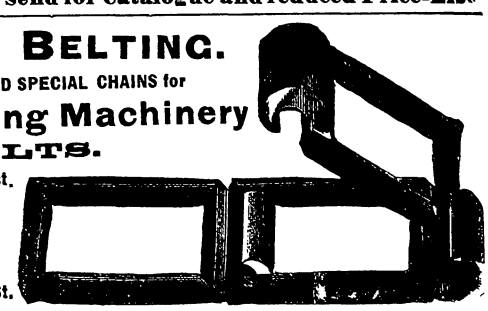
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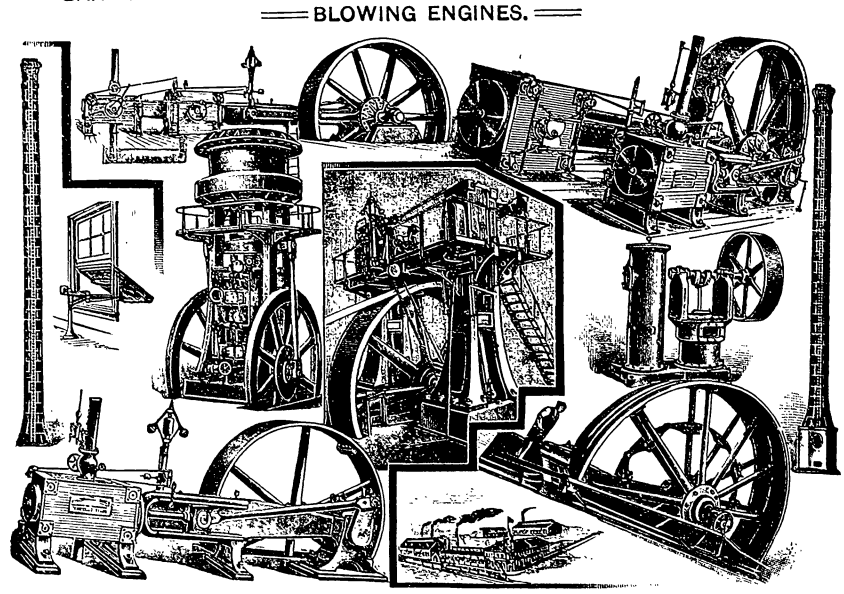
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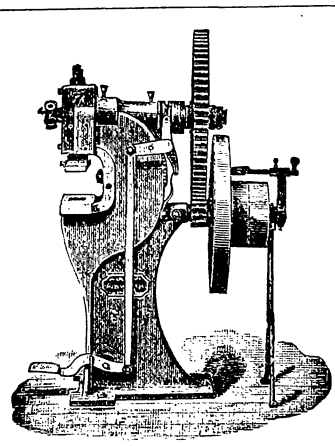
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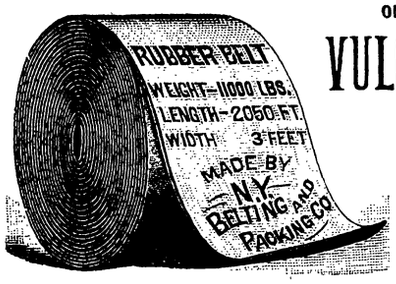
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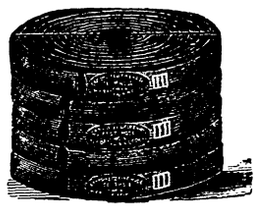
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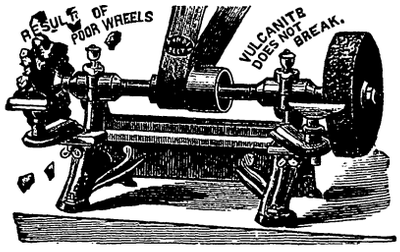


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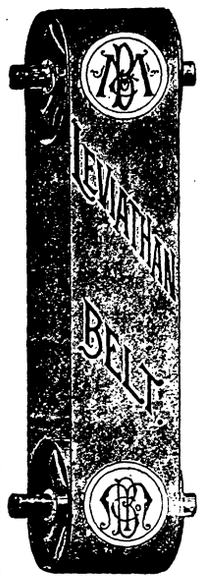
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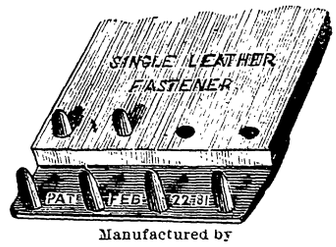
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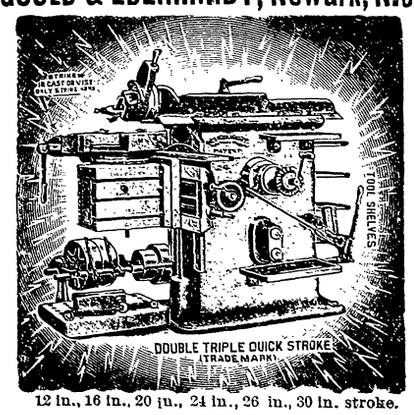
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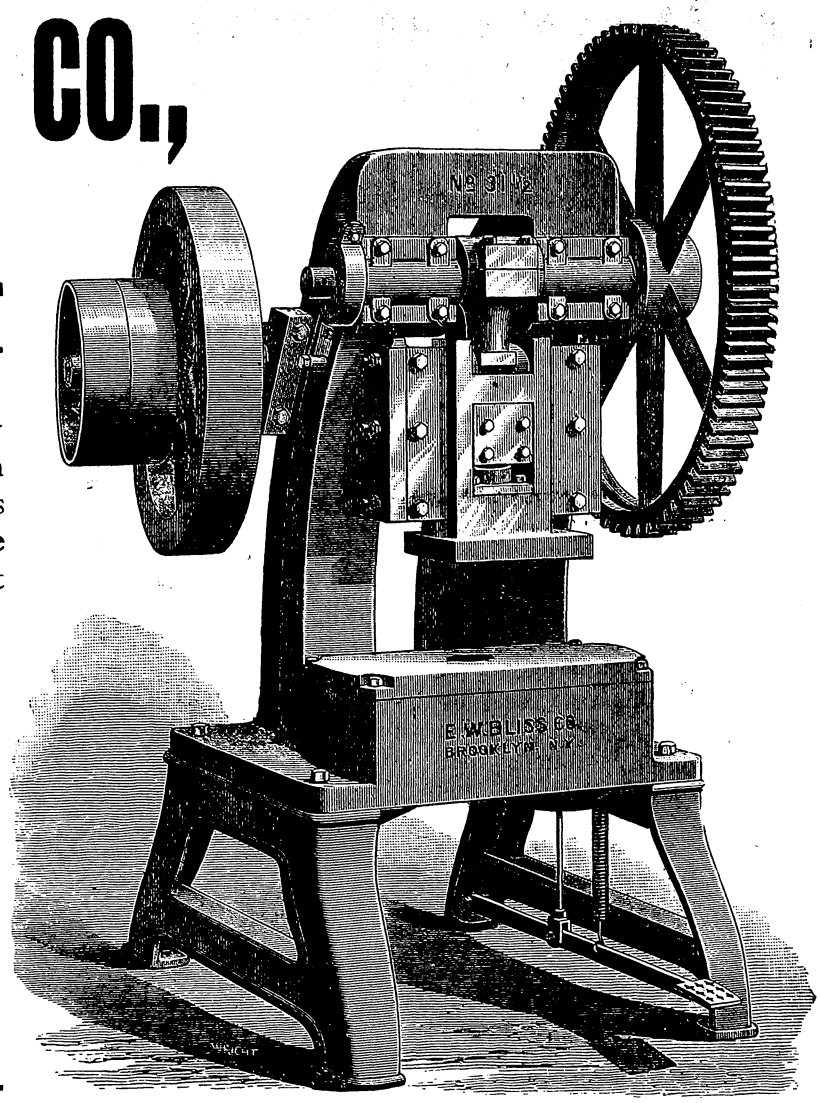
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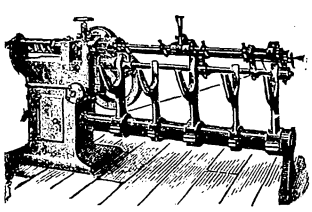
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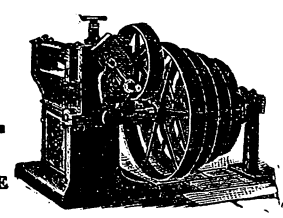
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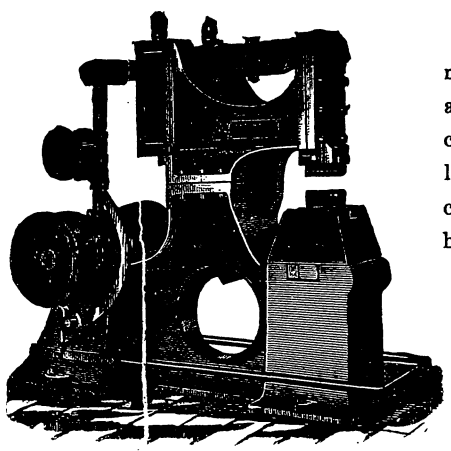
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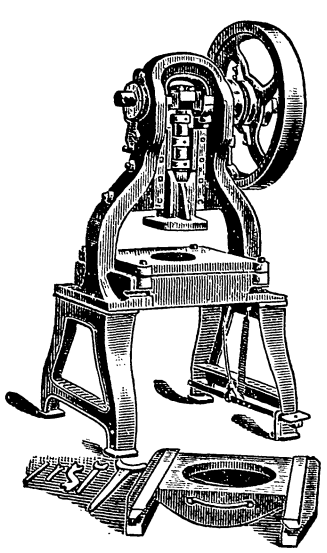


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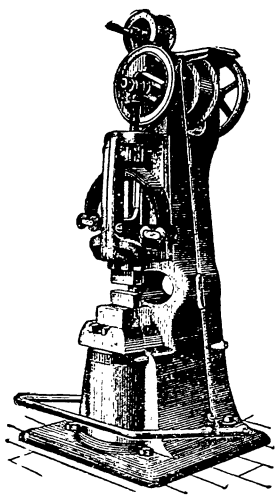
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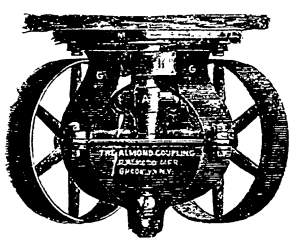
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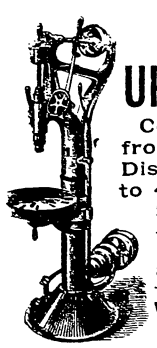
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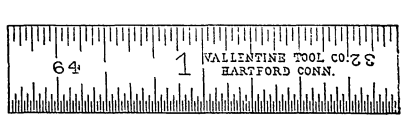
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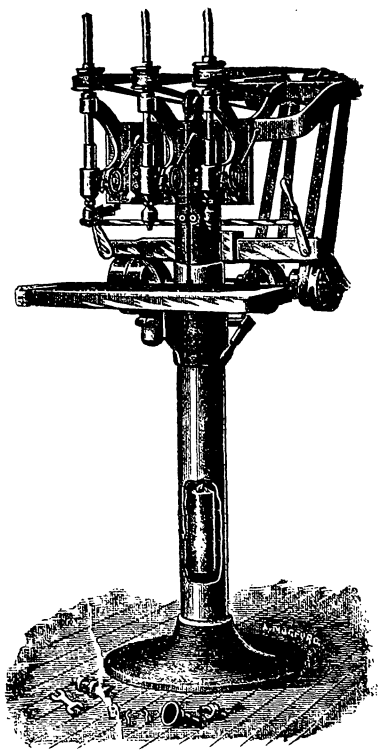


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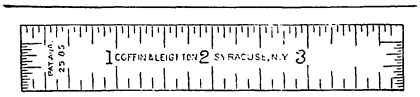
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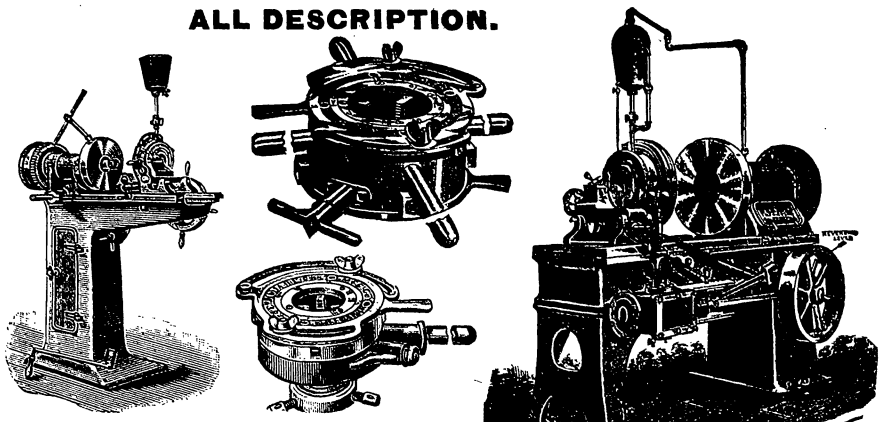
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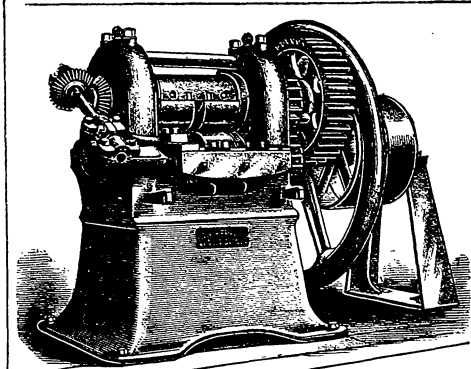
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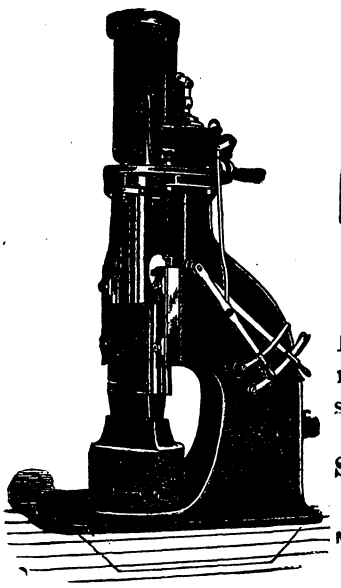
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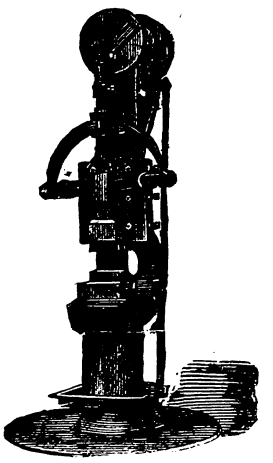
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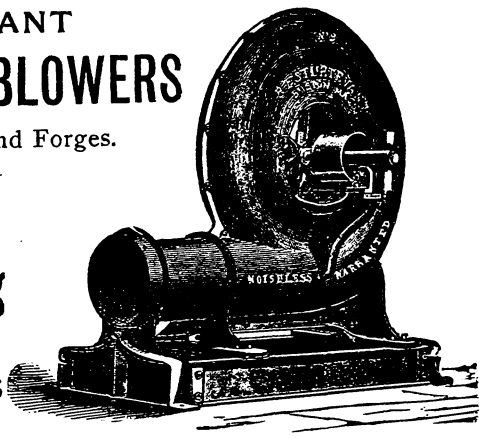
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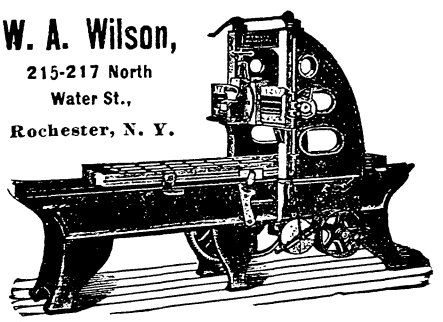
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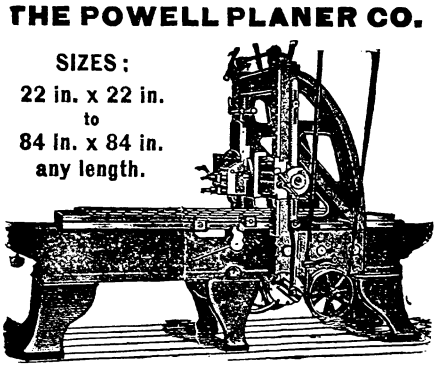
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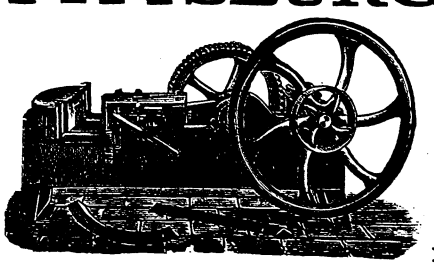
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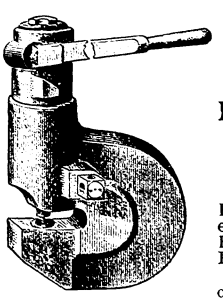


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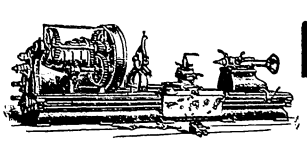
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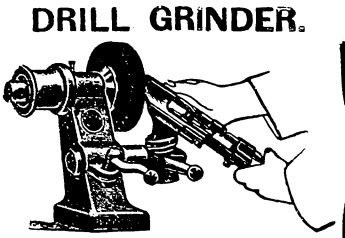


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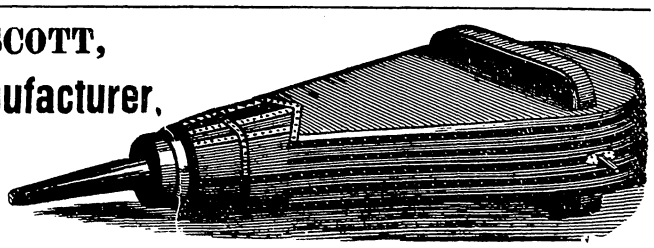
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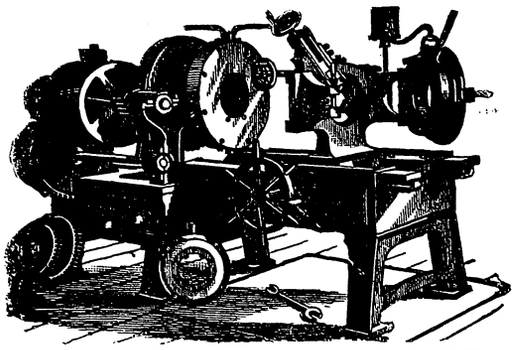
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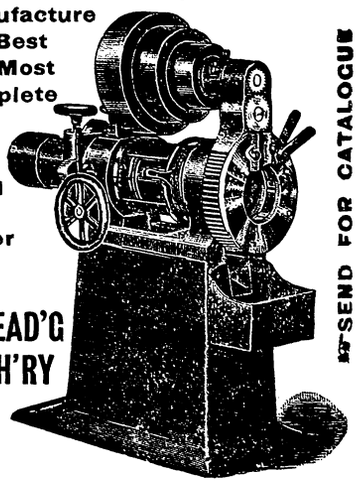
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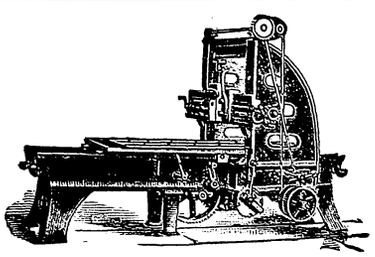
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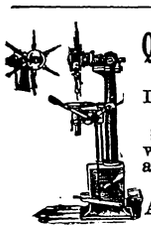


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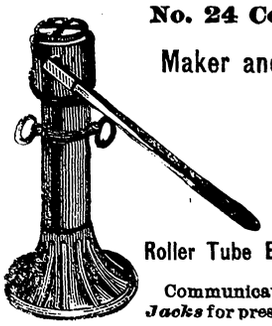
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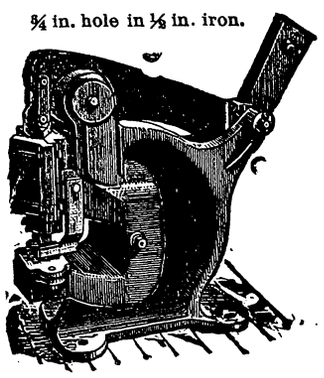


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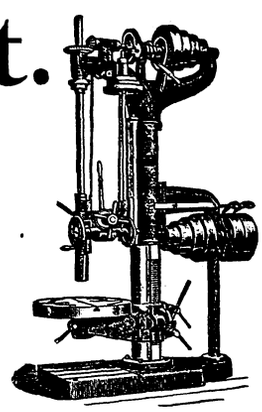
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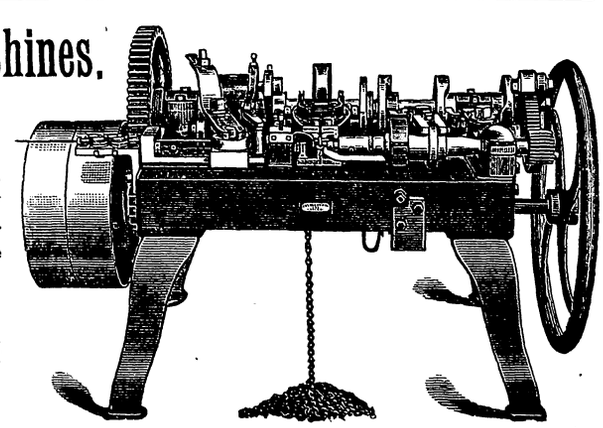
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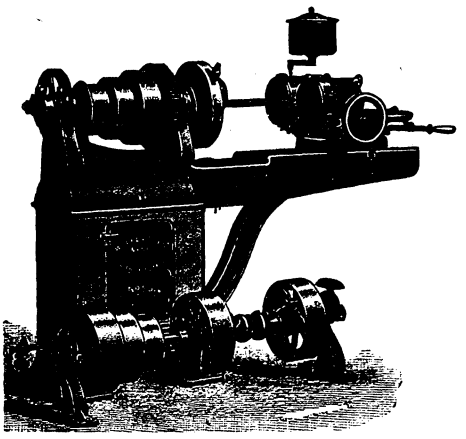
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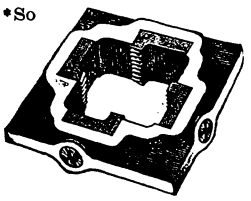
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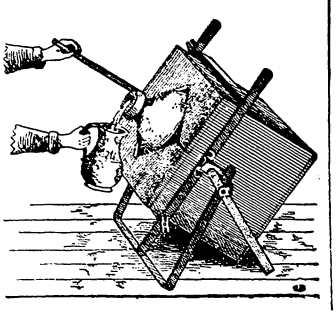
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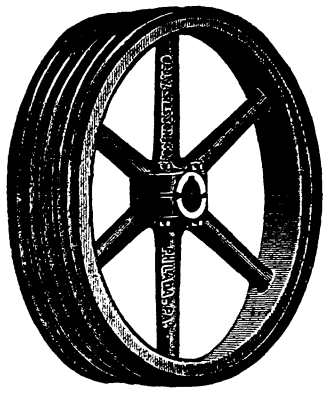




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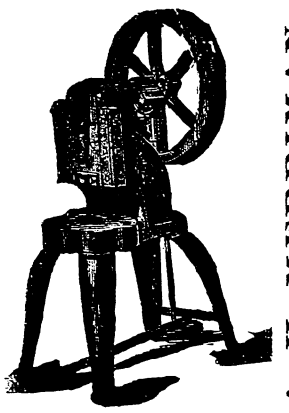
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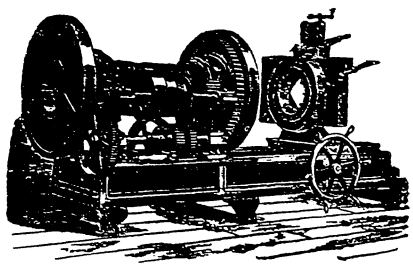


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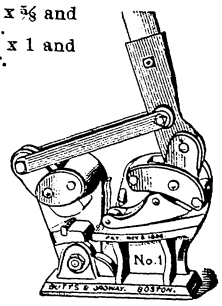
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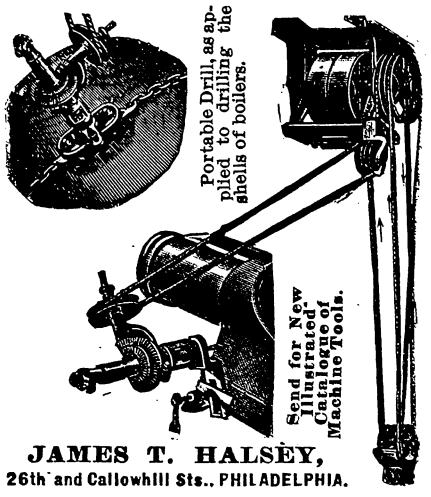
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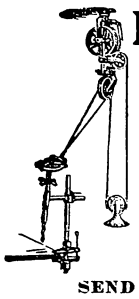
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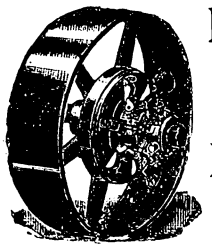
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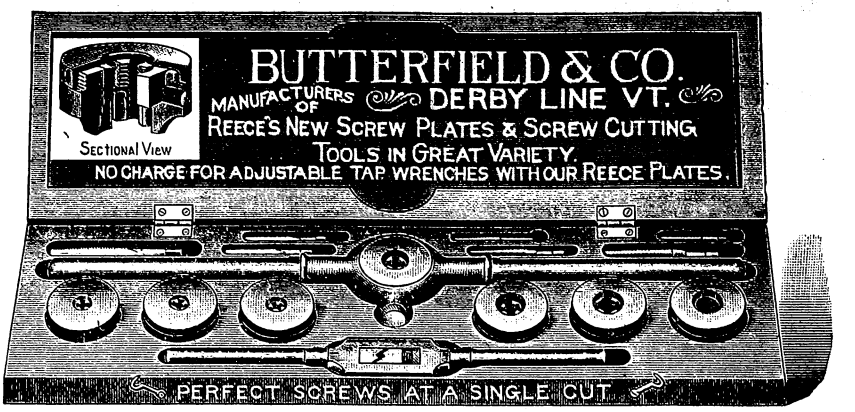


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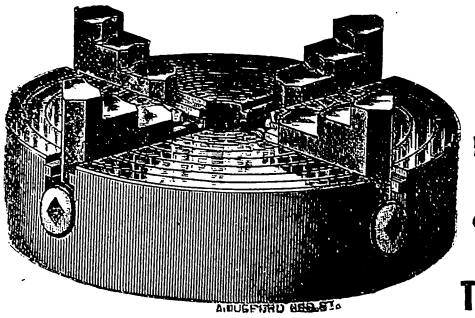
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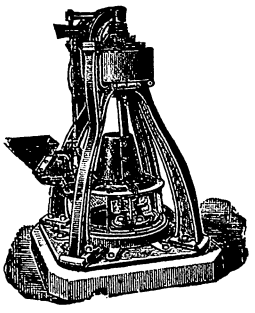
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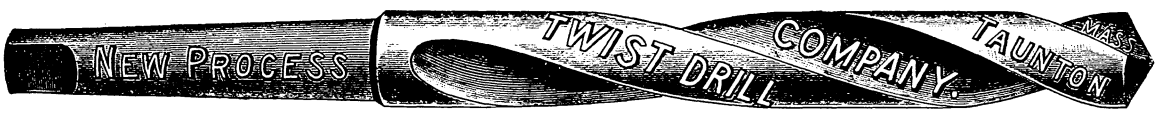
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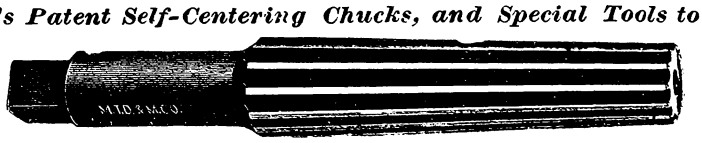
Bit Stock Drills, Solid and Shell Reamers, Drill Grinding Machines,

Milling



Cutters,

Beach's Patent Self-Centering Chucks, and Special Tools to Order.

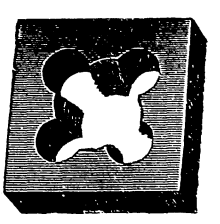


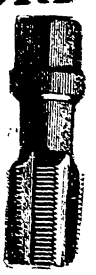
ALL TOOLS EXACT TO WHITWORTH STANDARD GAUGES.

MANNING, MAXWELL & MOORE

Sole Sales Agents for THE MORSE TWIST DRILL AND MACHINE CO.'S



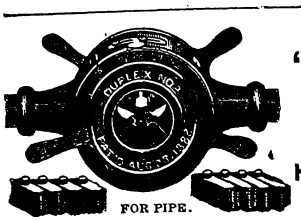




Manufacture of Patent Machine Relieved Nut, Hand, Blacksmith and Machine Screw Taps, Screw Plates, Tap Wrenches and Patent Relieved Pipe Taps and Pipe Reamers; also of Solid Bolt and Pipe Dies. Furnished in V, U. S. Standard and Whitworth shape of threads.



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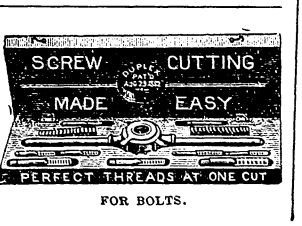
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Quick. Accurate. Durable.

15,000 now in use.

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STOW FLEXIBLE SHAFT,



Invented and Manufactured by

THE

STOW MFG. CO.,

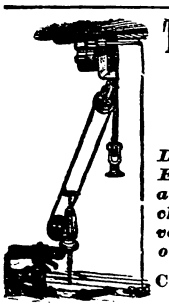
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PORTABLE. DRILLING TAPPING. REAMING.

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Thos. H. Dallett & Co.

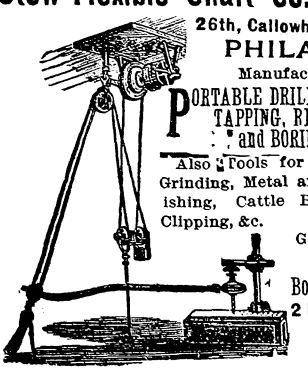
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Portable Drills, Hand Drills, Boiler Shell Drills Electric Motors specially adapted for driving Machine Tools, Cranes, Elevators, Pumps, Presses and other machinery.

Complete Power and Light Plants Installed.

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Also Tools for Emery Wheel Grinding, Metal and Wood Polishing, Cattle Brushing and Clipping, &c.

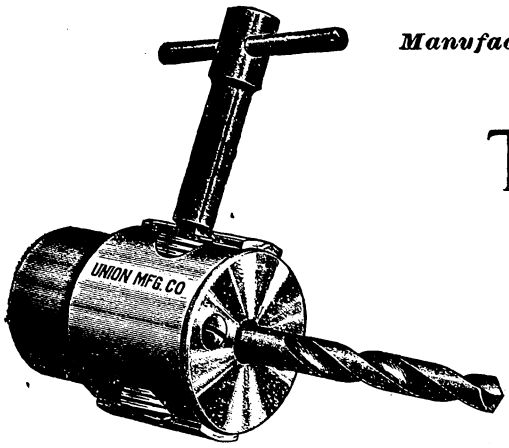
Gen'l European Agents.

Bolling & Lowe, 2 Lawrence, Pountney Hill. LONDON, ENG.

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WAREHOUSE, 103 CHAMBERS ST., NEW YORK.



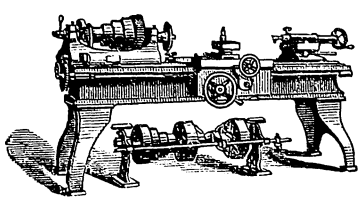
Manufacturers of Combination, Universal, Independent, and Combination Reversible Jaw Chucks.

THE UNION DRILL CHUCK.

NUMBER.	DIAMETER.	HOLDING.	LIST.
000	1¼ inches.	0 to ¼ inch.	$7.00
100	2¼ "	0 to ½ inch.	8.00
101	2¾ "	0 to ¾ inch.	9 00
102	3½ "	0 to 1 inch.	10 00

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Manufacture Machinists' Tools and Special Machinery. Simplicity in Design, Thoroughness in Construction and Durability are Characteristics of the Machines.



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ESTABLISHED 1852.



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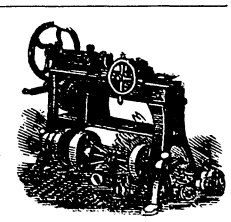
Labor-Saving Tools and Machinery.



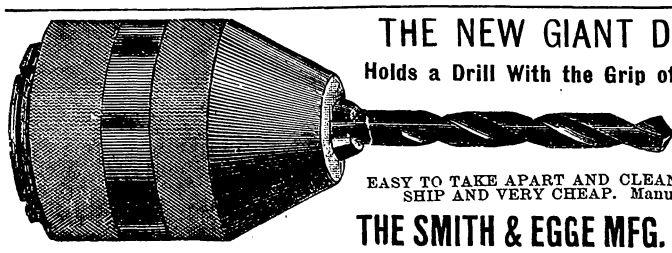
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"LITTLE GIANT"
Upsetters, Tire Benders, Foot Vises, Drilling Machines, Tire Wheels, &c., &c.

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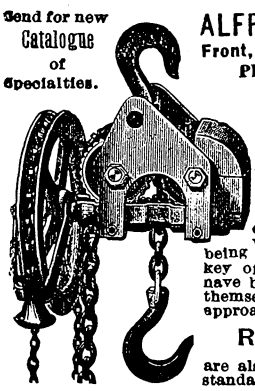
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SIMPLE IN CONSTRUCTION.

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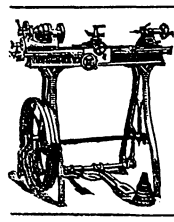
Many have done hard continuous duty 5 years without a single part being renewed. This is the key of our success. They have built up a reputation themselves that cannot be approached. Our improved

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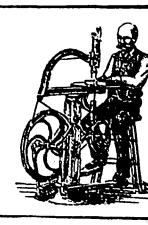
Foot & Hand Power Machinery,

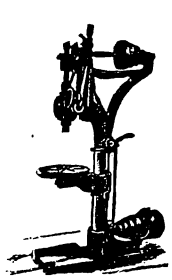
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Strictly High Grade. Catalogue Free.

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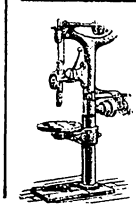


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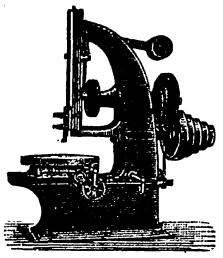
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AND RADIAL
BORING AND TURNING MILLS.
BICKFORD DRILL AND TOOL CO.,
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DRILLS

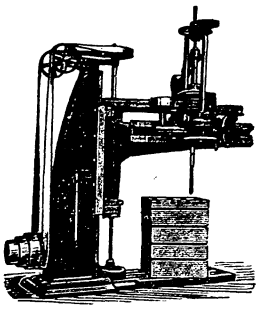
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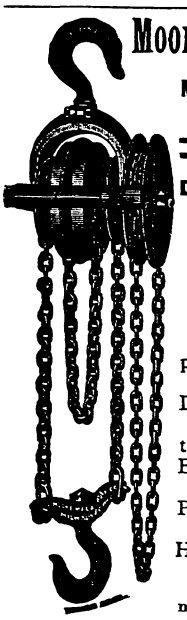
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Moore's Anti-Friction Differential Chain Pulley Block.

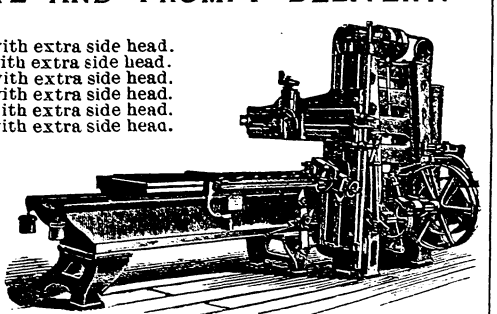
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One Man Can Lift to the Full Capacity of the Block.
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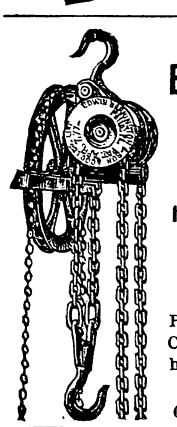
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Lathes, Planers,' Drill Presses, &c. Patent Double Chain Screw Hoists, Overhead Tramway-Switch, &c.

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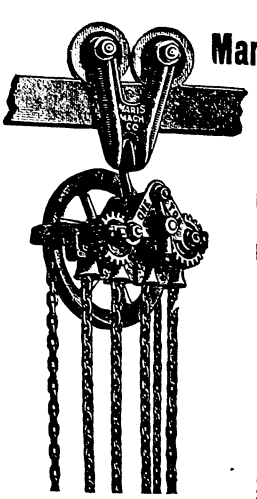
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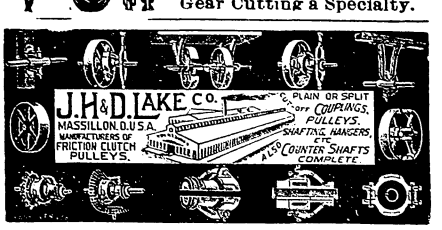
CRANES,

Power Bridge Cranes, Hand Bridge Cranes, Jib Cranes.

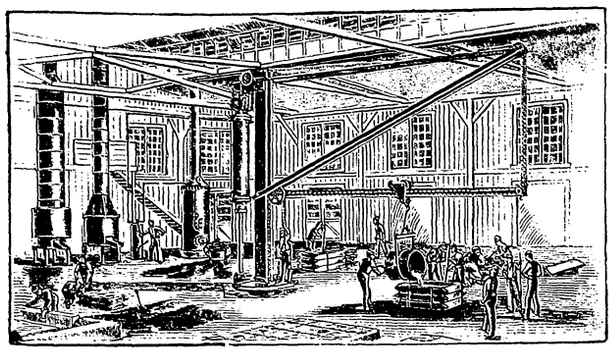
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Overhead Track, Trolleys, Switches.

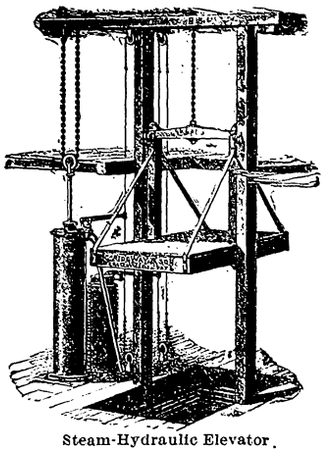
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Very truly,
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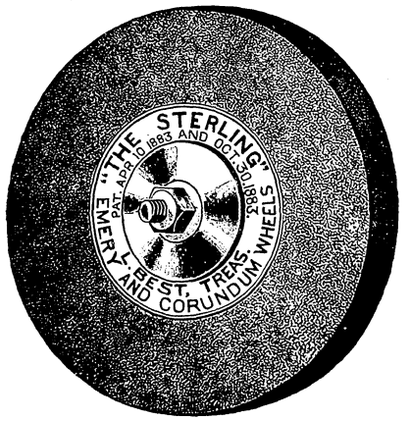
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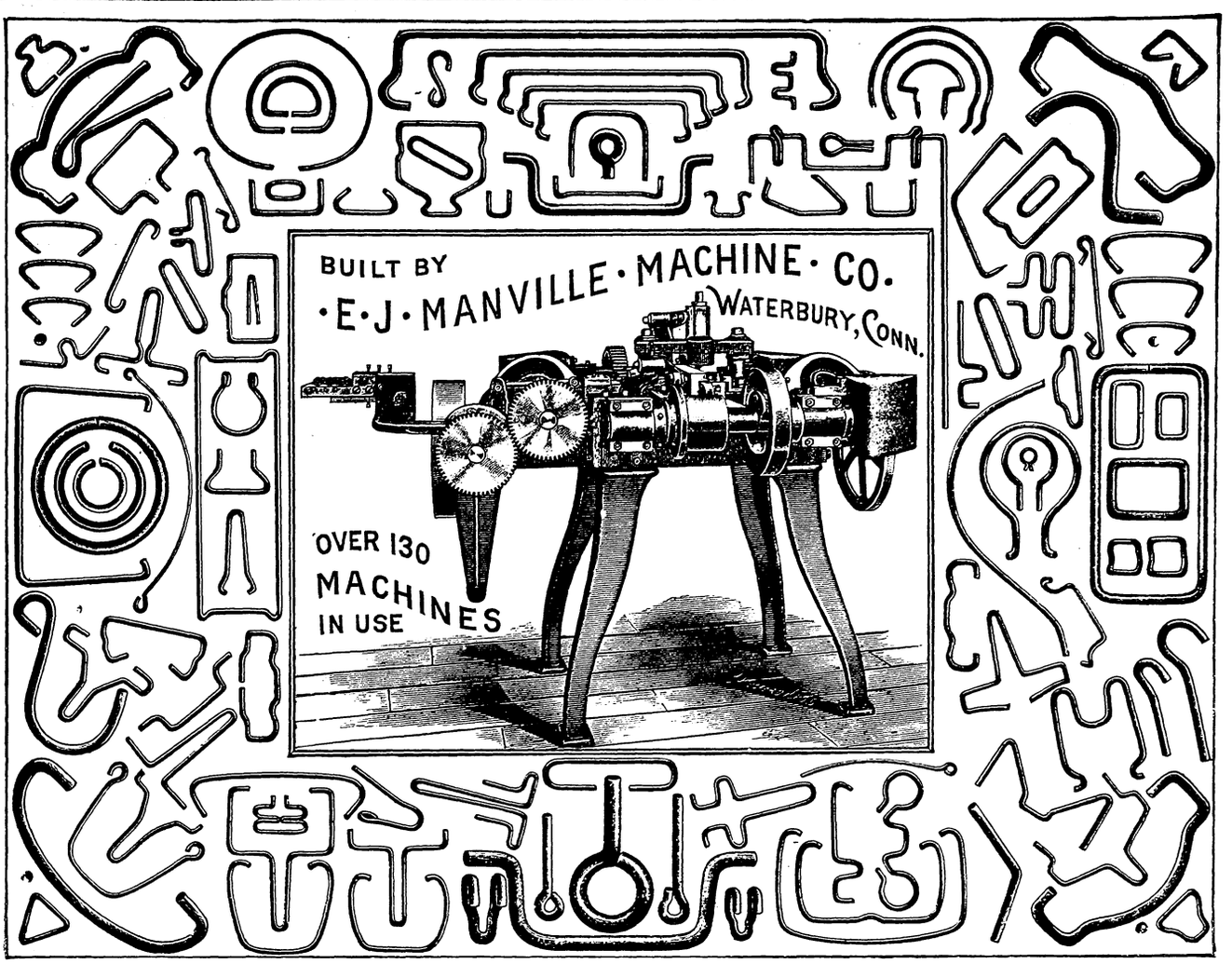
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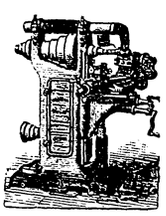
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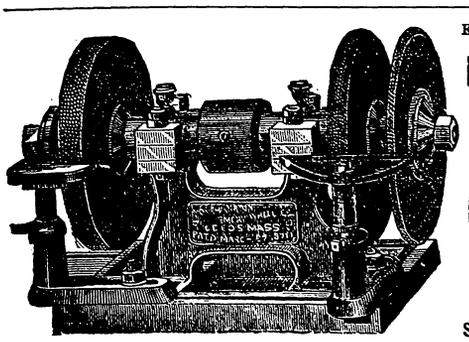




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Of Best Quality.
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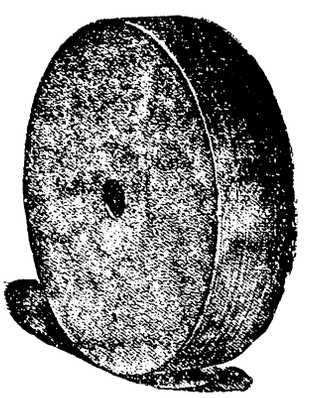
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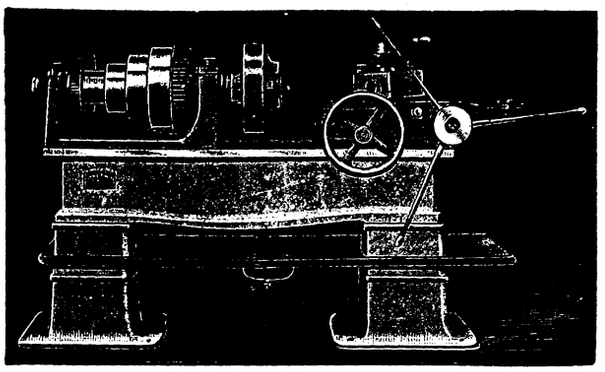
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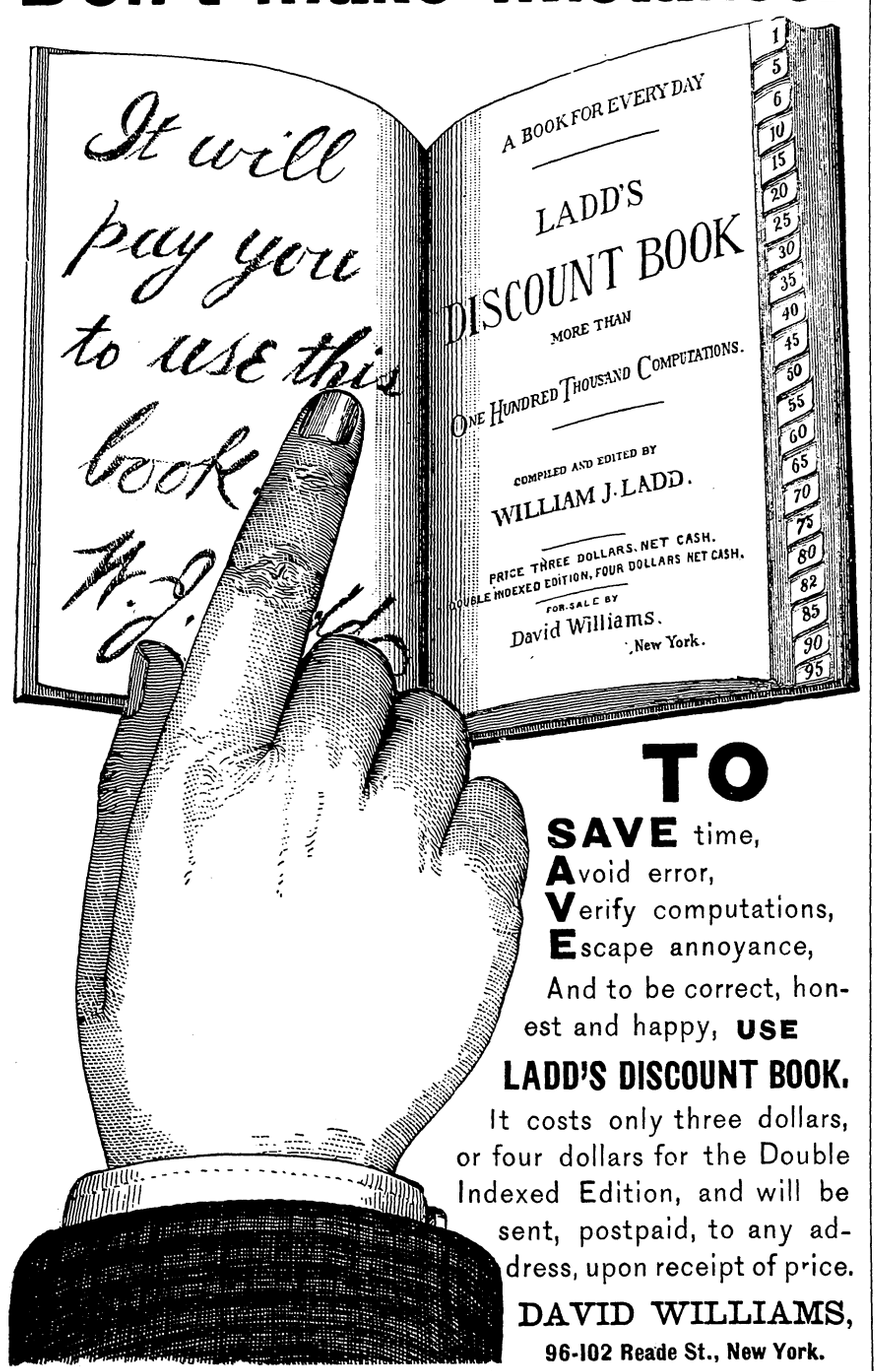
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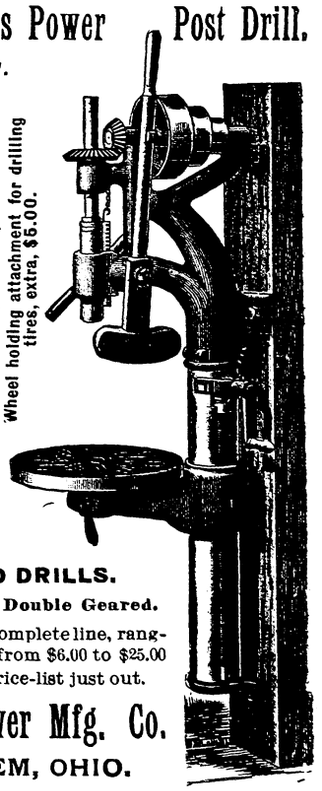
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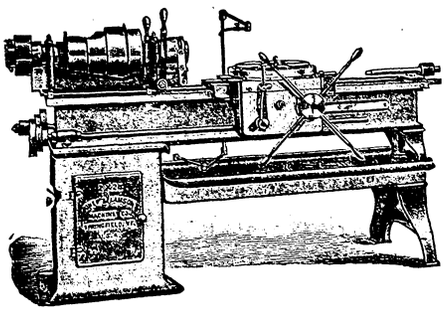
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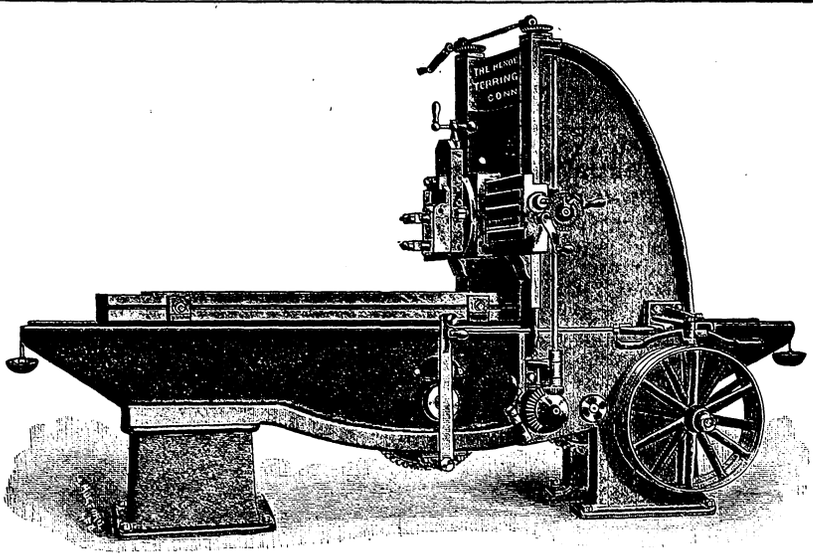
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IS A SPECIAL TOOL FOR THIS PURPOSE.

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WILL INTEREST YOU.

B. & B. Stoves are the Leaders.

B & B. Combination Oil Heaters and Cook Stoves are a great success, as proven by the many testimonials received from all parts of the country.

Every Stove is mounted on rollers, and can easily be moved from room to room. *They can be used in place of a range in the kitchen or in place of a base-burner in the parlor.* They are thoroughly well adapted to fill all requirements, *combining as they do all the qualities of a first-class Oil Heater and an elegant Parlor Cook Stove.*

If you happen to have one of them upstairs, *the tank can easily be removed and taken down to the kitchen to be filled,* and again replaced in the Stove.

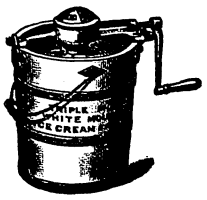
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It always has been, and is still, the best. Try them.

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JAR ENTIRELY COVERED.
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Complete Machine securely packed in one single package.
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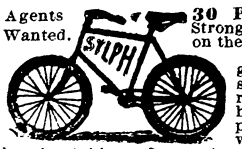
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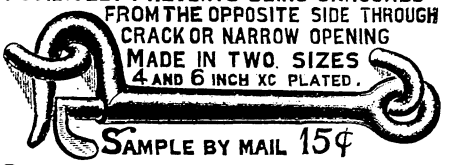
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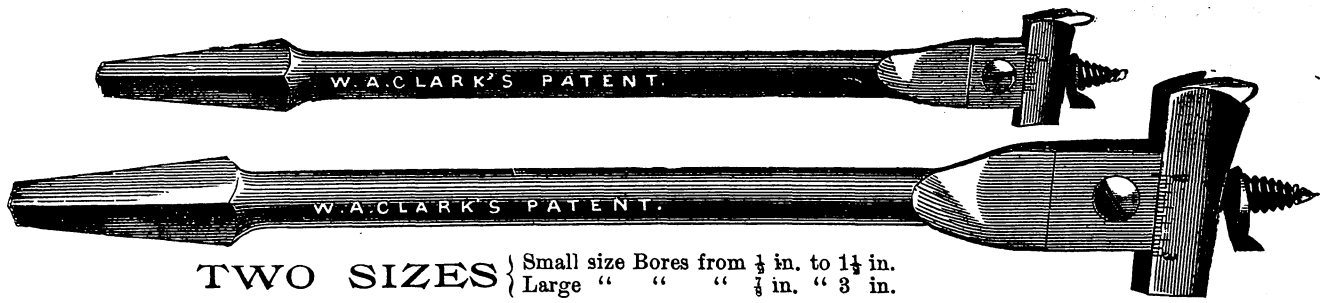
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SPECIAL CUTTERS: No. 5—For Large Bit, Bores from 3 in. to 4 in. No. 6—For Large Bit, Bores from 4 in. to 5 in.

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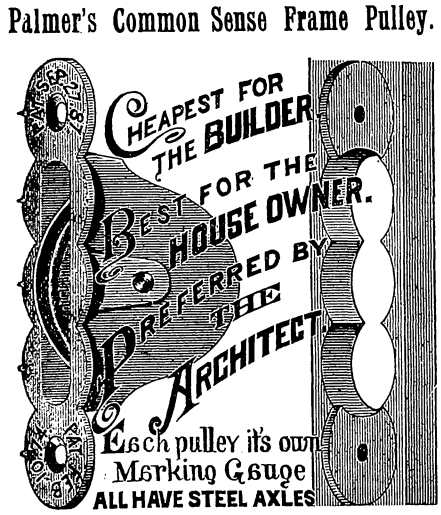


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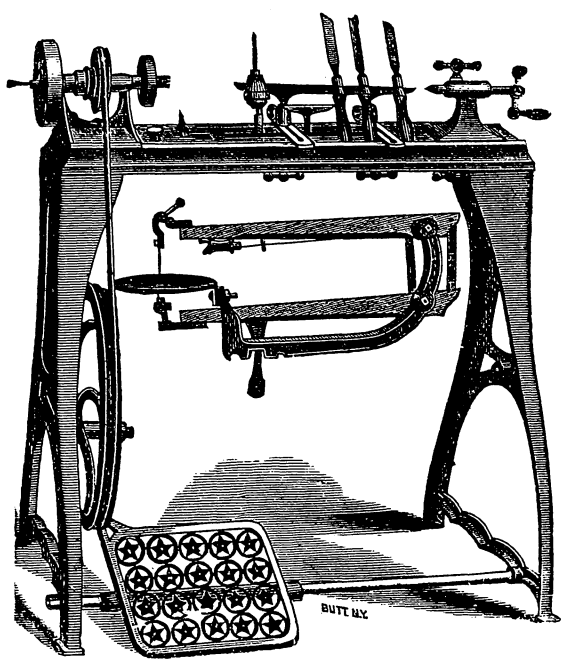
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Those who want a good Lathe with Scroll-Sawing Attachment and all Tools and Improvements to the very latest moment will buy the Goodell Lathe.

Those who want only a Scroll Saw with Drilling Attachment and Rubber Blower will prefer the Rogers Saw.

These two machines are taking the place of all others, and are now the most in demand throughout the world.

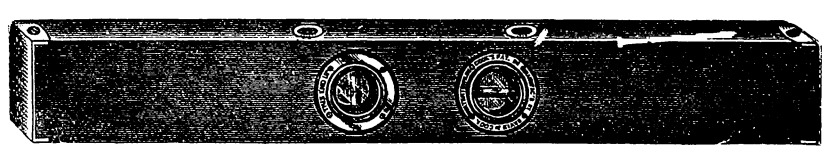
No dealer can make a mistake by laying in a stock of them. About Christmas time they are wanted in every town, and will make business lively at this otherwise dull season.

We also keep a full stock of Designs, Wood, and all other Scroll Sawing goods.

Price of Goodell Lathe, complete, $12.00.

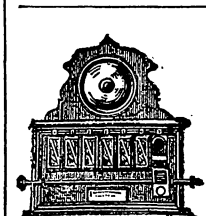
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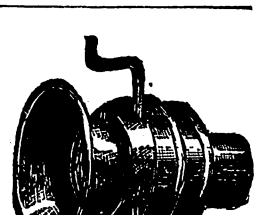


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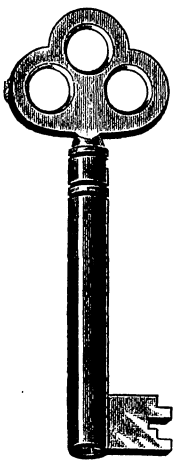


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Manufacturers of
SPEAKING TUBES, WHISTLES, ORAL, ELECTRIC MECHANICAL AND PNEUMATIC ANNUNCIATORS AND BELLS.
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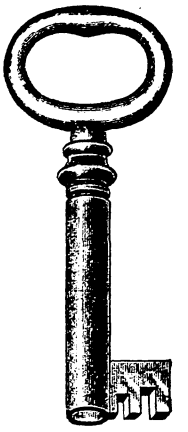
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MAKES FRIENDS and MONEY, and SAVES TIME and TROUBLE.

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LePage's Liquid Glue,

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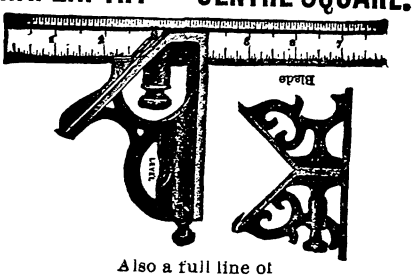
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NONPAREIL
Ratchet Wrenches.

Made of best forged Tool Steel; are easily and readily adjusted and controlled. Can be made reversible instantly without removing from their work by throwing over the lever in slot of the handle.

The Set of Combination Tools No. 1 includes the wrench, two sockets, one for screw-driver, bit or reamer shank, with wood handle, and one socket

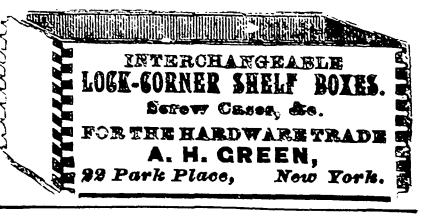


H

for drill shank and feed nut. The jaws on this wrench open from 3-16 to 1¼ inches.

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312 Terrace, Buffalo, N. Y.

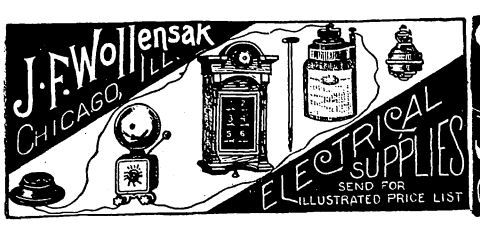


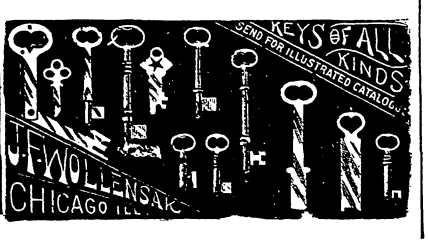
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Branch Warehouses: 85 and 87 John St., New York; 197 Lake Street, Chicago, Ill.

THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

Pumps, Hydraulic Rams, Garden Engines,

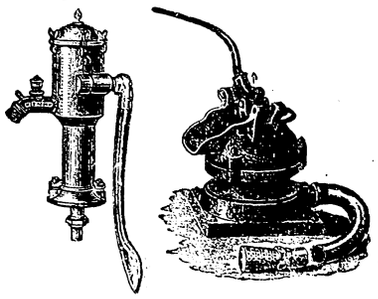
Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines in the World.

DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 209. Fig. 381.



or wherever it is desired to raise a large quantity of water by

hand power.

The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

CAPACITY

from 3,000 to 4,500 gallons per hour.

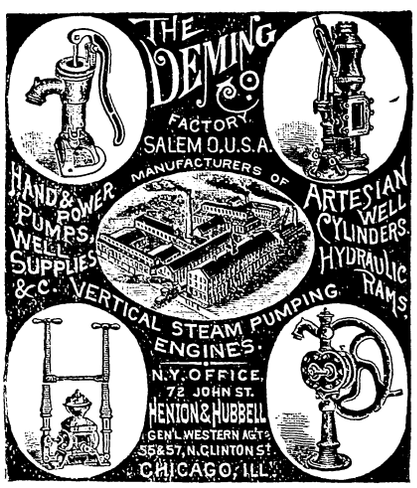
These pumps are simple, durable and low priced.
Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.

Send for Circular and Price List.

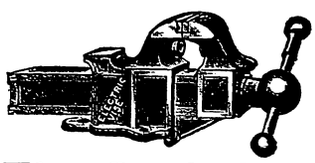
Fig. 145.



C. I. Grindstone Frame.



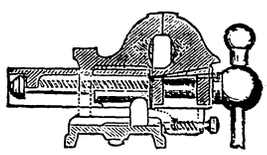
VISE.



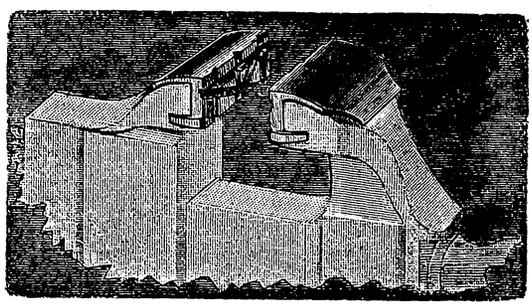
Patented Dec. 27, 1892.
IT HAS QUALITIES THAT ARE UNDISPUTED.

Rapid, Active, Prompt.

One movement in and out, one turn of the hand and the work is secured.



The Capital Machine Tool Co., AUBURN, N. Y.



BINGHAM

PATENT VISE JAW CAP

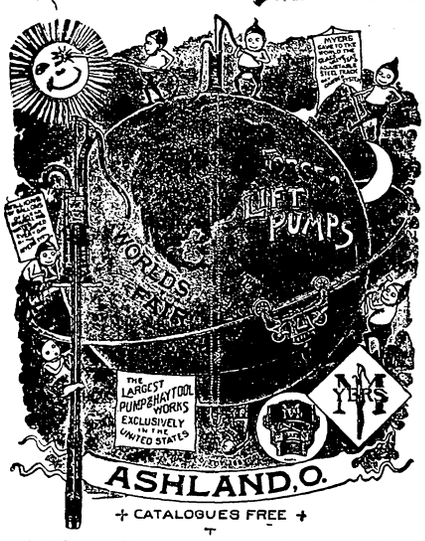
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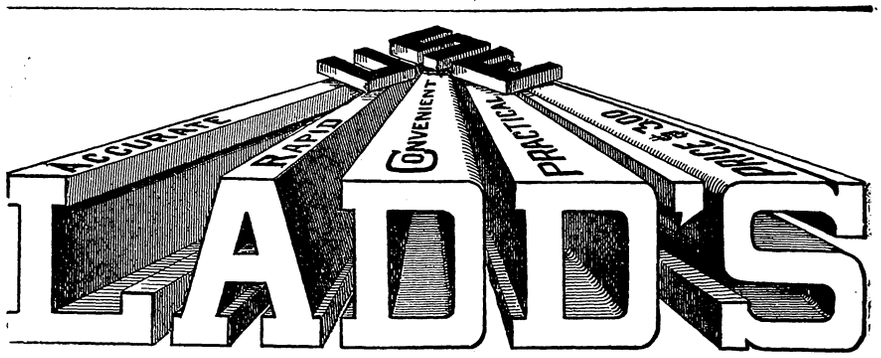
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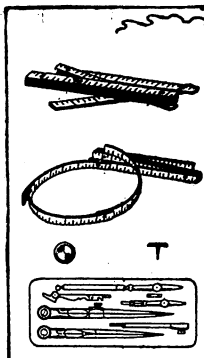
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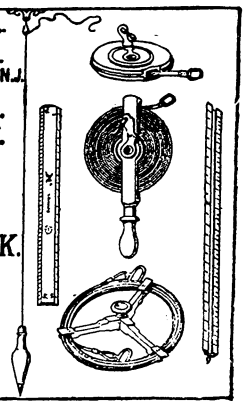
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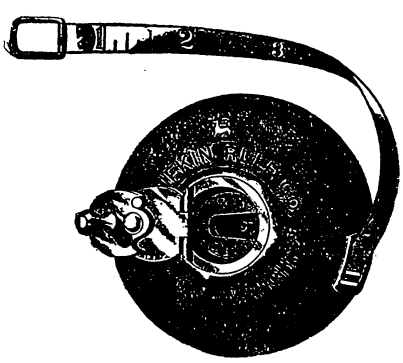


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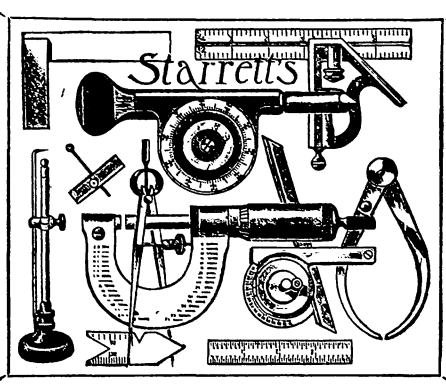
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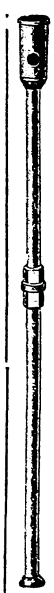
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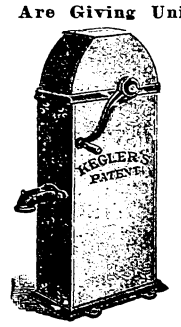
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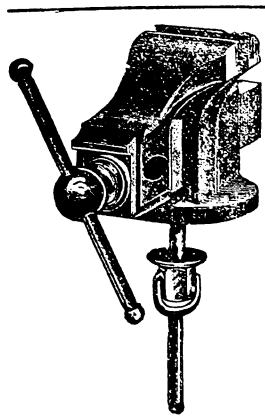
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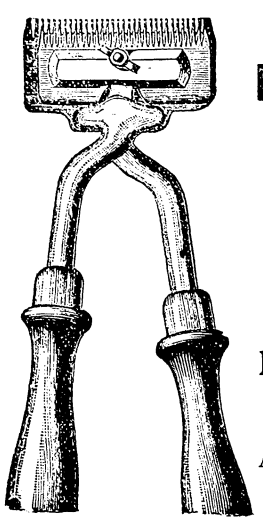
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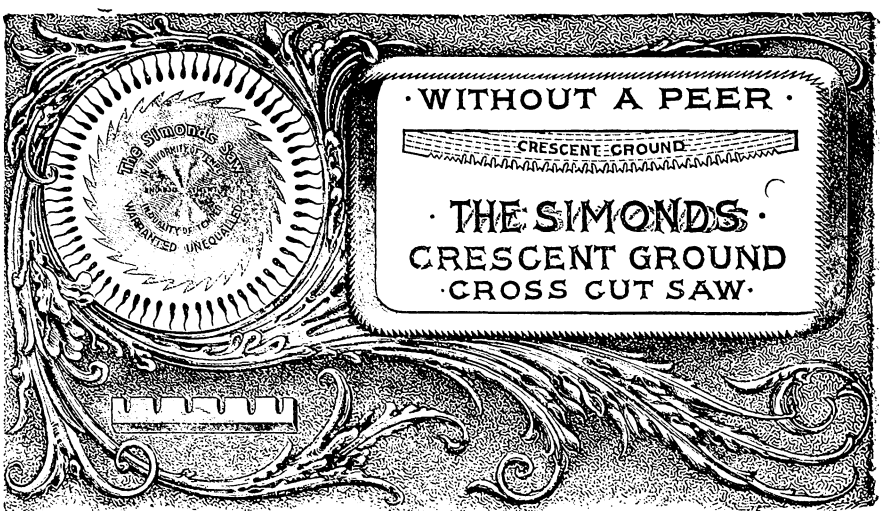
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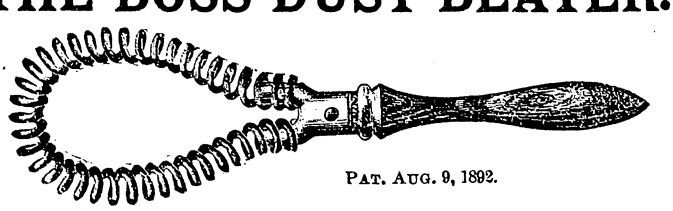
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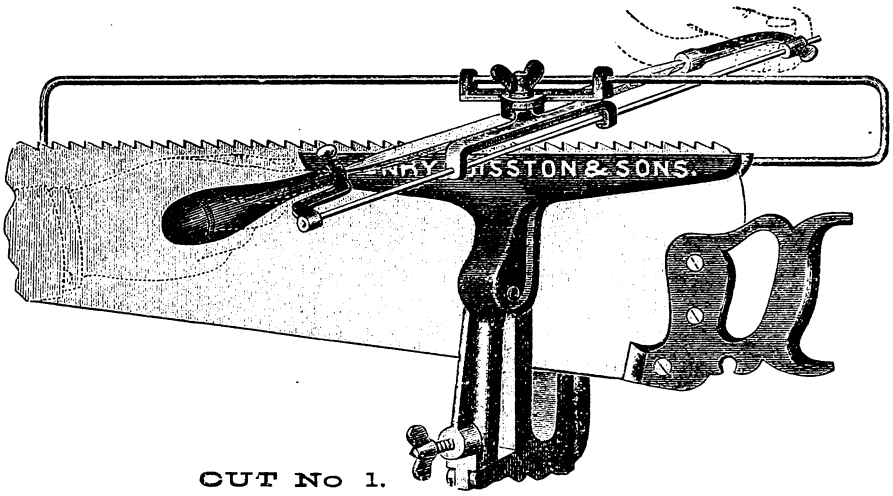
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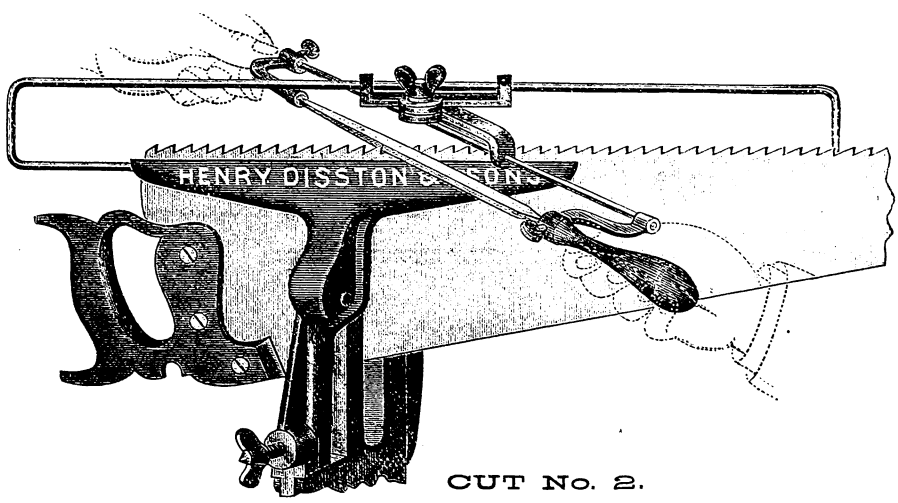
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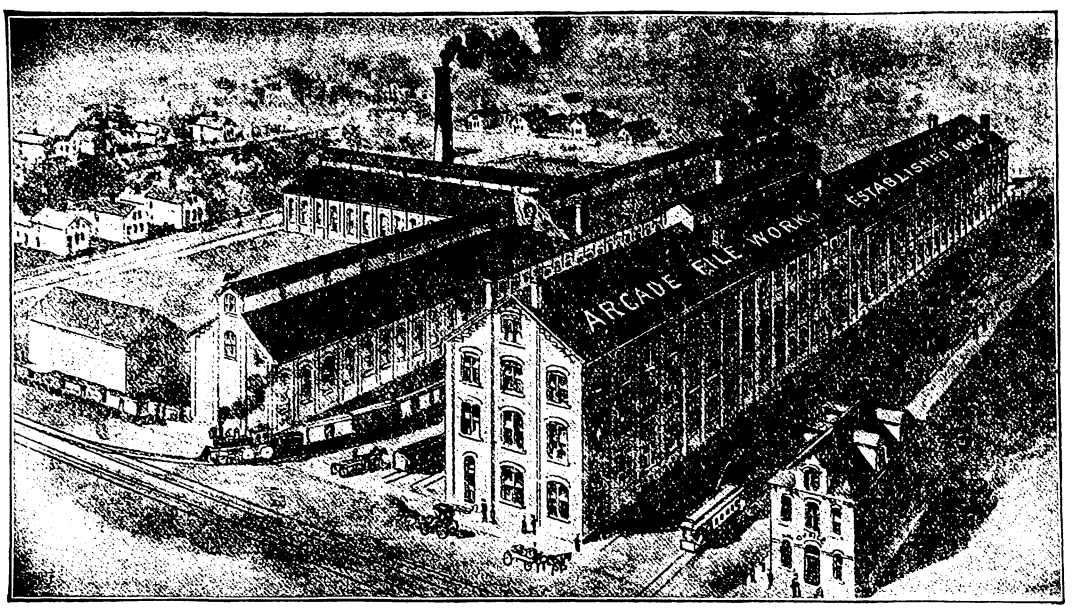
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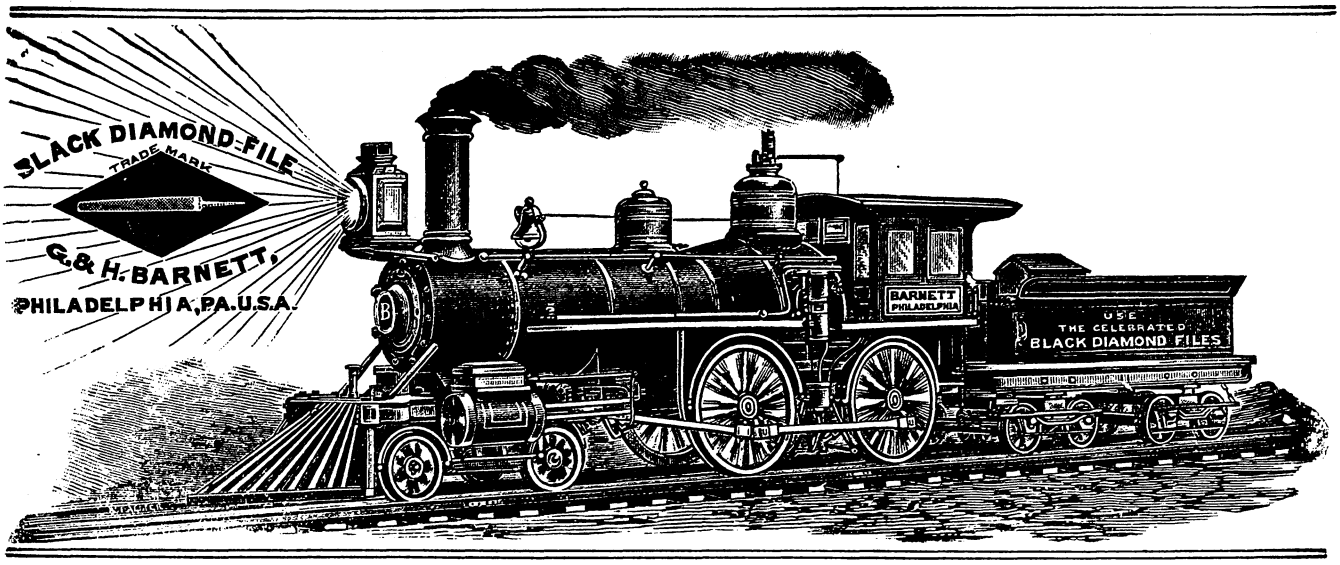
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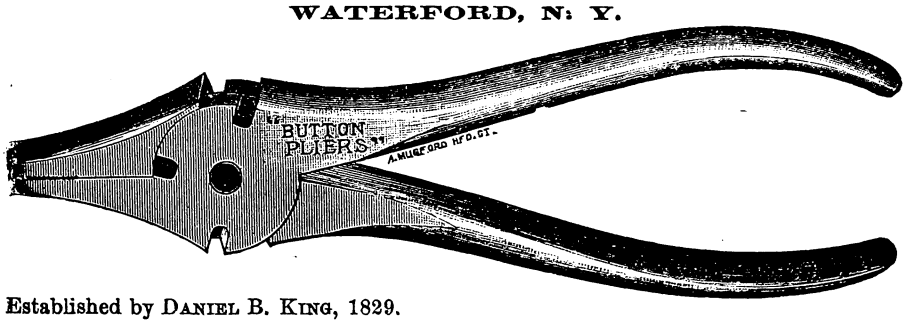
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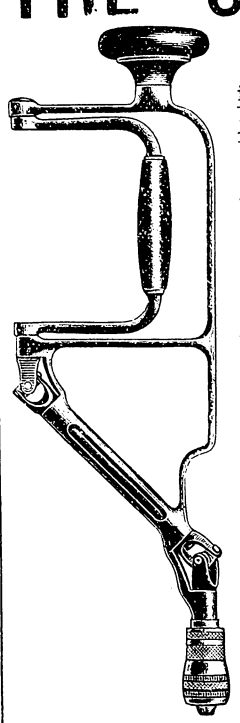
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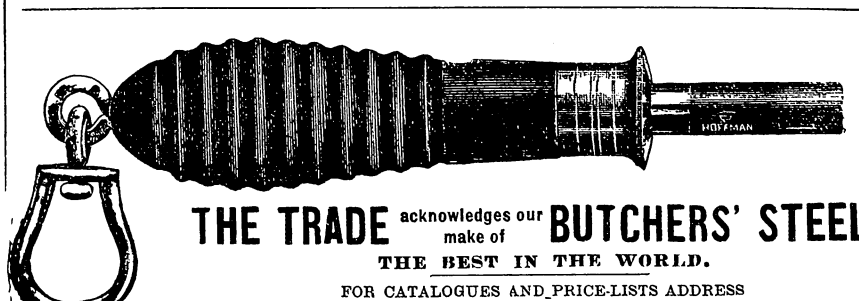
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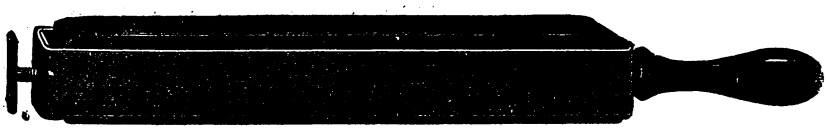
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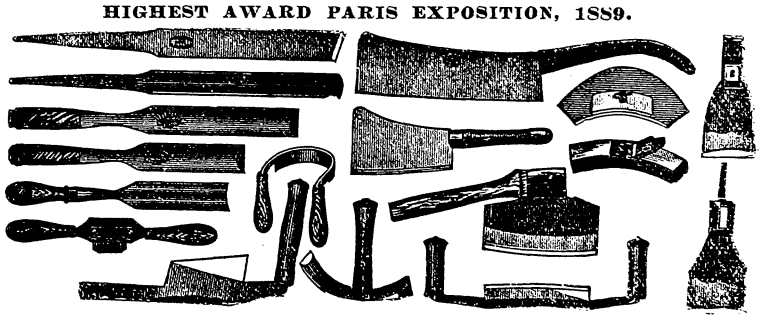
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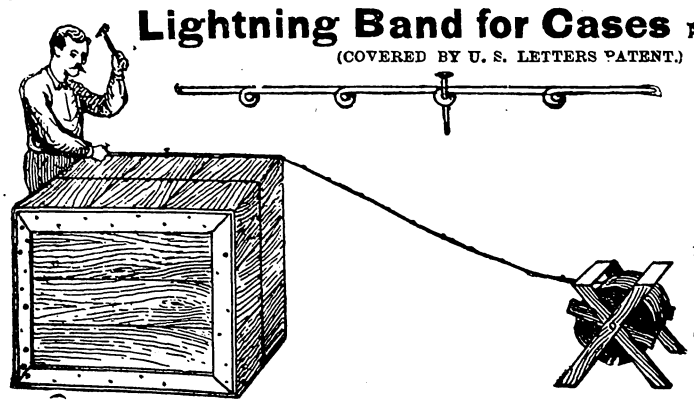
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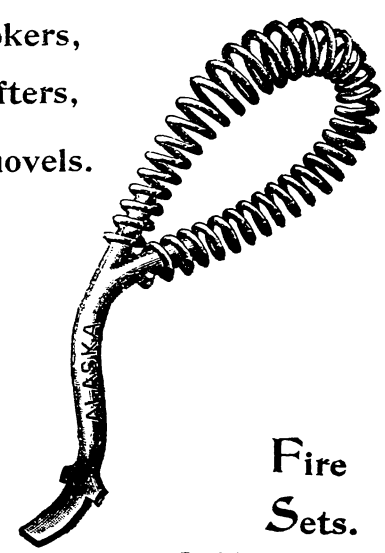
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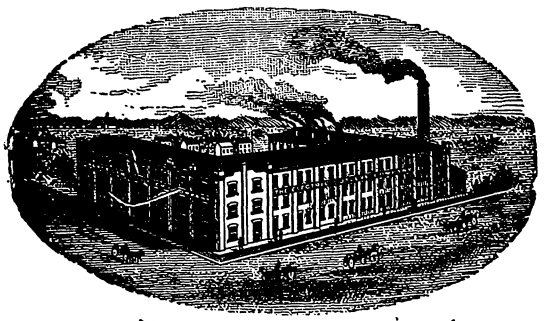
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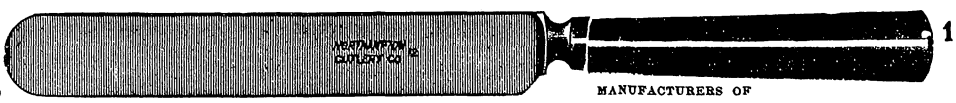
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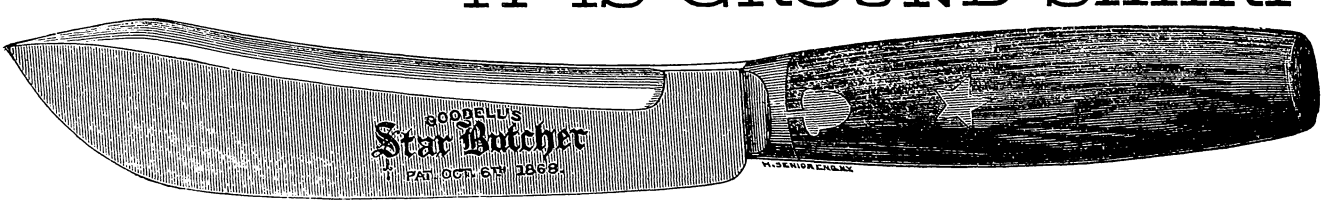
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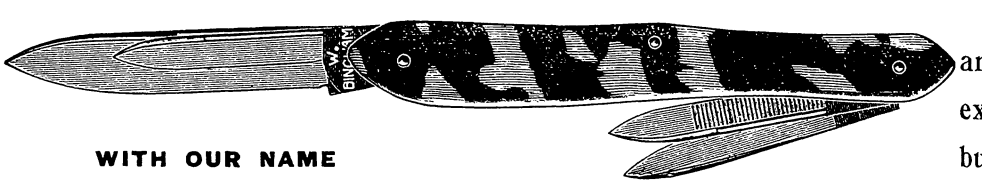
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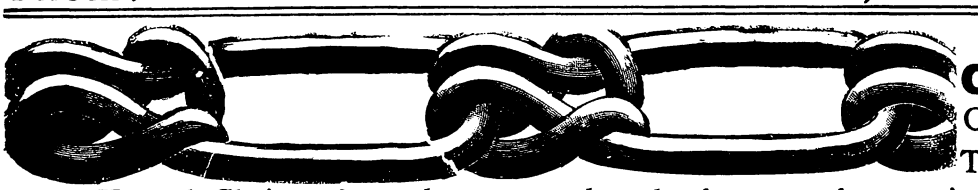


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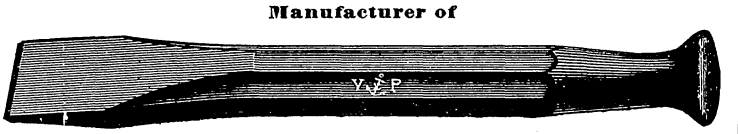
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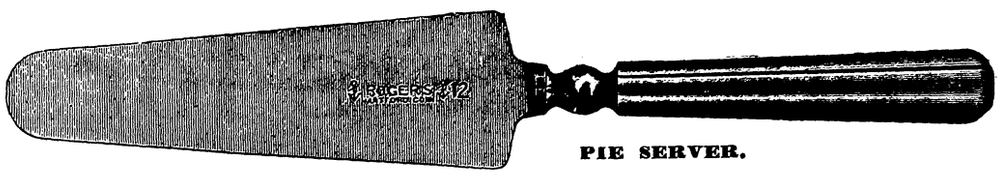
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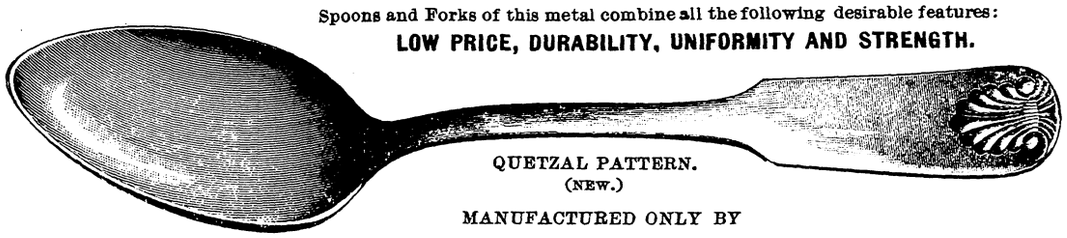
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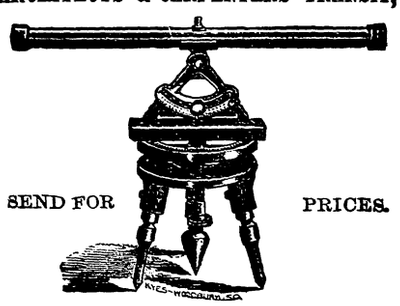
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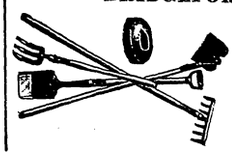
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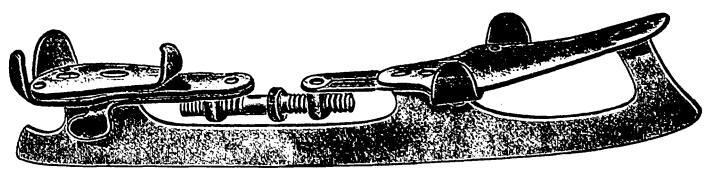
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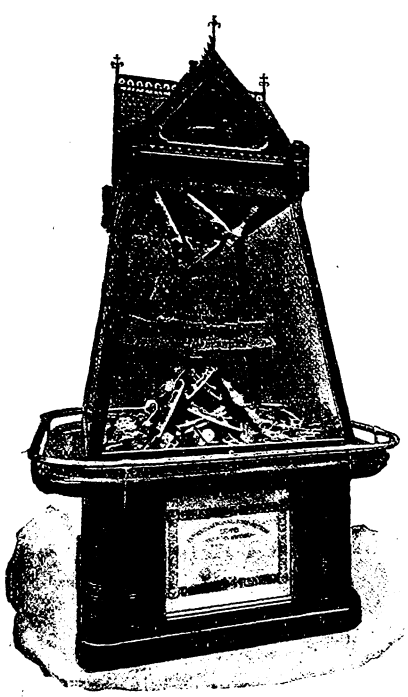
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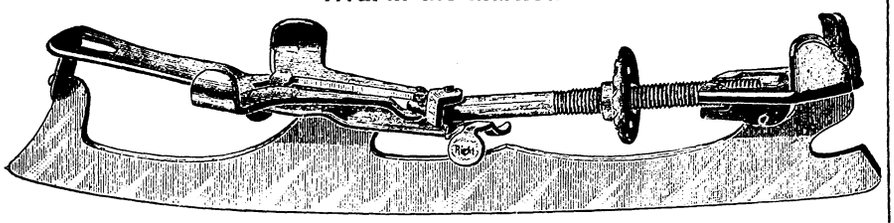
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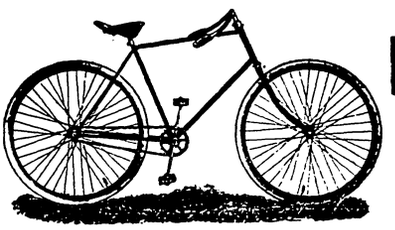
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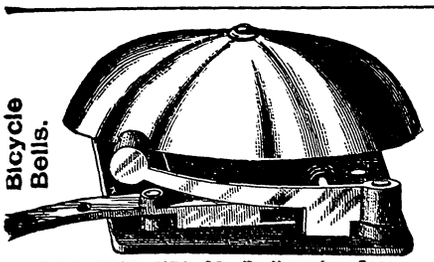
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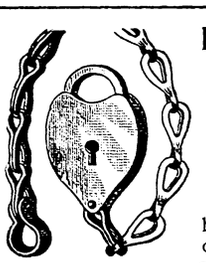
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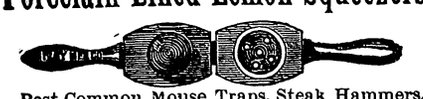
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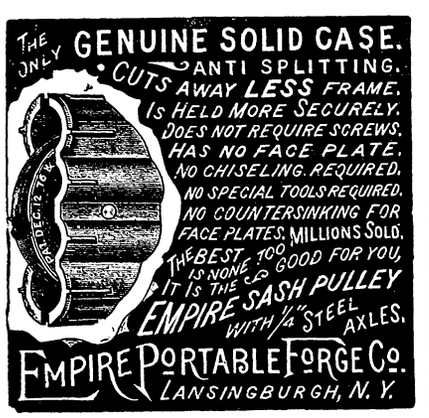


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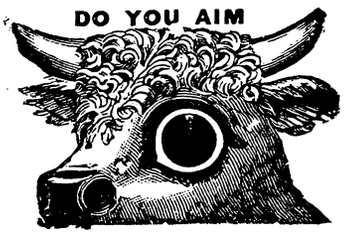


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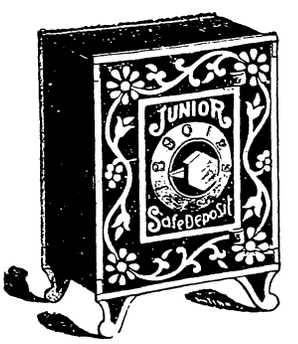
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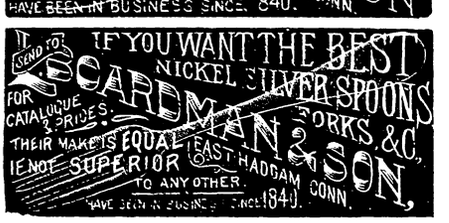
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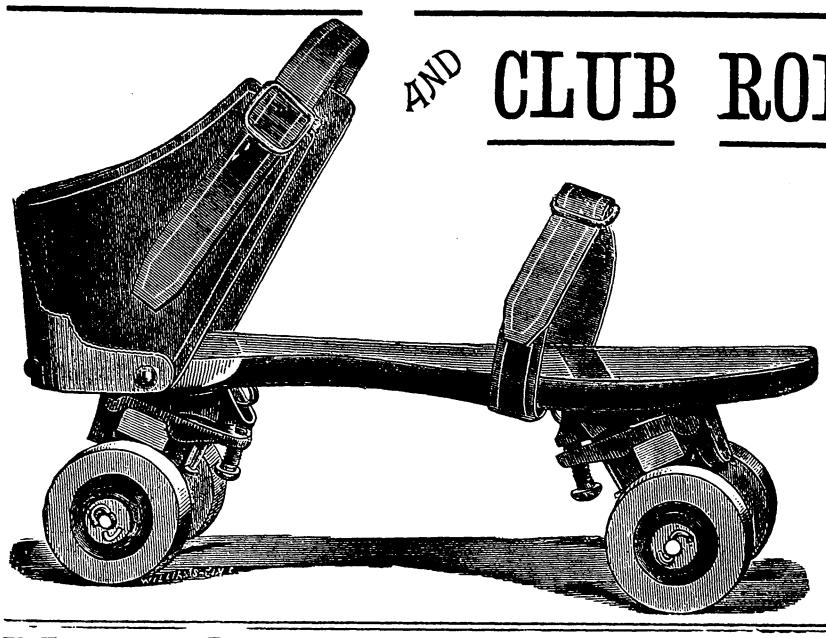






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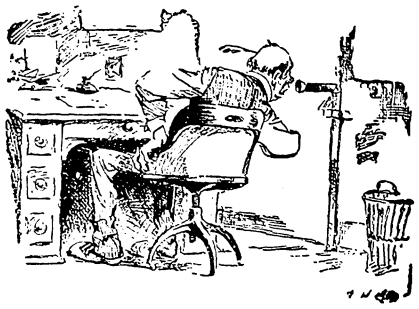
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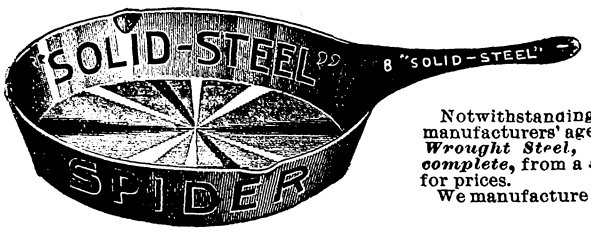
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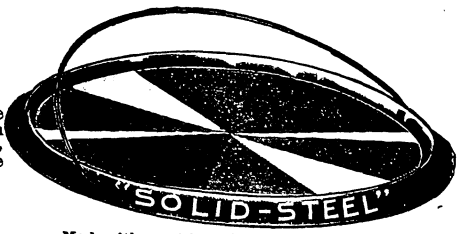
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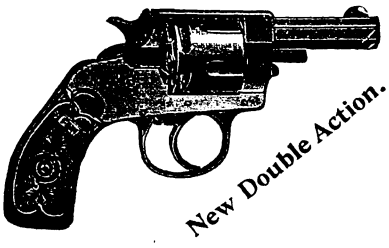
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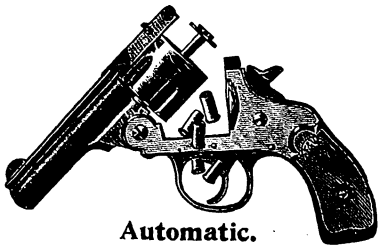
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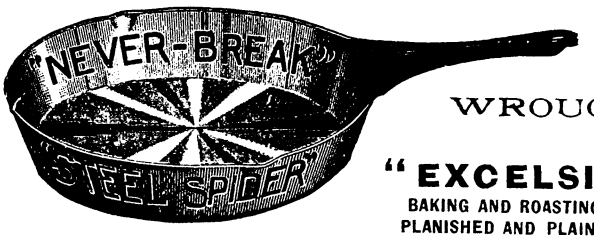
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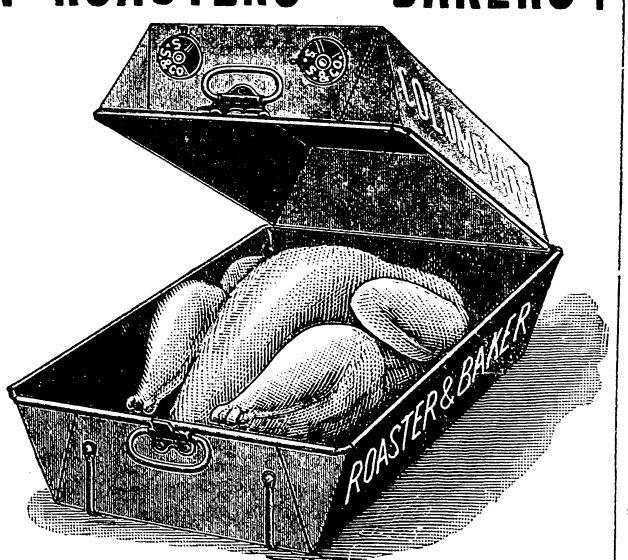
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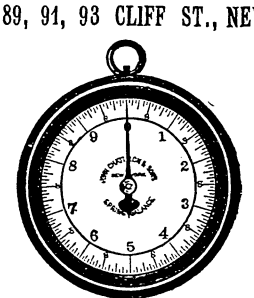
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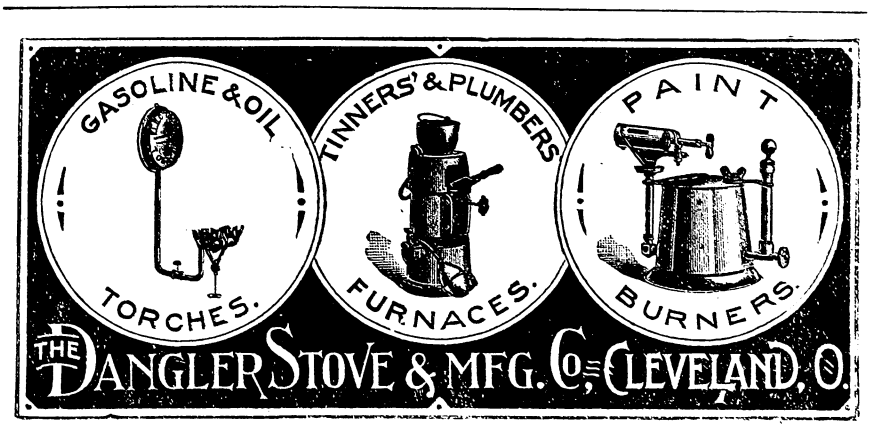
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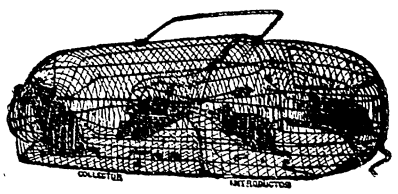
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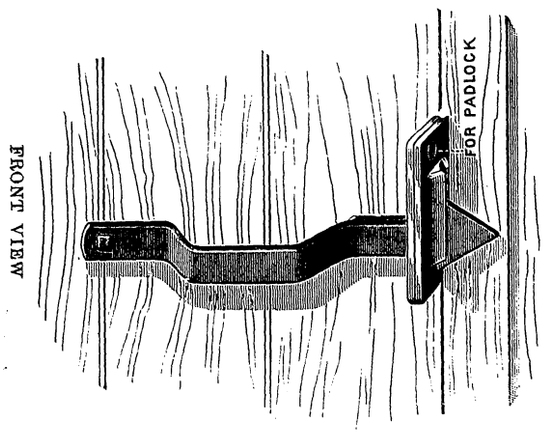


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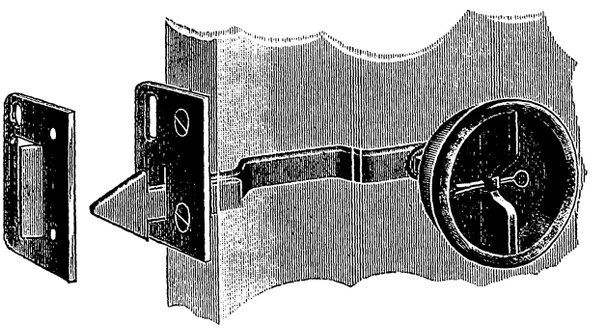
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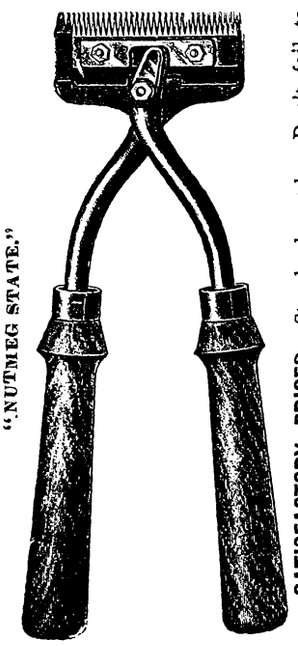
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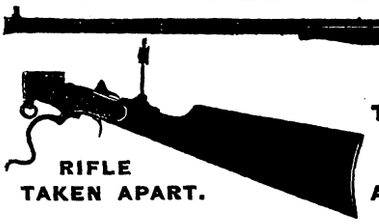
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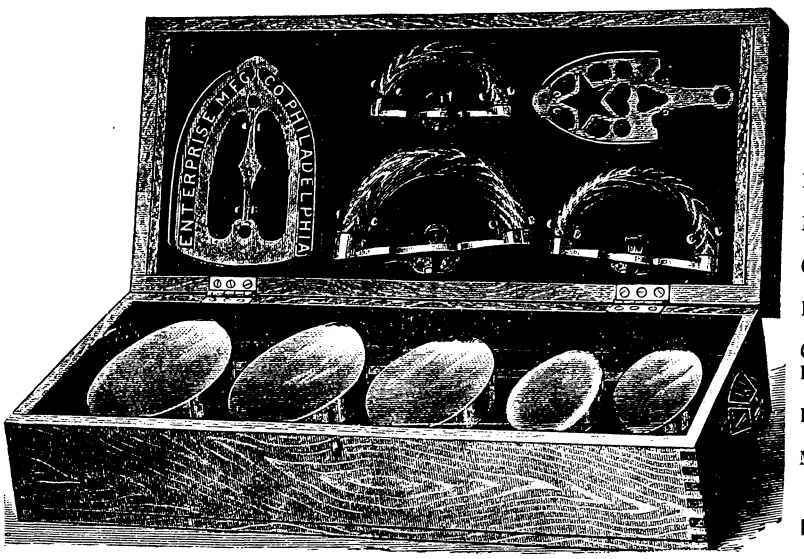
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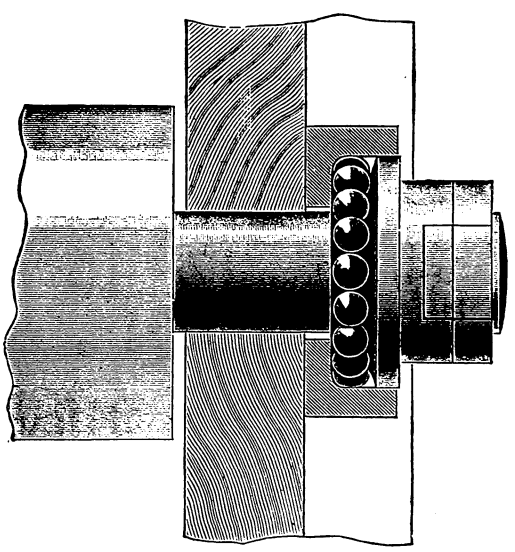
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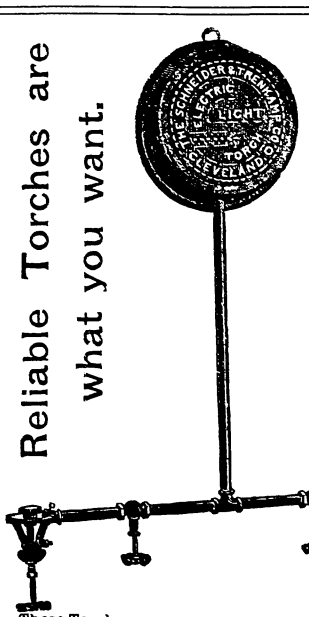
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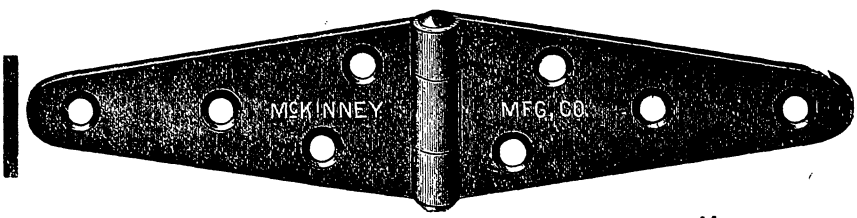
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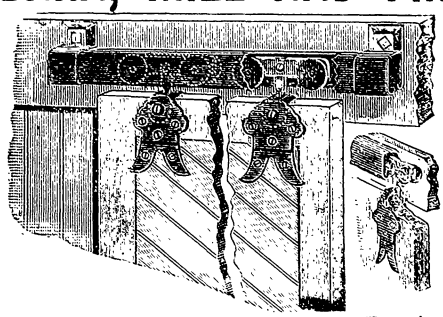
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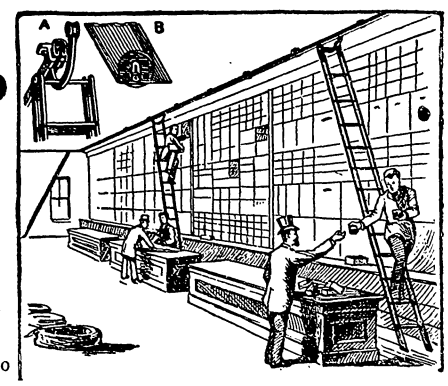
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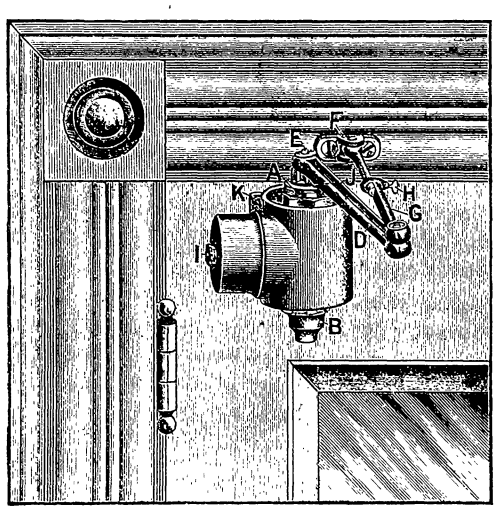


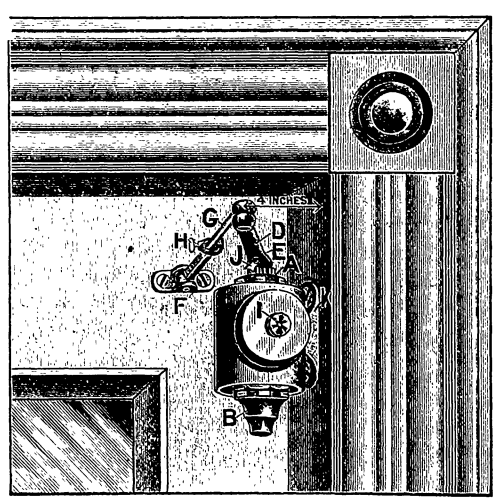
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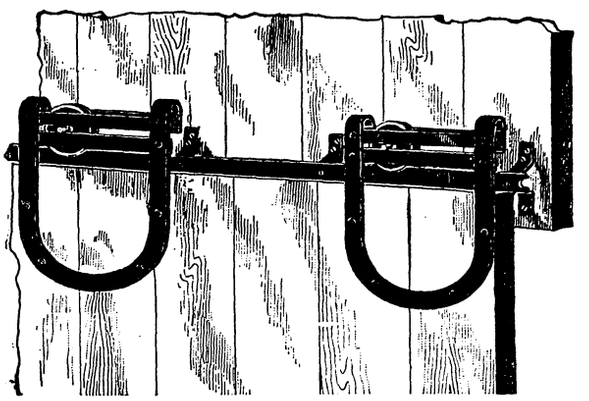
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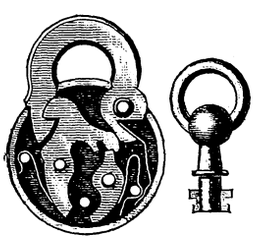
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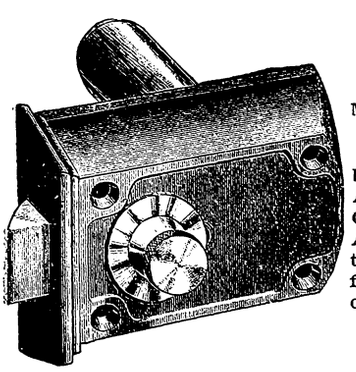
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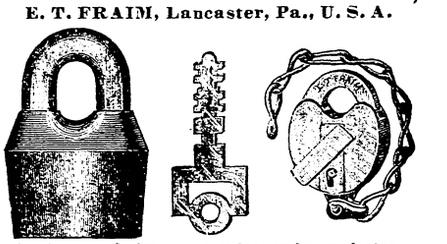
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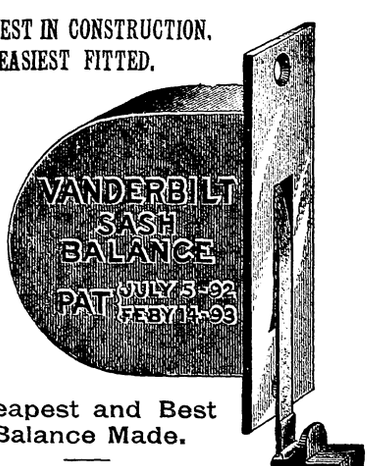
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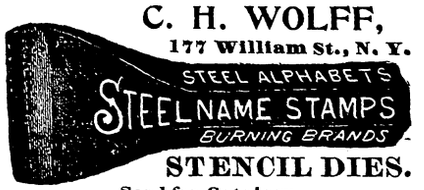
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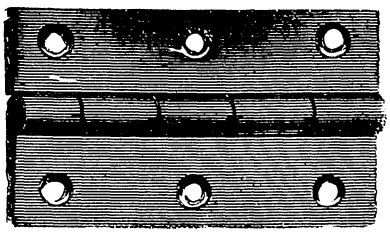
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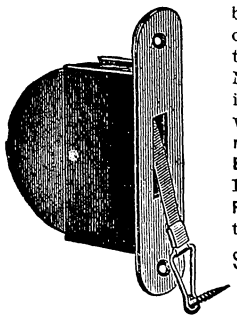
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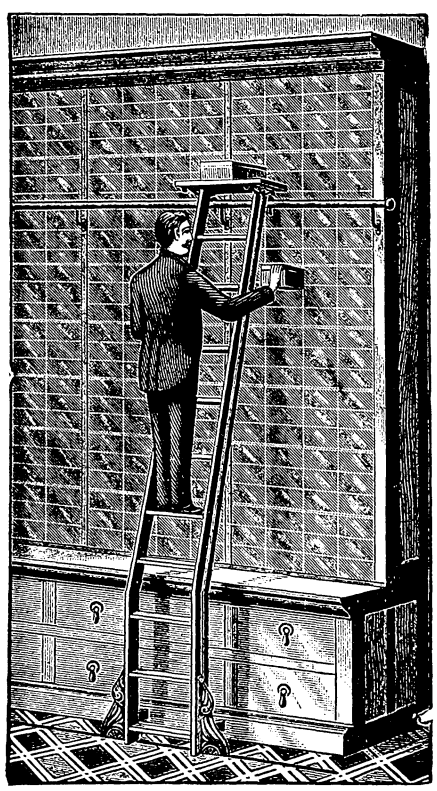
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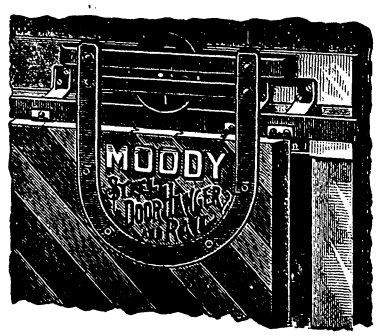


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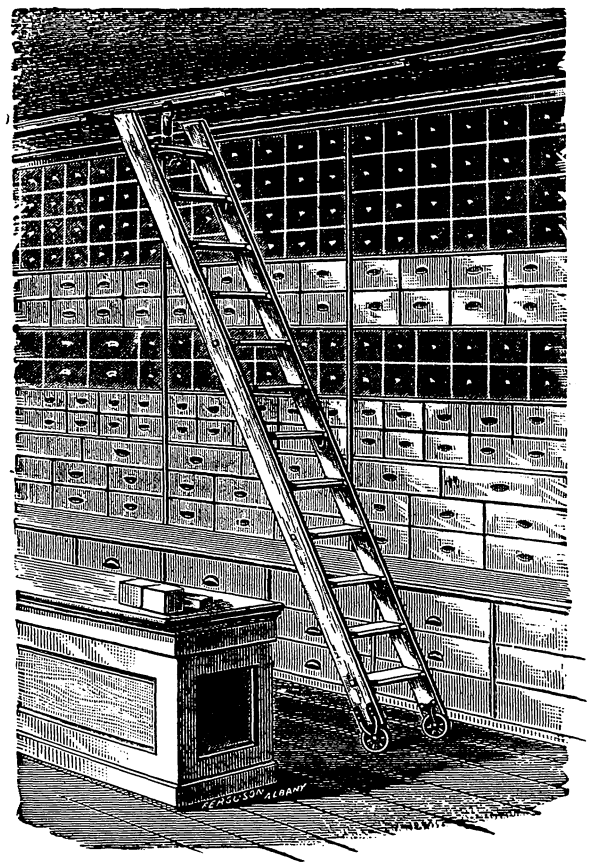


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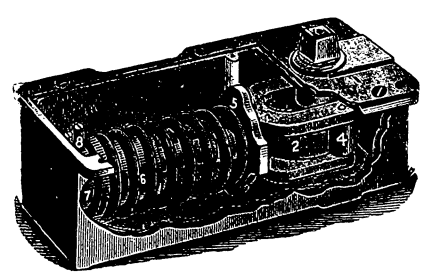
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Illustrated Price-List on Application.

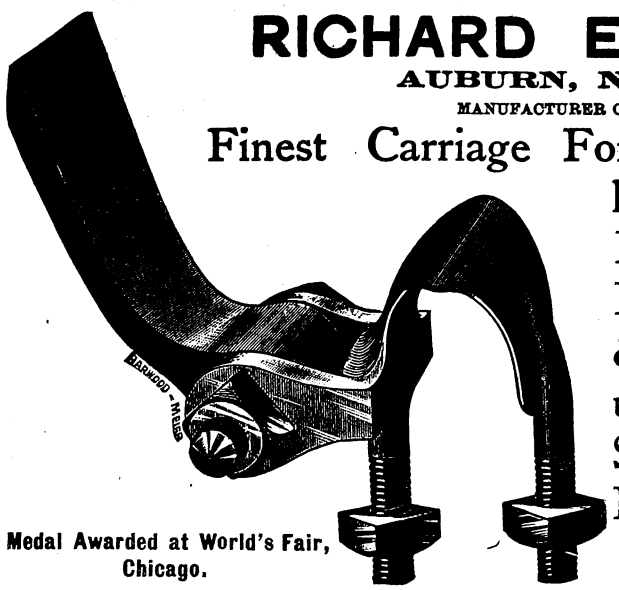
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MANUFACTURER OF

Finest Carriage Forgings, Couplings, Clips, King Bolts, Fifth Wheels, &c. Manufacture a full line Special Drop Forgings.



Medal Awarded at World's Fair, Chicago.

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WHY USE WOODEN OR HEAVY STEEL BLOCKS

WHEN THE STEEL AND IRON

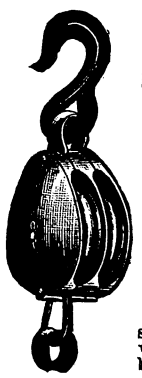
TACKLE BLOCKS

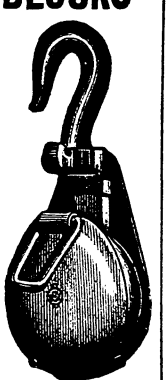
—MADE BY—

The Cleveland Block Co.

CLEVELAND, OHIO, U. S. A.,

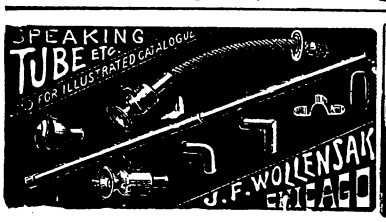
ARE BETTER IN EVERY WAY.

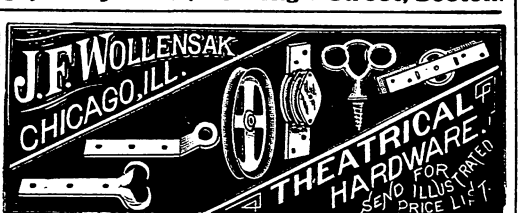




No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear but never break. Sheaves interchangeable.

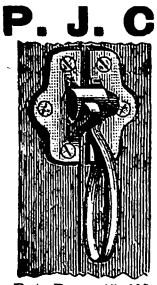
General Agents: Topping Brothers, 92 Chambers Street, New York.
The H. Channon Co., 22 Market Street, Chicago.
New England Agents, - Dodge, Haley & Co., 212 High Street, Boston.





P. J. Conroy & Co.,

Paschall, PHILADELPHIA.



Pat. Dec. 15, '85

"CONROY" Refrigerator Door Fasteners

Have rapidly supplanted all others.

Refrigerator Trimmings.

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Manufacturers of

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3 NICKLE, Silver and Bronze Metallic Figures and Letters, Sizes ⅛in to 3in. Pattern Letters, Steel Stamps, Brands. Dies &c. Send for Reduced Price List. We make a specialty of the Hardware Trade. A. A. WHITE & CO., Providence, R.I.

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MANUFACTURERS OF

Improved Adjustable Window Screens.

THE QUEEN ANNE. With box panels; the only screen made and finished alike on both sides.
THE EUREKA. The best cheap extension screen on the market.
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Cut One-half Size.

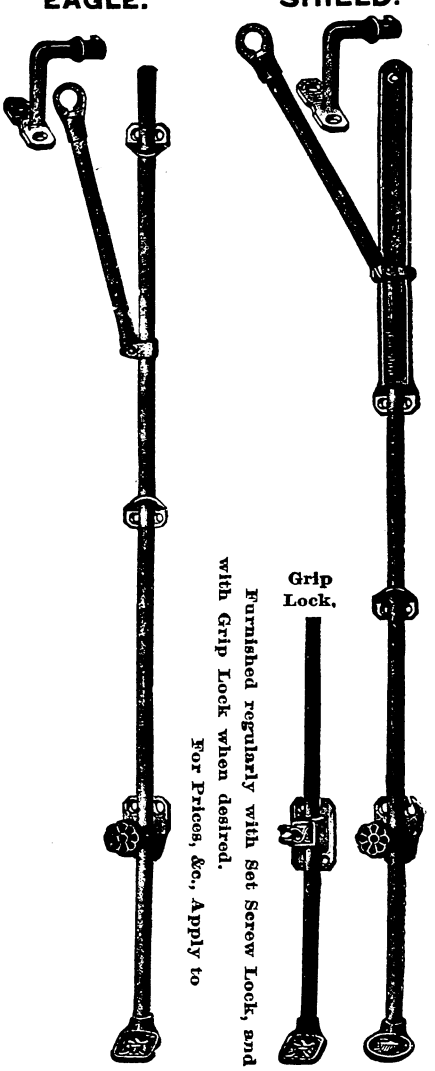
Sample pair sent to any hardware or saddlery firm by addressing

The Frost Thill Spring Co.,

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"EAGLE." "SHIELD."

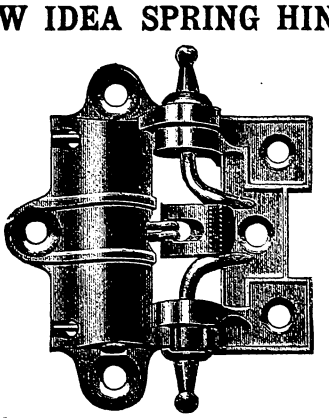


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NEW IDEA SPRING HINGE

Holds the door strongest when closed.



Resistance gradually decreases in opening

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A covered (patented) hold-back Spring Hinge. Full particulars, free Sample and Prices by mentioning this paper.

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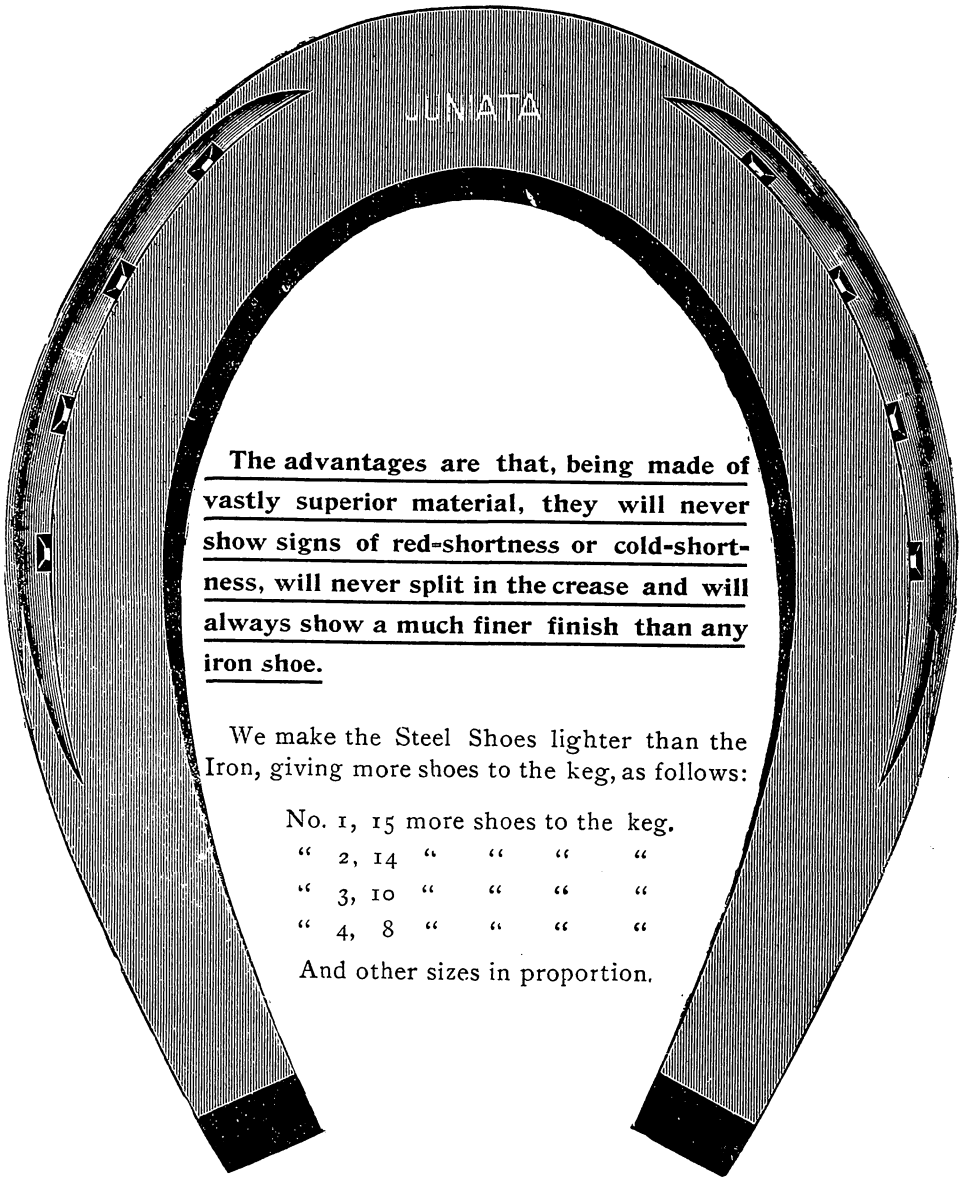
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SHOENBERGER & CO., PITTSBURGH, PA.,

After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged, and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



The advantages are that, being made of vastly superior material, they will never show signs of red-shortness or cold-shortness, will never split in the crease and will always show a much finer finish than any iron shoe.

We make the Steel Shoes lighter than the Iron, giving more shoes to the keg, as follows:

No. 1, 15 more shoes to the keg.
" 2, 14 " " " "
" 3, 10 " " " "
" 4, 8 " " " "

And other sizes in proportion.

No. 2 EXTRA SWAGED FRONT.

We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

We would also call your attention to our Improved Steel Toe Calk, equal to any in the market. To secure the best wearing qualities use sand or borax in welding on a calk and cool off at a dark red, or still better, cool off without plunging in water. We make sizes numbers 1, 2, 3, 4, 5 and 6, packed in 25-pound boxes.

Write to us for information and prices, or apply to jobbers and dealers, who sell them everywhere.

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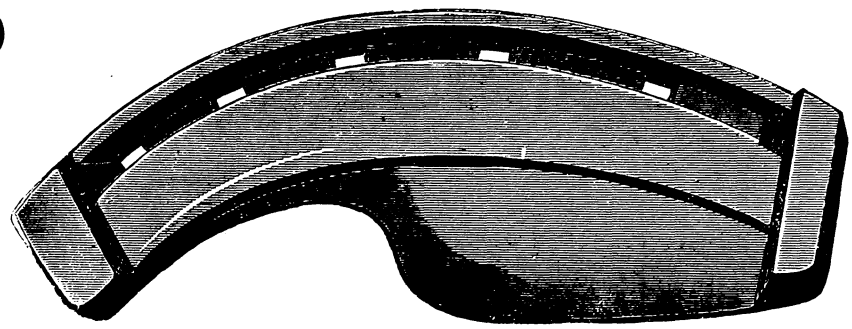
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CARRIAGE HARDWARE AND SPECIAL DROP FORGINGS.

FORGED OX SHOES.



Made under Deeble's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

IT IS JUST RIGHT.

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HORSE AND MULE SHOES.

Superior Quality, Shape and Finish.

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SPECIALTIES :—X L Steel Shoes, Toe Weight Shoes and Goodenough Shoes.

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THE NEW DIAMOND STATE HORSE AND MULE SHOES.

JUST TRY THEM and YOU will say they excel all others.

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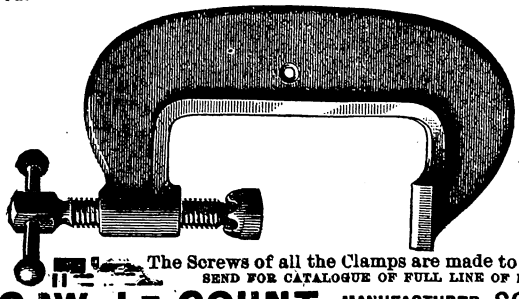
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Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Blan Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

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LE COUNT'S HEAVY STEEL CLAMP.

Extra heavy, with Button on end of screw, hung on a ball so as to accommodate itself to irregularities without bending the screw. The foot of the Clamp is planed. The back is 2¼ inches from center of Screw



No. 1,	opening to	2	inch	$1 75
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" 3,	"	4	"	2 25
" 4,	"	5	"	2 50
" 5,	"	6	"	2 75
" 6,	"	8	"	3 25
" 7,	"	10	"	3 75
" 8,	"	12	"	4 25
" 9,	"	14	"	5 00
" 10,	"	16	"	6 00
" 11,	"	18	"	7 00

Full Set, 11 sizes, $40.50.

Ship or Bridge Clamp with Large Screws.

No. 12 opens 24 inches.....price, $12 00
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The Screws of all the Clamps are made to reach the lower number.

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"Burden Best" Iron Boiler Rivets.

The Burden Iron Co.

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Standard Horse Shoe Co.,

Manufacturers of

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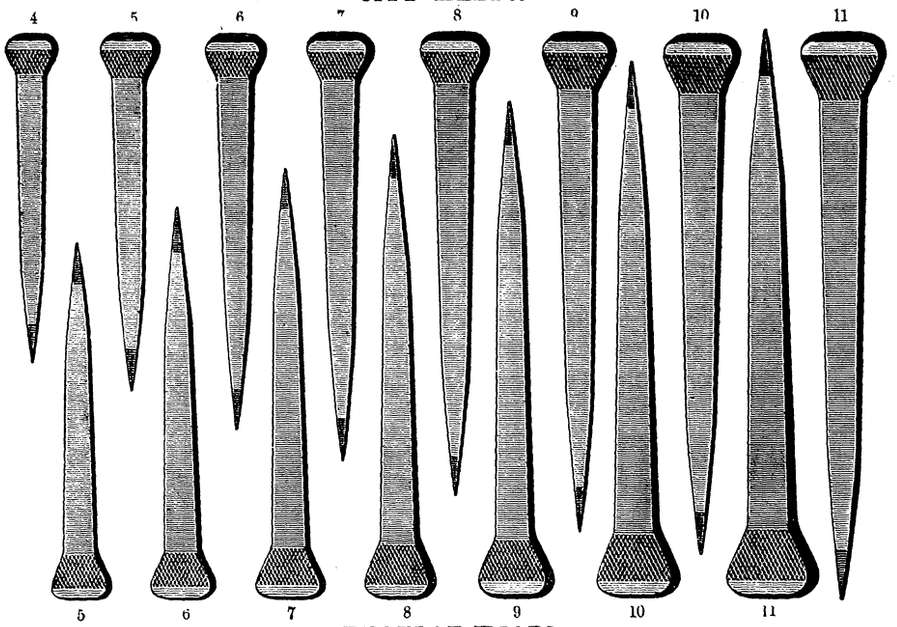
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CAPEWELL HORSE NAILS.

"Tensile strength one-half greater than that of any other nail made."

CITY HEADS.



REGULAR HEADS.

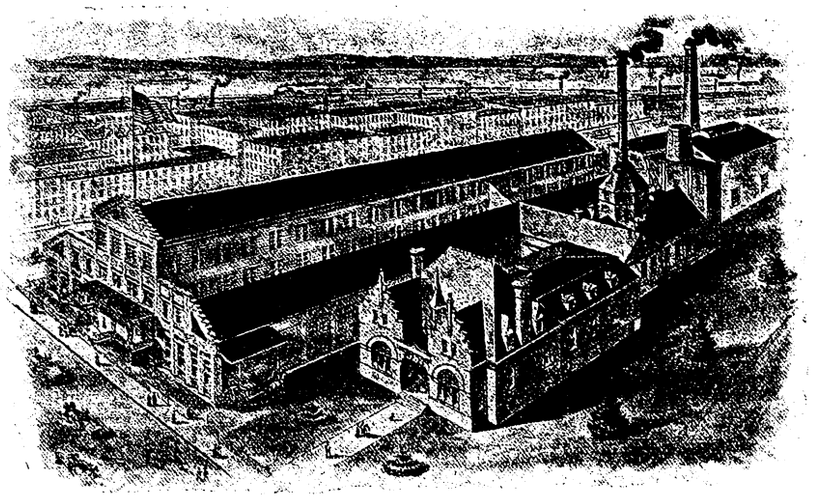
The Capewell Patent Corrugated Horse Nail.

Needs no Clinching.



Made in All Sizes.

"The Coming Nail to be Used."—JOHN KIERNAN,
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MANUFACTURERS OF THE BEST QUALITY

CARRIAGE MAKERS' HARDWARE,

MANUFACTURE THE LARGEST VARIETY OF

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Of Best Material and Workmanship.

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Elegant Iron.
Beautiful Shape.

HORSE SHOES,
Light, Medium and Heavy.
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The Strongest, Lightest, Cheapest Yoke on the Market.

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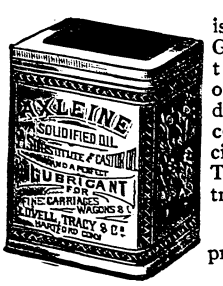


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Manufacturer of
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TOE-CALKS.
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BURKE'S IMPROVED
HORSESHOERS' FOOT VICE.
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Die for Welding Sharp Calks.

AXLEINE



is a fine quality of Axle Grease put up in square tin boxes containing one pound; beautifully decorated in assorted colors; designed especially for the Hardware Trade. Showy and attractive shelf goods.

Send for sample and prices.

LOVELL, TRACY & CO. 71 Asylum St. Hartford, Conn.

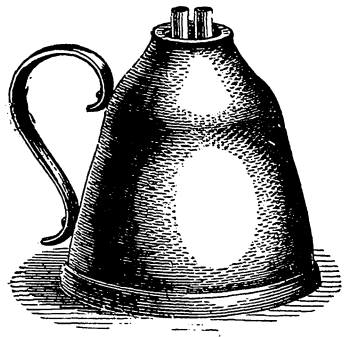
Crescent
Horse and Mule Shoes,
BAR IRON.

CRESCENT HORSE SHOE AND IRON CO.
Max Meadows, Va.

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SCALES OF ALL KINDS.

PATENTED ARTICLES
OF
Malleable Iron.
Hammer's Mall. Iron Hand Lamps.



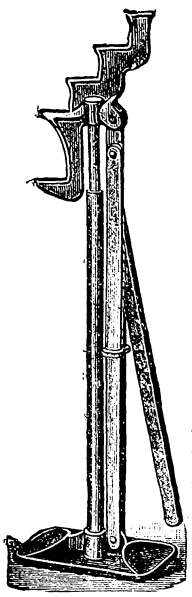
SCREW, KEROSENE SIZE.

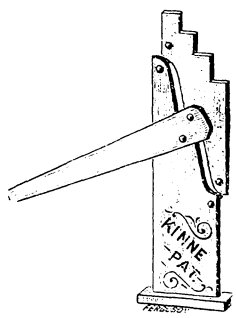
Hammer's Adjustable Clamps.
Hammer's Malleable Iron Oilers, 3 Sizes
Hammer's M. I. Hanging Lamps.
NEW pattern Heavy Screw Clamps strongest in the Market.
For sale by all the principal Hardware Dealers.
Send for Price List.

MALLEABLE IRON CASTINGS
Of superior quality, and Hardware Specialties in Malleable Iron made to order.

HAMMER & CO.,
BRANFORD, CONN.

COVERT MFG. CO.





THE KINNE PATENT WAGON JACK

Is the best wood Jack manufactured. It is light in weight, a giant in strength, complete in practi-ability, moderate in price and a favorite with all.

THE EMOUS IRON JACK

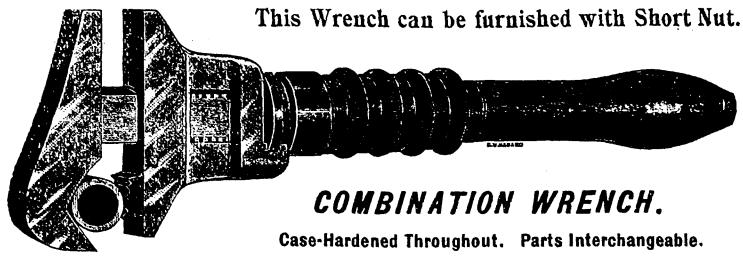
With late improvements is superior to all others in the market. One of its most important advantages being that it can be used on any vehicle from the lowest phaeton to the heaviest truck or brewery wagon, thus obviating the necessity of having two different sized jacks.

For sale by all leading Jobbers at Manufacturers' prices

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THE WILCOX & HOWE COMPANY,
BIRMINGHAM, CONN.,
MANUFACTURERS OF
A Full Line of Carriage Hardware
ALSO SPECIAL FORGINGS.
Estimates cheerfully given Send for Catalogue

This Wrench can be furnished with Short Nut.



COMBINATION WRENCH.

Case-Hardened Throughout. Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal.
For Circulars and Price-List, address

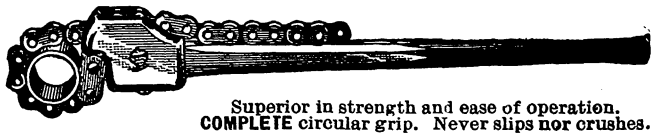
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TRIMO PIPE WRENCH,
Forged Steel
All parts interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

TRIMO CHAIN PIPE WRENCH.



Superior in strength and ease of operation. COMPLETE circular grip. Never slips nor crushes.

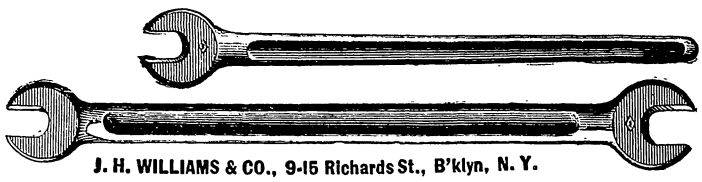


Can be used with one hand and in closer quarters than any other Basin Wrench. Parts Interchangeable.

TRIMO BASIN WRENCH.

TRIMONT MFG. CO., ROXBURY MASS.

STEEL DROP-FORGED TRACK WRENCHES.



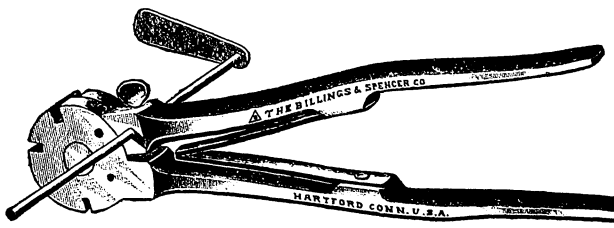
J. H. WILLIAMS & CO., 9-15 Richards St., B'klyn, N. Y.

Engineers' Wrenches.
100 Sizes.



Iron, Steel, Copper and Bronze Drop-Forgings of every description.

THE BILLINGS WIRE CUTTER

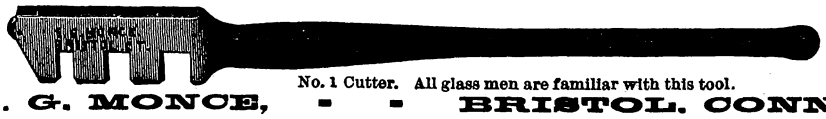


Drop forged from the best Tool Steel
Six Cutting Edges
Adjustable Gauge
Workmanship the Best

Length 10 inches

The Billings & Spencer Co., Hartford, Conn.

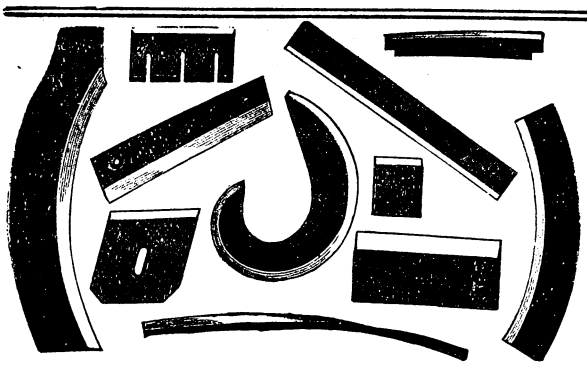
MONCE'S NOVELTY GLASS CUTTERS.——INTERCHANGEABLE LOCK STENCILS.



No. 1 Cutter. All glass men are familiar with this tool.

S. G. MONCE, - - BRISTOL, CONN.

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LORING COES & CO.

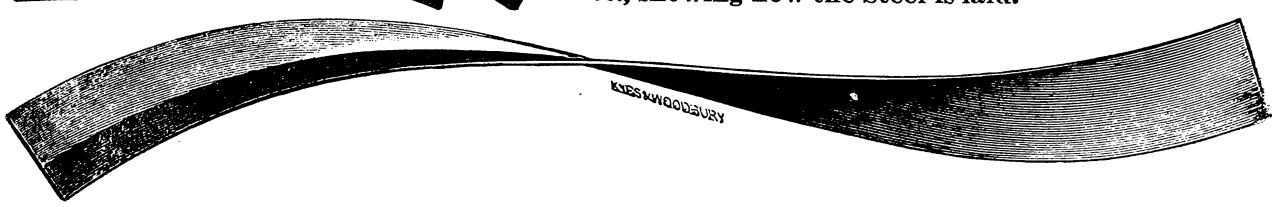
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Manufacturers of **MACHINE KNIVES.**

Shear Blades and Strips, Moulding Cutter Plate, Die Stock for Leather, Cloth and Paper Cutting Dies. Lawn Mower and Hay Cutter Knives of every description.



End view of Plated Stock for Dies, Lawn Mower Knives, Blades Etc., showing how the Steel is laid.



THE IMPROVED ACME STEEL WRENCH

PATENTED.



CAPITOL MFG. CO.,

Cable Address: "CAPITOL, CHICAGO."

125 to 137 REES STREET,

CHICAGO, ILL., U. S. A.

Awarded Prize Medal at Paris Exposition and Jamaica Exposition





HERCULES. Combination Pipe, Bolt and Nut Wrench. Bright Finish

HERCULES. Bright Finish.



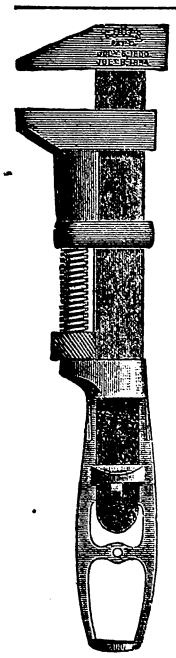
The Hercules Screw Driver and Tack Claw (Patented).

This Screw Driver is made from one piece of special cast steel, in all sizes, from 1½ in. to 12 in. The blade is well polished, carefully tempered, and every screw driver is subjected to a severe test and warranted. Handles Japanned with the best quality baking Japan.

The Strongest and Most Durable Wrench and Screw Driver Made.

Write for Prices and Full Information.

HARMON & DIXON, 118 Chambers St., New York, N. Y., Eastern and Export Agents



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Genuine Improved

KNIFE HANDLE

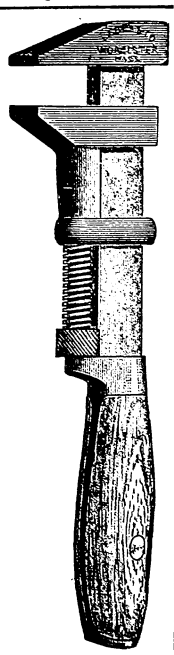
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Screw Wrenches

MANUFACTURED BY

COES WRENCH CO.,

WORCESTER, MASS.



Established in 1839.	Patented July 6, 1880.
Registered March 31, 1874.	Patented July 8, 1884.

Sectional View Illustrates our New Knife Handle, showing Malleable Iron Frame and Shank of Bar keyed into position.

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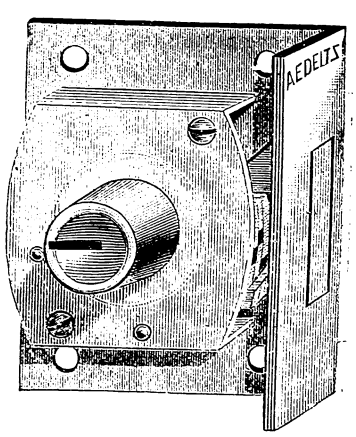
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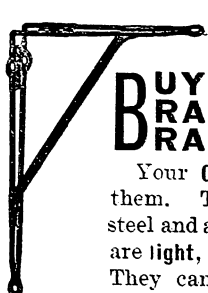


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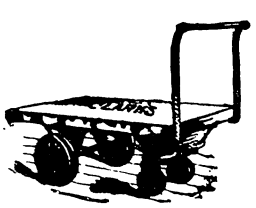
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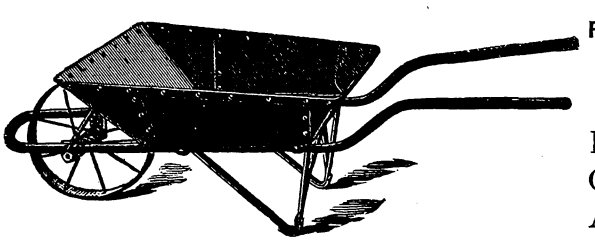
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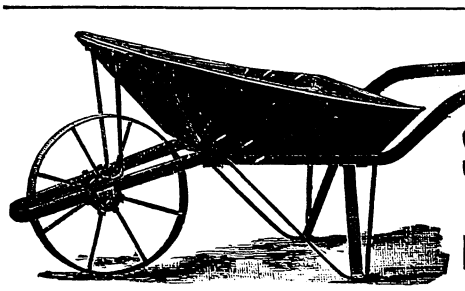


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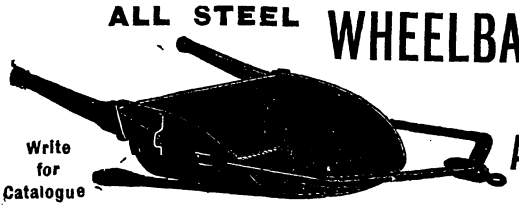
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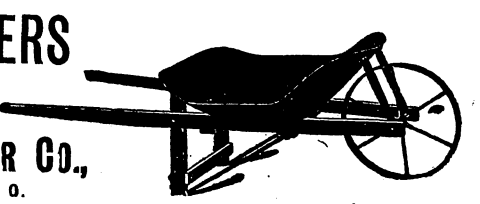
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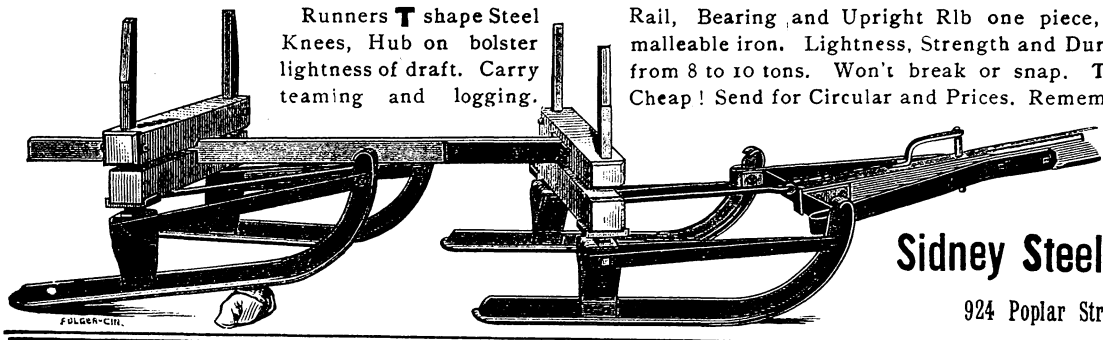
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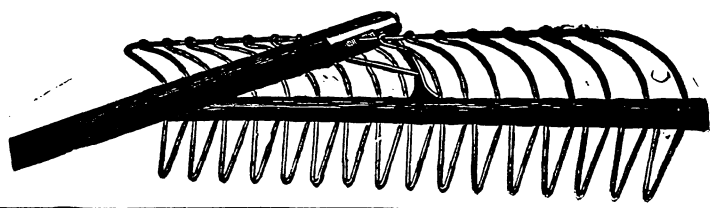
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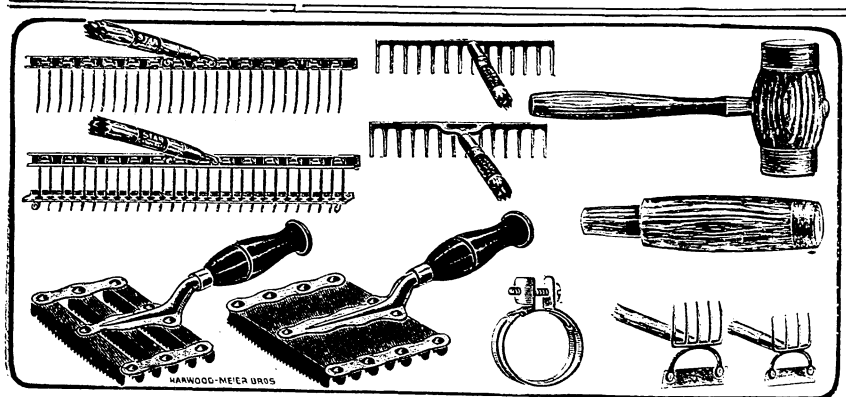
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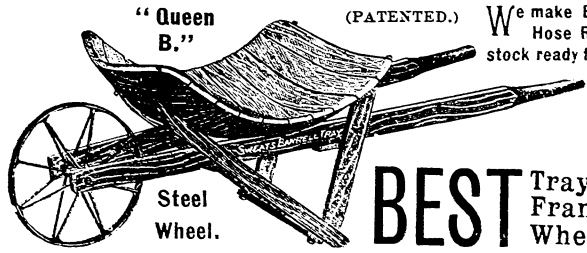
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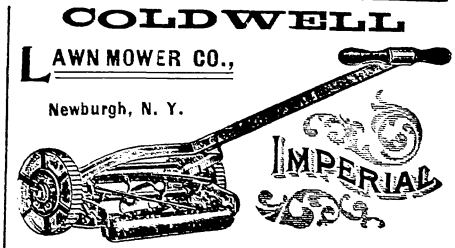
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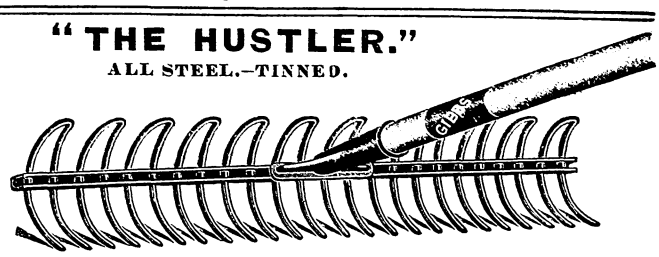
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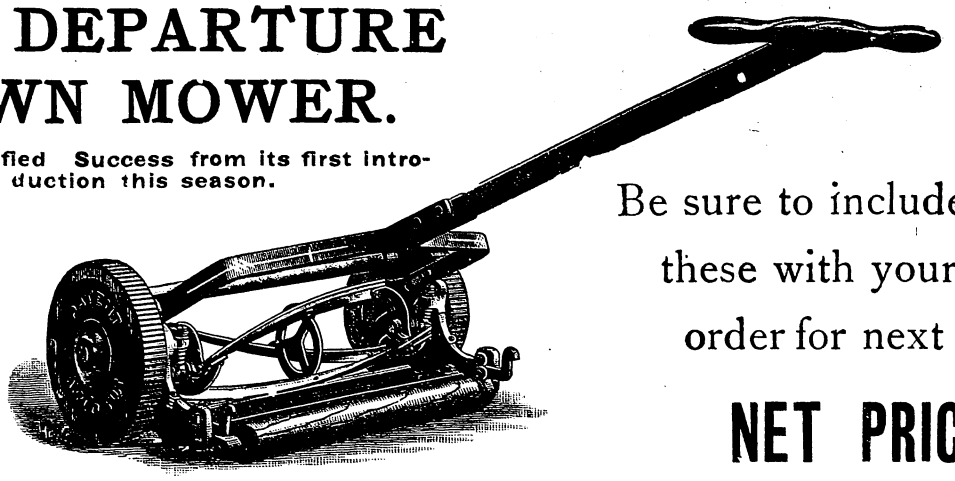
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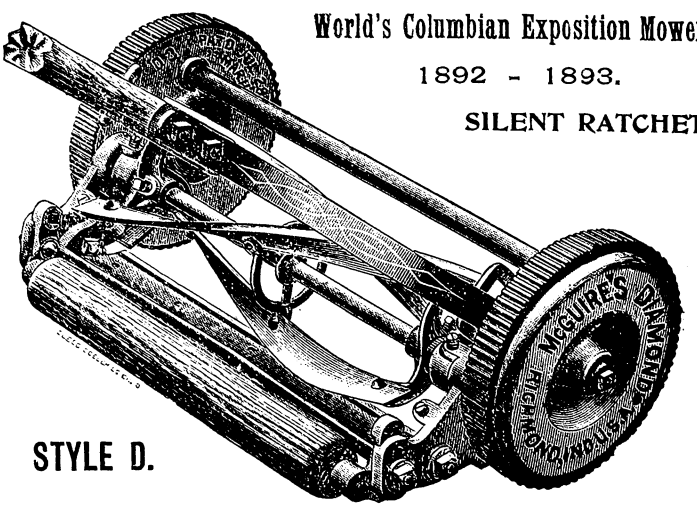
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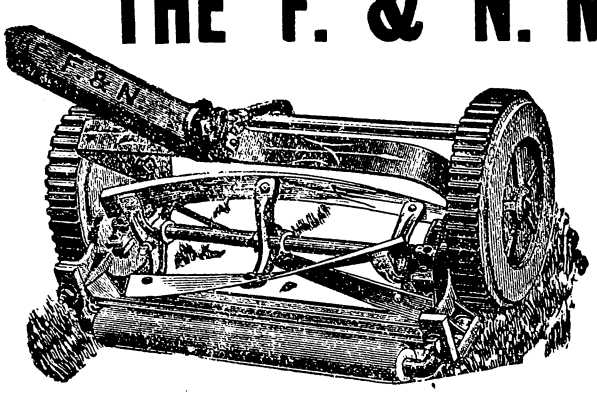
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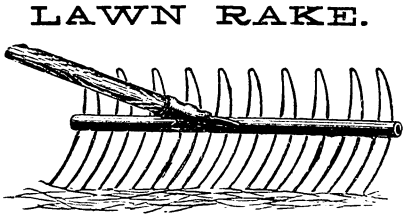
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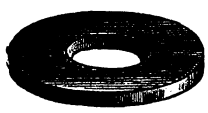
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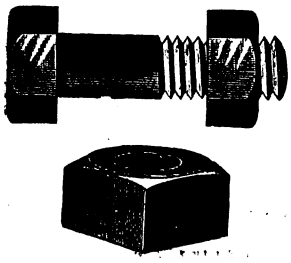
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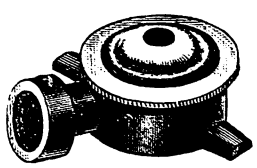
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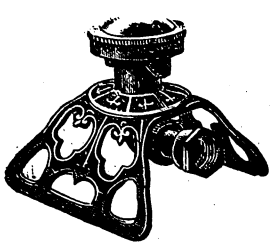
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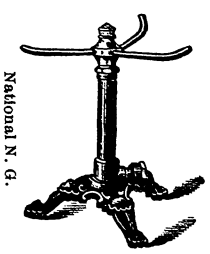


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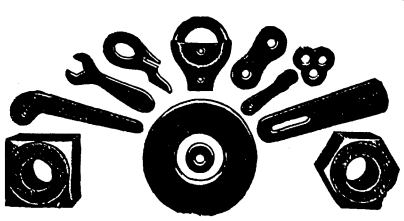
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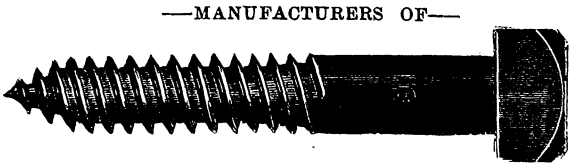
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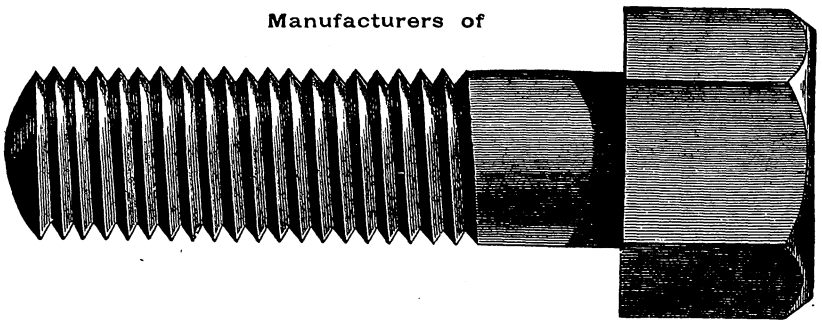
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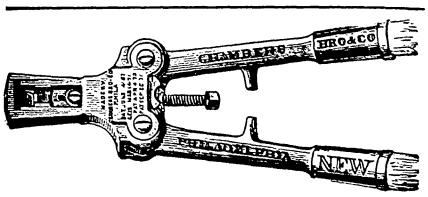


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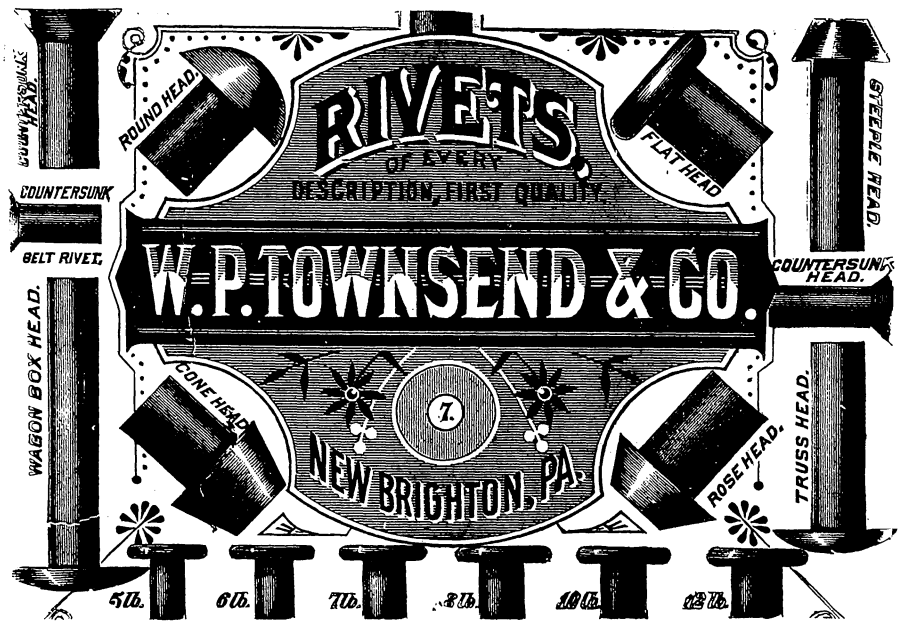
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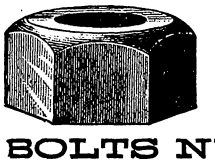
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Scovill Mfg. Co., Waterbury, Conn.

Aluminum, Brass and Bronze.
Gaylord, F. L. Co., Ansonia, Conn.
Haight & Clark, Albany, N. Y.
St. Louis Bronze & Aluminum Works, St. Louis, Mo.

Analytical Chemists.
Britton, J. Blodgett Philadelphia, Pa
Moore, Dr. Gideon E., 221 Pearl st, N.Y.

Anti-Friction Metals.—*See Babbitt Metal.*

Anvil and Vise (Combination).
Fulton Iron & Engine Works, Detroit, Mich.

Apple Parers.
Goodell Co., Antrim, N. H.

Arms and Ammunition.
Forehand Arms Co., Worcester, Mass.
Hartley & Graham, 313 & 315 Broadway New York
Ideal Mfg. Co., New Haven, Conn.
Read, Wm. & Sons. Boston, Mass.
Stevens, J., Arms and Tool Co. Chicopee Falls, Mass.
Union Metallic Cartridge Co., 313 & 315 Broadway, N. Y.

Auctioneers.
Bissell, E. Son & Co., N. Y.

Augers and Bits
Smith, Lyon & Field, 139 Duane St., N. Y.

Axes.
Peck, A. G. & Co., Cohoes, N. Y.

Axle Grease.
Lovell, Tracy & Co., Hartford, Conn.

Axles, Springs, &c., *Manuf'rs of*
Gautier Steel Dept. of Cambria Iron Co., Johnstown, Pa.
Wurster, F. W., & Co., Brooklyn, N. Y.

Babbitt Metal.
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn,
Crown Smelting Co., Chester, Pa.
Hiertz, T. & Son, St. Louis, Mo.
Keys, W. W. & R. M. Co., Bridgeport, Conn.
Reeves, Paul S., Philadelphia, Pa.

Bakers and Roasters.
Bronson Supply Co., Cleveland, Ohio.

Bale Ties.
Kilmer Mfg. Co., Newburg, N. Y.

Band Saw Machines.
Cross & Speirs Machine Co., Waterbury, Conn.

Barb Wire and Fence.
Consolidated Steel & Wire Co. St. Louis, Mo.
Gautier Steel Dept. of Cambria Iron Co., Johnstown Pa.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Washburn & Moen Mfg. Co., Worcester.

Bar Iron. *Manufacturers of*
Ætna-Standard Iron & Steel Co., Bridgeport, C
Allentown Rolling Mill, Allentown, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Montour Iron & Steel Co., Danville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Sternbergh, J. H. & Son, Reading, Pa.

Bellows, *Manufacturers of.*
Bullock Bellows Co., Cleveland, O.
Scott, Geo. M., Chicago, Ill.

Bells.
Bevin Bros. Mfg. Co., East Hampton.

Belt Dressing.
Jos. Dixon Crucible Co., Jersey City, N.J.

Belt Fasteners.
Bristols' Mfg. Co., Waterbury, Conn.
Clafien Mfg. Co., Cleveland, Ohio.
Talcott, W. O., Providence, R. I.

Belting, *Makers of.*
Alexander Bros., 412 N. 3d., Phila.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.
Main Belting Co., Philadelphia, Pa.
N.Y. Belting & Packing Co., Ltd., N.Y.
Roberts Mfg. Co., Pittsburgh, Pa.
Shults Belting Co., St. Louis, Mo.

Bicycles.
Eagle Bicycle Mfg. Co., Torrington, Ct.
Lovell, Jno. P. Arms Co. Boston, Mass
Pope Mfg. Co., Boston, Mass.
Rouse-Duryea Cycle Co., Peoria, Ill.
Western Wheel Works, Chicago, Ill.

Bicycle Parts.
New Britain Hdw. Mfg. Co., New Britain, Conn.

Bits and Braces.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
National Mfg. Co., Wilkes-Barre, Pa.

Blocks, Tackle, *Makers of.*
Cleveland Block Co., Cleveland, O.
Fulton Iron & Engine Works, Detroit Mich.

Blowers.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Sturtevant, B. F., & Co., Boston, Mass.

Boiler Plates.
Carbon Steel Co., Pittsburgh, Pa.
McIlvain, Wm. & Sons, Reading, Pa.
Lukens Iron & Steel Co., Coatsville, O.
Pottstown Iron Co., Pottstown, Pa.

Boilers, Copper.
Randolph & Clowes, Waterbury, Conn

Boilers, Steam.
Babcock & Wilcox Co., 30 Cortlandt, Edge Moor Iron Co., Wilmington.
Harrison Safety Boiler Wks., Phila., Pa.
Phœnix Iron Works Co., Meadville, Pa.
Pollock, W. B. & Co., Youngstown, O.
Southwark Fdy. & Mch. Co., Phila., Pa
Wetherill, Robt. & Co., Chester, Pa.

Bolt Cutters.
Chambers Bros. Co., Philadelphia.
Howard Iron Works, Buffalo N. Y.
Reece, Edw. F., Greenfield, Mass.
Wells Bros. Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Books.
Marine Review, Cleveland, Ohio.
Williams, David, 96-102 Reade N. Y.
Wolcott & West, Syracuse, N. Y.

Boxes, Hdw. Shelf, &c.
Green, A. H., 22 Park Place, N. Y.
Jones, Jesse & Co., Philadelphia, Pa.

Box Straps and Corners.
Buffalo Specialty Mfg. Co., Buffalo, N. Y.

Brackets.
Atlas Mfg. Co., New Haven, Conn.

Brass, *Manufacturers of.*
Ansonia Brass & Copper Co., N. Y.
Davol, John & Sons, 100 John, N. Y.
Plume & Atwood Mfg. Co., N. Y.
Randolph & Clowes, Waterbury, Conn,
Scovill Mfg. Co., Waterbury, Conn.
Waterbury Brass Co., 296 B'way, N. Y.

Brass Butt Hinges.
Tiebout, W. & J., 16 & 18 Chambers,

Brass Founders.
Best, Fox & Co., Pittsburgh, Pa.
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Cramp, Wm. & Sons, S & E. B. Co., Philadelphia, Pa.
Emory, P. P. Mfg. Co., Springfield, Mass.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Fraim, E. T., Lancaster, Pa.
Haight & Clark, Albany, N. Y.
Keys, W. W. & R. M. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Phila., Pa.
Reeves, Paul S., Philadelphia.

Brass Goods.
Brass Goods Mfg. Co., 88 Chambers,

Bridge Builders.
Berlin Iron Bridge Co., East Berlin, Ct
Boston Bridge Works, Boston, Mass.
Wrought Iron Bridge Co., Canton, O.

Brouze (Tobin).
Ansonia Brass & Copper Co., 19-26 Cliff Street, N. Y.

Builders' Hardware.
Corbin, P. & F., New Britain, Conn.
Deits, A. E., 97 Chambers St., N. Y.
Reading Hdw. Co., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Butchers' Steels.
Chatillon, John & Sons, 85-89 Cliff St., N. Y.
Hoffman, C. & A., Philadelphia, Pa.

Butcher and Shoe Knives, *Manufacturers of.*
Chatillon, John & Sons, 85-89 Cliff St., N. Y.
Goodell Co., Antrim, N. H.
Wilson, John, Sheffield, England.

Butts and Hinges.
McKinney Mfg. Co., Alleghany, Pa.
Sabin Machine Co., Montpelier, Vt.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Calipers and Dividers.
J. Stevens Arms and Tool Co., Chicopee Falls, Mass.
Starrett, L. S., Athol, Mass.

Can Makers' Tools and Machines.
Niagara Stamping & Tool Co., Buffalo, N. Y.

Car Axles.
Roberts, A. &, P. & Co. Phila.

Carboy Stands.
Hillebrand & Wolf, Philadelphia, Pa.

Car Wheels.
Whitney, A. & Sons, Phila.

Carriage Hardware, *Makers of.*
Covert's Saddlery Works, Farmer, N.Y.
Eccles, Richard, Auburn, N. Y.
Scranton Forging Co., Scranton, Pa.
Smith, H. D. & Co., Plantsville, Conn.
Wilcox & Howe Co., Birmingham, Conn.

Cartridge Reloading Tools.
Ideal Mfg. Co., New Haven, Conn.

Casters, Wheel, &c.
Clark, G. P., Windsor Locks, Conn.

Castings, Iron and Steel.
Ames Sword Co., Chicopee, Mass.
Arcade Malleable Iron Co., Worcester Mass.
Booth, The Lloyd, Co., Youngstown, O.
Burgess & Loxley, Buffalo, N. Y.
The Burr & Houston Co., Brooklyn, N.Y.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Cheney, S. & Son, Manlius, N. Y.
Chester Steel Casting Co., Phila.
Chrome Steel Works, Brooklyn, N. Y
Dayton Malleable Iron Co., Dayton, O.
Ette & Henger Mfg. Co., St. Louis, Mo.
Eureka Cast Steel Co., Chester, Pa.
Flagg, Stanley G. & Co., Phila.
Gartland Foundry Co., Cleveland, O.
Haight & Clark, Albany, N. Y.
Hammer & Co., Branford, Conn.
Herrick, J. A., 284 Pearl St., N. Y.
Johnson, I. G. & Co., Spuyten Duyvil.
Mahoning Fdry & Mch. Co., Danville, Pa.
Palmers & De Mooy, Cleveland, O.
Sessions Foundry Co., Bristol, Conn.
Spencer's, L. S., Sons, Guilford, Conn.
Standard Fdy. & Mfg. Co., Cleveland, O
Standard Steel Casting Co., Thurlow, Pa.
Taylor Iron & Steel Co. High Bridge, N.J.
Totten & Hogg Iron & Steel Fdry Co., Pittsburgh, Pa.
Union Mfg. Co., 103 Chambers St., N.Y.
Wetherill, Robt. & Co., Chester, Pa.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Conn
Link-Belt Engineering Co., Phila. Pa.
McKay, Jas. & Co., Pittsburgh, Pa,

Chimneys.
Phila. Engineering Works., Phila., Pa

Chisels, *Manufacturers of.*
Buck Bros., Millbury, Mass.
White, L. & I. J. Co., Buffalo, N. Y.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Smith & Egge Mfg. Co., Bridgeport.
Union Mfg. Co., 103 Chambers, N. Y.
Whiton, D. E., Mach. Co., New London, Conn.

Clamps.
Hammer & Co., Branford, Conn.
Le Count, C. W., So. Norwalk, Conn.

Clipping Machines.
Hotchkiss, E. S., Bridgeport, Conn.
McCoy, Jos. F. & Co., 26 Warren St.

Coal.
Barns, C. K. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Coke.
Barns, C. K. & Co., Philadelphia, Pa.
Houston, C. B. & Co., Philadelphia, Pa.
Rainey, W. J., Cleveland, O.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, Francis, Philadelphia, Pa.

Collections.
Hardware Board of Trade (Limited) 4 and 6 Warren, N. Y.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conveying Machinery.
Brown Hoisting & Conveying Machine, Co., Cleveland, Ohio.
Jeffrey Mfg. Co., Columbus, O.
Link Belt Engineering Co., Phila., Pa.

Copper.
Ames Sword Co., Chicopee, Mass.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
New Haven Copper Co., 294 Pearl, N.Y.
Randolph & Clowes, Waterbury, Conn.
Wister, Francis, Philadelphia, Pa.

Coppersmith.
Emory, P. P. Mfg. Co., Springfield, Mass.

Cordage.
Samson Cordage Works, Boston, Mass.

Cork Screws.
Williamson, C. T. Wire Novelty Co Newark, N. J.

Corrugated Furnaces.
Continental Iron Wks, Brooklyn, N.Y

Corrugated Iron.
Cambridge Roofing Co., Cambridge, O
Moseley Iron Bridge & Roof Co., 5 Dey N. Y.

Counting Machines.
Durant, W. N., Milwaukee, Wis.
Osborn, G. Edw. & Co., New Haven, Ct

Coupling.
Almond, T. R., Brooklyn, N. Y.

Coverings, Boiler and Pipe.
Johns, H. W. Mfg. Co., 87 Maiden Lane.

Cranes.
Detroit Foundry Equipment Co., Detroit, Mich.
Halsey, W. S. & Co., Birdsboro, Pa.
Harrington, E. Son & Co., Phila., Pa.
Maris & Beekley Philadelphia, Pa.
Ridgway, Craig & Sons, Coatesville, P
Sellers, Wm. & Co., Inc., Phila., Pa.
Yale & Towne Mfg. Co., Stamford Conn.

Cupolas, Hot-Blast.
Colliau, Victor, Detroit, Mich.
Detroit Fdry. Equipment Co., Detroi Mich.

Cutlery Cases.
Torrey, J. R. & Co., Worcester, Mass.

Cutlery, *Importers of.*
Field, Alfred & Co., 93 Chambers St New York.
Gurney, Fred B., 116 Chambers St., N. Y.
Sickles, Sweet & Lyon, 35 Barclay, N.Y.

Cutlery, *Manufacturers of.*
Bingham, W. Co., Cleveland, Ohio.
Dame, Stoddard & Kendall, Boston Mass.
Electric Cutlery Co., 113 Chambers, N Y
Goodell Co., Antrim, N. H.
Northampton Cutlery Co., Northampton, Mass.
Schmactenberg Bros., 98 Chambers Street, N. Y.
Wilson, John, Sheffield, England.

Dampers.
Shepard, Sidney & Co., Buffalo, N. Y.

Dies.
Wilson, J. Fred, Worcester, Mass.

Die Forgings and Castings.
Bliss, E. W. Co., Brooklyn, N. Y.

Dog Collars.
Chapman Mfg. Co., Meriden, Conn.

Door Checks and Springs.
Corbin, P. & F., New Britain, Conn.

Door Knobs.
Bardsley, J., 149 & 151 Baxter St., N. Y

Door Latches.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.

Drawing Instruments.
Keuffel & Esser Co., 127 Fulton St., N.Y

Drilling Machines.
Bickford Drill & Tool Co., Cinn., Ohio
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower and Forge Co., Lancaster, Pa.
Colburn, A. M., New Haven, Conn.
Dallett, Thos. H. & Co., Philadelphia.
Dwight Slate Machine Co., Hartford Conn.
Halsey, Jas. T., Philadelphia, Pa.
Hamilton Mch. Tool Co., Hamilton, O.
Norton & Jones Machine Tool Works, Plainville, Conn.
Penna. Diamond Drill & Mfg. Co. Birdsboro, Pa.
Quint, A. D., Hartford, Conn
Sellers, Wm. & Co., Inc., Phila., Pa.
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O,

Drop Forgings.
Beaden Mach. Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn
Boone, W. C. Mfg. Co., Boonton, N. J
Eccles, Richard, Auburn, N. Y.
Merrill Bros., Brooklyn, E. D
Miner & Peck Mfg. Co., New Haven, Ct
Phila. Drop Forge Co., Philadelphia, Pa.
Scranton Forging Co., Scranton, Pa.
Spiers, J. C. & Co., Worcester, Mass.
Williams, J. H. & Co., Brooklyn, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
Wyman & Gordon, Worcester, Mass.

Drop Presses.
Bliss, E. W. Co., Brooklyn, N.Y
Crosby, G. A. & Co., Chicago, Ill.

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Miner & Peck Mfg. Co., New Haven Conn.
Stiles & Parker Press Co., Brooklyn N. Y.
Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Dumb Waiters.
Storm Mfg. Co., Newark, N. J.

Dust Beaters.
Peabody & Parks, Troy, N. Y,

Dynamite.
New York Powder Co., 62 Liberty St N. Y.

Dynamos.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Lovell Mfg. Co., Ltd., Erie, Pa.
Zucker & Levett Chemical Co., 10 to 14 Grand St., N. Y.

Edge Tools. *Makers of.*
Buck Bros., Millbury, Mass.
Buffalo Edge Tool Wks., Buffalo, N.Y.
Plumb, Fayette R., Philadelphia, Pa
White, L. & I. J. Co., Buffalo, N. Y.

Egg Beaters.
North Bros. Mfg. Co., Philadelphia.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St., New York
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines.
Colburn Electric Mfg. Co., Fitchburg, Mass.

Elevators. *Makers of.*
Link-Belt Engineering Co., Phila., Pa
Morse, Williams & Co., Phila., Pa.
Salem F'dry & Mch. Co., Salem, Mass.

Emery and Emery Wheels.
Bell, Geo. E , 36 John St. N. Y.
Grant Corundum Wheel Mfg. Co. Worcester, Mass.
N. Y. Belting & Packing Co., Ltd., N. Y
Northampton Emery Wheel Co Leeds, Mass.
Norton Emery Wheel Co., Worcester Mass.
Sterling Emery Wheel Co., 174 Fulton St., New York.

Enamels.
Nubian Iron Enamel Co., Cragin, Ill

Engineers and Contractors.
Aiken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y,
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amsler & Co., Pittsburgh, Pa
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa
Witherow, Jas. P. Co., Pittsburgh; Pa.

Engines, Gas.
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg. N. Y.

Engines, Steam. *Makers of.*
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Erie Engine Works, Erie, Pa.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Phoenix Iron Wks. Co. Meadville, Pa.
Shipman Engine Co., Boston, Mass.
Southwark Foundry and Machine Co. Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.
Sweester, W. A., Brockton, Mass.

Expansion Bolts.
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O

Faucets, Self-Measuring.
Lane Bros., Poughkeepsie, N. Y

Faucets, Wooden. *Makers of.*
Boston & Lockport Block Co., Boston Mass., and Lockport, N. Y.
John Sommer's Son. Newark, N. J.

Feed-Water Heaters.
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N.Y
Harrison Safety Boiler Wks. Phila, Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire & Iron Wks., Milwaukee

Files. *Importers of*
Moss, F. W., 80 John, N. Y.

Files and Rasps, *Manufacturers of*
Arcade File Works, Anderson, Ind
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.

Fire Brick. *Makers of.*
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer B'k Sons, foot E. Houston, St
McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro., Woodbridge.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Fishing Tackle.
Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flue Cleaners.
Mackey, Jas. T., St. Louis, Mo.

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Foreign Periodicals.
Stechert, G. E., 810 Broadway, N.Y.

Forges, Portable, &c.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila. Pa.
Scranton Forging Co., Scranton, Pa.

Foundry Facings.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.

Foundry Riddles.
Estey, W. S. 65 Fulton, N. Y.

Foundry Supplies.
Colliau, Victor, Detroit, Mich.
Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O

Friction Clutches.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.
Evans Friction Cone Co., Boston, Mass

Fruit Presses.
Enterprise Mfg. Co. Philadelphia, Pa.

Gas Producers.
Wood, R. D. & Co. Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast, Henry B. & Co., Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
D. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glass Tubes,
Ashcroft Mfg. Co., 111 Liberty St., N.Y.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.
Supplee Hardware Co, Phila., Pa.

Grinding and Polishing Machines.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grindstone Dressing Machinery
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gunpowder, *Makers of.*
Laflin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich.

Handles.
New York Mallet and Handle Wks. 456 E. Houston St., N. Y.

Hangers, Door.
Coburn Trolley Track Mfg. Co., Holyoke, Mass
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Hotchkiss, E. S. Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Clarke Thomas, St. John, New Brunswick.
Graham, John H. & Co., 113 Chambers,
McCoy, Jos F. Co., 26 Warren St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N. Y,

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co. New Haven. Conn.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Haines & Zimmerman, Phila Pa.
Hart, H. C Mfg. Co., Detroit, Mich.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
New Britain Hdw. Mfg. Co., New Britain, Conn.
North Bros. Mfg. Co., Philadelphia, Pa
Peabody & Parks, Troy, N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
Weiland, Chas., 149 Chambers St., N.Y
Wilson, J. Fred, Worcester, Mass.

Hardware, Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N.Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co. Cleveland, Ohio.
Copeland & Bacon, 85 Liberty St. N.Y
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hollow Ware, Aluminum.
Illinois Pure Aluminum Co. Lemont, Ill

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, *Makers of.*
Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt,
Putnam Nail Co., Neponset, Boston, Mass.

Horse and Mule Shoes. *Makers of.*
Bryden Horse Shoe Co., Catasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.

Hose.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N.Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Injectors.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. Hartford Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y

Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pullman, J. Wesley, Phila. Pa.
Samuel, Frank, Philadelphia, Pa.

Iron, *Merchants.*
Barnes, C. K. & Co., Philadelphia, Pa
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia
Cotton, Bradley & Co., Philadelphia
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co. 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St. N. Y
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, *Importers.*
Abbott Wheelock & Co. N.Y. and Boston
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet. *Manufacturers of.*
Cambridge Iron & Steel Co., Cambridge Ohio
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladders, Rolling.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.

Ladles.
Detroit Fdy. Equipment Co., Detroit, Mich.

Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.

Lamps.
Standard Lighting Co., Cleveland, O.

Lanterns.
Ohio Lantern Co., Tiffin, Ohio.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls N. Y.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mowers.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Coldwell Lawn Mower Co., Newburg, N. Y.
Dille & McGuire Mfg. Co., Richmond, Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Mast, Foos & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila. Pa.

Lawn Rakes.
Gibbs Mfg. Co, Canton, Ohio.
Konler, F. E. & Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse N. Y.

Lawn Sprinklers.
Ette & Henger Mfg. Co., St. Louis,
Gibbs Mfg. Co., Canton, Ohio.
McGowan, John H. Co., Cincinnati, O.

Lemon Squeezers.
Ripley Mfg. Co., Unionville, Conn.

Letters and Figures, Metallic
White, A. A. & Co., Providence, R. I.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.

Locks & Knobs, *Manufacturers of*
Deitz, A. E., 97 Chambers, N. Y
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg Co. Bridgeport, Conn
Yale & Towne Mfg. Co., Stamford, Conn

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Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Sement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N.Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N.Y
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila. Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield Vt
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co. Rochester, N.Y
Manville, E. J. Mch. Co, Waterbury, Conn
Newark Mch. Tool Works, Newark, N.J
New Haven Mfg. Co., New Haven, Conn
New York Mach'y Depot, N. Y.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y
Poole, Robt. & Son Co., Baltimore, Md
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn
Prentiss Tool & Supply Co., N. Y
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ld., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.
Adt, Jno. & Son, New Haven, Conn.

Machine Knives.
Loring Coes & Co., Worcester, Mass

Machine Screws.
New Britain Hdw. Mfg. Co., New Britain, Conn.

Machine Tools.—*See Machinery.*

Machine Work.
Papping, J., 58th St., & 11th Ave., N.Y. City.

Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y
Starrett, L. S., Athol, Mass
Vallentine Tool Co., Hartford, Conn.

Machinists' Tools and Supplies.
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.

Mallets.
N. Y. Mallet & Handle Works, N. Y

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St., N.Y.
Lufkin Rule Co., Saginaw, Mich.

Meat Cutters and Stuffers.
Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Instruction.
Correspondence School of Mechanics Scranton, Pa.

Metals.
Fearing, Wm. S., 100 Chambers, N. Y
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
American Metal Co., N. Y.

Metallurgists.
Britton J. Blodgett, Phila.

Milling Machines.
Cin. Milling Mch. Co., Cincinnati, Ohio.

Mincing Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
Darby, Edw. & Sons Phila. Pa.
Leonard, B. E., Scranton, Pa.

Mining Screens.
Harrington & King Perforating Co Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y

Mirrors.
Rice, C. F., Chicago, Ill.

Models, *Makers of*
Franklin, H. H. Mfg. Co., Syracuse, N. Y.

Molding Sand.
Obermayer, S. Co., Cincinnati, O.

Motors, Water and Electric.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington, Pottstown Iron Co., Pottstown, Pa.
Riverside Iron Wks, Wheeling, W. Va.

Neck Yokes.
Johnson, S. C., Racine, Wis.

Nickel Platers' Supplies.
Colburn Electric Mfg. Co., Fitchburg, Mass.
Zucker & Levett Chemical Company. 10 to 14 Grand St., N. Y

Norway Shapes, *Rollers of.*
Rowland, William & Harvey, Frankford, Philadelphia

Novelty Manufacturers.
Franklin, H. H. Mfg, Syracuse, N. Y.

Nut Machines.
Dunham Nut Mch. Co., Unionville, Ct

Nuts, Bolts, &c., *Makers of.*
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Haskell, Wm. H. Co., Pawtucket, R. I
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Port Chester Bolt and Nut Co., Chester, N. Y.
Russell, Burdsall & Ward, Port Chester
Sternbergh, J. H. & Son, Reading, Pa
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R. I.

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
Glazier Stove Co., Chelsea, Mich.

Ores.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Morrison, Robt., St. Louis, Mo.
N. Y. Belting & Packing Co. Ltd., N.Y.

Padlocks.
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Miller Lock Co., Philadelphia, Pa.

Paint.
Dixon, Jos. Crucible Co., Jersey City, N.J

Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O

Paint Cans.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Patent Solicitors.
Howson & Howson, Phila. & Wash'gton.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co. Chicago, Ill
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., Boston, Mass.
Halk & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

Pile Drivers.
Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co. St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast Henry B. & Co., Philadelphia.
Saunder's Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y,

Pipes, Fittings, &c., *Makers of.*
McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas, *Makers of.*
Cumberland Nail & Iron Co., Phila, Pa
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W Va.
Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.

Planes, *Manufacturers of.*
Stanley Rule & Level Co., N. Y

Plated Ware.
Boardman, L. & Son, New Haddam, Ct
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Rogers & Hamilton, Waterbury, Ct.
Upson & Hart Co., Unionville, Ct.

Plate, Iron and Steel, *Mfrs of*
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa
Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.

Polishing Machines.
Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
La Massena, C. E. & Co., Newark, N.J.

Post Hole Diggers.
Gibbs Mfg. Co., Canton, Ohio.
Wister, L. & R. & Co., Philadelphia, Pa.

Poultry Nettings.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Wks. Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
Laflin & Rand Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y.

Power Hack Saws.
Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Jenkins & Lingle, Bellefonte, Pa.
Long & Allstatter Co., Hamilton, Ohio.

Presses, Dies, &c.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Niagara Stamping and Tool Co., Buffalo, N. Y.
Stark Mch & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn

Presses, Power, *Makers of.*
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct,
Merriman, A. H., Meriden
Niagara Stamping and Tool Co. Buffalo, N. Y.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
Keystone Clutch Mch. Wks., Phila., Pa.
Lane, J. H. & D. Co., Massillon, Ohio,

Pulverizing Mill.
Bradley Fertilizer Co., Boston, Mass.

Pumping Machinery.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Hooker-Colville Steam Pump Co., Chicago, Ill.
Mcgowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa
Valley Pump Wks, Easthampton, Mass
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, *Makers of.*
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Mast, Foos & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Henderer, A. L., Wilmington, Del.
Long & Allstater Co., Hamilton, Ohio.
Niagara Stamping & Tool Co., Buffalo, N. Y.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
Perry, W. H. & Co., Providence, R. I.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Estey, W. S. 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.

Razors.
Electric Cutlery Co., 113 Chambers, N.Y
J. R. Torrey Razor Co., Worcester, Mass

Reels.
Hendryx, A. B. Co., New Haven, Conn

Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.

Rivets.
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Troy, N. Y.
Cobb & Drew, Plymouth, Mass.
Henderson, Jas. S., 165 Greenwich, N.Y.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Rock Drills.
Sand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd, Co., Youngstown, O.
Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning F'dry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd, Co., Youngstown, O.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh Pa.

Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Johns, H. W Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y

Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa.

Rubber Goods.
Canfield, H. O., Bridgeport, Conn.

Rules, *Manufacturers of.*
Keuffel & Esser Co., 127 Fulton St., N.Y
Lufkin Rule Co., Saginaw, Mich.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,

Sad Irons.
Enterprise Mfg. Co., Philadelphia, Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Pullman Sash Balance Co., Rochester, N. Y.
Vanderbilt Sash Balance Co., Canandaigua, N. Y.

Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.
Cincinnati Corrugating Co., Piqua, O.

Sash Locks.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Portable Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.

Saw Filing Machines.
Disston, Henry & Sons, Philadelphia, Pa.

Saws, *Makers of.*
Disston, Henry & Sons, Phila., Pa.
Hiss, C. A. & Co., 336-338 Carroll Ave Chicago, Ill.
National Saw Co., 96 Reade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Taintor Mfg. Co., 84-86 Chambers, N

Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N.Y

Scrapers, Road.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.

Screens, Coal and Ore.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Screens, Door and Window.
Queen Anne Screen Co., Burlington, Vt.

Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Capitol Mfg. Co., Chicago, Ill.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.

Screws, *Makers of.*
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
National Screw & Tack Co., Cleveland, Ohio.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls N. Y

Scythe Stones and Whetstones.
Pike Mfg. Co., Pike Stat'n, N. H.
Cleveland Stone Co., Cleveland, O.

Shafting, *Makers of.*
Cresson, Geo. V., Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Fitzsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc. Phila. Pa.
Stow. Co. Mfg, Binghamton, N. Y.

Shaped Iron and Steel,—*Manufacturers of.*
Ætna-Standard Iron & Steel Co., Bridgeport, O.

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Allentown Rolling Mill, Allentown, Pa
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phœnix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn
Heinischs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, *Manufacturers of.*
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh,
Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ld., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch. A. B. & Co., Peoria, Ill.

Sinks.
Douglas, W. & B., Middletown, Conn.

Skates. Ice.
Barney & Berry, Springfield, Mass.
Dame, Stoddard & Kendall, Boston, Mass.
Lovell, Jno. P. Arms Co., Boston, Mass.
Sickels, Sweet & Lyon, 35 Barclay St., N. Y.
Winslow, Sar'l, Skate Mfg. Co. Worcester, Mass.

Skates. Roller.
Barney & Berry, Springfield, Mass.
Henley, M. C., Richmond, Ind.
Winslow, Saml., Skate Mfg. Co., Worcester, Mass

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.
Clendenin Bros., Baltimore, Md.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.

Spelter.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
Rogers & Hamilton Co., Waterbury, Conn.
Upson & Hart Co., Unionville, Ct.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y

Springs.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y
Morgan Spring Co., Worcester, Mass
Nourse, Fred. Co., 315 to 319 E. 22d St., N. Y.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt
Tuck Mfg. Co., Brockton, Mass
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Bardsley, J., 149 & 151 Baxter St., N.Y.
Pullman Sash Balance Co., Rochester N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St, New York.

Stamping Works.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co. Binghamton N.Y

Steam Gauges.
Ashcroft Mfg. Co., 111 Liberty St., N.Y
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., *Makers of*
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Camden, N.J.

Steam Separators.
Goubert Mfg. Co., 32 Cortland St N. Y.
Harrison Safety Boiler Wks. Phila. Pa

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.

Steel Figures and Alphabets.
Hoefig, C. W., 52 Fulton St., N. Y.
Krogsrud, W., 61 Fulton N. Y.
Wolff, C. H., 177 William St., N. Y.

Steel Importers.
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 9 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 88 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Ætna-Standard Iron & Steel Co., Bridgeport,
Bethlehem Iron Co., S. Bethlehem, Pa
Boker, Hermnan & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Elken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 9 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa
Moorhead-McCleane Co., Pittsburg Pa
Moss, F. W., 83 John N. Y
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co. High Bridge, N.J
Wardlaw, S. & C., Sheffield, Eng
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn

Steel, *Manufacturers' Agents.*
Barnes, C. K. & Co., Philadelphia, Pa
Corning, Edw, & Co., 29 B'way, N. Y
Frasse Co., 19 Warren St., New York.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, *Manufacturers of.*
Bethlehem Iron Co., S. Bethlehem, Pa
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville Pa
Riverside Iron Wks., Wheeling, W. Va

Steel, Tool.
Frankford Steel Co., Philadelphia. Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill,
Croissant, M., Albany, N. Y.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunder's Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y

Stove Pipe Thimbles.
Cheney, S. & Son Manlius, N. Y

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse N. Y.

Strops.
Electric Cutlery Co. 113 Chambers, N.Y
J. R. Torrey & Co., Worcester, Mass.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co. La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation. Boston, Mass
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland O.
Phillips, E. & Sons, South Hanover.
Trufant, W. E., Whitman, Mass.

Taps and Dies.
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila.

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tinning Process.
Sands, Thomas, Nashua, N. H.

Tin Plate Machinery.
Lloyd Booth Co., Youngtown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St.,

Tire Upsetters.
Butts & Ordway, Boston, Mass,

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N.Y.

Tools.
Brown, R. H. & Co., New Haven, Conn.
Frasse Co., 19 Warren St., New York.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,
Starrett, L. S., Athol, Mass.

Tools, Blacksmith and Wheelwrights.
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R. Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasolene.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.

Transom Lifters.
Wollensak, J. F. Chicago, Ill.

Trucks. *Manufacturers of.*
Berger Bros., Philadelphia, Pa.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co. Lansing Mich.

Tubes, Seamless Drawn Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.
Ellwood Shafting & Tube Co., Ellwood City, Pa.
Leng's John S. Son & Co., 4 Fletcher St., New York.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills. *Makers of.*
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 56 John N. Y.
Mason Regulator Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vises.
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Wheelbarrows.
Akron Tool Co., Akron, O.
Amer. Steel Scraper Co., Sidney, Ohio.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Sweatt Mfg. Co., Minneapolis, Minn.

Whips.
American Whip Co., Westfield, Mass,

Window Cord, *Makers of.*
Samson Cordage Works, Boston, Mass

Wire, *Manufacturers of.*
Consolidated Steel & Wire Co., St. Louis, Mo.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co. Worcester, Mass

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Reliance Wire & Iron Wks. Milwaukee Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.
King, J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 88 John, N. Y.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods, *Manufacturers of.*
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros, Cortland, N. Y.
Williamson, C. T. Wire Novelty Co. Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester Mass.
Waterbury Mch. Co., Waterbury, Conn

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wire Nails.
Consolidated Steel & Wire Co., St. Louis, Mo.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle Pa.
Phillips, E. & Sons, South Hanover Mass
Phillips, Townsend & Co., Phil., Pa.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City

Wire Rods. Steel.
Consolidated Steel & Wire Co., St. Louis, Mo.
New Castle Wire Nail Co., New Castle Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y

Wire Rope, Iron and Steel *Makers.*
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Wood-Working Machinery.
Seneca Falls Mfg. Co., Seneca Falls, N. Y

Wrenches, *Manufacturers of.*
Bemis & Call Hardware & Tool Co. Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn
Capitol Mfg. Co., Chicago, Ills.
Coes Wrench Co., Worcester, Mass.
Keystone Mfg. Co., Buffalo, N. Y.
Trimont Mfg. Co., Roxbury, Mass.
Williams, J. H., Brooklyn, N. Y.

Wringers.
Colby Wringer Co., Montpelier Vt.
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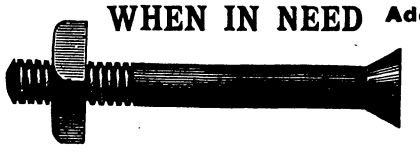
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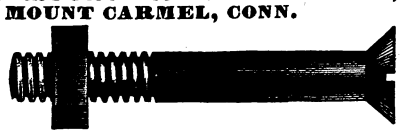
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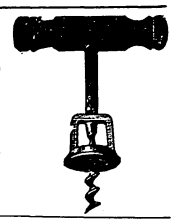
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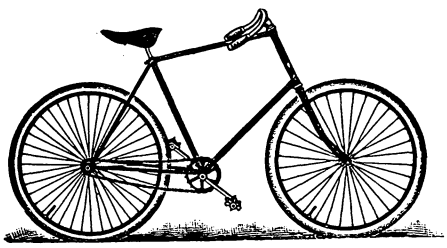
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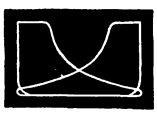


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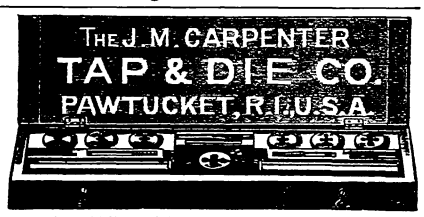
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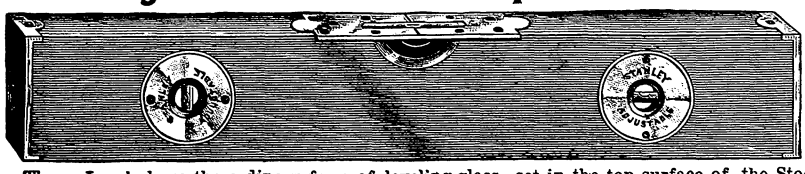
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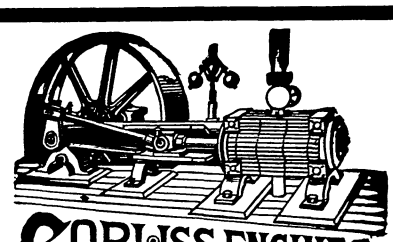


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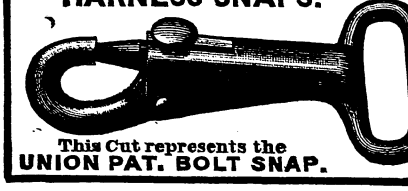
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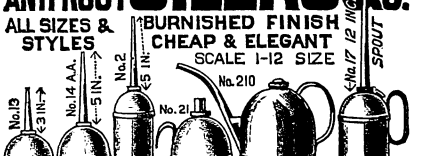
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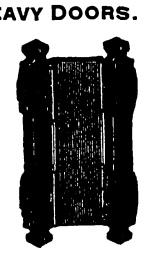
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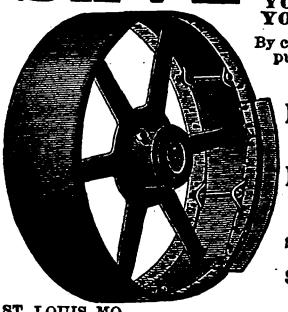
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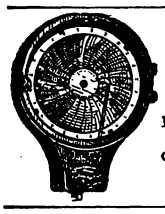
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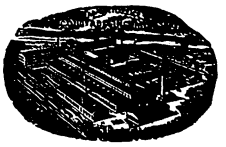
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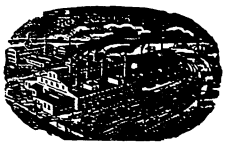
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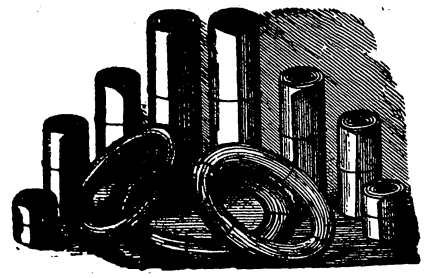
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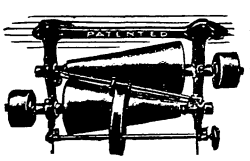
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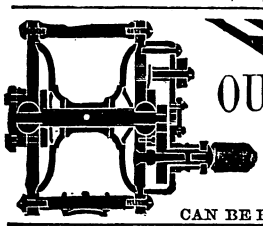
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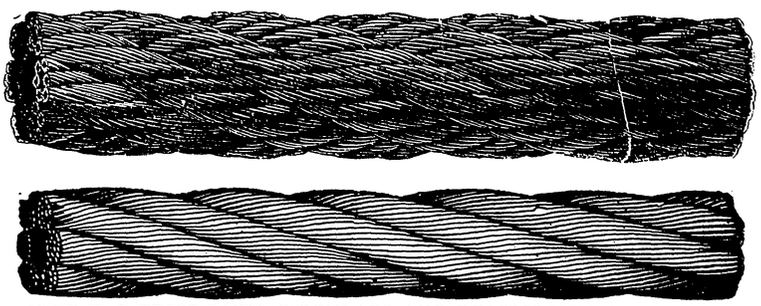
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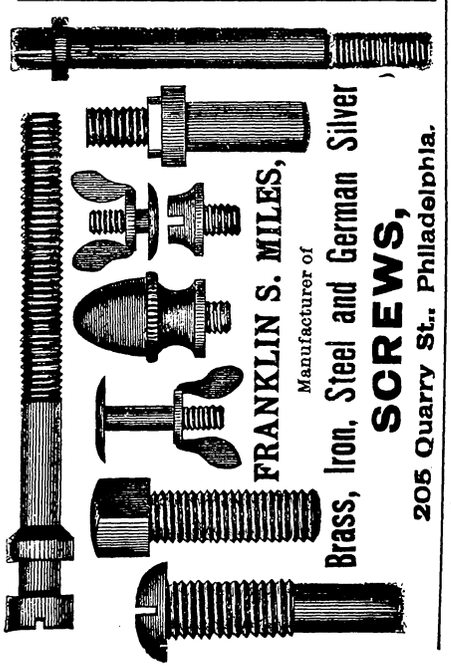
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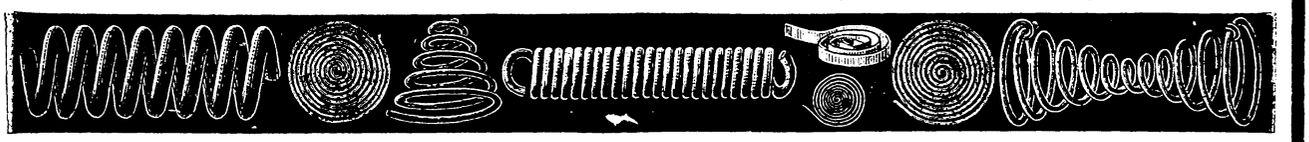
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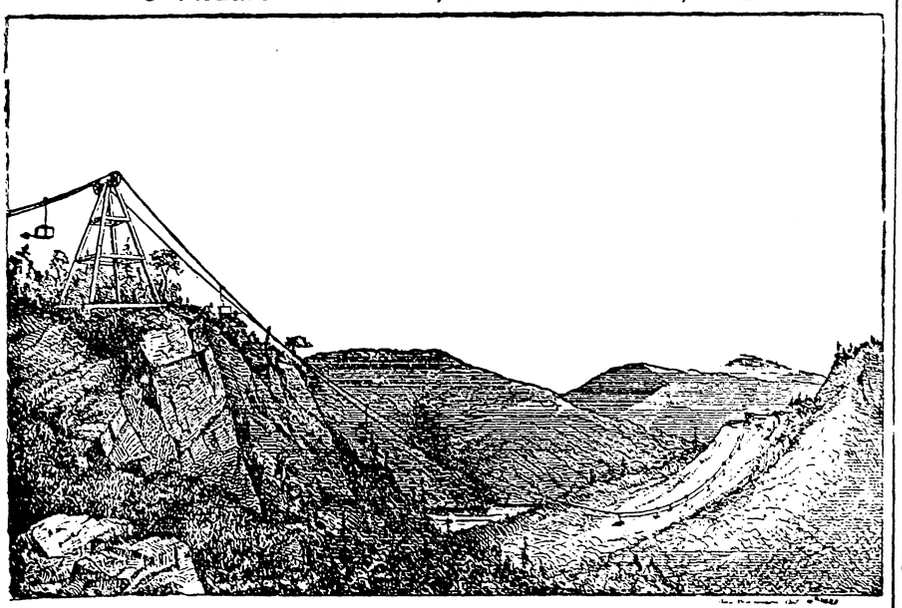
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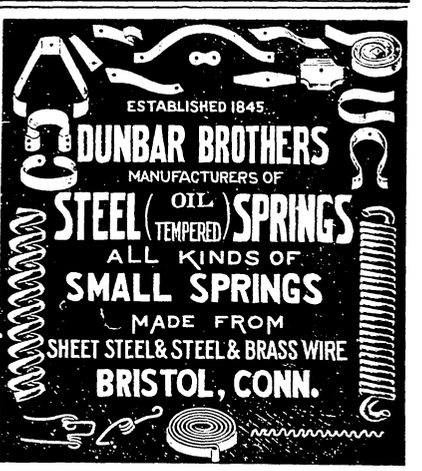
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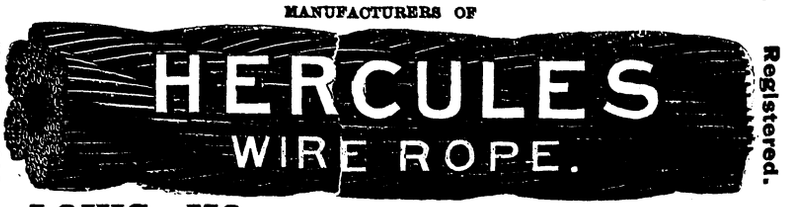
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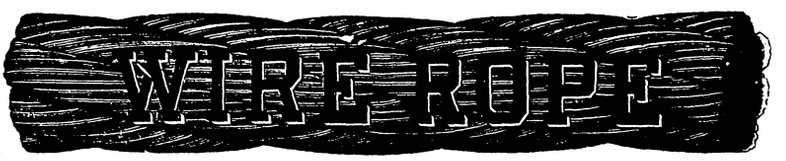
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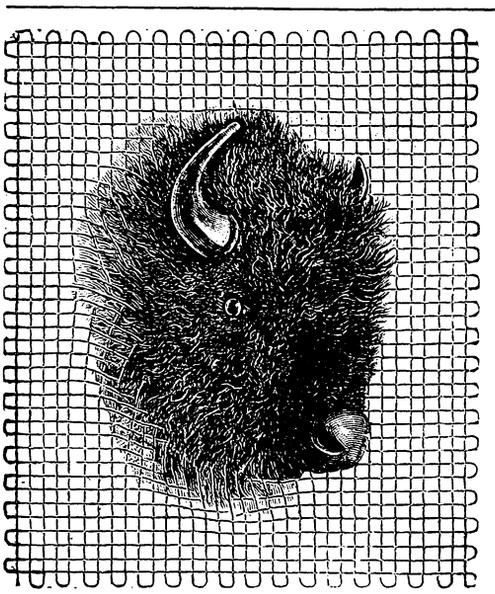


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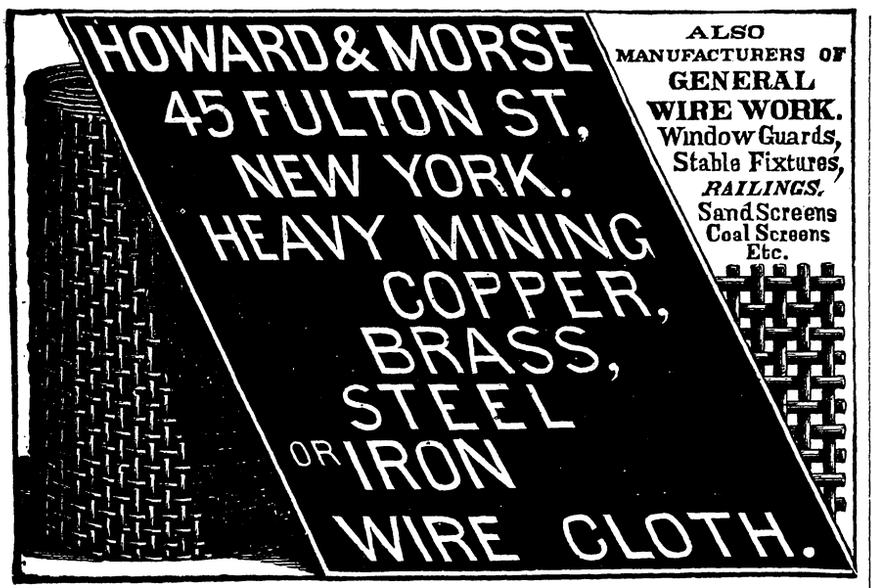
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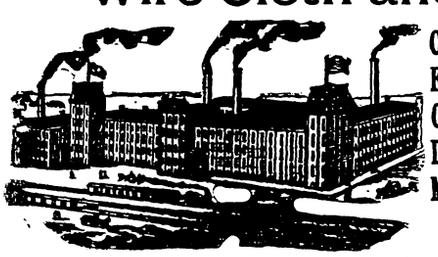
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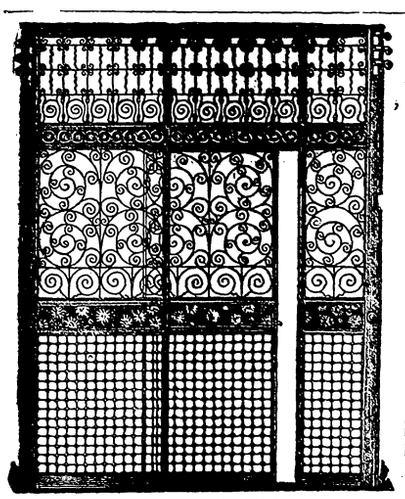


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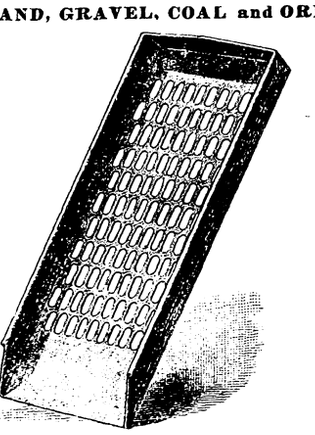
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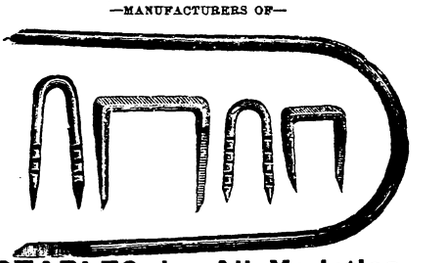
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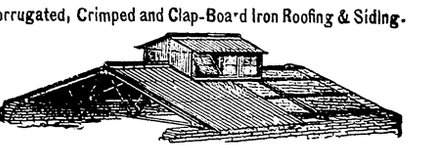


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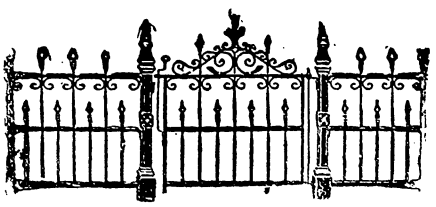
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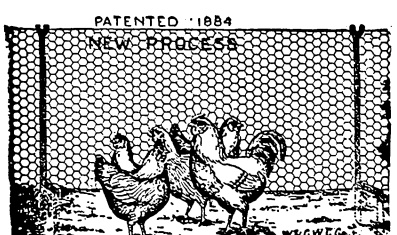
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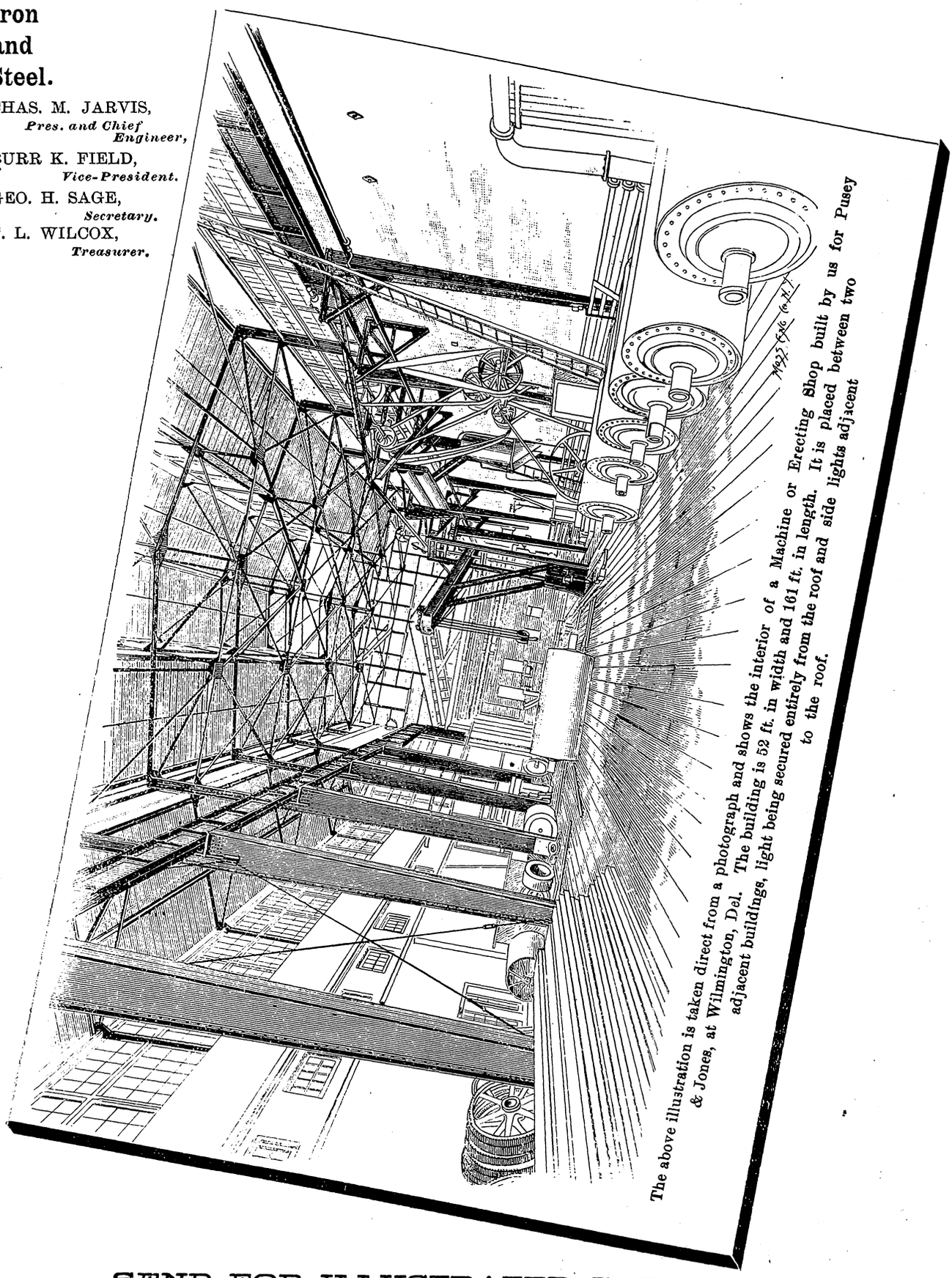
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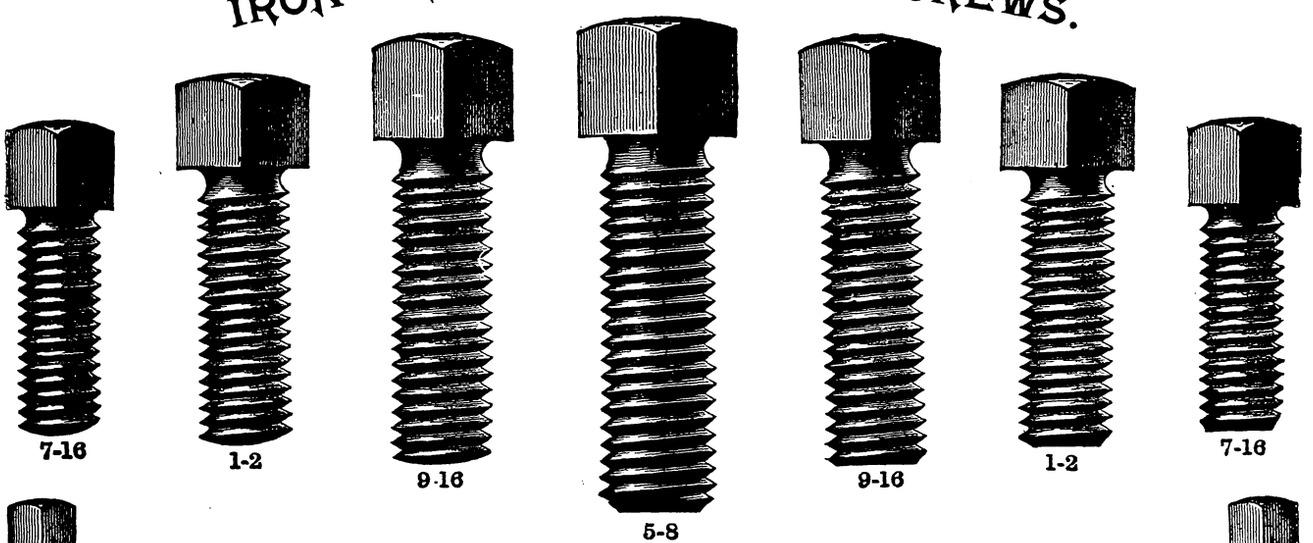
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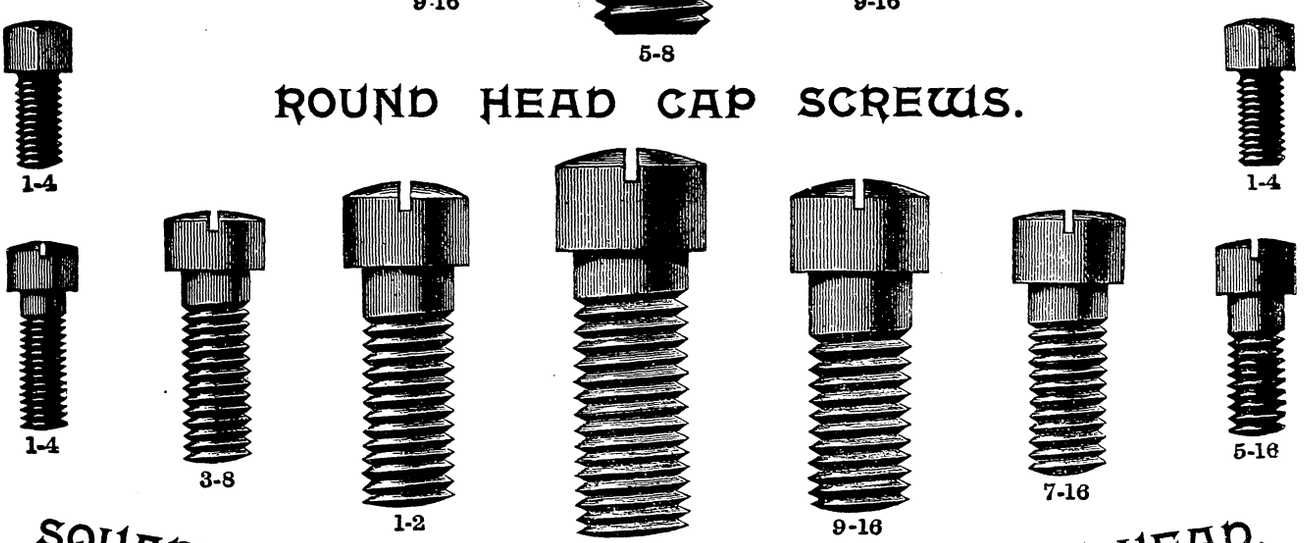
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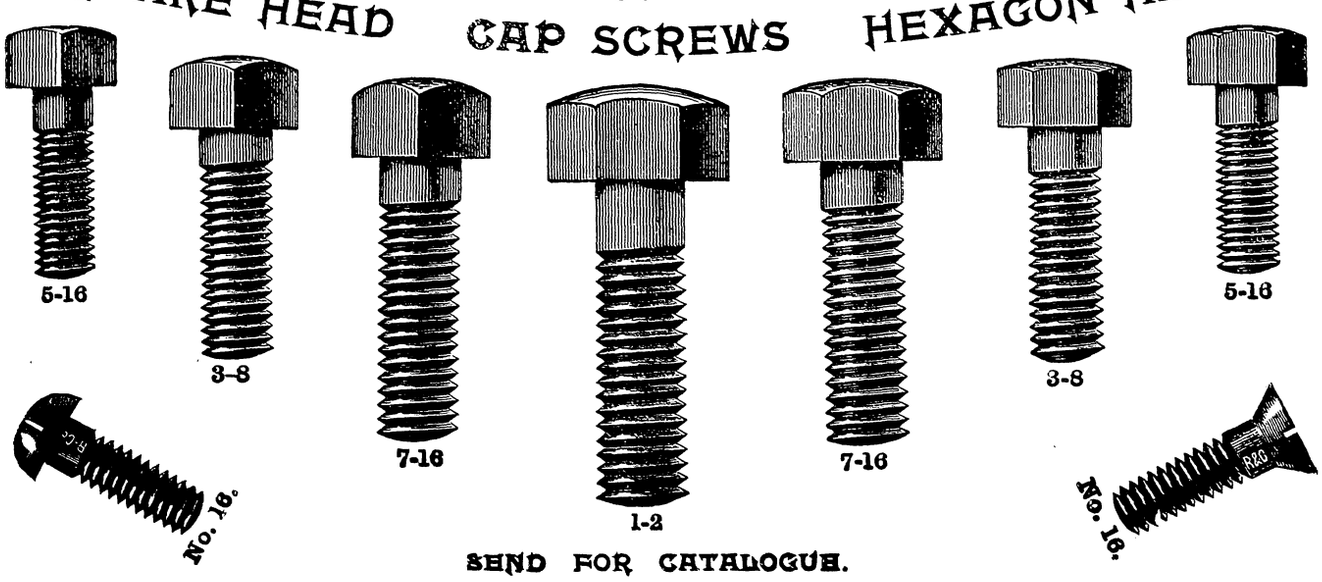
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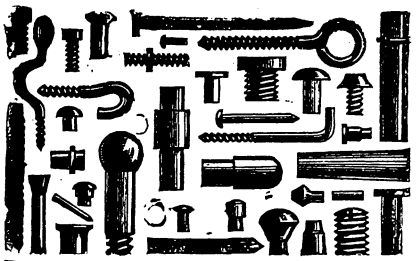
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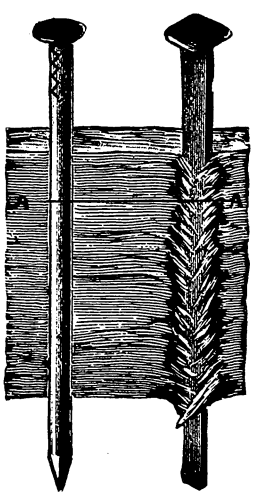
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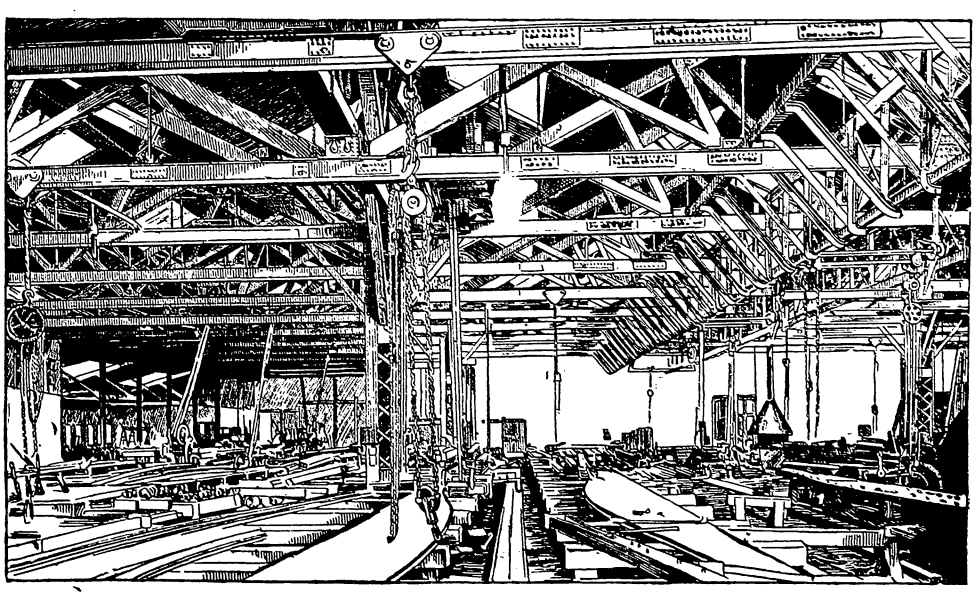
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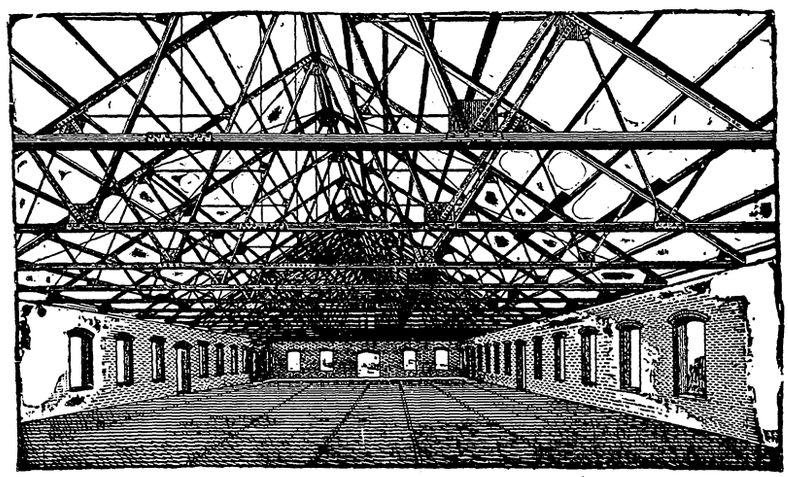
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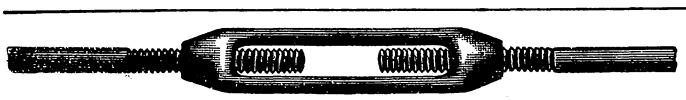
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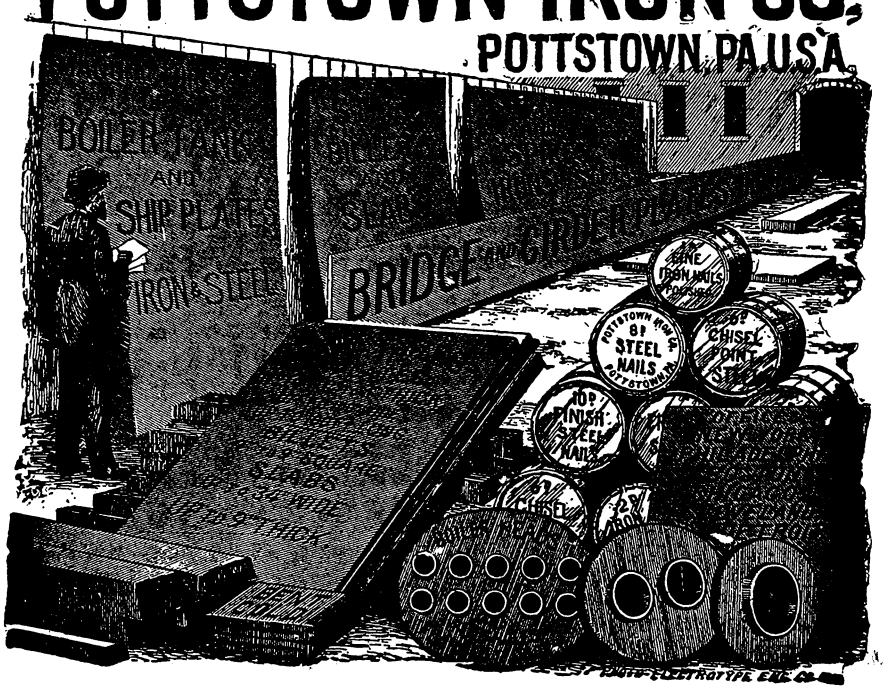
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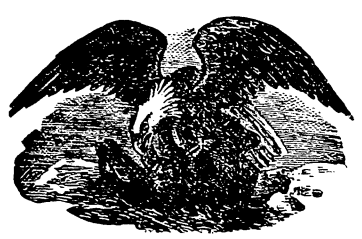
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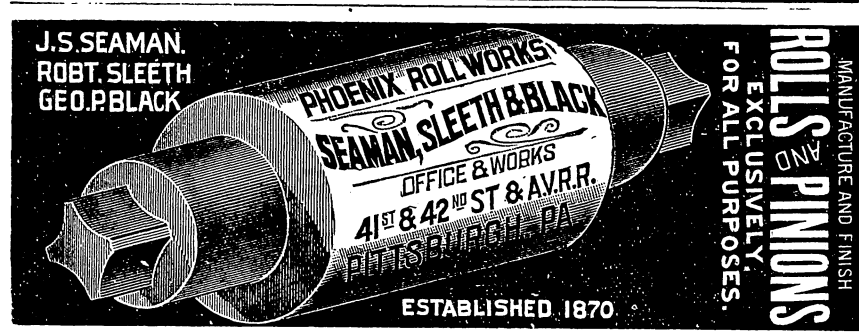
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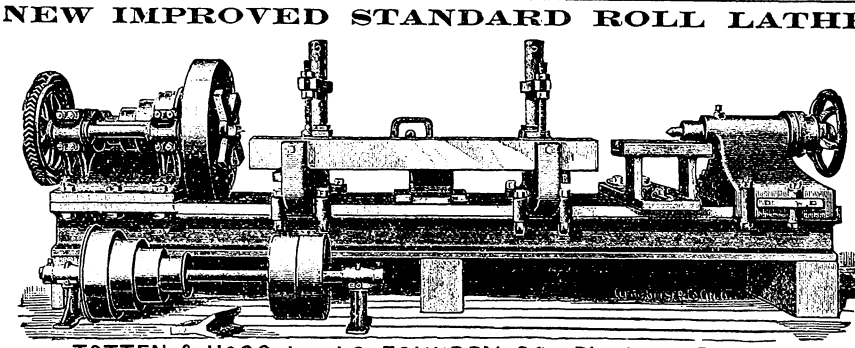
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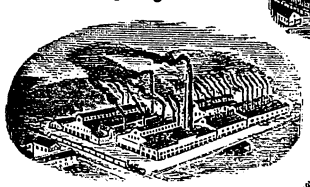
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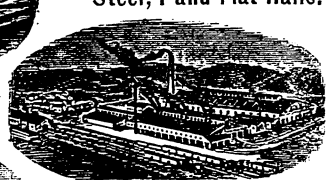
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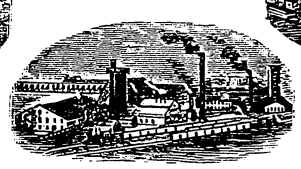
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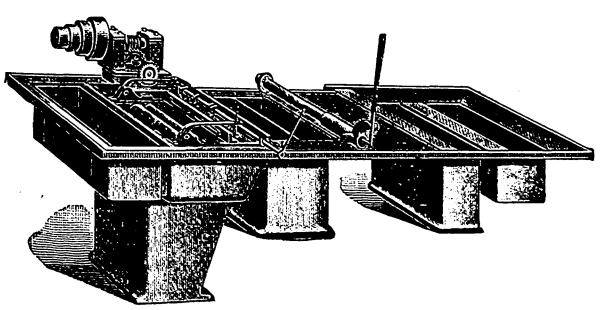
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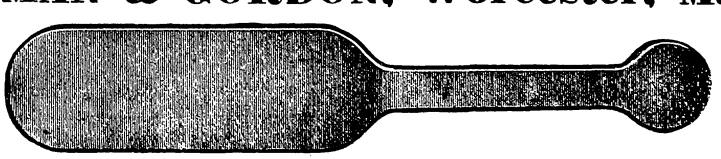
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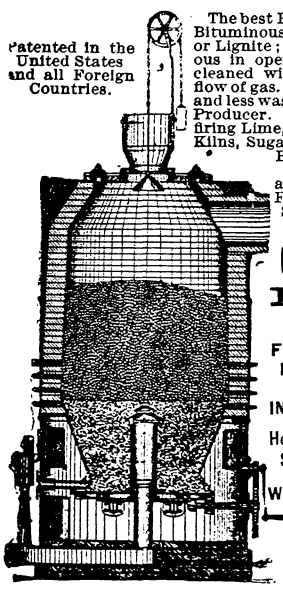
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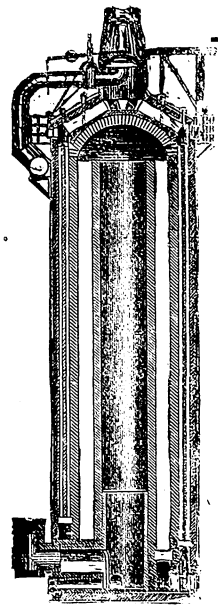
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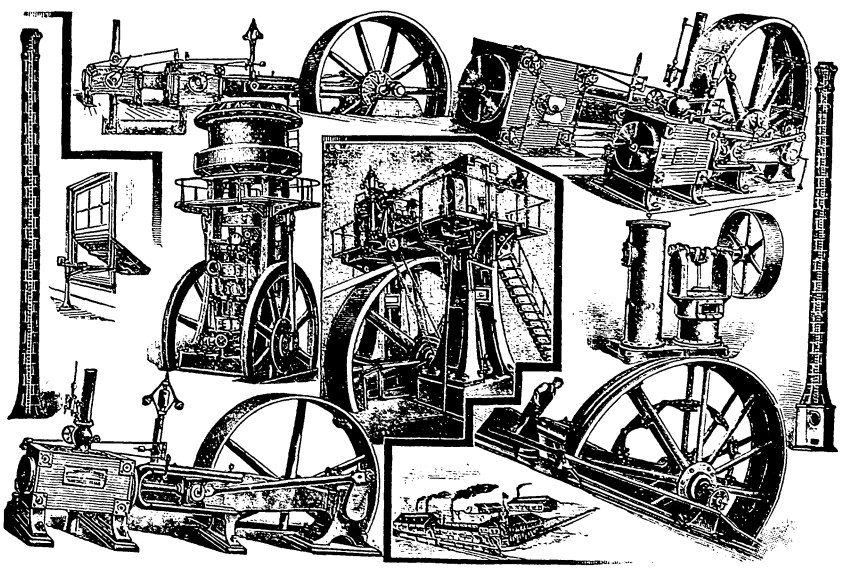
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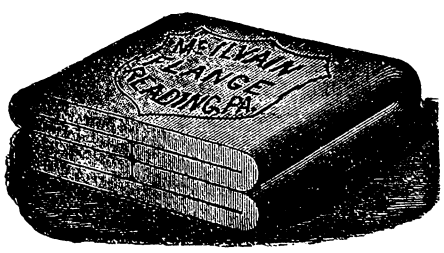


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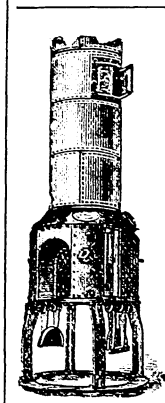
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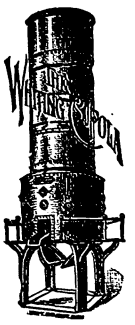
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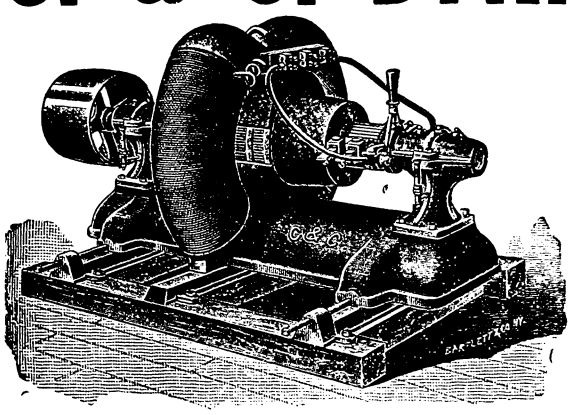
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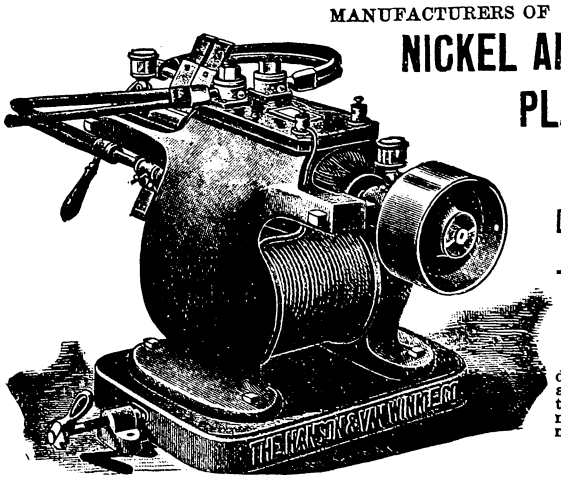
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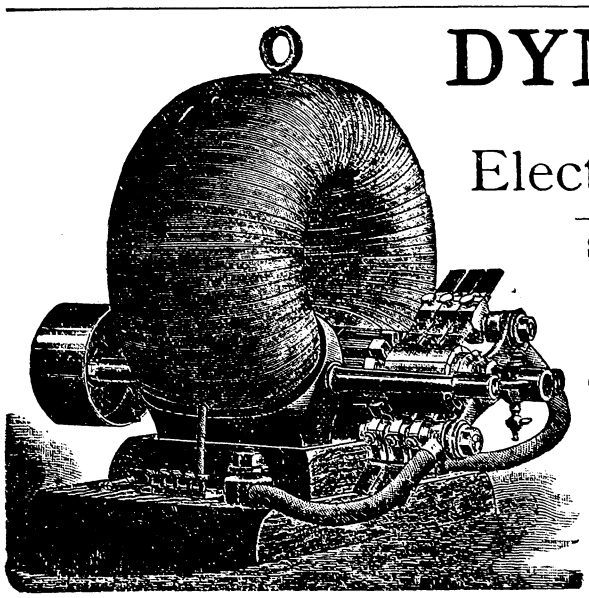
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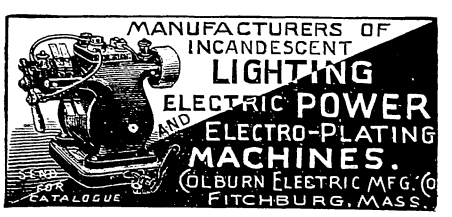
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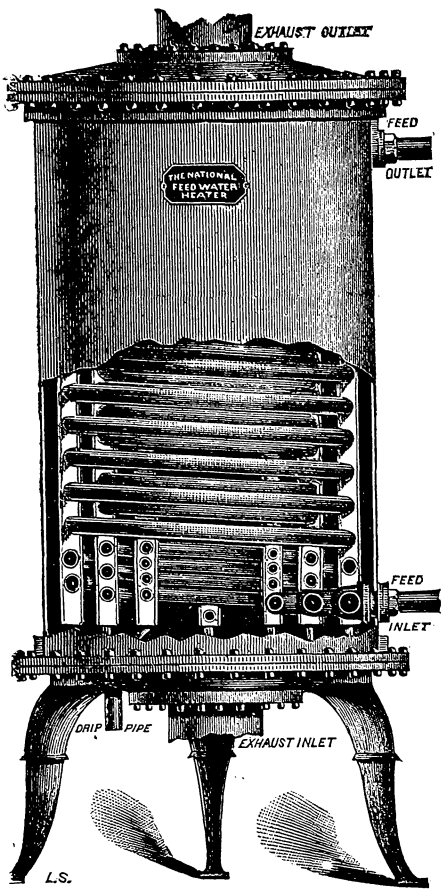
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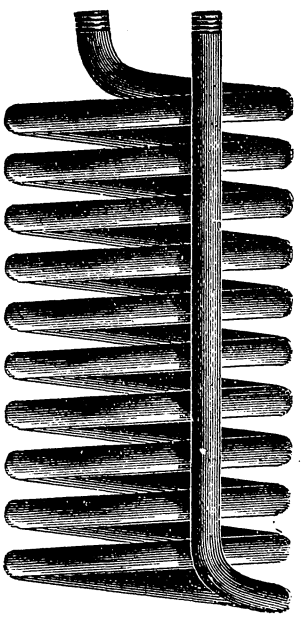
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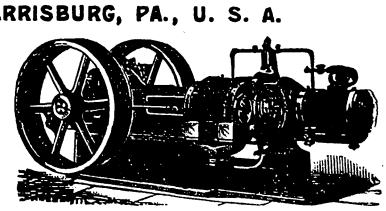
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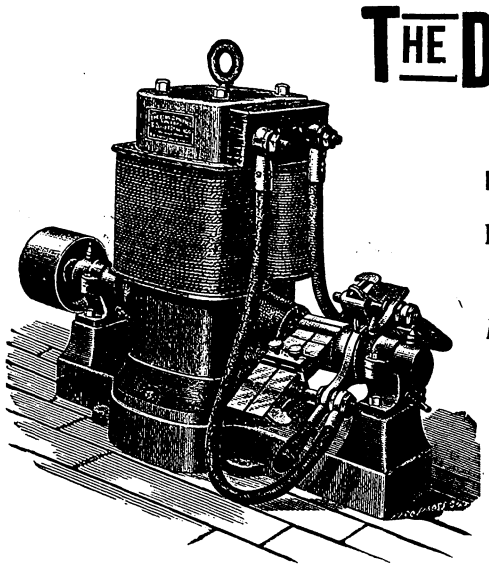
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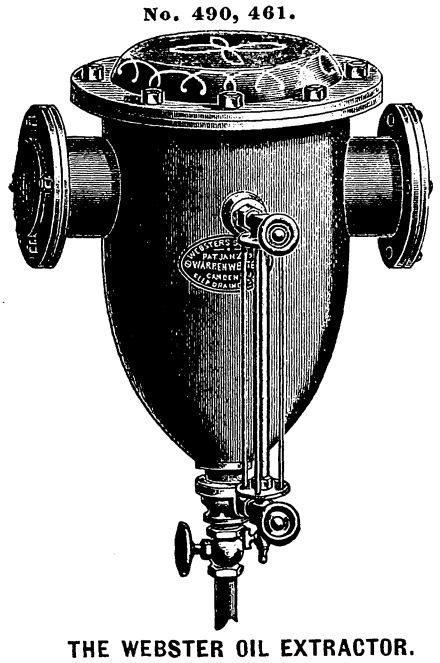
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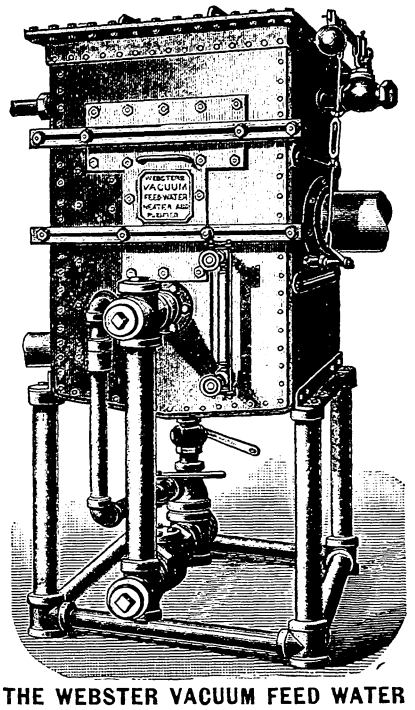
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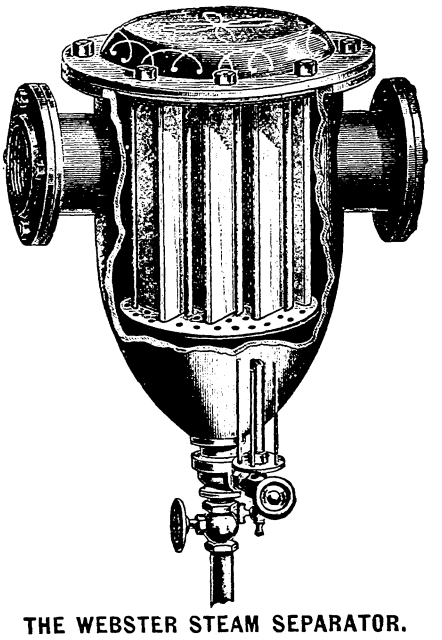
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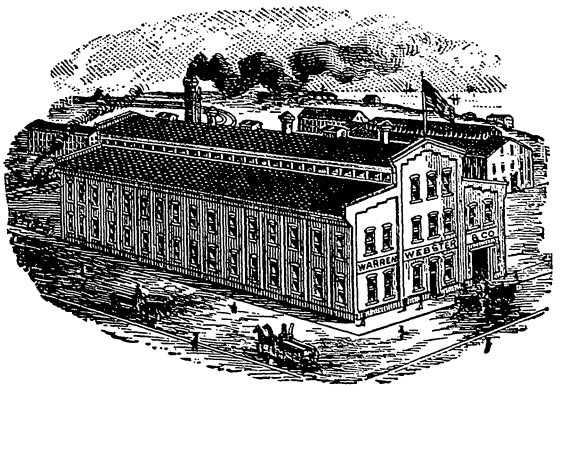
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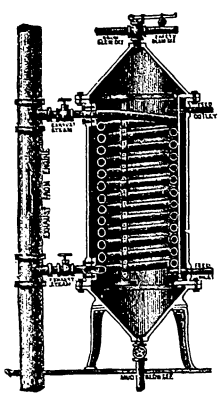
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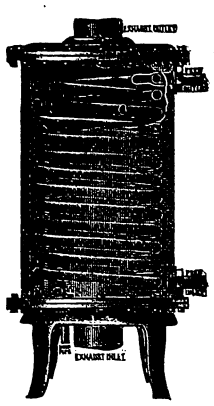
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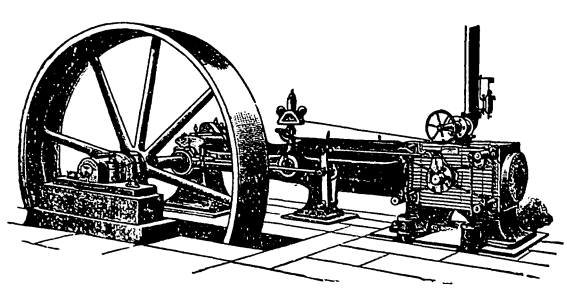
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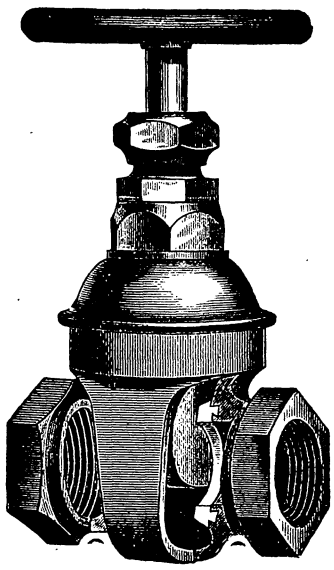
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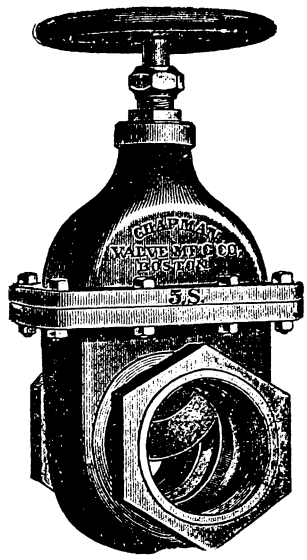
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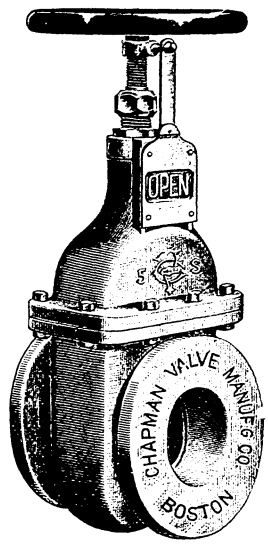
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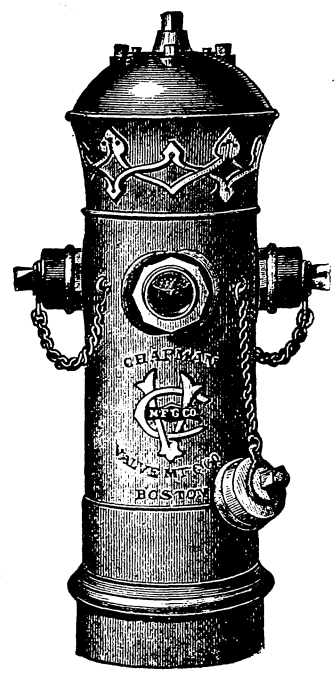
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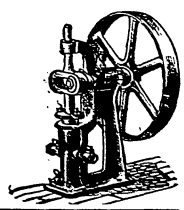
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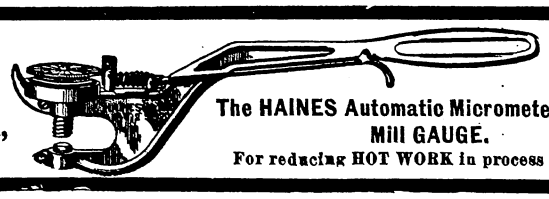
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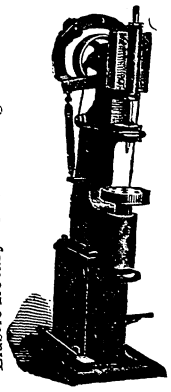
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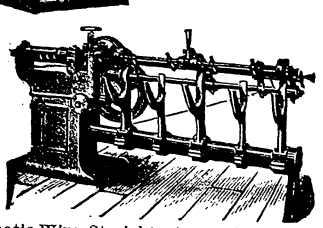
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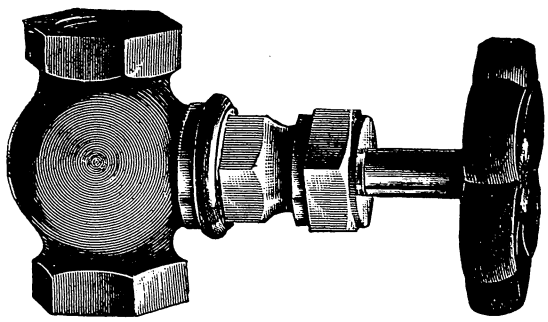
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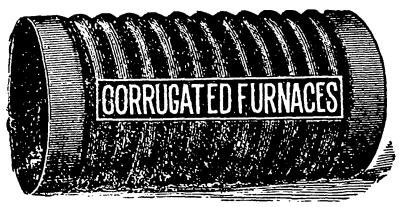
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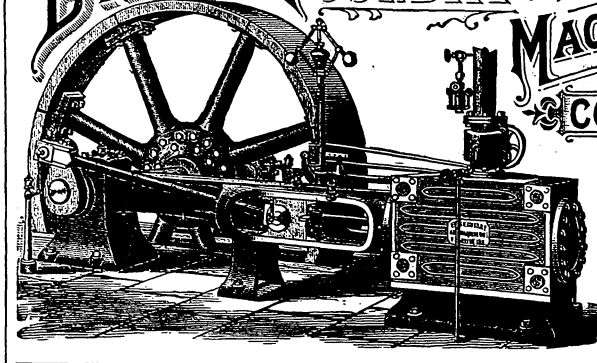
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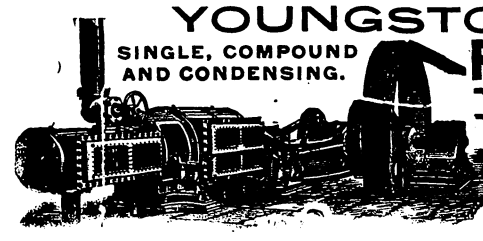
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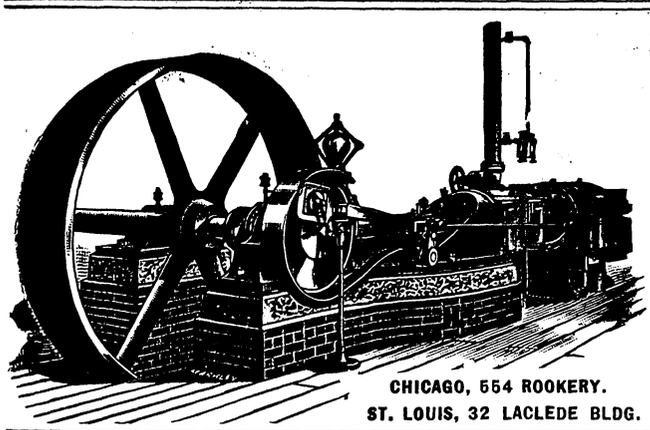
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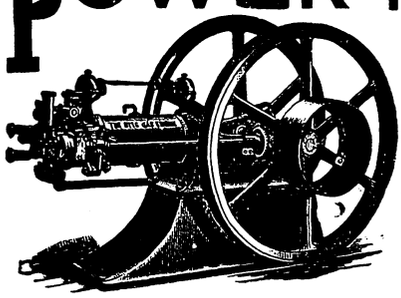


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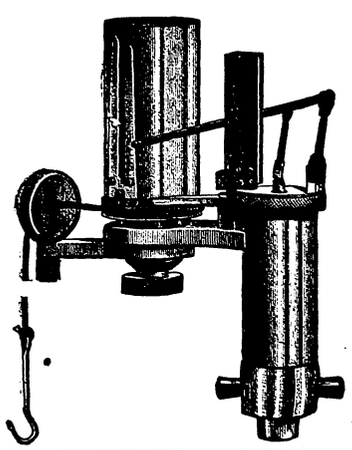
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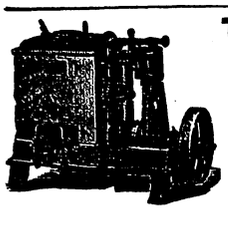
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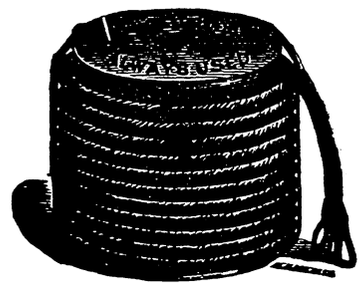
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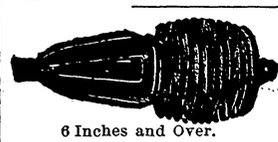
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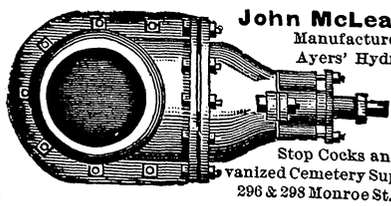
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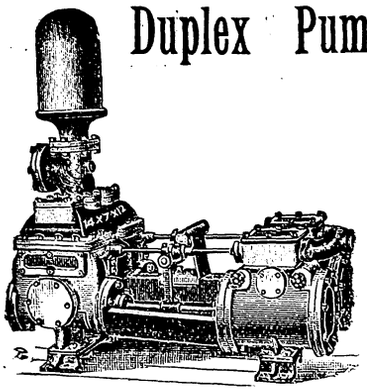


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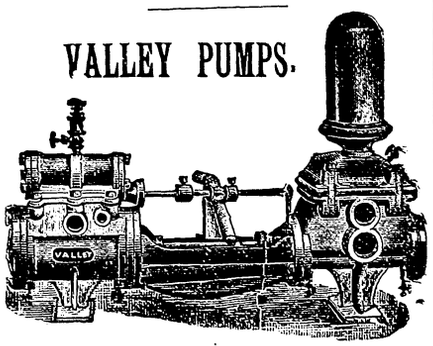
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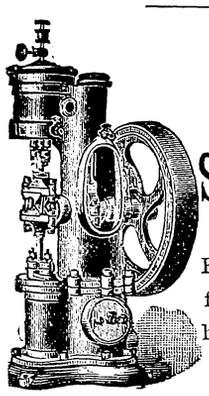
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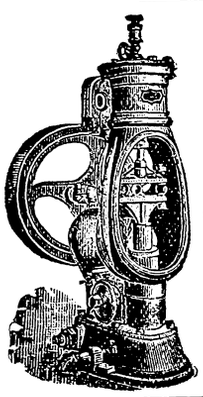




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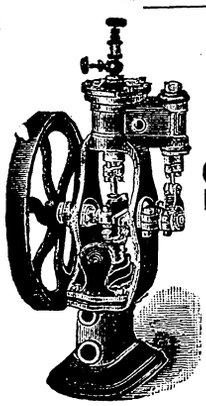
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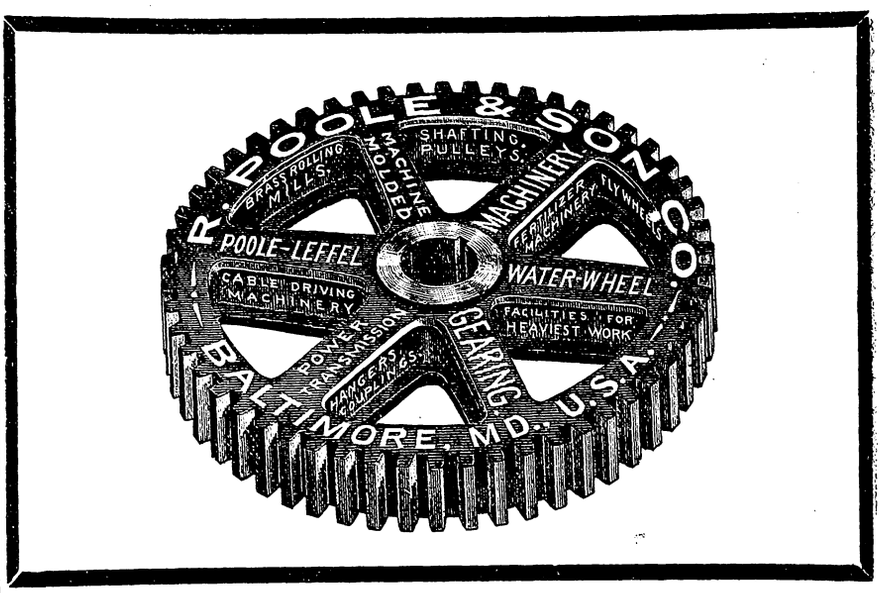
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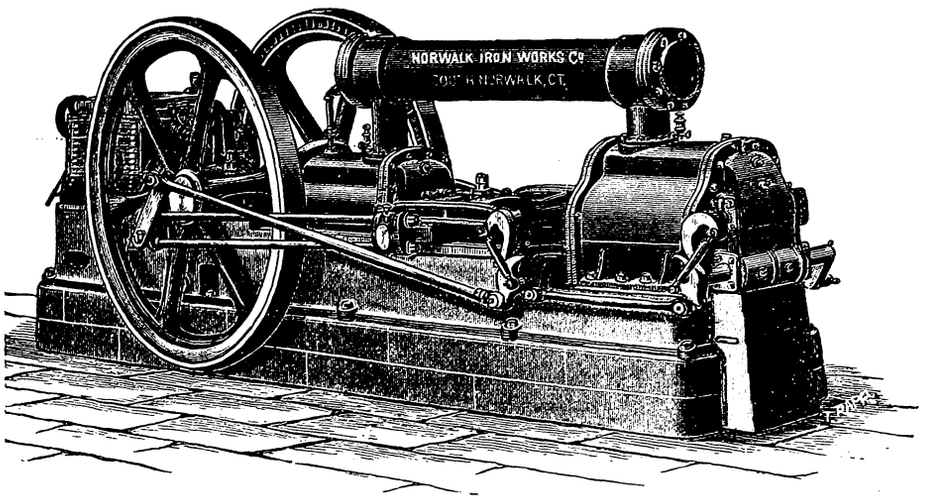
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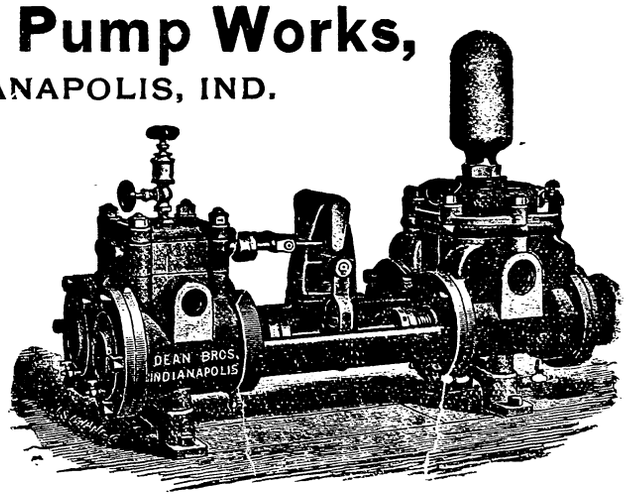
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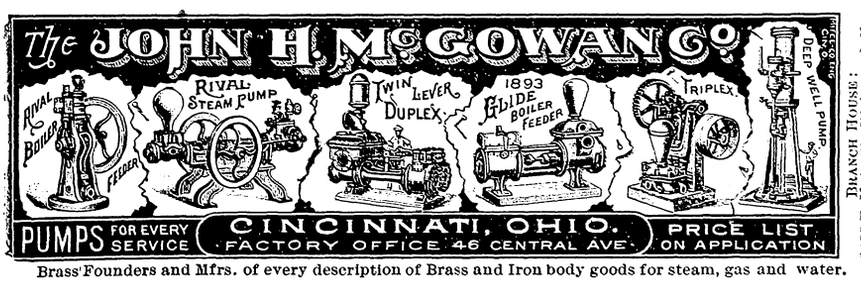
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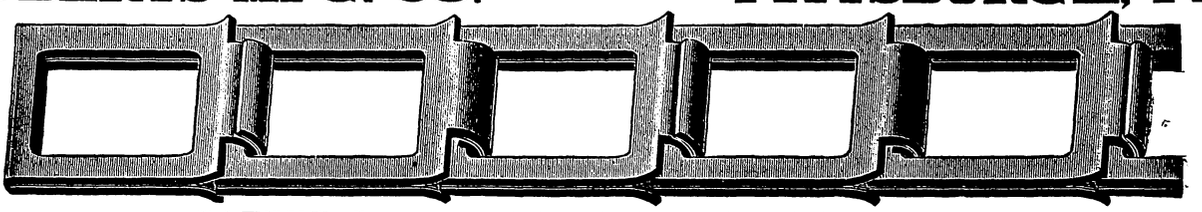
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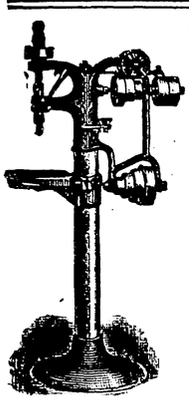
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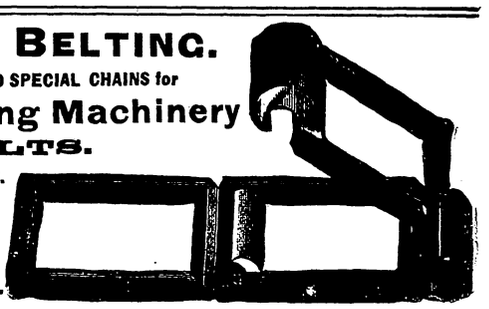
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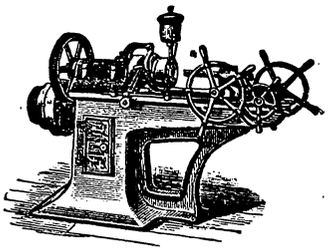
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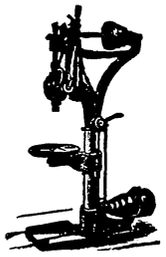
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and the bigger the Fraud the more they usually find to feed on. Many users of black varnish will continue to use cheap asphaltum blacks when they might use **Bonnell's Nubian Iron Enamel** at as low a cost, and always have good reliable guarantee. If you use or sell asphaltum varnishes, dipping or brushing, air drying or baking, you ought to hear our tale. It's a good one, for it touches the pocket. See?

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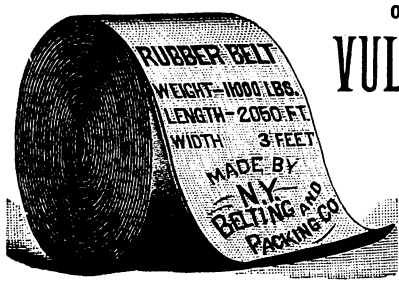
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For Mechanical Purposes.

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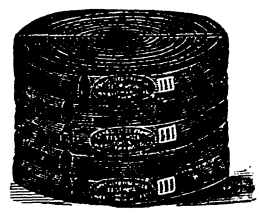
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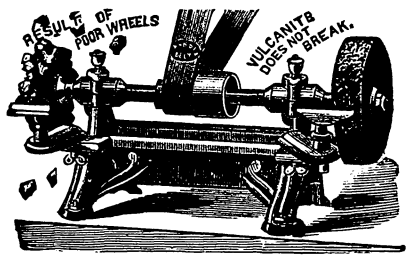


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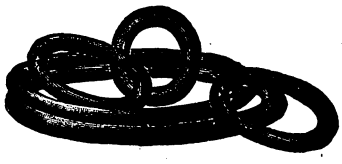
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BRIDGEPORT, CONN.

Small moulded work a specialty. Send for estimates for moulds and work.

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I am using Dixon's Perfected Lubricating Graphite on a 12 x 22 x 36 Cooper Tandem, feeding it dry by using an old tallow cup, filling it once every day (it holds about 3 oz.); just before starting I open the valve on the cup, and the steam does the rest.

By using graphite I am able to run six days with one quart of cylinder oil of fair quality. We intend putting cups on all the engines, so as to use graphite on them all.

I have not had a chance to see the inside of the cylinder, but as soon as I do you will hear from me again: for, *if there was ever a good thing manufactured, Dixon's Lubricating Graphite is the thing.*

October 25, 1893.

To-day I have taken off the heads from our tandem engine, and I find the cylinders are in the finest condition after a run of six months. All the parts are as bright as can be, yet show no signs of wear or cutting—thanks to Dixon's pure flake graphite. I consider this graphite the handiest article in an engine room for anything that sticks or squeaks or needs lubricating. Use Dixon's flake graphite is my advice.

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Positively unequaled for Strength, Durability and Traction Power; unaffected by Heat, Steam or Water.

Belts for Main Driving and work of a heavy nature a specialty.

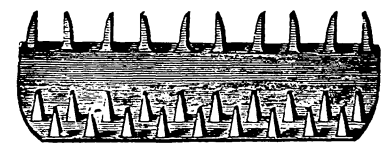
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Sole Manufacturers,
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248 Randolph Street, Chicago.
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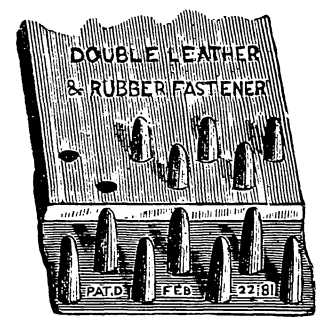
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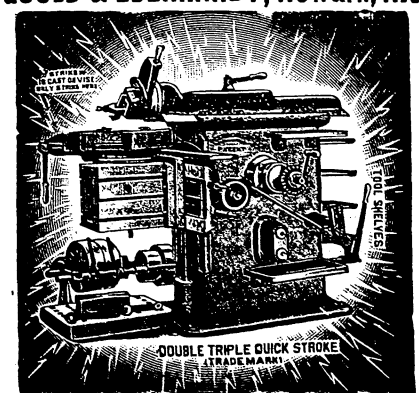
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Manufactured by **The Claflen Manufacturing Co.**
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SHAPER

WRITE TO
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12 in., 16 in., 20 in., 24 in., 26 in., 30 in. stroke.

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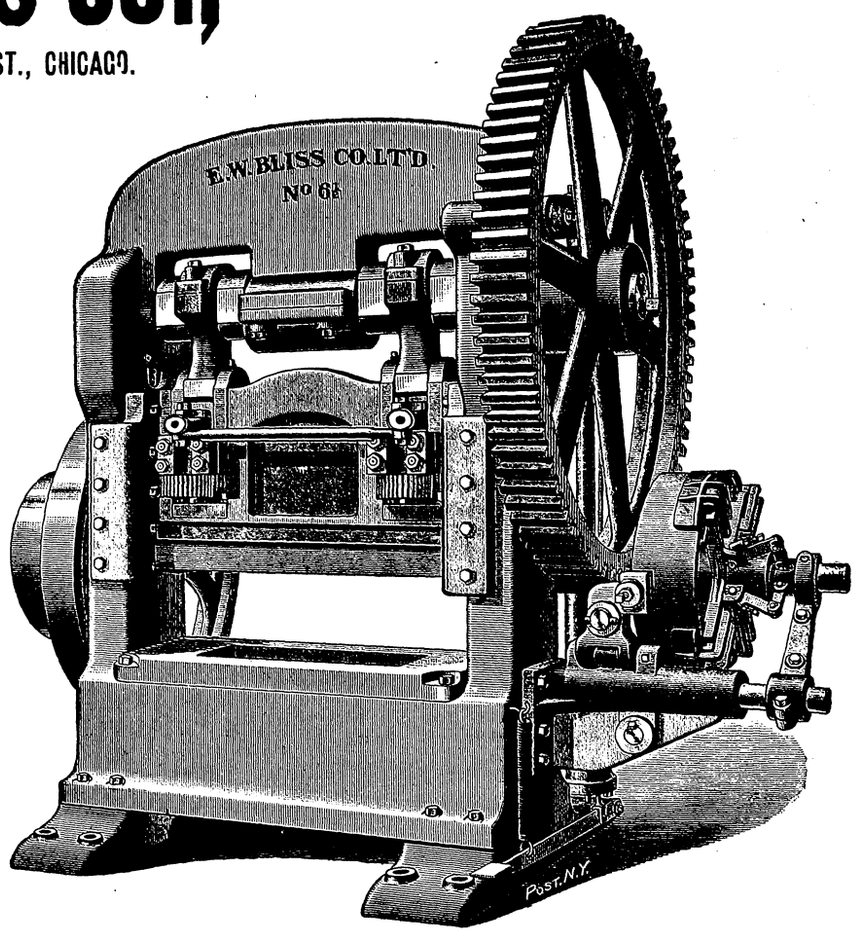
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SPECIAL MACHINERY.

OWNERS ALSO OF
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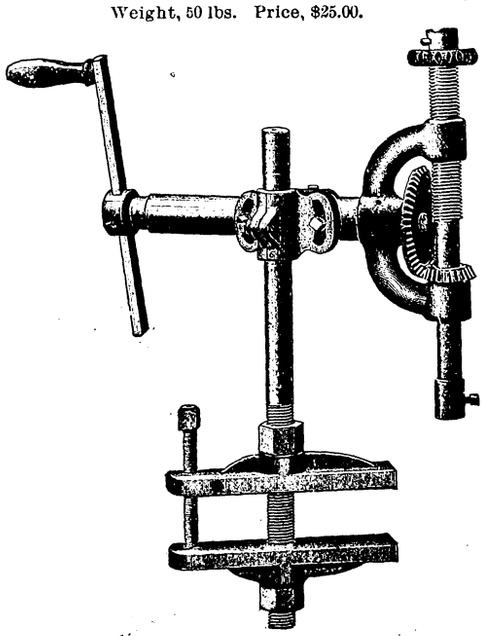
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B. & O. SURE GRIP TIRE UPSETTER.

Size.	Capacity.	List Price.
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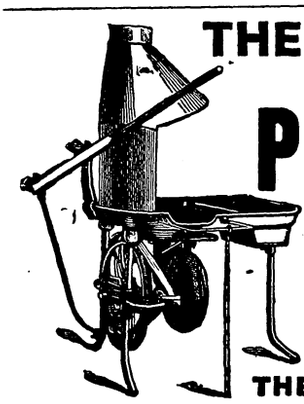
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Every machine is tested and warranted to give satisfaction. We confidently offer this upsetter as the best to be had.

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ALSO DEALERS IN
Heavy Hardware.
Iron and Steel.
Carriage and Wagon Wheels.
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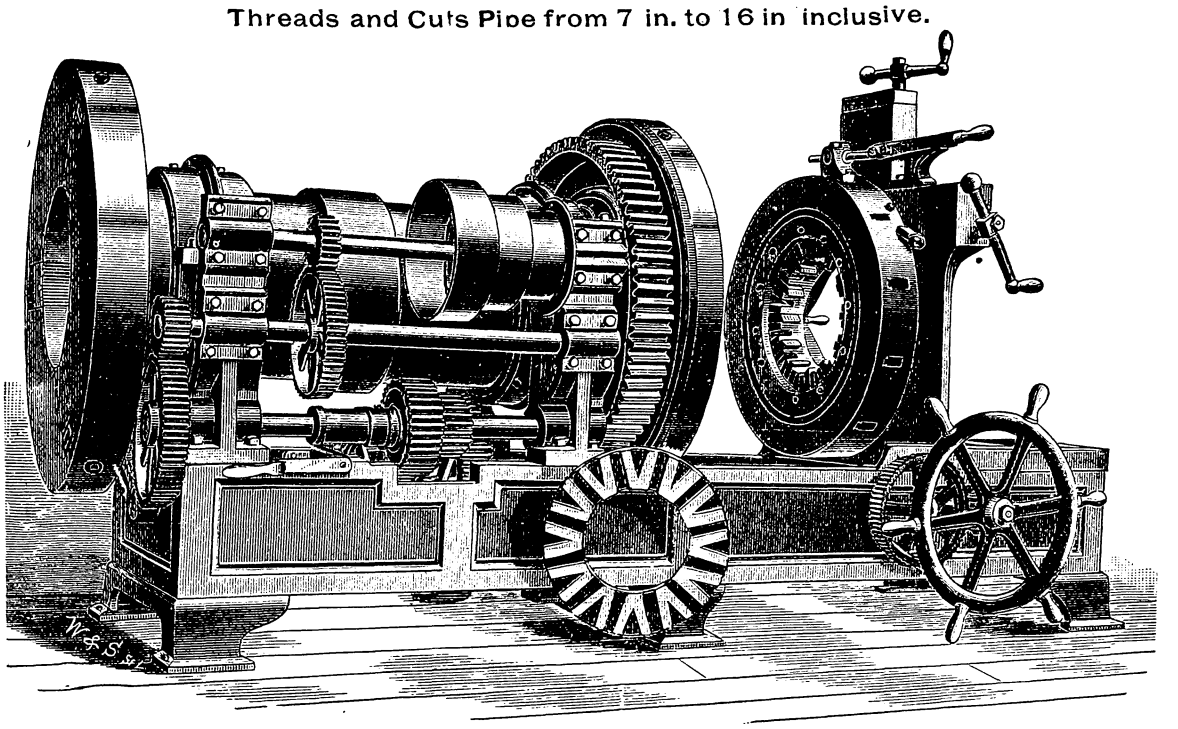
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Have Double Ratchet, Solid Frame, Adjustable Legs, Detachable Lever.
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ALL DESIRABLE STYLES AND SIZES.
Sold by Hardware and Machinery Dealers everywhere.
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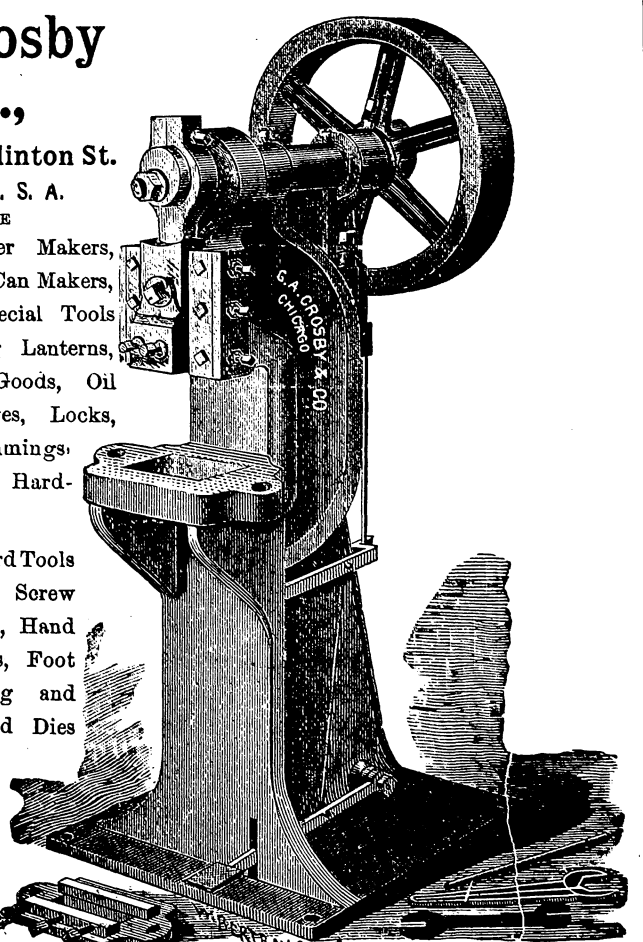
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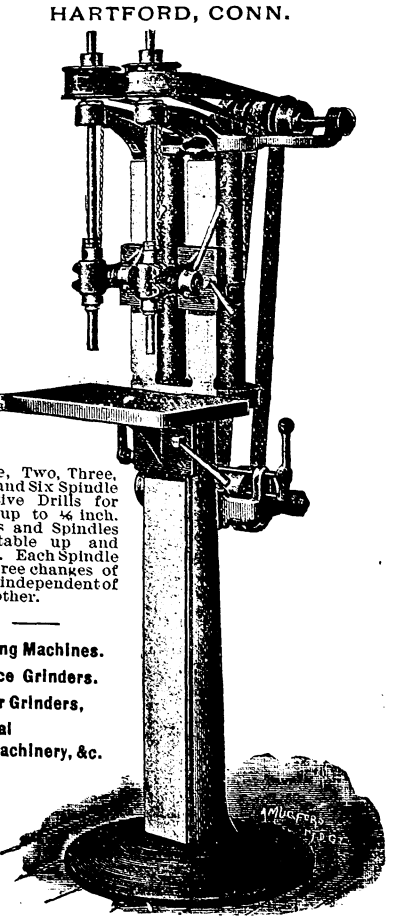
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One, Two, Three, Four and Six Spindle Sensitive Drills for holes up to ¼ inch. Tables and Spindles adjustable up and down. Each Spindle has three changes of speed independent of each other.

Tapping Machines.
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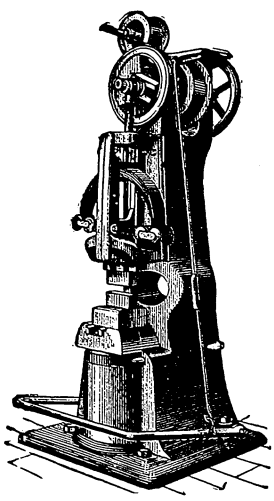
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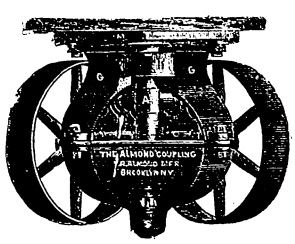
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BELDEN MACHINE CO.

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Chicago Office, 65 South Canal Street.



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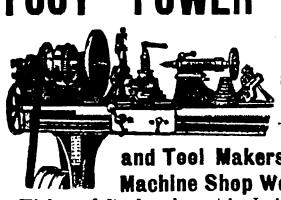
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High grade tools; elegant in design, superior in construction. The best foot power lathes made, and quality considered the cheapest. Discounts to the Hardware and Machinery trade, quoted on application. Send for Catalogue and Price-List.

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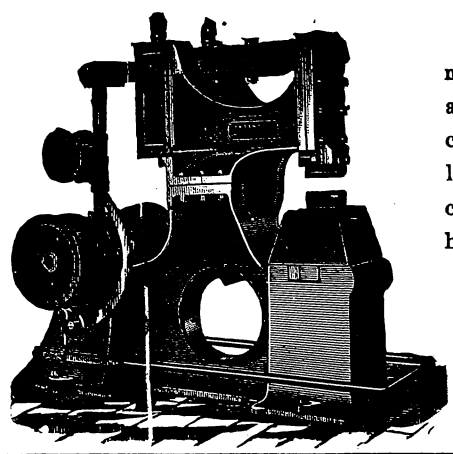
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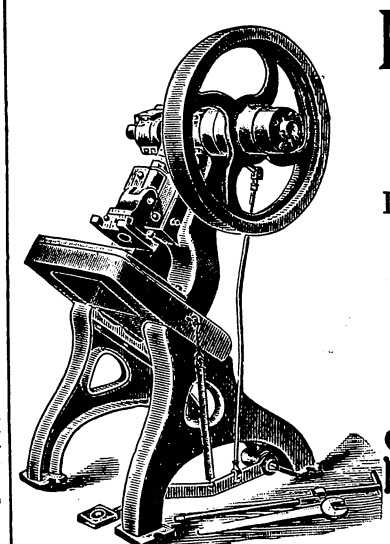
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Adjustable and elastic stroke, nicety of regulation, efficiency of action, simplicity and durability of construction and the absence of leather straps, steel springs and all complication, combine to make this hammer the favorite wherever used.

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Presses, Dies, Presses,

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Difficult and Intricate Drawing Stamping, Embossing, Wiring, Blanking and Combination Dies a Specialty.

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Send for Catalogue and mention "The Iron Age."

A Treatise on Belts and Pulleys.

Embracing full explanations of Fundamental Principles; proper Disposition of Pulleys; Rules for determining widths of leather and vulcanized rubber belts, and belts running over covered pulleys; Strength and Proportions of Pulleys, Drums, &c. Together with the principles and necessary rules for Rope Gearing and transmission of power by means of Metallic Cables. By J. Howard Cromwell, Ph. B., author of a Treatise on Toothed Gearing. 12mo, cloth. $1.50.

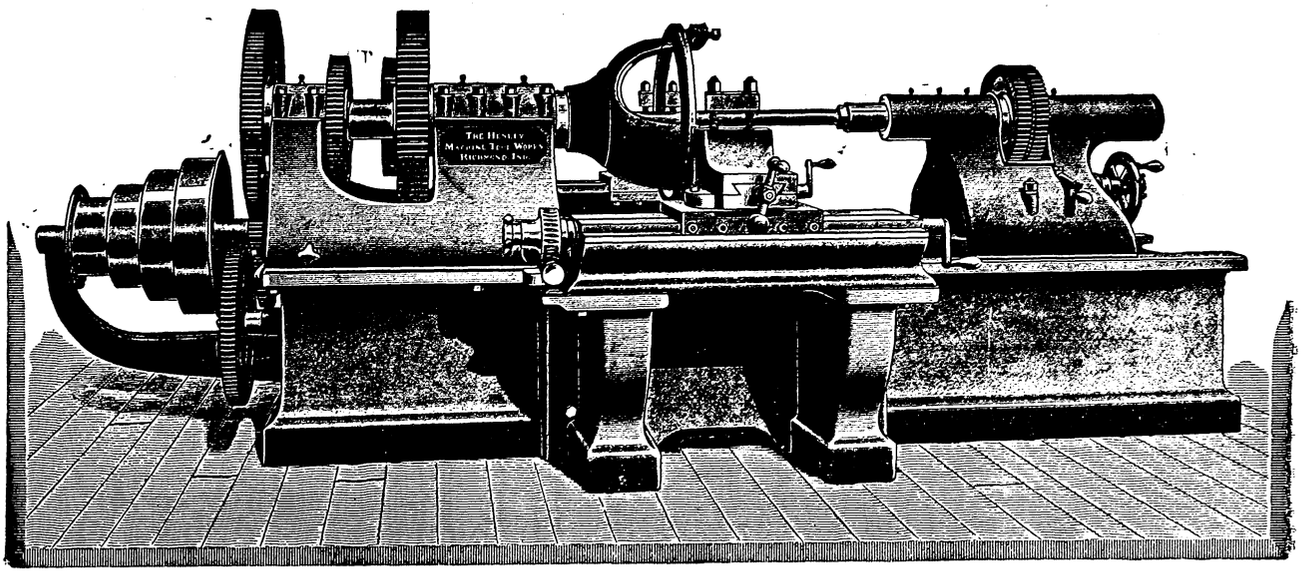
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PULLEY LATHES



Patented Feb. 17, 1891; June 14, 1887.

This cut represents the 42-inch Lathe. The 60-inch Lathe is of same design, but much heavier throughout. The 30-inch Lathe is of same general construction, with the bed supported on feet at each end.

These Lathes are especially designed for Simultaneously Boring and Turning Pulleys, both straight and crowning face, Cone Pulleys, Gear Blanks, and a variety of other work.

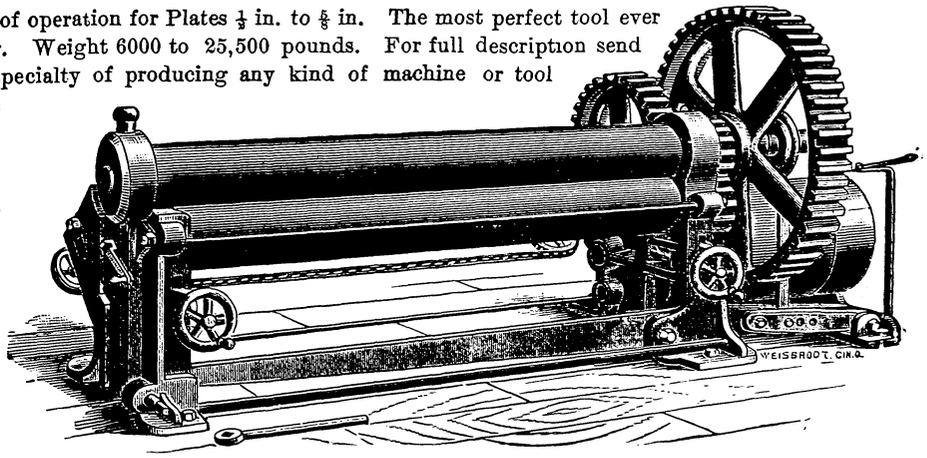
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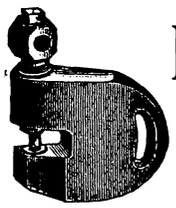
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A revolution for quickness and ease of operation for Plates ⅛ in. to ⅝ in. The most perfect tool ever devised for heavy bending and forming. Weight 6000 to 25,500 pounds. For full description send for descriptive circular. We make a specialty of producing any kind of machine or tool wanted for working Sheet Metal, Plate or Bar Iron.



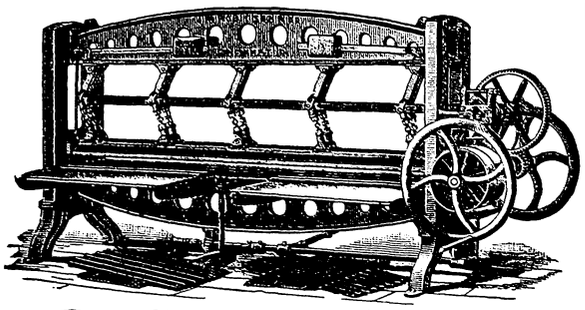
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Furnished with three sets of Punches and Dies. Extra heavy made to order.



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Cambridge City, IND.



Roofing Machine.

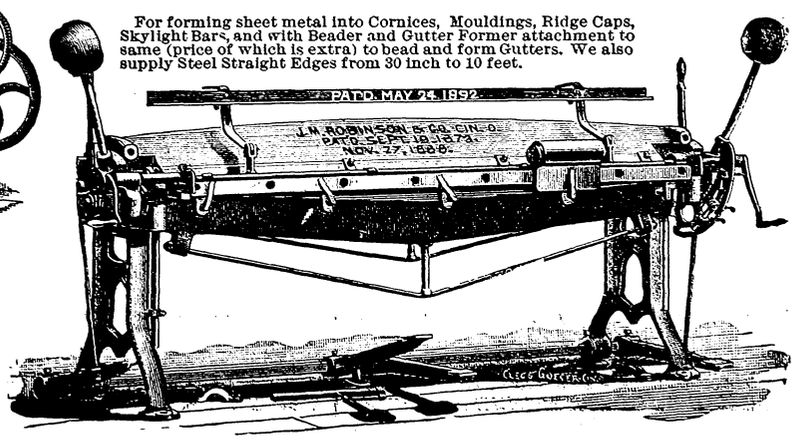
For forming sheet metal Roofing, Siding, Ceiling, Weather Boarding, Skylight Bars, Metal Lath, Gutters, Ridge Cap, Escalloped Steel Sheets and Cattle Troughs. Made by

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The "Globe" Cornice Brake.

For forming sheet metal into Cornices, Mouldings, Ridge Caps, Skylight Bars, and with Beader and Gutter Former attachment to same (price of which is extra) to bead and form Gutters. We also supply Steel Straight Edges from 30 inch to 10 feet.



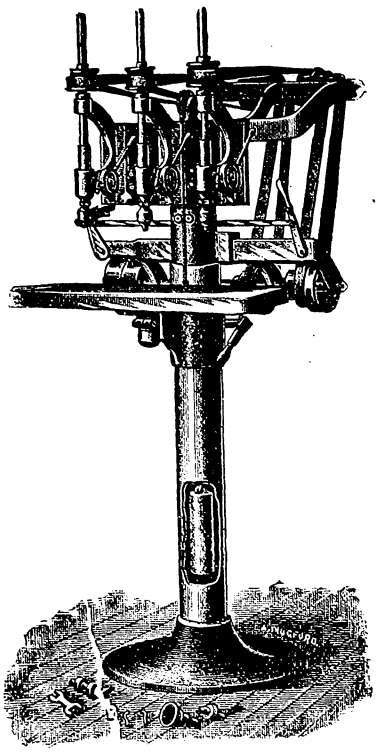
RIEHLE BROS. TESTING MACHINE CO., Phila., have issued a new CAT. No. 3

describing and illustrating all the various styles of their U. S. Standard Testing Machinery with the special appliances. Marble Machinery, Rope Twisters. Loam Mills, Riehle-Robie Frictionless Ball Screw Jacks, Iron and Wooden Trucks, &c., &c., are described. It is desired to have one of these Catalogues in the office of every Superintendent, Purchasing Agent, Engineer or Manufacturer using such Machinery. A copy will be mailed free of charge to those who may apply.

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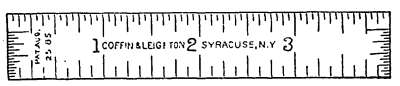
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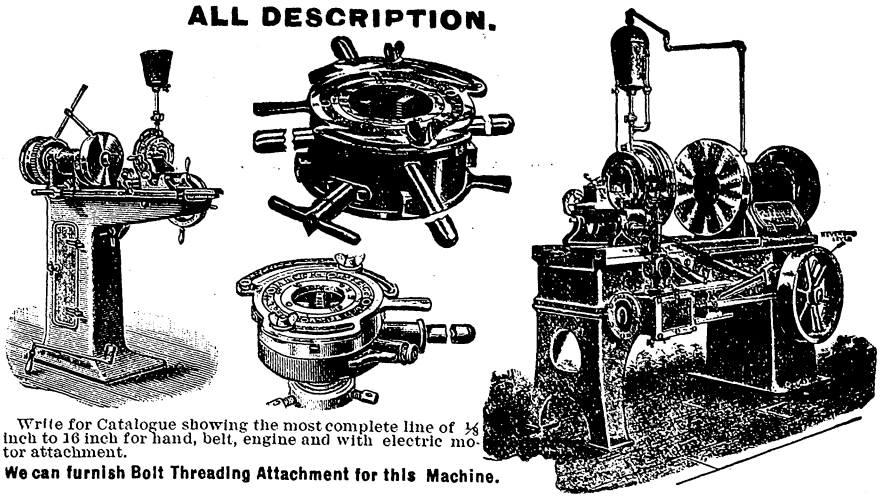
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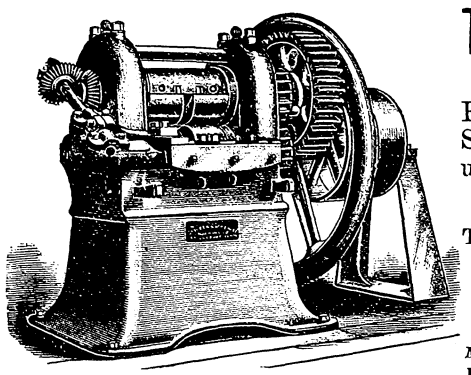
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Write for Catalogue showing the most complete line of ⅛ inch to 16 inch for hand, belt, engine and with electric motor attachment.

We can furnish Bolt Threading Attachment for this Machine.

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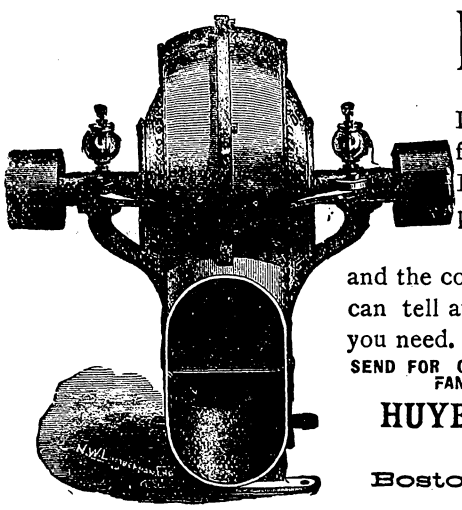
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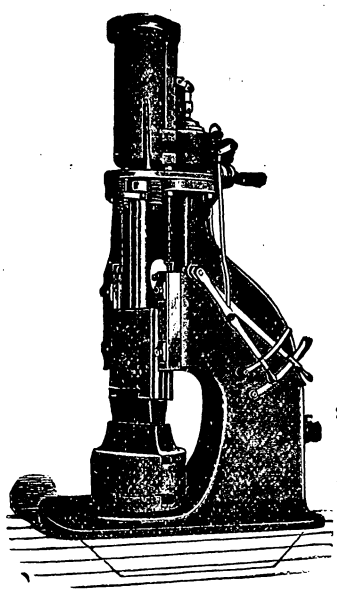
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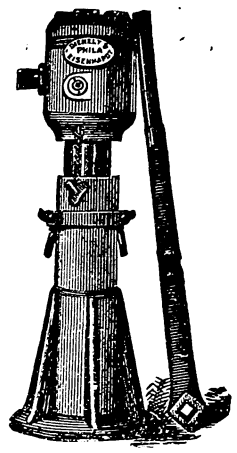
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SUPERIOR TO ANY JACK NOW MADE.
Absolute in its action in any position.
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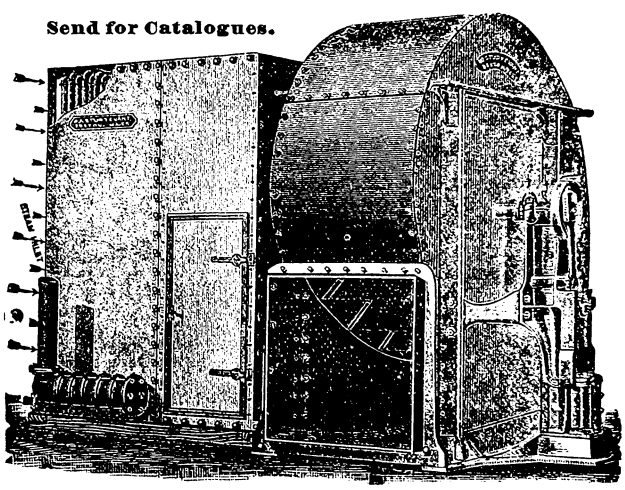
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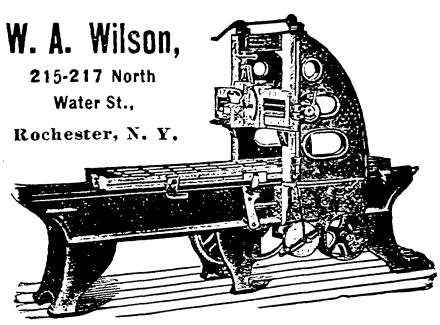
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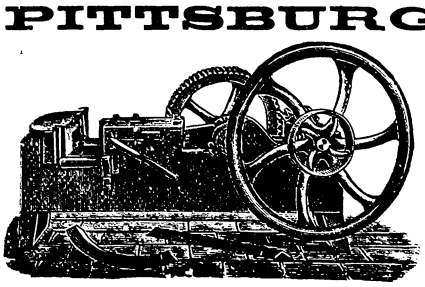
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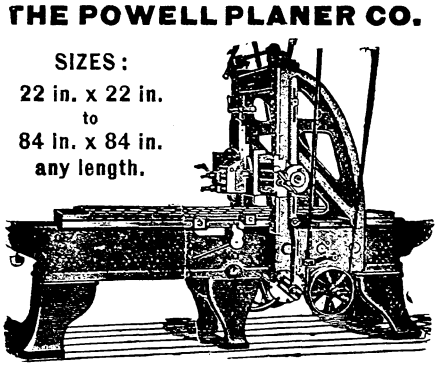
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to
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any length.



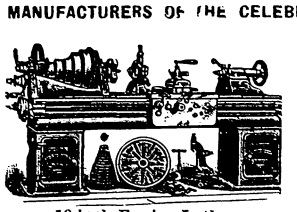
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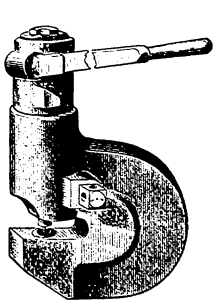
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18-Inch Engine Lathe.

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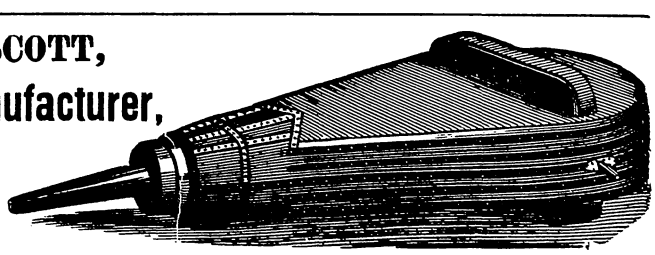
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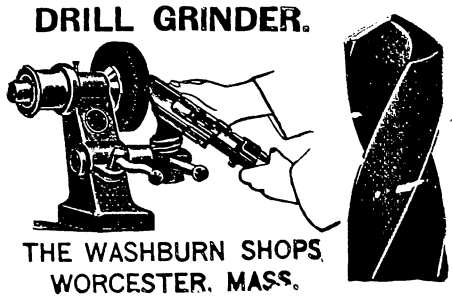
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Johnson Street
Cor. 22d St.,
CHICAGO, ILL.



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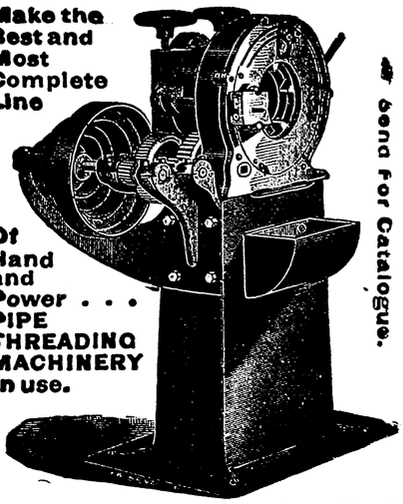
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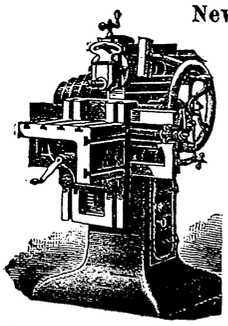


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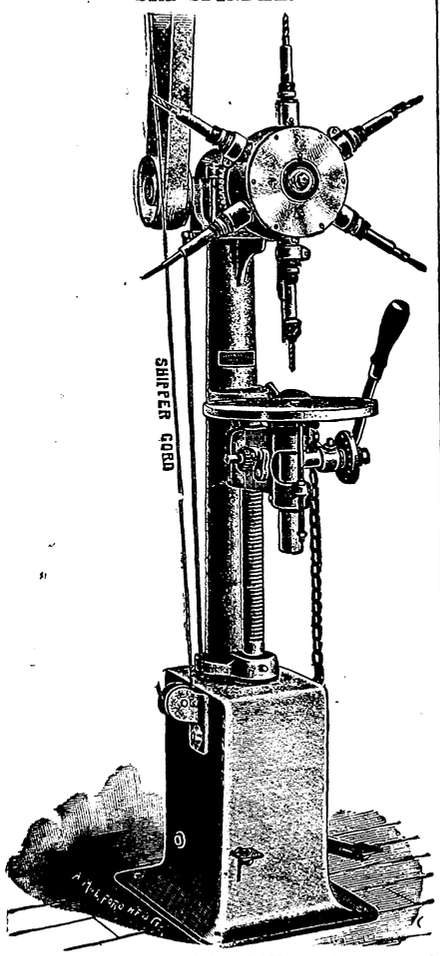


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SIX SPINDLE.



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HAND



PIPE



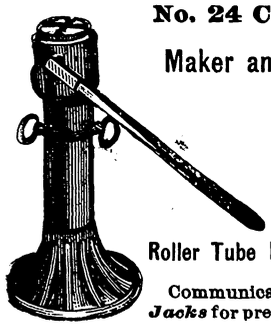
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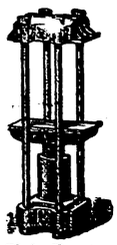


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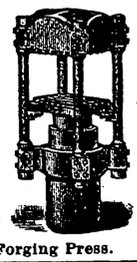
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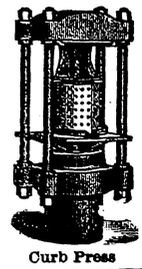
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And all other Presses.



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And over 50 varieties of Hydraulic Pumps.
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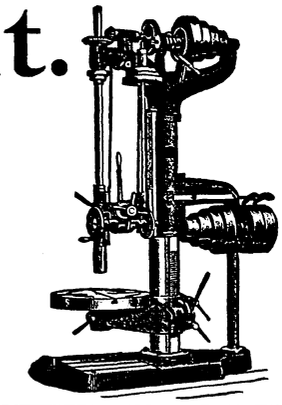


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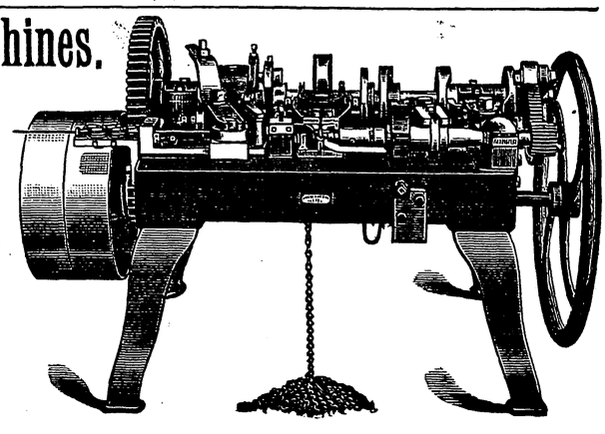
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FOR BOTH DOUBLE AND SINGLE LINKS.

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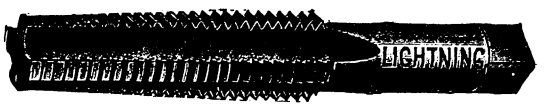
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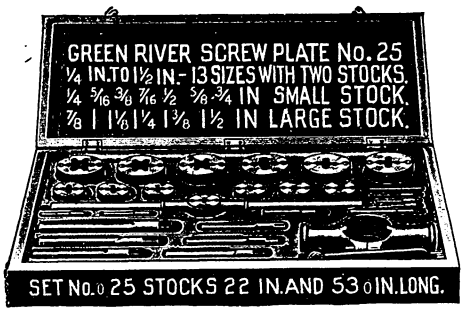
Waterbury, Conn.

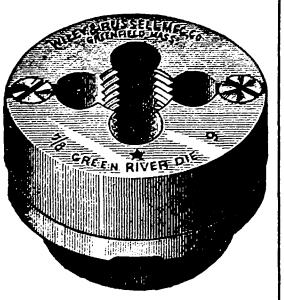
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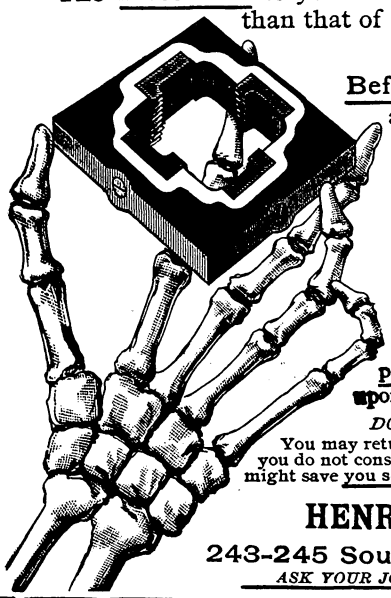
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Two "Points" about it—only 2 (There are plenty more, but we only mention these two here.)

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The First Cost to you of MAULE'S "SKELETON" PIPE DIE is less than that of any other Pipe-Threading Die—and



2

Before it becomes dull from use it will cut as many perfect threads as the best solid die extant, and when it is dull, you don't throw it away and buy a new one—Oh, no! You simply sharpen the cutters on a common grindstone, and so make it practically as good as it was at first, and this sharpening process may be repeated a number of times.

A sample One-inch "Skeleton" Pipe Die, either 2⅜ or 2½ x ¾ thick, by mail, postage prepaid, will cost you **62 cents,** and will be sent upon receipt of a Postal note for that amount.

DO NOT SEND US ANY POSTAGE STAMPS.

You may return such sample to us, at our expense, if, after seeing it, you do not consider it worth the price. Don't the above sound as if it might save you some money—if TRUE?

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ASK YOUR JOBBER WHAT HE KNOWS ABOUT THIS TOOL.

Wire Drawing Machines, Gang Slitters, Power Presses and Dies, Tumbling Barrels, Special Machinery.

WATERBURY MACHINE CO.,

Waterbury, Conn.

MANUFACTURERS.

Send For Prices.

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HILLEBRAND & WOLF,

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SCANDINAVIAN AND SPRING PADLOCKS

TRUNK & CASE LOCKS

CARBOY STANDS, &C.

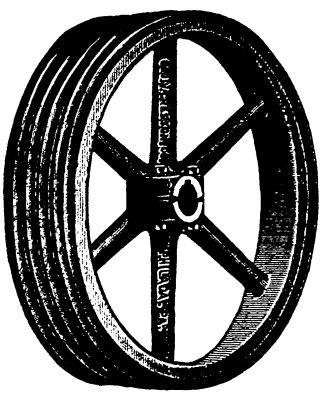
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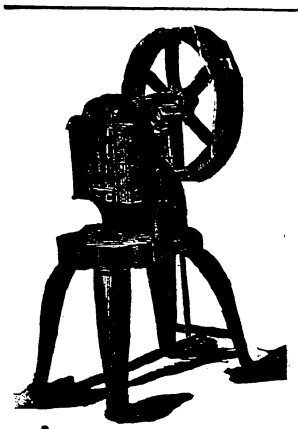
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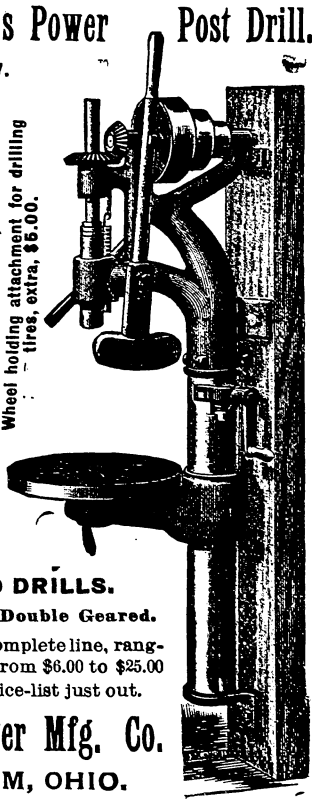
All Diameters and Number of Grooves, for Manilla, Hemp, Cotton, or Leather Ropes.



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Manufacturer of all Descriptions of
PRESSES.

Silver's Power Post Drill.

FIG. 727.



Has CUT GEARS, and is a thoroughly first-class tool in all respects. Dia. Column, 4½ in.; Dia. Spindle, 1 3-16 in.; and bored No. 2 Morse Taper; Vertical Travel, 6 in.; Drills to centre 19 in. circle.

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Wheel holding attachment for drilling tires, extra, $5.00.

HAND DRILLS.

Single and Double Geared.

Large and complete line, ranging in price from $6.00 to $25.00 list. New price-list just out.

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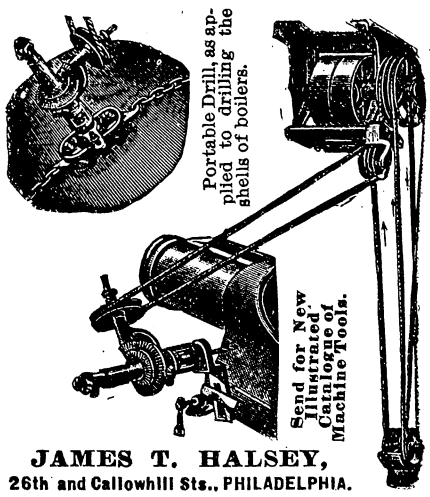
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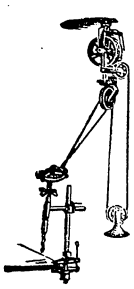
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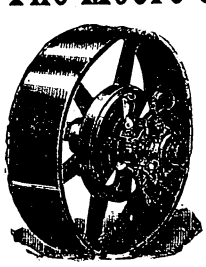
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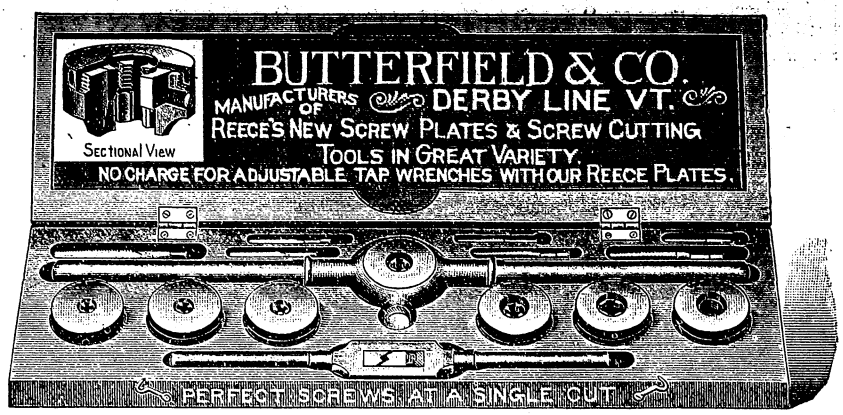


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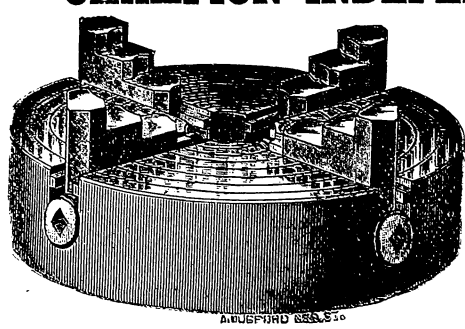
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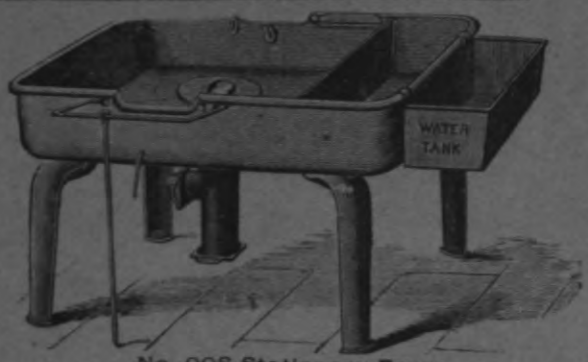
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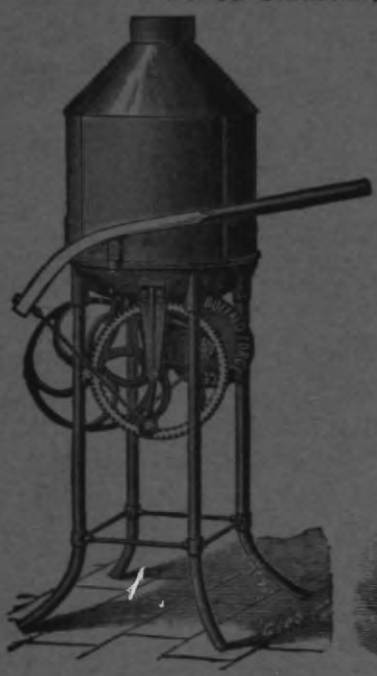
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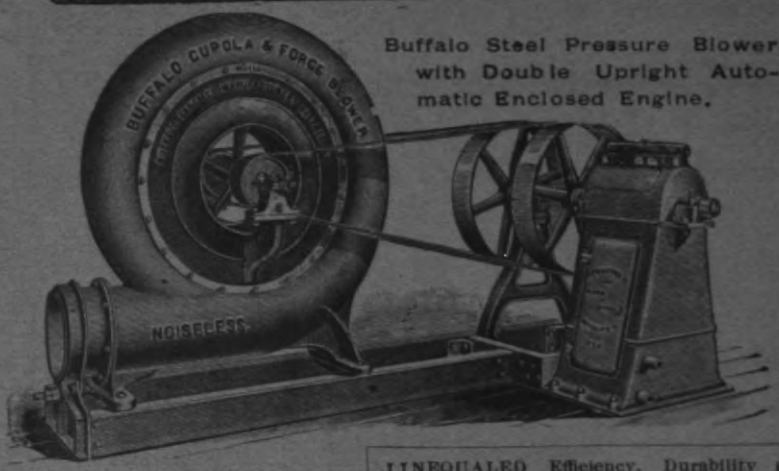

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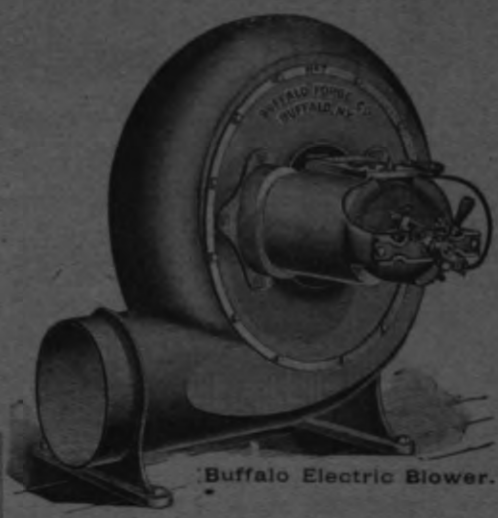
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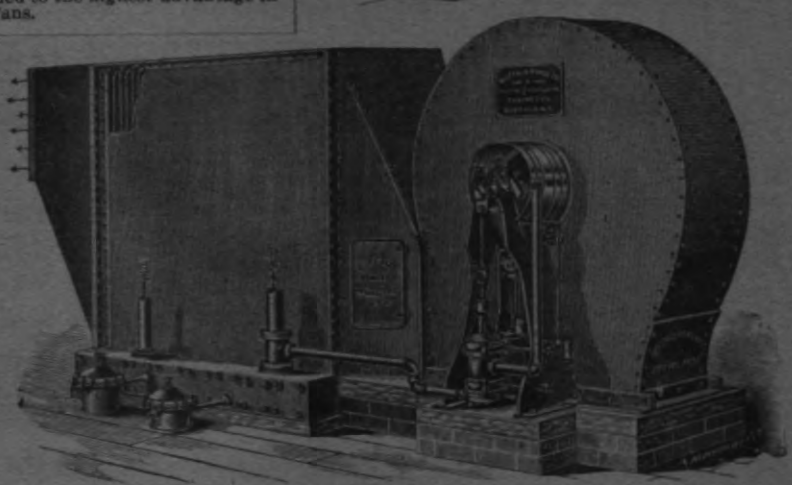


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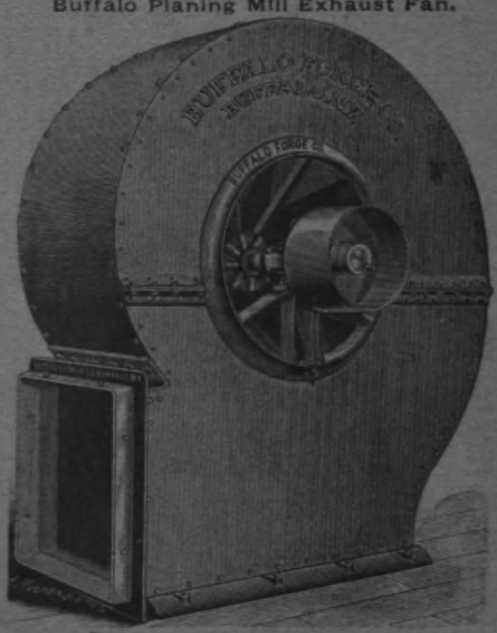


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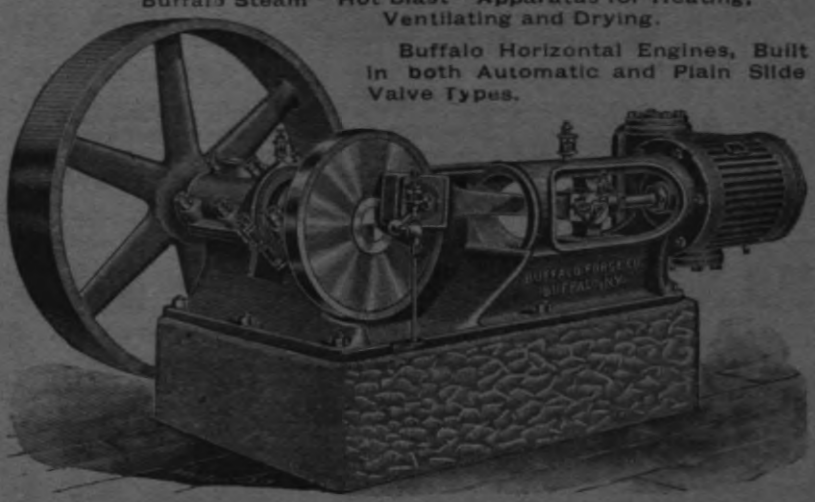


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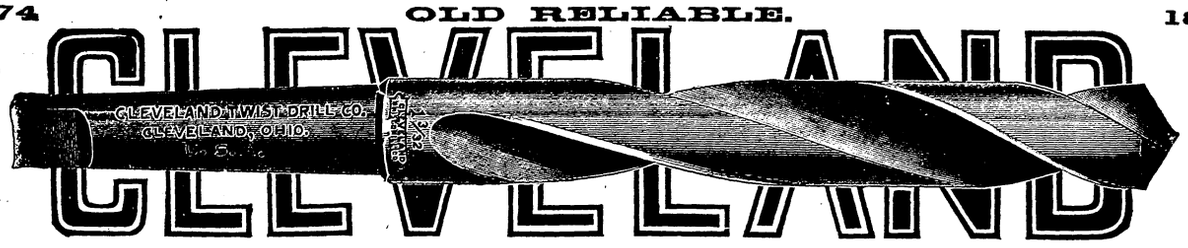
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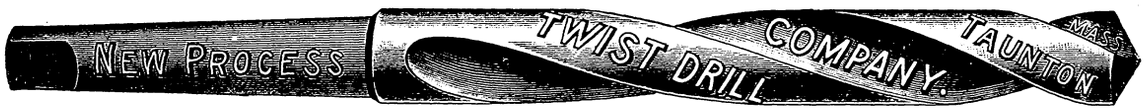
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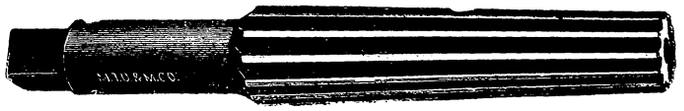
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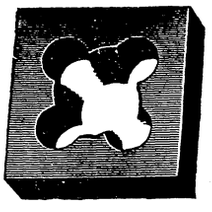


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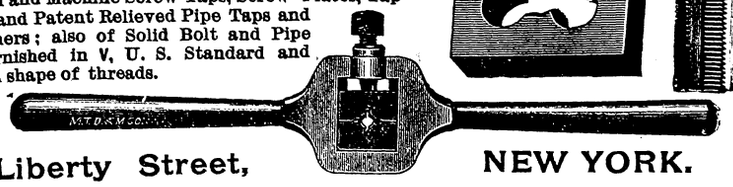
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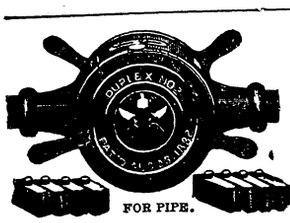




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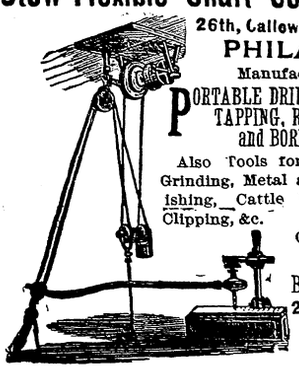
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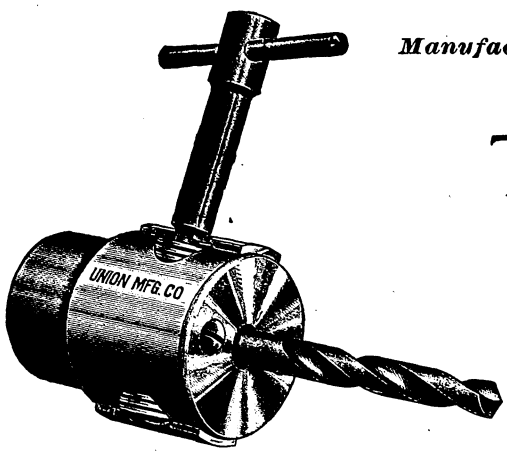
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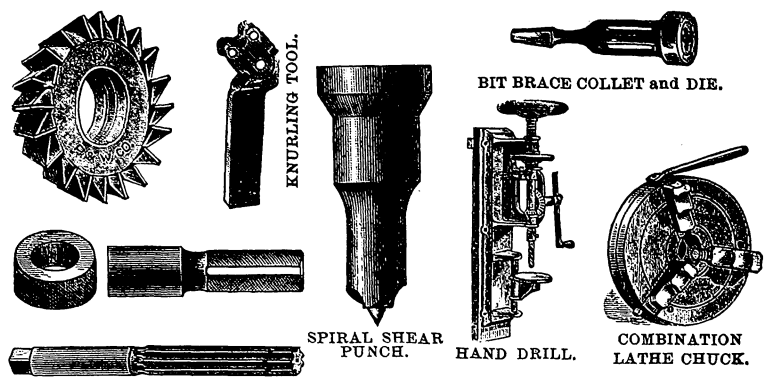
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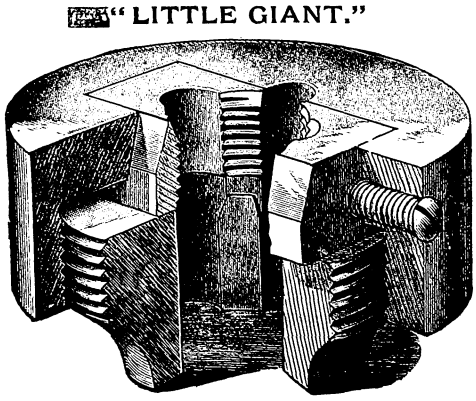
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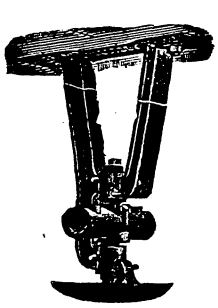
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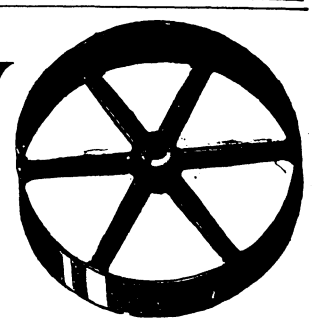
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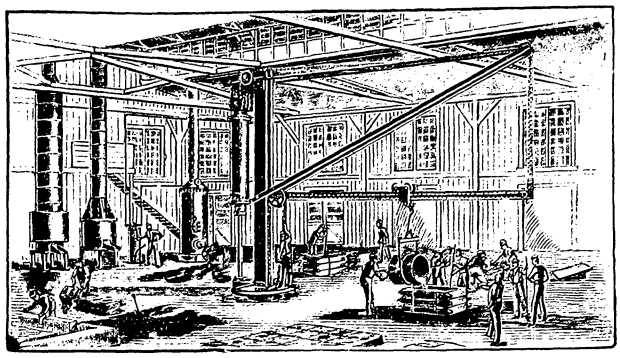
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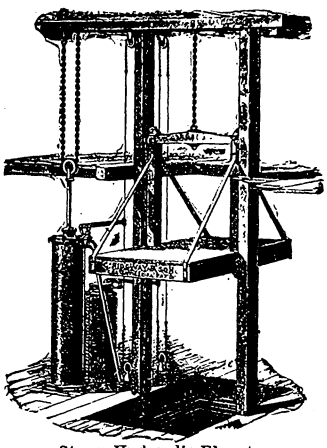
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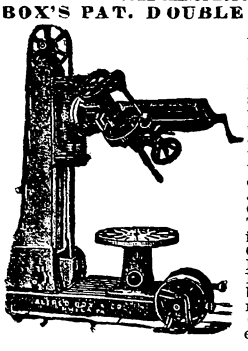
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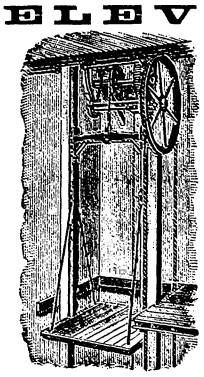
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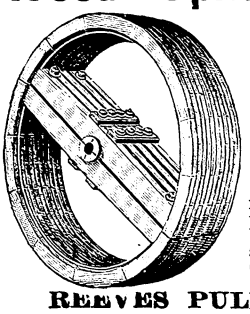
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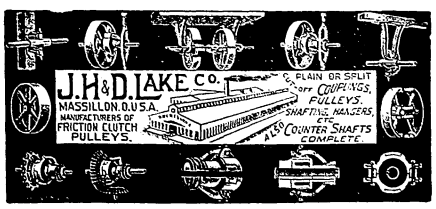
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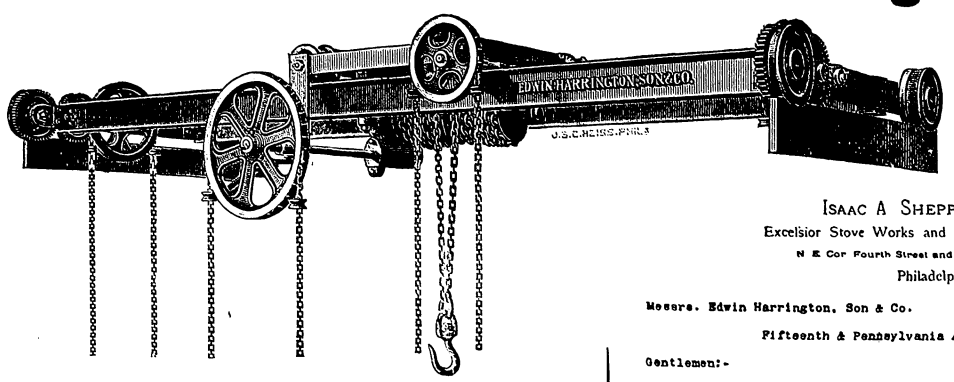
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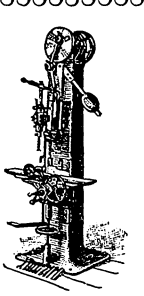
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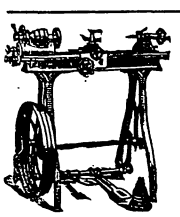
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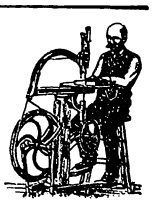
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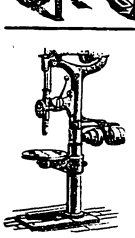


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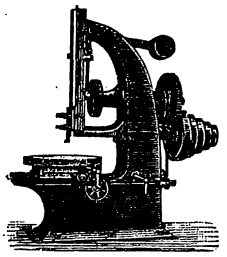




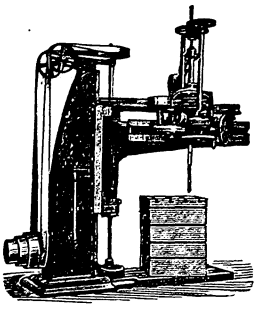
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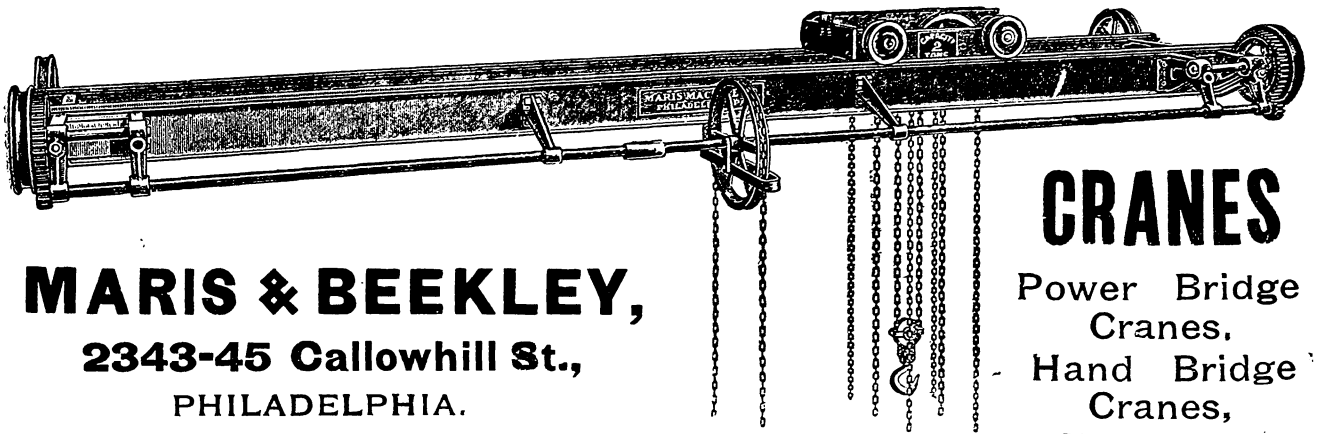


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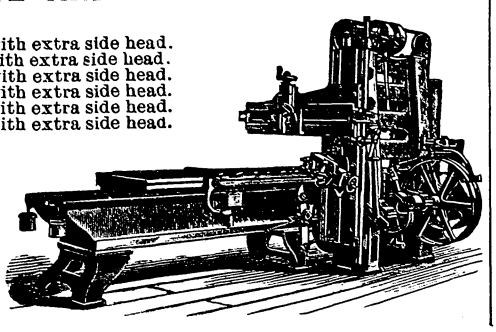
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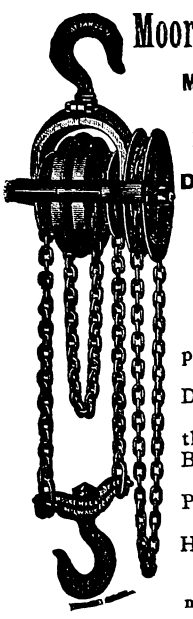
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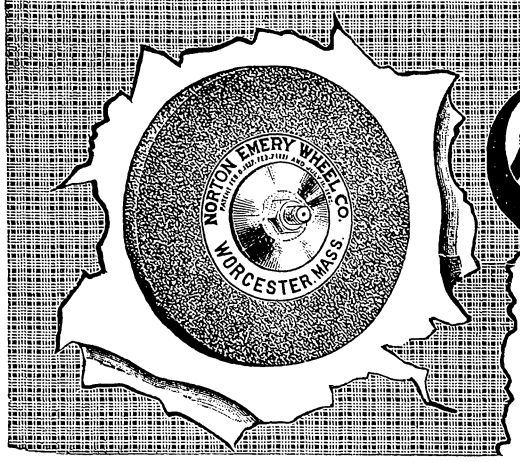
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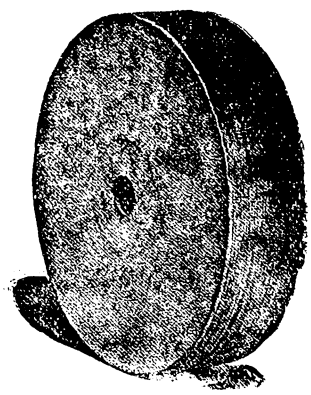
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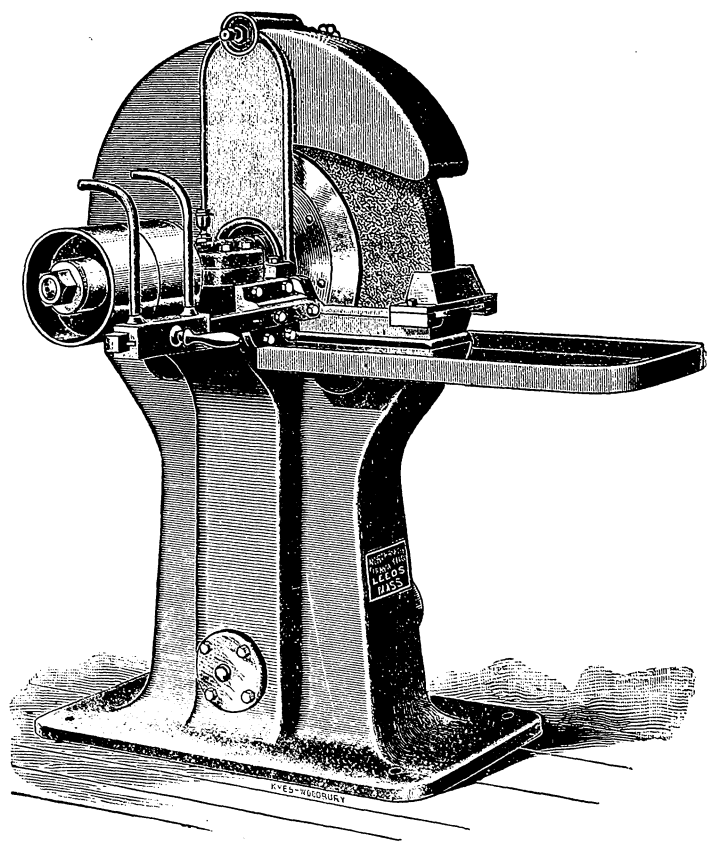
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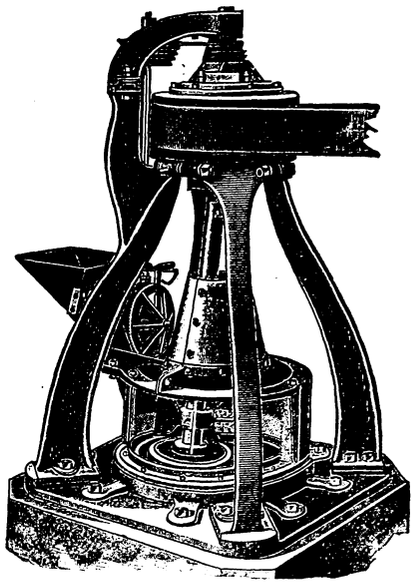
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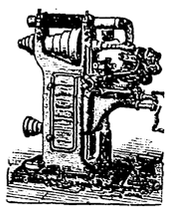
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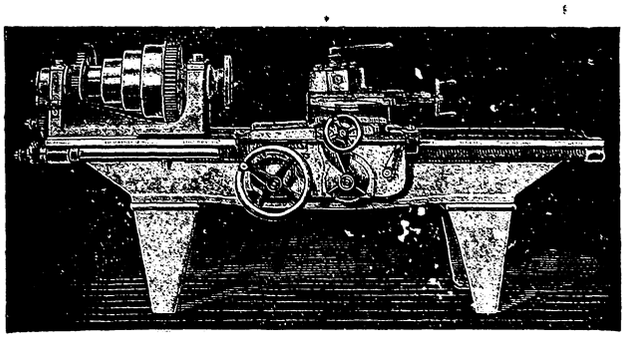


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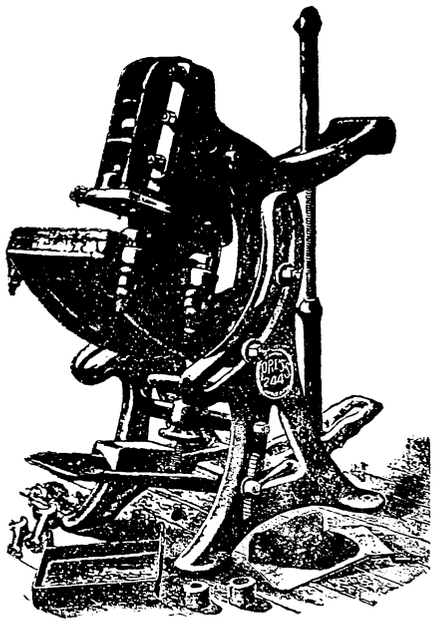
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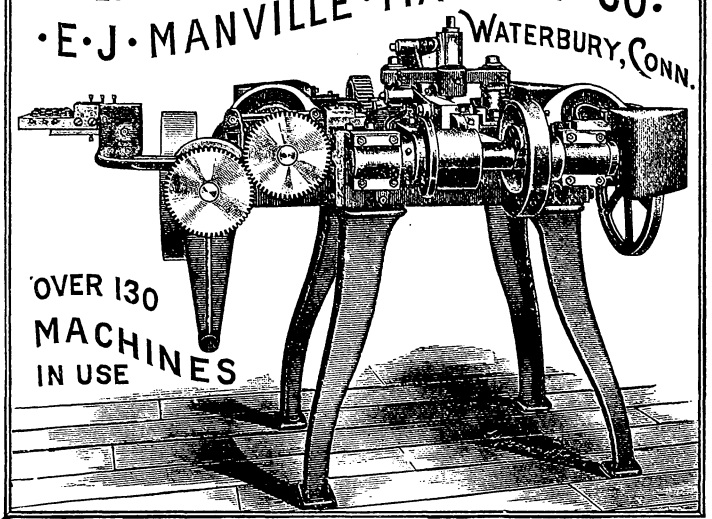
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600 Machine Tools in Stock.

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PLANER, 24 in. x 20 in. x 5 ft., table. Good order $150.00
PLANER, 30 in. x 30 in. x 6 ft., with chuck. Good order 200.00
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36 in. x 24 ft. Bx. G'd. Sc. Cut'g Gleason Lathe. Good order..... 475.00
No. 1 Dallett Portable Drill. Good as new..... 90.00
26-in. Hvy. Drill Press, Back G'd. Good as new. 125.00
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Power Punch Presses..... $75.00 and upward.

AMER. TOOL WORKS. Cleveland, O.

SECOND-HAND MACHINISTS' TOOLS.

1 Planer, planes 15 ft. 42 in. x 42 in.
1 Planer, planes 6 ft. 32 in. x 25 in.
1 Planer, planes 8 ft. 24 in. x 24 in.
1 Planer, planes 5 ft. 24 in. x 24 in.
1 Planer, planes 4 ft. 24 in. x 24 in.
1 Crank Planer, 2 ft. 18 in. x 12 in. A1.
1 Engine Lathe, 18 ft. bed, 82 in. swing, for Boring and Turning.
1 Engine Lathe, 20 ft. bed, 60 in. swing, old style, cheap.
1 18 ft. 24 in. Lathe.
1 17 ft. 18 in. Lathe.
1 10 ft. 17 in. Lathe.
3 6 ft. 14 in. Blaisdell Lathes.
2 6 ft. 15 in. Wood & Light Lathes.
1 Pratt & Whitney Cushioned Hammer.
1 475 lb. Drop Hammer, Merrill Pattern.
1 No. 21 Bliss Press.
2 20-in. Wheel and Lever Feed Drills.
1 28 in Upright Plain Drill. Cheap.
1 1 H.-P. Shipman Engine.
And various other tools.

NEW YORK MACHINERY DEPOT,
Bridge Store No. 16, on Frankfort St., New York.

FOR SALE OR HIRE.

Engines with Cylinders 26 in. x 48 in. and smaller.
Portable, Tubular and Vertical Boilers of all sizes.
13 2-yard 3-ft. gauge all around Dump Cars.
7 Narrow Gauge and 2 Standard Gauge Locomotives.
1 Large Worthington Duplex and other Pressure Pumps. New and Second hand.
Hoisting Engines and Grinding Pans.
Rail, Sheet and Clipping Shears.

THOMAS CARLIN'S SONS,
Allegheny, Pa.

F

FOR

MACHINERY

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Pennsylvania Mch. Co., Ltd.,

PHILADELPHIA, PA.

Machinery,

Second-Hand and New, on Hand.

No 4, 3, 2 Stiles Punch Presses.
No. 1½ and 0 Fowler Punch Presses.
No. 1 and 2 3-Screw Machines, Pratt & Whitney.
No. 1 Profiling Machine, " "
No. 3 Hand Miller, " "
15 x 5 Eng. Lathe, Taper Attch., " "
16 x 5 x 6 Eng. Lathe, Bridgeport Mch. Tool Wks.
200 lb. Drop Hammer, Bliss.
Magnetic Separating Machine, Dynamo for Electroplating, Shaping, Planing, Slotting Machines, all Sizes.
Engine Lathes from 11 inch Swing to 90 inch Swing.
Drill Presses, Regular, from 10 to 44 inch Swing.
" Radial, H. & Jones, 48 "
Gang Drills, 2 Spindle and 4 Spindle.
Lot of Special Drills for Butt Drilling.
Special Butt Milling Machine.
No. 12 Turret Lathe, 3¼ inch hole, Jones & Lamson.
No. 12 " " 24 inch Swing by 8 ft. Bed, Am. T. & Mch. Co.
Lot of Polishing Mchy., Leather Covered Wheels, etc.
Belting, Pulleys, Engines, etc., etc.

Boiler Shop Outfit of Machinery.

Send for our latest list or state what is required.

Warehouse, 511 & 513 West 13th St.
Office, 120 Broadway, New York.

Geo. Place Machine Co.

——ONE GONE;——
TWO ARE LEFT.

Last week we offered 1 100 H.-P. and 2 80 H.-P. **TUBULAR BOILERS**; the 100 H.-P. has been **SOLD.** The 2 80 H.-P. remaining are alike, are 60 in. diameter by 16 ft. long, have 36 4½ in. tubes, full arch fronts, and fitted with **McCLAVE GRATES** and Blowers. Are in perfect condition.

THE SCRANTON SUPPLY & MACHINERY CO.,
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For Sale, Very Low for Cash.

500 tons Relaying Steel Street Rails, side bearing, 35 to 47 lb. sections. Also 65-lb. Steel T's.

WM. H. PERRY & CO., Providence, R. I.

FOR SALE.

2 Stokes & Parrish 7 in. x 9 in. Hoisting Engines.
3 No. 7 Knowles Pumps.
1 Worthington Duplex Pump, 10 x 6 x 10 in.
Lot 30 and 36 in. Plain Cylinder Boilers.
Lot I Beams, Stacks &c.
At Merion Furnaces, West Conshohocken, Pa.
Apply for particulars to

POULTERER & COMPANY,
No. 26 Bullitt Building, Philadelphia, Pa.

SEE HERE!

1 each Garvin No. 2 & No. 4 Milling Machines. 2d hand.
1 Pratt & Whitney Lincoln Miller No. 3, 2d hand.
1 Muller 16 x 6 Engine Lathe, 2d hand.
1 Lodge & Davis 17 x 6 Engine Lathe, 2d hand.
1 Pratt & Whitney 19 x 6 Engine Lathe, 2d hand.
1 each Lodge & Davis, 21 x 8 and 21 x 10 do., 2d hand.
1 Dietz Gang 22 x 8 Engine Lathe, 2d hand.
1 New Haven 28 x 8 " " " "
1 Dietz Gang 80 in. Radial Drill, " "
1 20 in. Lever Drill, new.
1 each Lodge & Davis 15 in. and 20 in. Shaper, new.
1 Gear Cutter, will cut up to 40 in., 2d hand.
1 Baker Bros. Universal Saw Bench, new.
A full line of the most improved Turret Lathes.

THE LODGE & SHIPLEY MACHINE TOOL CO.,
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FOR SALE.

Boiler Shop Punch and Shears, capable of punching and shearing ¾ in. plate, 26 in. from edge; weight 10,000 lbs. Modern style; good order. Must be moved at once and will be sold low.

J. J. McCABE,
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Great Bargains.

Must be Sold and Removed.

16 in. x 30 in. Horizontal Engine.

18 in. x 36 in. Horizontal Engine.

24 in. x 36 in. Horizontal Engine.

19½ in. x 48 in. Beam Engine, with Knowles Condenser.

Write us for what you want.

LOVEGROVE & CO.,

Third and Quarry Sts., Philadelphia, Pa.

SECOND-HAND

MACHINERY.

One American Tool Co.'s No. 2 Cabinet Turret Lathe, with slide rest; in fine order.

One Pratt & Whitney 36-in. Gap Chucking Lathe.

One Pratt & Whitney No. 3 Lincoln Milling Machine.

One Iron Planer, 52 in. wide, 44 in. high, 12 ft. long, with two heads.

One Springfield Universal Grinding Machine No. 3, swing 18½ in. over the ways and take 6 ft. between centers. Has been used but a very few times and is practically new.

One L. W. Pond Gear Cutter, to cut gears 36 in. diameter, 5 in. face, also arranged for cutting beveled gears.

HILL, CLARKE & CO.,

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12 and 14 South Canal St., Chicago, Ill.

HERE ARE SOME

BARGAINS

IN SECOND HAND MACHINERY

from the equipment of the United Electric Traction Company's Works of Marion, N. J., comprising:

Reed, Prentice, Ames, Jones & Lamson and other Engine Lathes, 14 in. to 20 in. swing.
1 48 in. x 18 ft. Pond M. T. Co.'s Engine Lathe.
1 11 in. Newton Slotter.
1 No. 2 Betts Horizontal Boring Mill, with lot of fixtures.
1 each 36 in., 48 in. and 60 in. Gould & Eberhardt Automatic Gear Cutters.
1 24 in. x 5 ft. Pond M. T. Co.'s Planer.
Shapers, 10 in., 12 in. and 15 in. stroke.
Drill Presses up to 25 in. swing.
Milling Machine, Plain and Universal.
2 Brown & Sharpe Screw Machines.
2 Large Bliss Power Presses.
Hand Lathes, 10 in. to 20 in. swing.
1 10 H.-P. Baxter Engine, with 15 H.-P. Boiler, complete. Good as new.
Also Tool Grinders, Die Sinkers, Tapping Machines, Bolt Cutters and Large Pattern and Blacksmith's Shop Equipments.
The tools are in excellent order and of the best makes. They will be sold at remarkably low prices.
Call at our salesroom and inspect them, or write for complete descriptive circular and price-list.

THE GARVIN MACHINE CO.,

Laight and Canal Sts., New York.

SOME BARGAINS HERE.

1 Hendey Shaper, 15 in. stroke, imp. vise.
1 14 x 6 Screw Cutting Engine Lathe. New.
1 5 in. hole in Turret Screw Machine and Counter, $25.
2½ Hendey Cutting-off Machine. New.
1 3-Spindle Garvin Drill Press, used 1 month.
100 H.-P. Woodbury Engine. 2d-hand. Good order.
2 50 H.-P. Woodbury Boilers. Good order.
2 75 H.-P. Woodbury Boilers. Good order.
75 H.-P. Ball Engine. 2d-hand. Good condition.
Also variety of Engines, Boiler Pumps, &c.
And other machinery, new and second hand. Write for prices. **Machinists' Supply Company,**
39, 41 and 43 Central Ave., Rochester, N. Y.

FOR SALE.

Iron Stack nearly new, 64 in. diameter, 110 ft. high. Cheap.

FRANK TOOMEY,
131 North 3d St., Phila., Pa.

RAILS

FOR RELAYING.

10 tons 80 pound Steel T's.
65 tons 65 pound Steel T's.
50 tons 40 pound Iron T's.
650 tons 35 pound Iron T's.
250 tons 30 pound Iron T's.
10 tons 25 pound Steel T's.

STEAM ROCK DRILLS.

2 No. 4 Rands, with Tripods.
1 No. 3½ Ingersoll, with Tripod.
1 Bullock Diamond Drill for hand or power. Nearly new.
Send for new list of good things.

THOS. P. CONARD,

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WE ARE OFFERING BARGAINS IN THE FOLLOWING PIECES OF SECOND-HAND MACHINERY.

14 x 18 High Speed Engine, 2 wheels 60 in. dia., 14 in. face.
18 x 48 Corliss Engine, wheel 16 ft. dia., 25 in. face.
16 x 48 Corliss Engine, wheel 16 ft. dia., 9 tons.
2 Horizontal Tubular Boilers, 5 ft. dia. x 17 ft. long.
7 Horizontal Tubular Boilers, 5 ft. dia. x 15 ft. long.
Smith Valve Compound Duplex Pump. 14-20 x 15 x 15.
Worthington Compound Duplex Pump, 10-16 x 10¼ x 10.
Davidson Pump, 24 x 12 x 24.
500 H.-P. J. P. Witherow, Pittsburgh, Pa., Heater.
Edison Dynamos of 75, 150, and 300 lights, with lamps, sockets, switches, wire, &c.

MARVIN BRIGGS, 12 Broadway, N. Y.

SECOND-HAND MACHINERY.

2 11 in. x 5 ft. Reed Engine Lathes.
2 11 in. x 5 ft. Prentice Lathes.
2 12 in. x 5 ft. Young Speed Lathes.
2 13 in. x 5 ft. Ames special feature Lathes.
2 15 in. x 6 ft. Reed Engine Lathes.
1 15 in. x 8 ft. Young Lathe.
1 16 in. x 6 ft. Young Lathe.
1 16 in. x 6 ft. Perkins Lathe.
2 16 in. x 6 ft. Blaisdell Lathes.
1 16 in. x 6 ft. Flather Lathe.
1 18 in. x 8 ft. New Haven Lathe.
1 18 in. x 8 ft. Dustin Lathe.
2 20 in. x 6 ft. Bullard Lathes.
1 26 in. x 10 ft. Dustin Lathe.
2 20 in. x 8 ft. Bullard.
1 20 in. x 10 ft. Bullard.
1 26 in. x 13 ft. New Haven
1 Dexter Pattern Lathe.
1 Bullard Turret Lathe.
2 Brainard No. 7 Overh'ging Arm Plain Millers
2 Brainard No. 7 Lincoln Plain Millers.
1 B. & S. No. 1 Universal
1 Brainard Heavy No. 6 Lincoln Pattern Miller.
1 Garvin No. 2 Miller and Screw Slotter.
1 No. 3 Garvin Plain Miller.
1 38 x 18 ft. N. Y. S. E. Lathe. Also large stock of New Tools.
1 Garvin No. 4 Rack Feed Miller.
1 Brainard No. 15 Universal Miller.
2 Brainard No. 5 Universal Millers.
1 Blaisdell 30 in. Single Spindle Drill.
1 Wilder Punch Press.
1 Grindstone and Frame.
1 Garvin one-spindle Profiling Machine.
1 Garvin No. 2 three-spindle drill.
1 Garvin No. 3 four-spindle Drill.
1 Garvin No. 4 four-spindle Drill.
1 Garvin No. 2 Wire Feed Screw Machine.
1 Garvin No. 2 Plain Screw Machine.
1 Garvin Small Gear Cutter.
1 Dustin 18 in. wheel feed one-spindle Drill.
1 Brainard Universal Cutter Grinder.
1 Band Saw.
1 Diamond No. 3 Emery Grinder on column.
1 Diamond Polishing Head.
1 Bullard 15 in. stroke Shaper.
1 16 in. Smith & Mills Shaper.
1 24 in. x 24 in. x 6 ft. New Haven Planer.
1 10 ft. Boring Mill.
1 8 ft. 4 in. Boring Mill.
1 76 in. x 60 in. x 13 ft. Planer.
1 48 in. Car Wheel Borer.
1 Axle Lathe.

NILES TOOL WORKS CO.,

136 & 138 Liberty St., N. Y. City.

MACHINERY, TOOLS, &c.

Engines, all sizes, Slide Valve and Automatic.
Boilers, all sizes, Horizontal, Vertical and Locomotive.
Hoisting Engines, Portable Engines, Steam Pumps.
20 Screw Cutting Lathes, 12 in. to 24 in. swing.
20 Bement Milling Machines.
24 in., 30 in. and 36 in. Planers, 6 in., 12 in. and 15 in. Shapers.
44 in. Radial Drill, 1½ in. National Bolt Cutter.
Power Shears, ½ in. iron, 15 in. Gap.
Hydraulic and Punching Presses.
10 lbs., 25 lbs., 60 lbs. hammers for belt.
4½ Pratt and Whitney cut-off machine.
Brown & Sharpe Grinding Lathe.
FRANK TOOMEY, 131 N. Third St., Philadelphia, Pa.

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4 3 H.-P. Vertical High Pressure Engines.
2 5 H.-P. " " " "
3 6 x 10 Horizontal Engines.
2 8 x 12 " "
2 10 x 14 " "
8 5 H.-P. Gas Engines.
5 10 H.-P. " "
1 8 x 12 D. C. Hoisting Engine.
3 Rock Crushers.

H. H. MANSFIELD,

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Heavy Plate and Bar Shears, Engines, Boilers, Pumps, Cranes, Fairbanks Testing Machine, &c., &c., for sale by

MATTHEW GILL, Jr.,
Philadelphia, Pa.

CORLISS

and other Automatic Engines, Slide Valve Engines Boilers, Steam Pumps, Tanks, &c., &c.

CORLISS, 10 x 20; 10 x 24; 12 x 36; 14 x 30, 16 x 42; 23 x 36; 22 x 48; 26 x 48; 28 x 60; 30 x 60; 30 x 72; Porter-Allen, 14 x 30; Brown, 16 x 42.
HIGH SPEED AUTOMATIC, 12½ x 15; 14 x 16; 12 x 18; 11 x 20; 10½ x 12; 9½ x 12.
HORIZONTAL SLIDE VALVE, 28 x 32; 18 x 36; 16 x 48; 16 x 36; 14 x 24; 13 x 24; 12 x 24; 10 x 24; 12 x 18; 10 x 14; 10 x 12, and others.
VERTICAL SLIDE VALVE, 28 x 30; 20 x 24; 13 x 16; 13 x 12; 10 x 12; 10 x 10; 9 x 9; 8 x 10; 7 x 9; 7 x 7; 6 x 6.
ASSORTMENT OF BOILERS, Horizontal, 6 x 16; 5½ x 16; 5 x 16; 4 x 14; 4½ x 12, and others.
LOCOMOTIVE BOILERS, 15, 30, 45, 50, 60, 70, 100 and 150 H.-P.
ASSORTMENT OF STEAM PUMPS, 1000 gl. Duplex Fire Pump also Brennan Crusher, Bogardus Mill, Rock Drill, Burr Stone Mill, Fan Blowers, Platform Scales, Wood Planer, Rendering Tank, Open Tanks, Hoisters, Berryman Heaters, 600-ton Hydraulic Press, Boiler Rolls. Also some Large Steel Boilers, new, below market price. Send for catalogue.

GEO. M. CLAPP,
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PLATE MILLS.

For sale, one 2 high and one 3 high 30-inch Train, will roll heavy and light plates up to 60 in. In complete order. Made by Garrison & Co.

MATTHEW GILL, Jr., Philadelphia, Pa.

GUILLOTINE SHEAR.

For sale, Morgan, Williams & Co. Guillotine Shear, Engine attached, Knife 104 inches long, will cut heavy steel plates. (Has Auxiliary shear on back.)
MATTHEW GILL, Jr., Philadelphia, Pa.

HEAVY ENGINE.

For sale, Horizontal Engine 39 in. x 72 in.; 2 Fly Wheels weighing 53 tons each.
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ROLL LATHE.

For sale, one heavy Roll Lathe made by Garrison & Co., will take in 12 ft. Roll and turn to 40 inches. MATTHEW GILL, Jr., Phila., Pa.

!!! FOR SALE !!!

BAKER BLOWERS, Nos. 1, 4½, 5, 6 and 7.
ROOT BLOWERS, Nos. 1, 2, 3, 4, 5, 6 and 7.
Sturtevant Blowers, Nos. 4, 5, 6, &c.
1 Corliss Band Wheel, 12 ft. x 24 in., in halves.
A Variety of Machinery, Such as Boilers, Engines, Pumps, Crushers, &c., very cheap.
Do you want to buy or sell Machinery? If so, write

C. R. BIGELOW, Machinery Expert,
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TRAIN OF ROLLS

WANTED.

Complete, modern Merchant Bar Mill 9 in., 10 in. or 12 in. Also Blooming Mill 26 in. to 32 in., and Alligator Shears to cut 2 in. to 3½ in. iron.

"S.,"
office of *The Iron Age*, 220 South 4th Street, Philadelphia, Pa.

FOR QUICK SALE.

One Otis Steam Shovel in good condition.
Two 12 ton 3-ft. Gauge Locomotives.
Two Standard Gauge Saddle Tank Locomotives.
20 Dump Cars, 3-ft. Gauge, 3-yd. Capacity, Side Dump.
3000 tons Mill Cinder, &c.
Also Pig Iron, Muck Bars, Bar Iron and Steel Billets, Scrap, &c. We are always in the market to buy and sell Equipment and Scrap.

G. H. SIBELL & CO.,
62 and 64 Michigan Ave., Chicago, Ill.

FOR SALE.

Corliss Engine and Boilers for sale, nearly new, 250 H.-P., also a large assortment of Bundy Radiators, Quarry Pumps, Boilers, Engines and miscellaneous Machinery.

WILSON & ROAKE,
Front and Dover Sts., New York City.

Trustee's Sale of Machine Shop Equipment.

Lathes, 52 in. swing by 41 ft., 54 in. swing by 22 ft., 30 in. swing by 22 ft. One Pit Lathe.
Planers, 54 in. wide by 20 ft., 36 in. wide by 13 ft.
Drills, 36 in. upright, 5 ft. post, 20 in. post.
Engines, 5 new and 7 second-hand, from 100 H.-P down.
Circular on application.

W. A. BOLE, Trustee,
Liberty Ave., cor. 25th St., Pittsburgh, Pa

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In lots to suit, and ready for delivery.

3000 tons 60 lb. Steel T Rails.
450 tons 56 lb. Steel T Rails.
800 tons 54 lb. Steel T Rails.
400 tons 50 lb. Steel T Rails.
350 tons 40 lb. Steel T Rails.
50 tons 35 lb. Steel T Rails.
500 tons 35 lb. Iron T Rails.
250 tons 30 lb. Iron T Rails.
120 tons 30 lb. Steel T Rails.
150 tons 25 lb. Iron T Rails.
140 tons 20 lb. Steel T Rails.
60 tons 16 lb. Steel T Rails.
1700 tons Johnson Girder Rails, 38, 48, 52 and 66 lb. Rails.

All selected and in excellent condition for relaying and only slightly worn.

Second hand selected and sound rails furnished in specified lengths for builders' use. For prices and particulars apply to

JOSEPH JEWKES,
Railway Equipment, Pittsburgh, Pa.

FOR SALE.

2 Double Deck Boilers about 40 H.-P. each, cheap. Hoisting Engine. Cylinder Boilers for Stacks, 30, 36 and 42 in. diameter. Round and Square Iron Tanks. Blow Offs. 5 Brass Cannons about 1400 or 1500 pounds each. Good order. All kinds of Scrap Iron and Metals on hand.

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DON'T INVEST in expensive tools or machinery or let a contract before getting our estimate for making novelties or parts. Fine, difficult and accurate parts a specialty. White metal work at prices that cannot be duplicated. Inventions perfected. Models made. Secrecy and satisfaction guaranteed, and no extra charge for new ideas or improvements To insure reply to letters of inquiry only, enclose stamp. THE H. H. FRANKLIN MFG. CO.,
Syracuse, N. Y.

FLOOR PLATES.

FOR SALE.—A Superior Lot of Cast Iron Plates 2 ft. x 4 ft. They are made to avoid warping and cracking. Will sell in lots to suit.

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BLAKE PUMP, 14 x 16 x 18 in.
WORTHINGTON DUPLEX, 7½ x 4½ x 10 in.
BLAKE PUMP No. 7, 10 x 6 x 12 in.

All in good order.
MATTHEW GILL, JR., Philadelphia, Pa.

WANTED.

Bids on Heavy Machinery Castings, carload lots. Address

W. FORGIE,
Washington, Washington Co., Pa.

WANTED.

A large sized, new or second-hand, Blake Crusher. Must be in good condition, and cheap for cash. Address

"CRUSHER,"
office of *The Iron Age*, 96-102 Reade St , N. Y.

FOR SALE
AT LOW PRICES.
NEW SOFT STEEL PLATES.

About 100 tons ¼, 5-16, 7-16 and 9-16 in. thick. We have limited quantity of ⅜ and ½ in. The sheared plates are 12 to 25 in. wide, mostly 16 to 22 in., and average 7 ft. long. The universal rolled are 10 to 34 in., average 18 in. wide, and average 8 to 9 ft. long. Are parallel on sides and edges and just the thing if you buy plates for cutting up. Are nice and flat and splendid quality. Car lots or less. Write for prices.

EVANS & ROBERTSON,
Cincinnati, Ohio.

MACHINE SHOPS.

For sale, to settle an estate, the machine shops of the late firm of Carter & Allen, adjoining and connecting with the Philadelphia & Reading Railroad at Tamaqua, Pa. The improvements include Boiler Shop, Foundry, Machine Shop, Erecting Shop, Pattern House, Boiler House, Blacksmith Shop, etc., etc. Also Machinery, including Engine, Shafting Drills, Lathes, Forges, etc., etc. Buildings are well adapted for their purposes. May be examined on application to

WALLACE GUSS,
Cashier First National Bank of Tamaqua, Pa.,
or to
THE FIDELITY INSURANCE, TRUST & SAFE DEPOSIT CO.,
327 Chestnut St., Philadelphia,
WAYNE MacVEAGH,
Bullitt Building, Philadelphia,
Executors Estate of William T. Carter, deceased.

WANTED.

Second-hand Steam Hammer, about 9 in. cylinder. Must be in good order. Address, giving price and full particulars, "M. F. C.," 127, office of *The Iron Age*, 96-102 Reade Street, New York.

FOR SALE, CHEAP.

400 tons of 60-pound, 200 tons 52-pound and 400 tons of 30-pound second-hand Steel Rails, suitable for relaying. For prices, etc., address

J. H. RICHARDSON & CO.,
Pittsburgh, Pa.

FOR SALE.
HARDWARE STOCK

in Cleveland, O. Will invoice very near $4500. A bargain. Write to

"M.," care E. S. Adams,
office of *The Iron Age*, 312 The Cuyahoga, Cleveland, Ohio.

FOR SALE.
HARDWARE STOCK.

Good stock of Hardware, invoice $4000, good store building with living rooms above, valued at $2500, in a good town in Southwestern Minnesota; only hardware store in the town; good established trade of $15,000 a year. This is a rare chance to go into business. Address

F. A. & A. J. MEACHAM,
Edgerton, Minn.

FOR SALE.

Stock and good will of a Builders' Hardware, Mantel and Grate, Door and Sash, Paint, &c., &c., store in one of the best manufacturing cities in central Ohio (population 50,000). Stock is clean and the store has done the principal business in its line for the last 10 years; a rare chance for some one with about $15,000. Traders in real estate, &c., need not apply. Address "G. H. CO.," No. 127, office of *The Iron Age*, 96-102 Reade Street, New York.

FOR SALE.

Stock of Hardware, Stoves, Paints and Glass, no agricultural implements, invoicing about $30,000; no indebtedness or book accounts. One of the most solid towns in the middle West. Present owner has been in same business in same town for 40 years, and wishes to retire. Stock can be reduced considerably if desired. This is the cleanest stock in Minnesota. Address T. H. LOYHED, Faribault, Minn.

FOR SALE.—An established retail hardware business in one of the best towns in Southern Mich., pop. 16,000. Two other stores. Stock will invoice between 7 and 8 M. Clean, nice assortment; will sell for cash only; good chance. Reason for selling, have other business. Address "O.," No. 1130, office of *The Iron Age*, 96-102 Reade St., New York.

COAL TAR
FOR SALE.

The undersigned are producing **daily,** at their works, at Winifrede Junction, Kanawha County, W. Va., upon the line of the Chesapeake & Ohio Railway, about **SIX HUNDRED GALLONS COAL TAR,** free from water and other impurities, and are prepared to sell the same in barrels, in car load lots, at their works as above, or delivered.

Contracts solicted from consumers. Address

ELERSLIE GAS & COKE COMPANY,
508 Walnut Street, Philadelphia.

WANTED.

Radial Drill Press 38 to 44 in. swing. Address, with particulars and lowest price,

P. O. BOX 305,
Philadelphia, Pa.

WANTED.

An Engine Lathe not less than 24 in. swing or 15 ft. bed. Planer not less than 24 in. x 24 in. x 6 ft. Engine 25 to 40 H.-P. All in A1 order. We want bargain, nothing else. Address

E. H. TITCHENER & CO.,
Binghamton, N. Y.

RARE CHANCE

for a capable energetic party with $10,000 to $15,000 to assist in managing a well established business. A good position assured. Address

"RARE CHANCE," 127,
office of *The Iron Age*, 96-102 Reade Street, N.Y.

FOR SALE.

The wholesale and retail hardware stock of Hildebrand & Fugate, 52 S. Meridian St., Indianapolis, Indiana, together with fixtures and good will of the firm, is now offered for sale in bulk. Bids for same will be received until December 10, 1893, by

A. P. HENDRICKSON, Receiver,
52 S. Meridian St., Indianapolis, Indiana.

FOR SALE.

An established shelf and heavy hardware business in a thriving town in Nebraska. Address

"HEAVY HARDWARE,"
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WANTED.

Practical Boiler Maker with small capital and business, to take interest in small shop. Fair business established and a good opportunity to an energetic man of ability. Applicants must be well recommended as to mechanical ability and moral character, and other things equal American preferred. Address

"W. B. & S.,"
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WANTED.

To furnish reasonable estimates on specialties in light metal work.

CLARK & COWLES, Plainville, Conn.
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EXPERIENCED SALESMAN solicits correspondence with manufacturers of hardware and metals with view to establishing branch office or sales agency either on salary or commission. Address "BRANCH," office of *The Iron Age*, 96-102 Reade St., New York.

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BY PATTERN (ornamental) CARVER; first-class workman; wages, according to locality, or would contract. Address A. J. DYMOTT, 34 Walnut Street, Stamford, Conn.

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AS FOUNDRY FOREMAN; 28 years' experience, about half that time as foreman. Address "R. N.," Box 119, office of *The Iron Age*, 96-102 Reade St., New York.

BY A YOUNG MAN traveling in Iowa, Missouri, Kansas and Nebraska and selling the hardware trade for a large corporation, a side line, on commission, from concern of equal reputation. Strict investigation solicited. Address "REPUTATION," office of *The Iron Age*, 96-102 Reade Street, New York City.

BY AN EXPERIENCED Superintendent and Manager, position to take charge of light manufacturing business or shop; specialty: goods pertaining to the requirements of the steam and gas pipe trade; understands designing and constructing metal patterns, steam and hot water heating, cast and malleable iron foundry work. Address "R.," office of *The Iron Age*, 220 So. 4th St., Philadelphia, Pa.

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BY A YOUNG married man, as Bookkeeper or Salesman with wholesale or retail hardware house; ten years' experience; best of references as to character and ability. Address "S.," Room No. 9, Third Floor, 104 West Fourth St., Williamsport, Pa.

YOUNG MAN, able and willing to work, with experience at bookkeeping and shipping, would like position with manufacturing firm; machinery or architectural iron work preferred; will start on small salary. Address "B. & S.," 127, office of *The Iron Age*, 96-102 Reade St., New York.

AS FOREMAN of Iron Foundry; best of references. Address "HENRY B.," No. 127, office of *The Iron Age*, 96-102 Reade Street, N. Y.

BY A THOROUGHLY EXPERIENCED man in general and builders' hardware, cutlery, guns, &c., as traveling salesman in any of above lines; wholesale house, manufacturer, or manufacturers' agent Address "CUTLERY," office of *The Iron Age*, 59 Dearborn St., Chicago.

BY A THOROUGHLY experienced Hardware Traveling Salesman, either in store or on the road; thoroughly posted in builders' and general hardware, cutlery, tinware, &c. Address "GENERAL," office of *The Iron Age*, 59 Dearborn St., Chicago.

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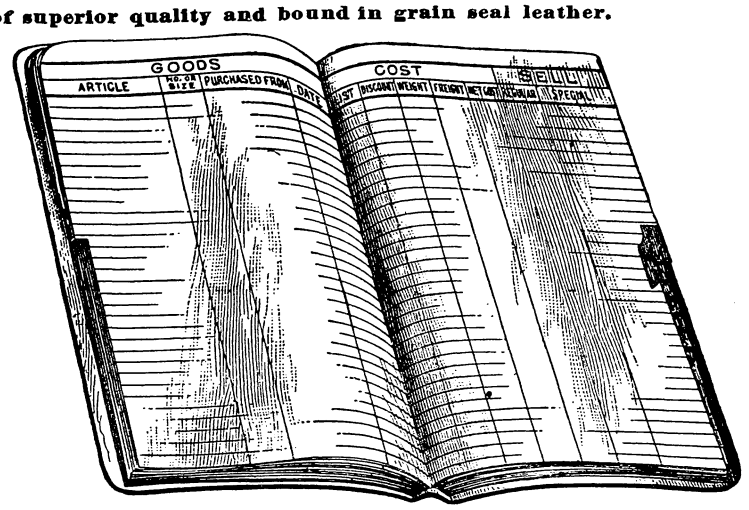
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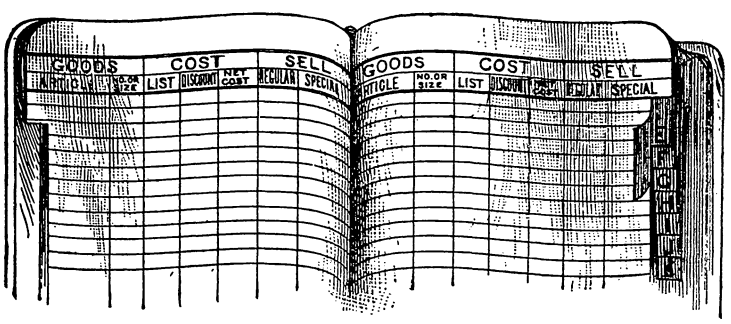
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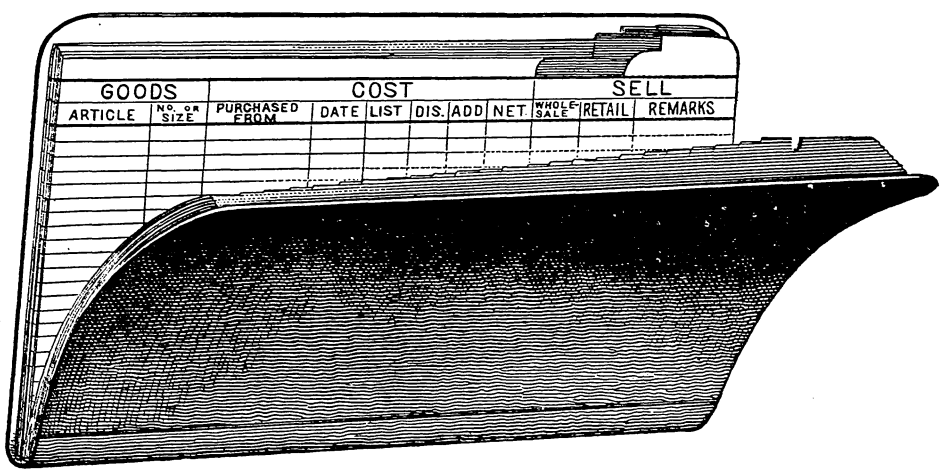
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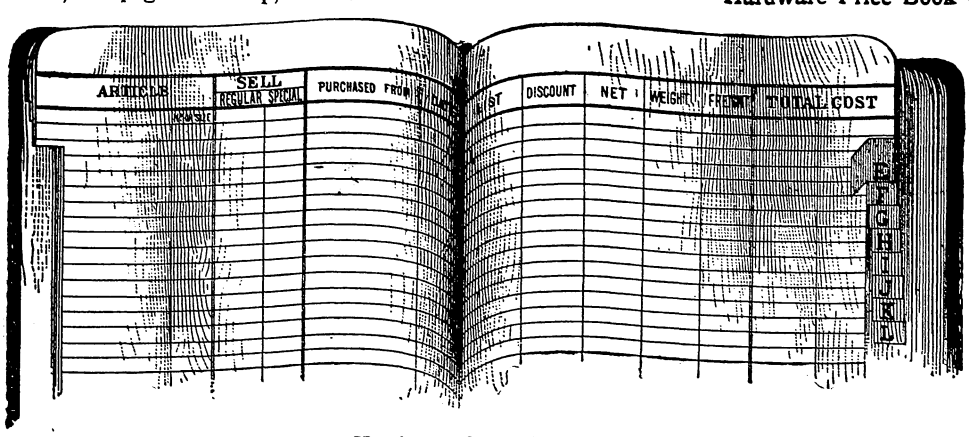
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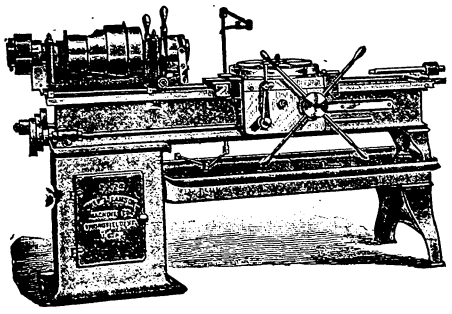
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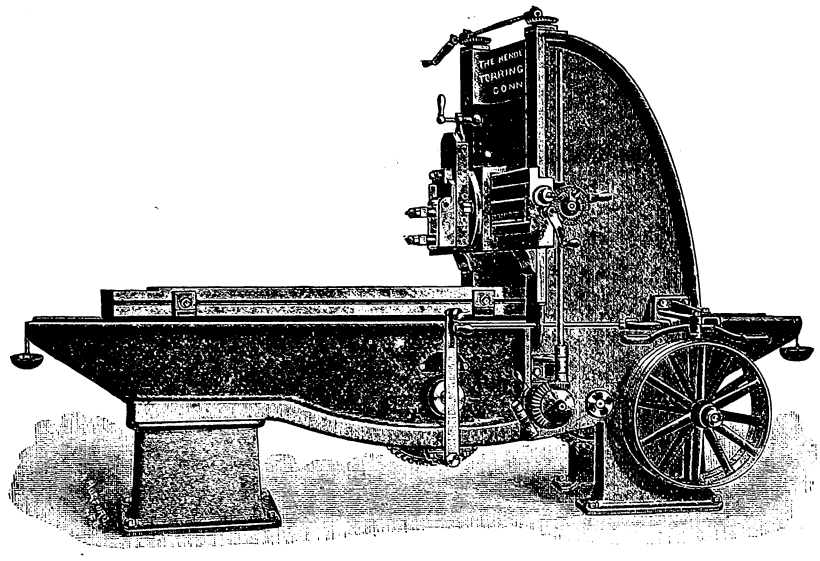
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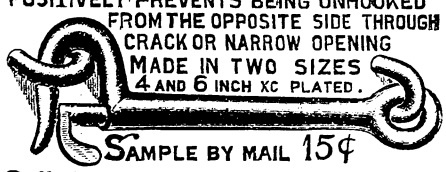
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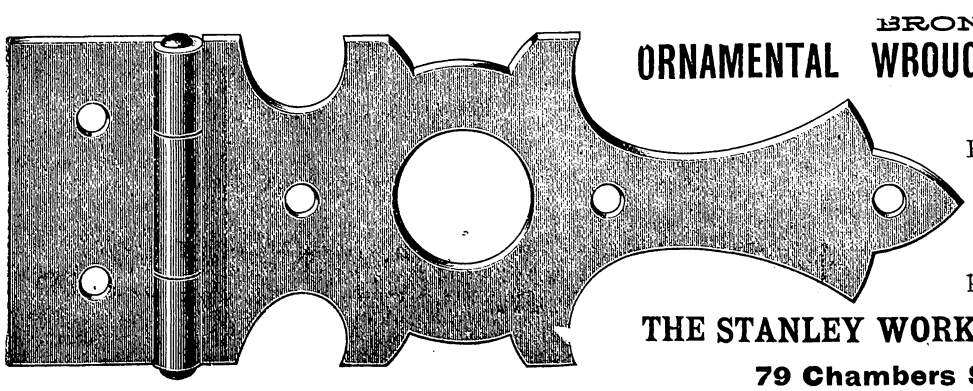
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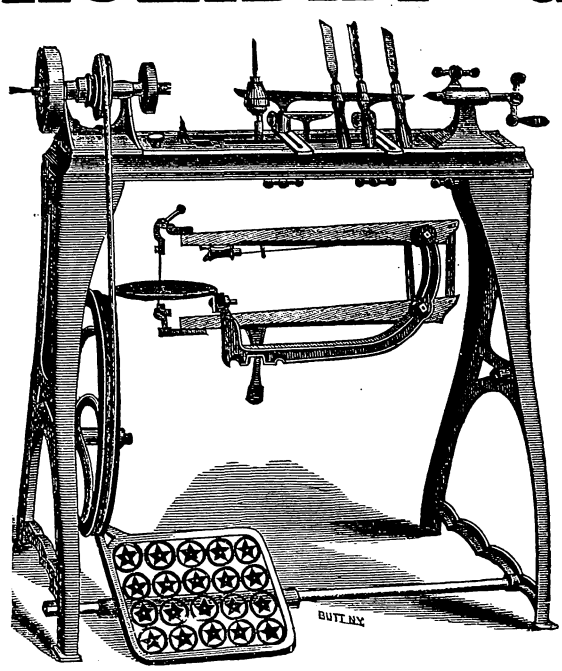
Sand Papers IN Reams and Rol — Flint Paper, Garnet Paper, Emery Paper, Emery Cloth

HAIR FELTING for covering Boilers, Steam and Water Pipe, and lining Refrigerators.

BAEDER, ADAMSON & CO.

730 MARKET STREET, PHILADELPHIA.
97 BEEKMAN STREET, NEW YORK.
143 MILK STREET, BOSTON.
82 LAKE STREET, CHICAGO.

HOLIDAY GOODS.



Many kinds of Scroll Saws have been put on the market by ourselves and other manufacturers during the past twelve years. Of these only a few have proved good enough to remain in demand. The call now is for a well-made, practical machine, and all second-class ones are of slow sale.

Those who want a good Lathe with Scroll-Sawing Attachment and all Tools and Improvements to the very latest moment will buy the Goodell Lathe.

Those who want only a Scroll Saw with Drilling Attachment and Rubber Blower will prefer the Rogers Saw.

These two machines are taking the place of all others, and are now the most in demand throughout the world.

No dealer can make a mistake by laying in a stock of them. About Christmas time they are wanted in every town, and will make business lively at this otherwise dull season.

We also keep a full stock of Designs, Wood, and all other Scroll Sawing goods.

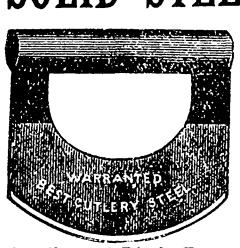
Price of Goodell Lathe, complete, $12.00.

Price of Rogers Saw, complete, $3.50.

MILLERS FALLS CO.,

No. 93 Reade Street, New York.

THE GEM
SOLID STEEL MINCER



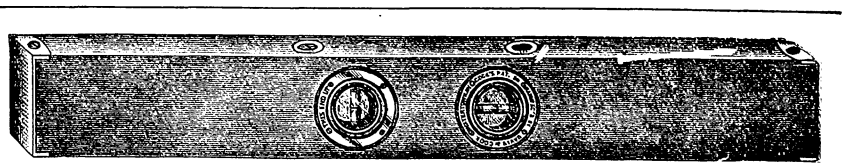
Single and Double Blades

Handle and Blade Formed in one piece.
Always Clean. Indestructible.
No Rivets to Wear Loose.
No Wooden Handle to Shrink, Swell, Loosen Split, or Fill with Rancid Grease.

MANUFACTURED BY

PALMER HARDWARE MFG. CO.

TROY, N. Y.



COOK'S PATENT LEVEL.

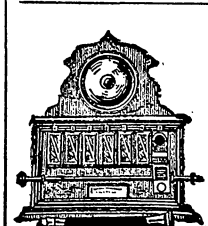
Made in Wood and Iron. Every Level Fully Guaranteed.

Inquire at your nearest hardware store for them. If not in stock, send to

TAKE NO OTHER.

DAVIS & COOK

WATERTOWN, N. Y.



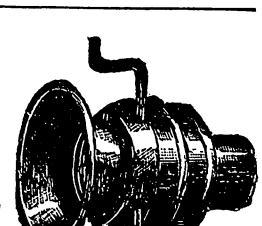
W. R. OSTRANDER & CO.,

204 FULTON STREET, NEW YORK,

Manufacturers of

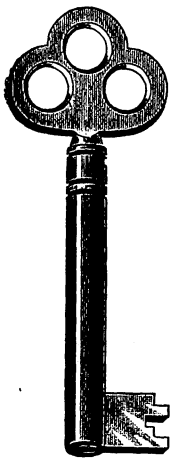
SPEAKING TUBES, WHISTLES, ORAL, ELECTRIC MECHANICAL AND PNEUMATIC ANNUNCIATORS AND BELLS.

Complete outfits of Speaking Tubes, Whistles Electric, Mechanical and Pneumatic Bells. A full line always in stock. Send for new catalogue. Factory, DeKalb ave. near Knickerbocker Brooklyn, N. Y



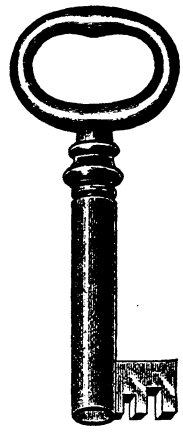
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OF EVERY KIND.

DRAWER LOCKS,
CUPBOARD LOCKS,
WARDROBE LOCKS,
CHEST LOCKS
DESK LOCKS.



A complete line of more than 1000 list numbers exclusive of our old and complete line of

YALE CABINET LOCKS.

THE YALE & TOWNE M'F'G CO.,

STAMFORD, CONNECTICUT.

New York. Chicago. Philadelphia. Boston. Pittsburg. San Francisco.

THE DEALER who sells what
THE PEOPLE ask for.

MAKES FRIENDS and MONEY, and SAVES TIME and TROUBLE.

The people ask for

LePage's Liquid Glue,

And the people are right.

It is the strongest and best glue made. It has been imitated, but never equalled. Be sure to get what you order and ACCEPT NO SUBSTITUTES.

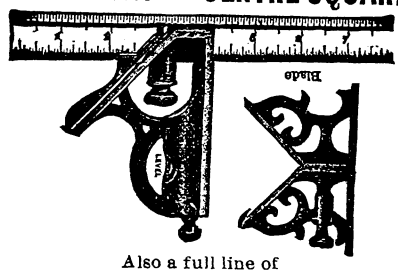
Our name is on every label

RUSSIA CEMENT CO.,

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New York Office, 95 Reade and 113 Chambers Streets.
Pacific Coast Office, 23 Davis Street, San Francisco, Cal.

CHAPLIN TRY AND CENTRE SQUARE.



Also a full line of

MACHINISTS' FINE TOOLS.

If you haven't our 1893 catalog send us a postal card.

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ATHOL, MASS., U. S. A.

ATHOL MACHINE CO., Selling Agents.

NONPAREIL

Ratchet Wrenches.

Made of best forged Tool Steel; are easily and readily adjusted and controlled. Can be made reversible instantly without removing from their work by throwing over the lever in slot of the handle.

The Set of Combination Tools No. 1 includes the wrench, two sockets, one for screw-driver, bit or reamer shank, with wood handle, and one socket

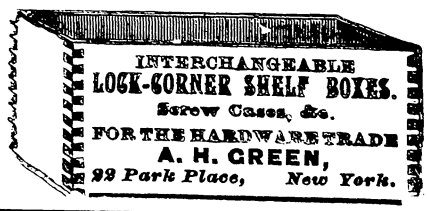


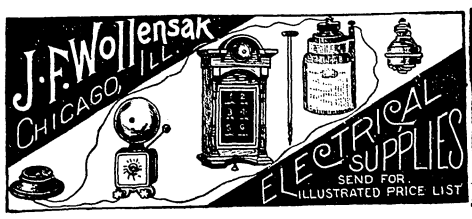
for drill shank and feed nut. The jaws on this wrench open from 3-16 to 1¼ inches.

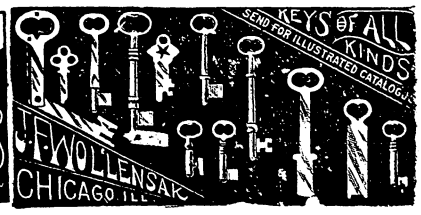
Send for Illustrated Circular and Price-list of various sizes

The Keystone Mfg. Co.

312 Terrace, Buffalo, N. Y.







Phillips Screens

FOR DOORS AND WINDOWS, ARE WELL MADE, FROM GOOD MATERIALS BY

A. J. Phillips & Co., Fenton, Mich.

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W. & B. DOUGLAS, MIDDLETOWN, CONN.

Branch Warehouses: 85 and 87 John St., New York; 197 Lake Street, Chicago, Ill.

THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

Pumps, Hydraulic Rams, Garden Engines,

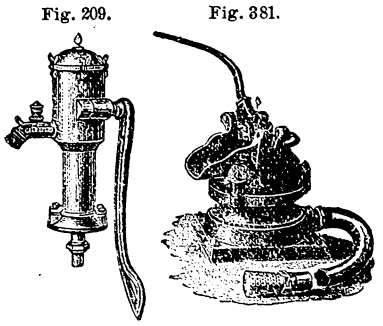
Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines in the World.

DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 209. Fig. 381.



or wherever it is desired to raise a large quantity of water by

hand power.

The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

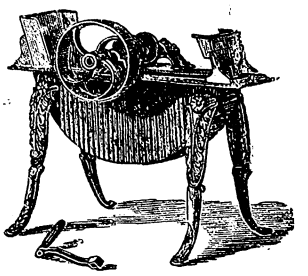
CAPACITY

from 3,000 to 4,500 gallons per hour.

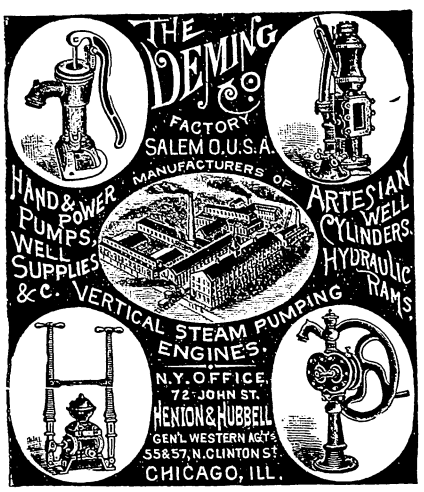
These pumps are simple, durable and low priced.
Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.

Send for Circular and Price List.

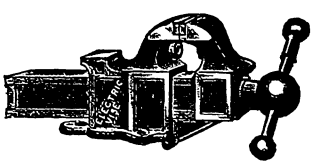
Fig. 145.



C. I. Grindstone Frame.



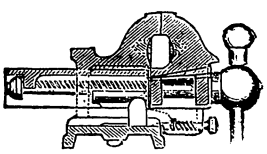
VISE.



Patented Dec. 27, 1892.
IT HAS QUALITIES THAT ARE UNDISPUTED.

Rapid, Active, Prompt.

One movement in and out, one turn of the hand and the work is secured.



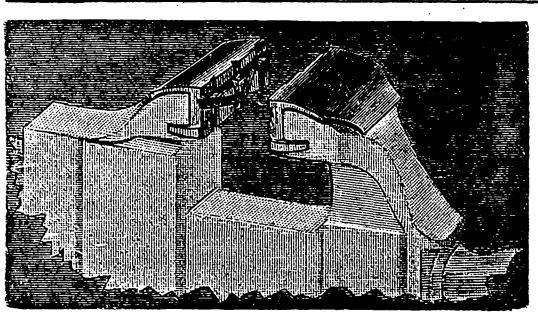
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F.E.MYERS & BRO.



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Ashland Pump and Hay Tool Works.



BINGHAM

PATENT VISE JAW CAP

Will Fit any Kind of Vise.

For protecting finished work. Will hold finished rods of any shape without injury.

3½ inch.....per pair, 40 cents.
4 " ..... " " 50 "
4½ " ..... " " 60 "

PRENTISS VISE CO.
44 Barclay St., New York.

THE MALIN & CO.

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Manufacturers and Dealers in Steel, Copper and Brass Wire of all kinds.

Patent Spooled Wire

For Retail Hardware Trade and Wire Specialties.

Dealers who handle it do away with the Broken Bundle Business and sell small quantities by the spool only. It is a convenience for both dealer and consumer. It is Shellac Coated and Cannot Rust: is wound like spool cotton on 1 oz., ¼ lb., ½ lb., 1 lb. and 5 lb. Spools.

Special Wires Spooled for manufacturing purposes. Send for Illustrated Catalogue and prices. Sold by all Hardware Dealers.

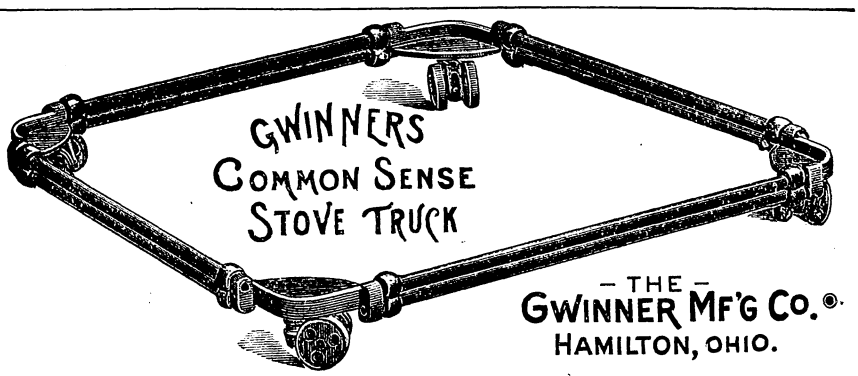
BOSTON OFFICE,
JOHN WALES & CO., No. 5 Winthrop Sq



Retail Stock contains 147 Spools

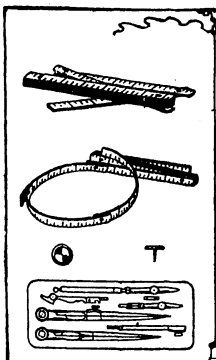
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"The Manhattan Dumb Waiter."
"The Improved Humphrey Hand Elevator."
Made specially to be sold by Hardware Stores.
Thousands in use. Catalogues on application.

THE STORM MANUFACTURING CO.
NEWARK, NEW JERSEY.
Formerly of Poughkeepsie, New York.



— THE —
GWINNER MF'G CO.
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BRANCH: CHICAGO. FACTORIES: HOBOKEN, N.J.

MANUFACTURERS OF EXCELSIOR MEASURING TAPES.

SUPERIOR QUALITY, LATEST IMPROVED. GREATEST VARIETY.

STEEL · METALLIC · LINEN · POCKET TAPES.

EXCELSIOR BAND CHAINS FOR SURVEYORS; LAND CHAINS, &c.

K&E Co FOLDING POCKET RULES.

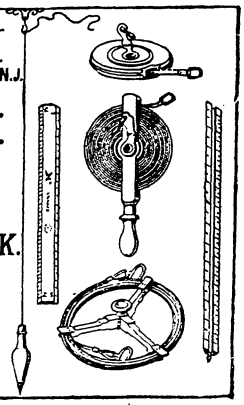
NO WARPING, NO SHRINKING, NO ILLEGIBLE JOINTS, NO BULK.

2 3.4.5.6.8 FOOT, ALSO WITH PATENT SPRINGS.

FLAT & TRIANGULAR BOXWOOD SCALES, BEST MADE.

PLUMB BOBS, THUMB TACKS, DRAWING INSTRUMENTS.

PRICE LISTS & QUOTATIONS PROMPTLY SENT.



HIGHEST GRADE PLATED WARE MADE.

THE MAJESTIC.

Design Patented August 29th, 1893.



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The Rogers and Hamilton Co., Factories and Main Office, WATERBURY, CONN.

FOR SALE BY ALL THE LEADING JOBBERS.

IRON INSTEAD OF WOOD.

GALVANIZED IRON

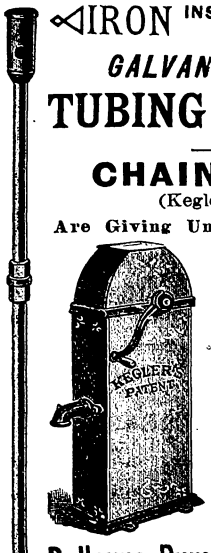
TUBING and CURB,

— FOR —

CHAIN PUMPS,

(Kegler's Patent)

Are Giving Universal Satisfaction,



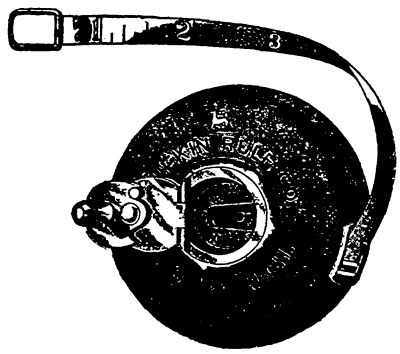
BECAUSE:

They do not rust and accumulate filth—always clean. Extreme lightness is combined with strength and durability. No freezing. No waste of water by reason of enlarged reservoir at top of tubing. No annoying wheel at bottom. Easy to handle.

Tubing weighs less than ½ lb. per ft., is connected by couplings and can be attached to any make of curb.

Send for Catalogue.

Bellevue Pump Co., Bellevue, Iowa.



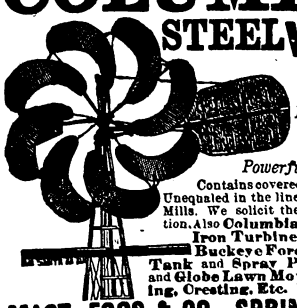
"RELIABLE"

Steel Measuring Tapes.

Entirely new. Handle or crank when closed is perfectly flush with leather case. Opens by pressing button on opposite side and folds out double, giving increased leverage. Best and most convenient steel tape on the market. Fully guaranteed. Will send samples on approval. We carry a complete stock of our goods at our New York Office, 20 Murray St.

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COLUMBIA STEEL WIND MILL



New in Principle Beautiful in Appearance. Powerful in Operation.

Contains covered **Internal Gear.** Unequaled in the line of Pumping Wind Mills. We solicit the closest investigation. Also **Columbia Steel Derricks, Iron Turbine Wind Engines, Buckeye Force & Lift Pumps, Tank and Spray Pumps, Buckeye and Globe Lawn Mowers, Iron Fencing, Cresting, Etc.** Write for circulars.

MAST, FOOS & CO., SPRINGFIELD, O.



BERGER BROS.

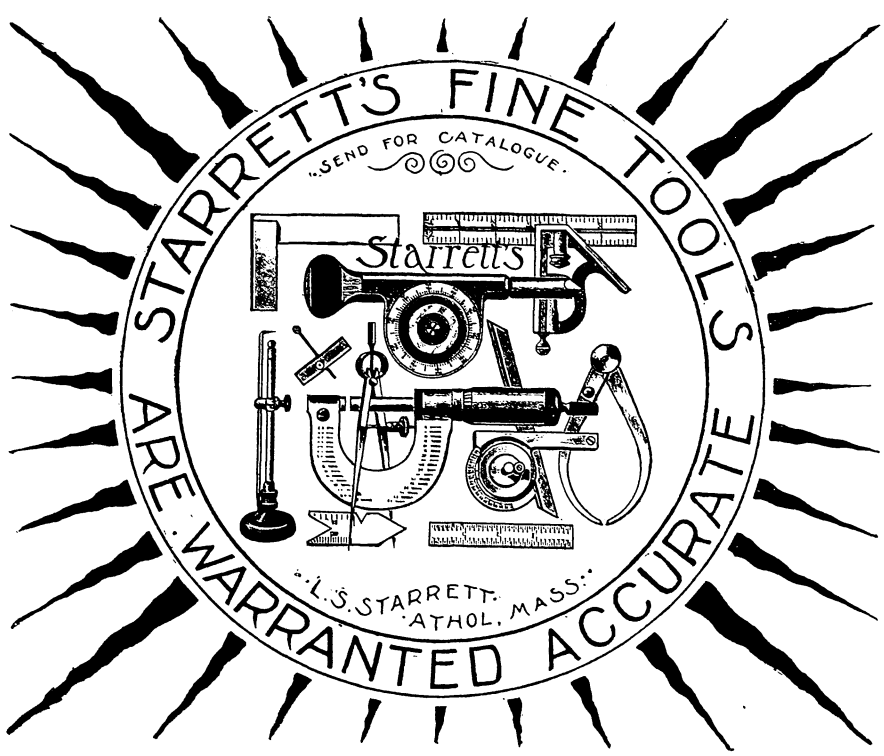
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TINNERS' HARDWARE.

Berger's Celebrated Pail Ears. Sauce Pan Handles, Eave Trough Hangers, Pipe Fasteners, Hooks, Straps and Barrel Trucks, &c., &c. Send for Prices and Catalogue.

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The National Saw Co.,

OPERATING

Wheeler, Madden & Clemson Mfg. Co., Middletown, N. Y. Woodrough & McParlin, Cincinnati, O. Woodrough & Clemson, Boston, Mass. Monhagen Steel Works, Middletown, N. Y. Richardson Brothers, Newark, N. J. Harvey W. Peace Co., Brooklyn, N. Y. Pennsylvania Saw Co., Philadelphia, Pa.

GENERAL OFFICE

96 & 98 READE ST., - NEW YORK.

SAWS

CIRCULAR, BAND,
BUTCHER, BUCK

SAWS

MANUFACTURED BY

C. A. HILES & CO.,

336-338 Carroll Ave. CHICAGO.

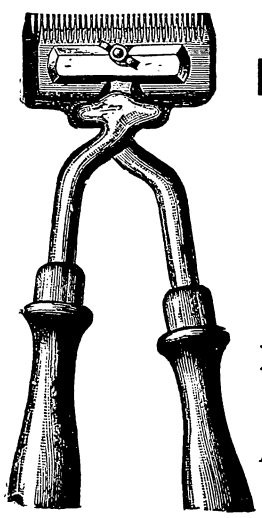
BUSINESS ESTABLISHED 1798. INCORPORATED 1891.

JOS. F. McCOY CO.,

26 Warren St., New York,

Headquarters for

Coates' Horse Clipper



AND

Barber Clippers.

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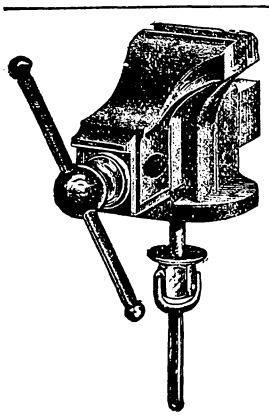
THE "BELL"

AND

THE "COMET"

Horse Clippers.

At prices to suit the times.



HOLLANDS' OFFSET JAW VISE.

Specially adapted for drill press work where chucks can not be used and equally good for special or regular bench work.

Hollands Mfg. Co.,
ERIE, PA.,
Manufacturers all styles VISES.

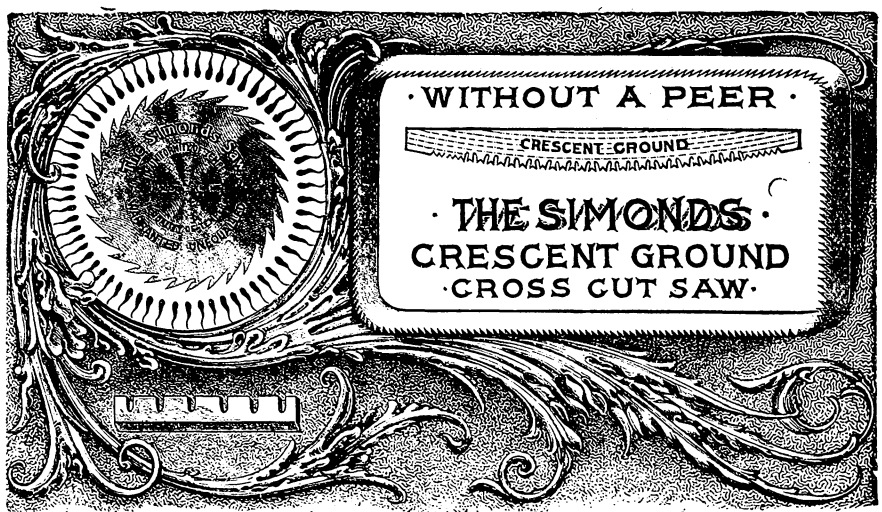
JESSE JONES & CO.,

HARDWARE SHELF BOXES

Made of Wood. No screws or nails used to work out and cut your shelving.

615 & 617 Commerce St., Phila.

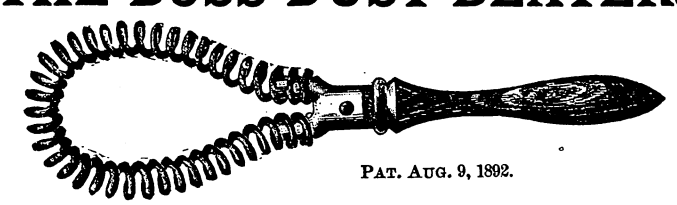
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Simonds Mfg. Co. Simonds Saw Co.

FITCHBURG, MASS. CHICAGO, ILL. SANFRANCISCO CAL. PORTLAND, ORE.

THE BOSS DUST BEATER.



PAT. AUG. 9, 1892.

NEAT, DURABLE, AND DOES THE BUSINESS.

For removing dust and filth from Clothing, Upholstered Furniture, Rugs and Carpets it is just the thing. Will raise the nap and so improve the appearance. Will not, like other Dust Beaters, leave marks, nor tear the fabric. The coil is of steel wire secured in a malleable iron socket and attached to an enameled wooden handle. Just what everybody wants.

Retail Price, 25 Cents. Sent by Mail, 35 Cents.

PEABODY & PARKS,

Manufacturers, TROY, N. Y.

The Taintor Positive Saw Set.

Mechanics are now inquiring for this tool, and Hardware Dealers should have them in stock, or at least have a sample.

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YOU CAN OBTAIN PROMPTLY the latest work on any subject in which you are interested by addressing DAVID WILLIAMS, Publisher and Bookseller, 96-102 Reade Street, New York.

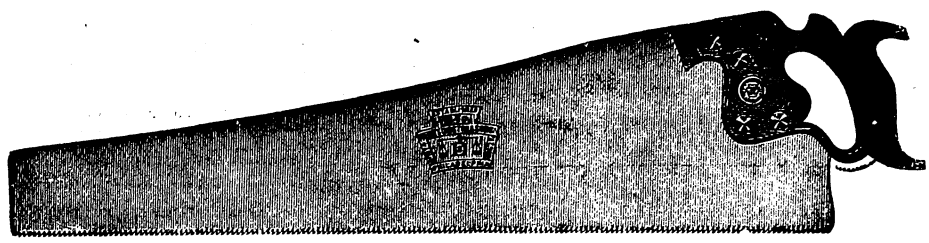
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"If you want a Saw it is best to get one with a name on it which has a reputation.
A man who has made a reputation for his goods knows its value as well as its cost and will maintain it."—HENRY DISSTON.

THE SAWS THAT LEAD THEM ALL

"THE SAW;" HOW TO CHOOSE IT, AND HOW TO KEEP IN ORDER, Sent Free on Receipt of Name and Post Office Address.

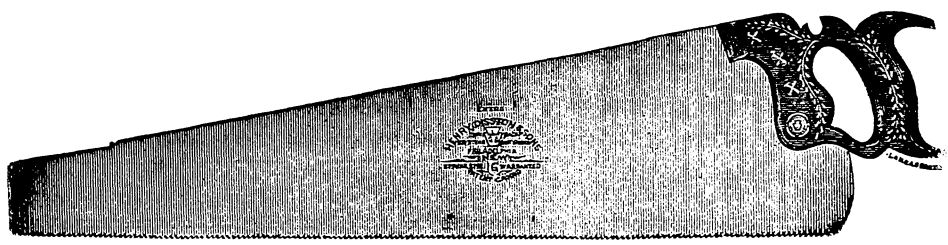
DISSTON & SONS' PATENT D-8 HAND SAW.



This Saw combines all the valuable improvements in Hand Saws that have been made by us of late. The first and most important is the hollow or skew back, the success of which can best be attested by the number sold. The peculiar shape of the butt or heel, coupled with the new method of fastening to the handle, give a full stroke of the blade without fear of catching or hooking in the work ; and as the handle is put further on the blade you have a full stop on the proper point and a greater command over your Saw, by reason of being two inches nearer the point, which must give more power.

The Saw being let into the handle on a circle, has a perfect bearing, which, with the new screws, makes it stronger and almost impossible to work loose, and avoids the unsightly gap that is seen on the back of the old style handle. All the above features are patented.

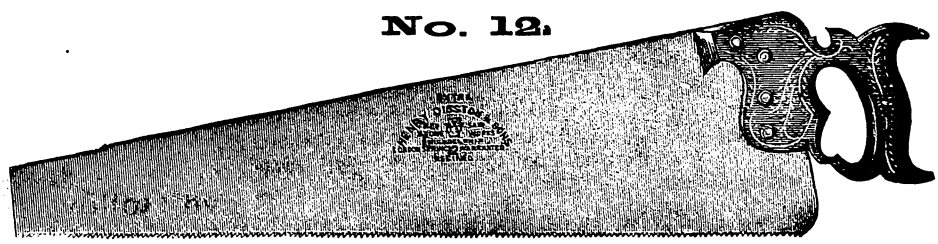
Our New No. 16 Premium Saw.



AN EXTRA FINE SAW IN EVERY RESPECT.

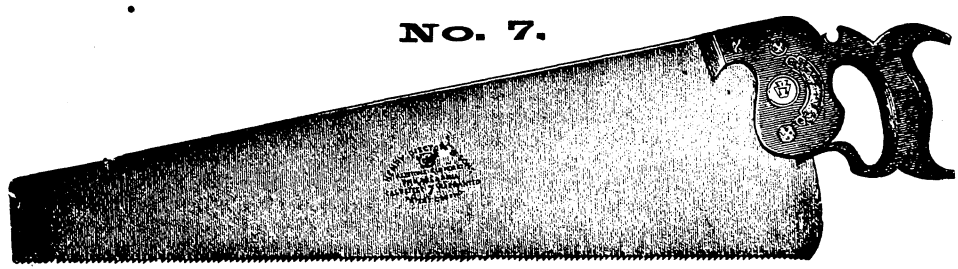
Having the Latest Close up Handle, Spring Steel Blade, Extra Thin Back, Finely Grained, with an Apple Handle and Four Brass Centennial Screws.

No. 12.



DISSTON & SONS' Extra Refined London Spring Steel, Selected and highly Polished Blade, Handle Carved and Polished, 4 Improved Brass Screws, the finest Hand Saw manufactured.

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DISSTON & SONS' Cast-Steel, Warranted, Beech Handle, Polished Edge, 4 Improved Screws, Grained Blade.

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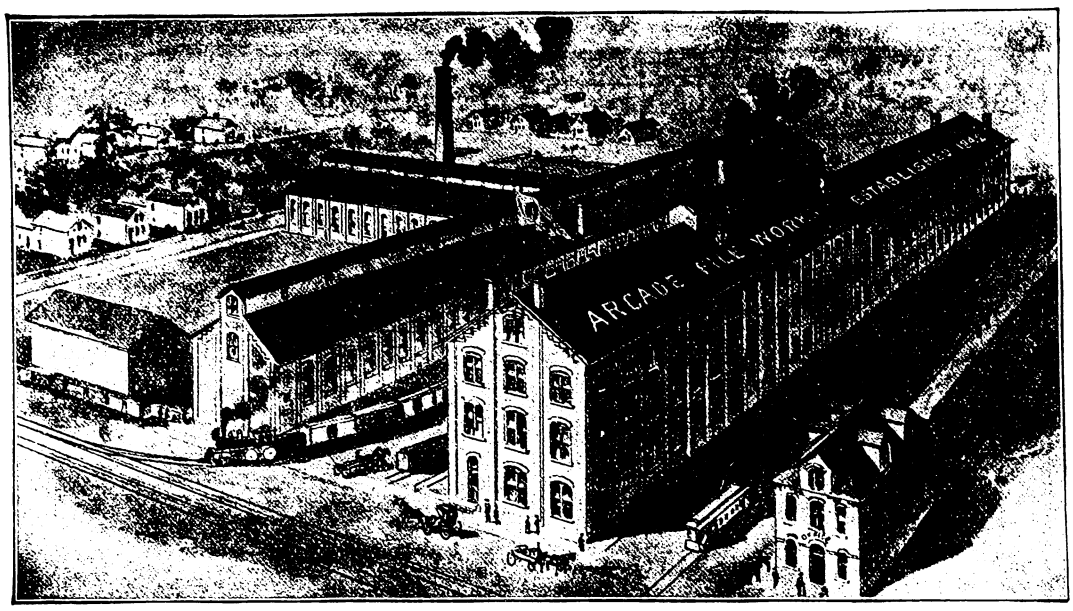
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ARCADE FILE WORKS.

ESTABLISHED 1842.

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The fact that we alone use the improved File Machinery recently invented by Alfred Weed, and the even heat of natural gas enables us to produce a file that will cut faster and wear longer than any on the market.

THIRD REVISED EDITION.

THE IRON AGE STANDARD HARDWARE LISTS

FOR USE IN PRICE BOOKS.

Compiled by R. R. WILLIAMS, Hardware Editor of The Iron Age.

This pamphlet contains the principal standard Hardware price-lists in as clear and compact an arrangement as possible, s as to permit their being advantageously cut out and inserted in the price book. In order to make them adapted to this us they are printed on thin and tough paper of fine quality and on only one side of the paper.

The success of the effort to give the lists in small space is illustrated in many of the lists, in which a clear and condensed arrangement is secured. For instance, the wrench list occupies but 3 inches by ¼ inch, while the list of Stove Hollow Ware, in very small space, gives the list prices on a large and important line of goods which often occupy several pages in catalogues. In several lists, such as Strap and T Hinges and Butts, a new arrangement is adopted, which is regarded as presenting these lists in a very convenient as well as condensed form.

As is obvious from the lists herewith reproduced, the shape and size of the different lists varies greatly, the aim being to give each list the smallest and most convenient arrangement possible. None of the lists are, however, more than 3½ x 6 inches in size, very few of them being as large as this and most of them very much smaller. In use it is intended that they shall be trimmed closely before they are inserted in price book when they may be attached either by one edge close to the hinge of the book, as will, perhaps, be mo convenient with the larger lists, permitting the use of the entire page for memoranda, or the smaller lis may be pasted on the page in connection with the entries in regard to discounts, freights, &c. Many the lists are so compact in arrangement as when thus inserted to leave ample room for recording quotations

Saucepans and Round Boilers.

	Plain	Turned.	Tin'd or En'd.
Pints.			
1	$0.30	.35	.39
1½	.32	.37	.44
2	.35	.39	.48
3	.42	.47	.56
Quarts.			
2	.50	.56	.63
2½	.53	.59	.68
3	.55	.62	.73
4	.60	.68	.84
5	.65	.75	.96
6	.70	.81	1.11
7	.75	.84	1.21
Gallons.			
2	.85	.96	1.31
2½	1.05	1.18	1.56
3	1.20	1.35	1.70

Stove Hollow Ware. Ground and Unground.

POTS, KETTLES, ETC. (CAST IRON.)

No.....	6	7	8	9	10	11
Pots.....	$0.65	.75	.85	1.00	1.25	1.7
Kettles.....	.55	.65	.70	.85	1.00	1.4
T Kettles.....	.75	.80	.90	1.00	1.25	...
Spiders.....	.27	.30	.35	.40	.50	.6
Griddles Round	.22	.25	.27	.30	....	..
" Long..	.40	.50	.60	.75	....	..

SCOTCH AND YANKEE BOWLS.

No ...	1	2	3	4	5	
Scotch Bowls..	$0.35	.40	.45	.50	.60	.7
Yankee Bowls.	.35	.45	.55	.65	.75	.8

Wrenches. Standard List.

Inches.	6	8	10	12	15	18	21
Black...	$9.00	$10.00	$12.00	$14.00	$24.00	$30.00	$36.00
Bright..	10.00	11.00	14.00	16.00	26.00	32.00	38.00

Some merchants use this pamphlet for reference, checking off invoices, etc., as it gives the leading lists in a more convenient form than they can otherwise be obtained. The lists are, however, intended primarily to be cut out and inserted in price books, and *can be used in connection with any of The Iron Age Hardware Price Books.*

Glue Pots. Tinned or Enameled

No. 4/0....	$4.50	No. 2	$8
3/0....	5.00	3	10
2/0....	5.50	4	12
0	6.00	5.....	14
1	6.75	6.	16

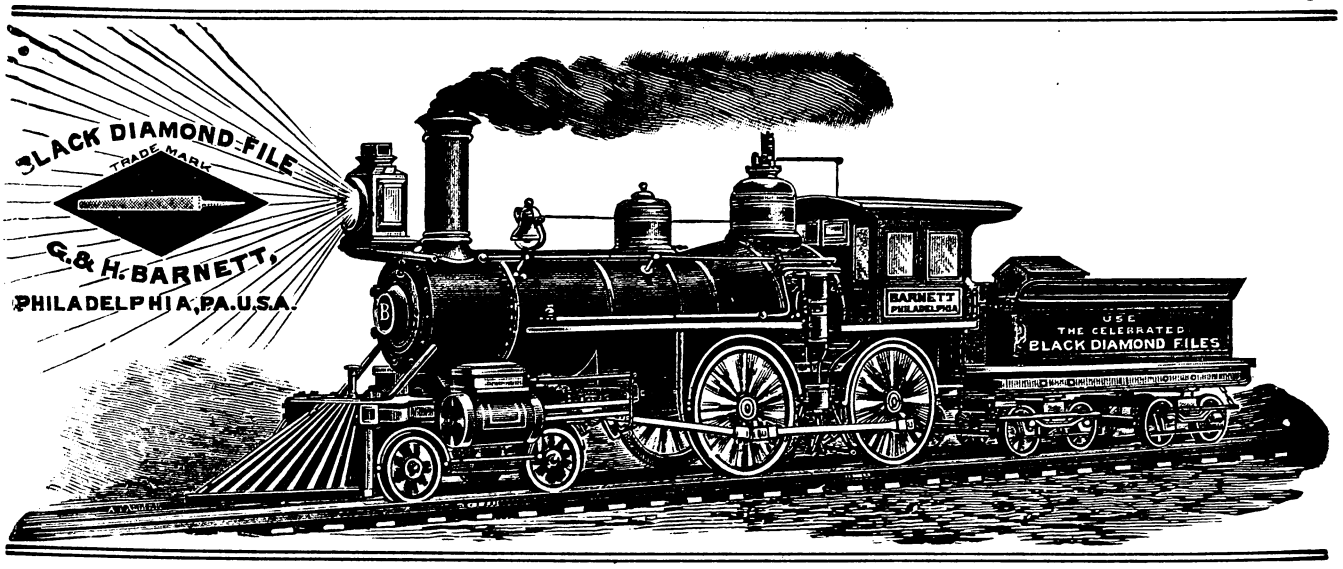
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PROVIDENCE, R. I.

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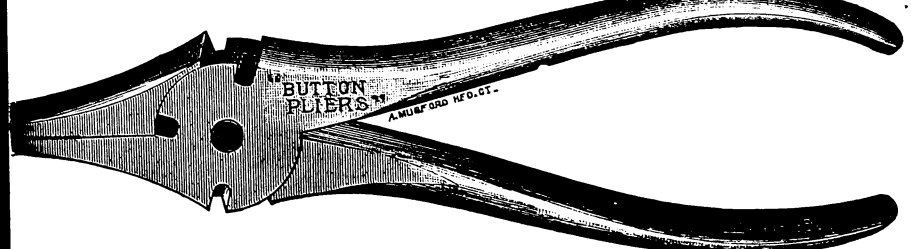
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Pat. Wire Cutter

AND PLIER COMBINED.



Specially Adapted for Use on Wire Fence.

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Manufacture and keep in stock a full line of **FILES** and **RASPS** only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

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BEST CRUCIBLE STEEL.

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STRONGEST TOOTH.

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SOLID STEEL ACME PLIER AND WIRE CUTTER. Made with cutters of best steel.

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New York Office, 18 Cliff Street.

COMMON MOUSE TRAPS BEST FOR USE!

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Porcelain-Lined Lemon Squeezers, Steak Hammers, Boot Jacks, Magnetic Tack Hammers, Mallets, Bung-Starts, Hand Screws, Beacon Hill Pat. Mouse Traps, Sunny-Side 2 lb. Lap Board.

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See Opposite Page.

Hardware dealers have been vieing with each other for the past few years to see who could get out the largest catalogue, until the books have become so cumbersome that they are a burden. It has been our aim in issuing our 1894 catalogue to reverse the order of things, and to see how **SMALL** a book we could get out and at the same time illustrate our complete line of hardware and do it distinctly and comprehensively. How well we have succeeded we will leave it for our friends to judge. On the opposite page is a full size cut of the book. It contains 1476 pages besides the index, and weighs 5 lb. 10 oz.

Each of our Customers is Entitled to One Copy Free of Charge, which will be sent upon request, with the first order. We have a few extra copies for sale at Ten Dollars each to those who wish a handy illustrated price book. Orders will be filled in turn as received.

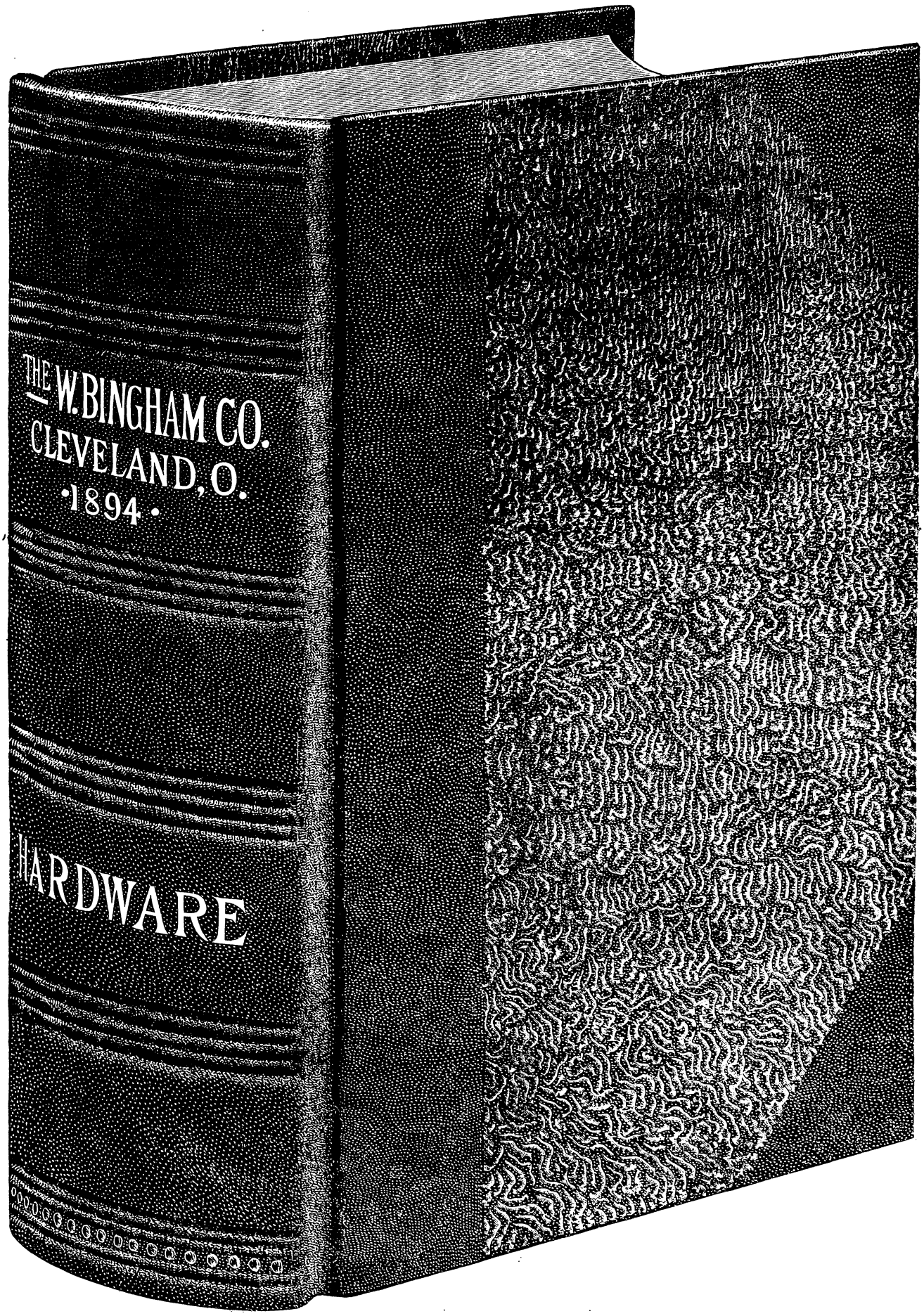
Respectfully,

THE W. BINGHAM COMPANY.

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Skinning, Sticking, Farriers' & Shoe Knives,

Have established and maintained their reputation, for superiority, against all Competitors, from

THE YEAR SEVENTEEN HUNDRED & FIFTY,

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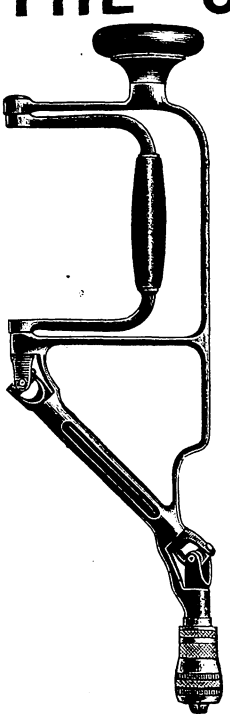
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6, 7 and 8 inch SWEEPS.

Unequaled as a Corner Brace.

The crank arm revolves at right angles to the bit.

The frame is readily and firmly held in any desired position with one hand.

The thrust of the tool is directly in the line of the bit.

The operation is familiar, natural and convenient.

All parts are simple and durable

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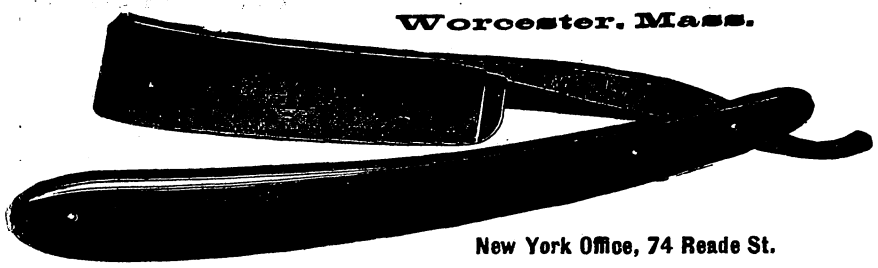
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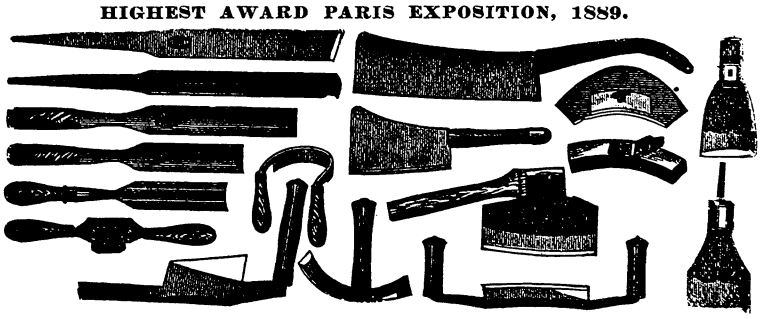
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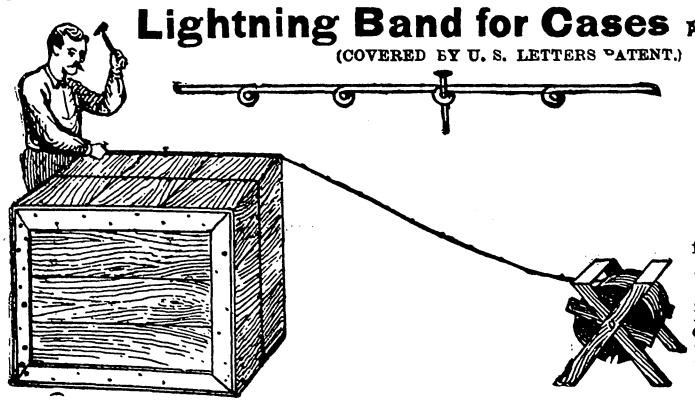
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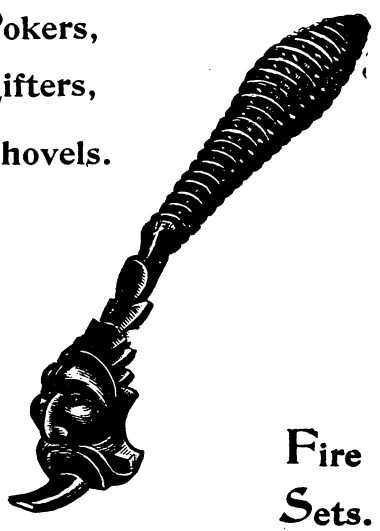
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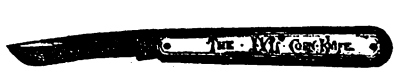
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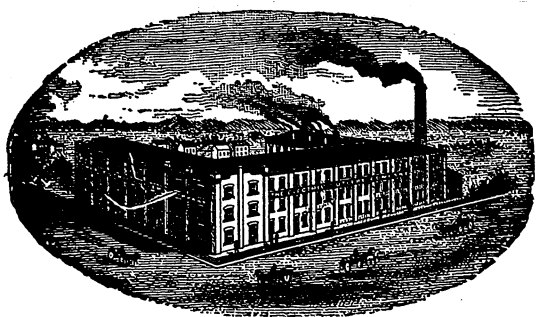
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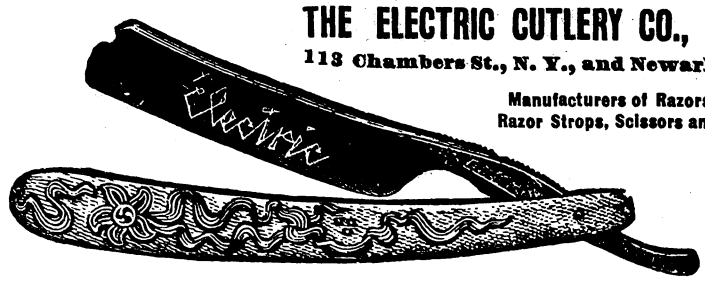
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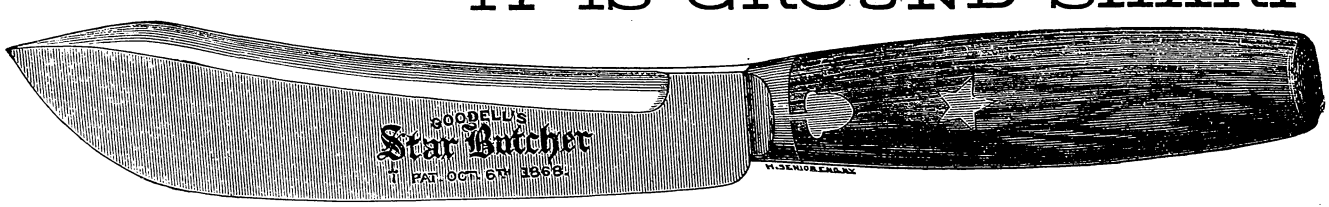
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Made in Plain Steel or Heavily Plated Blades, Hand Burnished.

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WE DON'T KNOW HOW TO IMPROVE IT.

Blade is made of steel especially prepared for the purpose, and it is made just right; finish excellent; shape unsurpassed; the handle just fits the hand.

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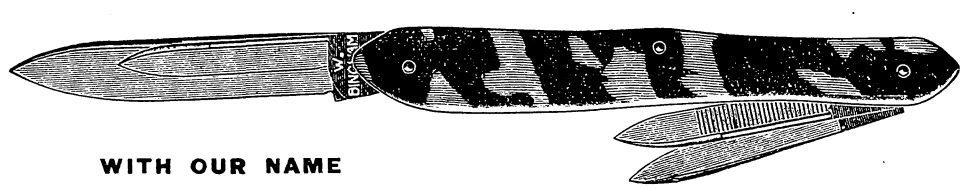
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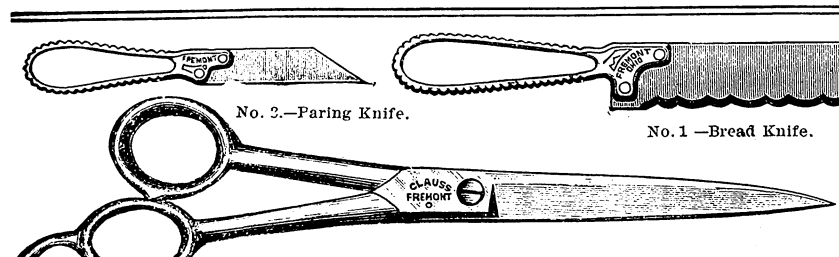


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That money and 50 years' experience can buy.

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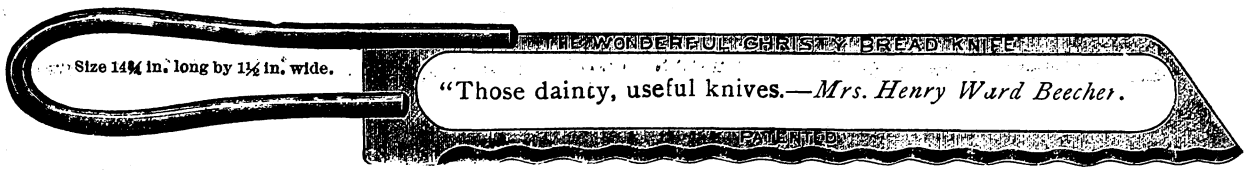
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Cut?

That's what the "CLAUSS" Knives and Shears always do People buy Cutlery for use, not ornament, hence they purchase "CLAUSS" productions because they can be relied upon to last and give satisfaction. Write for Prices and Discounts.

THE CLAUSS SHEAR CO., - - Fremont, Ohio, U. S. A.

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Solid steel from tip to tip, with *Scientific Grinding* of the Razor Steel Blade, carefully tempered and sharpened ready for use—Warranted perfect in every respect.

Ask your wholesale dealer for prices on Christy Knives.
There are imitations and counterfeits with cast iron handle—cheap but not good.
You will find it profitable to be posted on Christy Knives.

THE CHRISTY KNIFE CO.,
FREEMONT, OHIO.

—NEW YORK OFFICE; 97 Chambers St.—

NICHOLS BROTHERS, Greenfield, Mass., U. S. A.

BUTCHER KNIVES, CLEAVERS, STEELS, ETC.

TRADE DISCOUNTS AND CATALOGUE ON APPLICATION.





The Bridgeport Chain Co.'s Triumph Chain, made into Halters Traces, Cow Ties, Tie-outs, Kennel Chains, &c.; also cut to lengths for manufacturers' use.

The cut represents the exact size of 6/0.

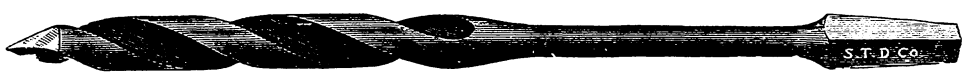
Thirteen Sizes made, 6/0 being the Largest.

FACTORY AT
BRIDGEPORT, CONN.

Drills for Wood & Metal, Counter-sinks, Screw Drivers, Chucks, &c., for sale by the trade.

Syracuse Twist Drill Company,

SYRACUSE, N. Y.



Every tool fully Guaranteed. Beware of imitations.

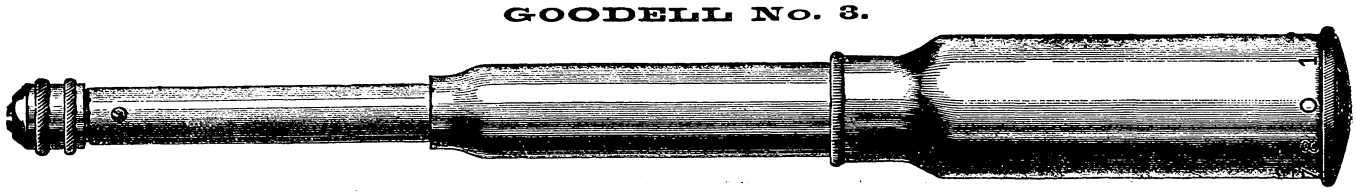
TRADE SYRACUSE T.D. CO. MARK.

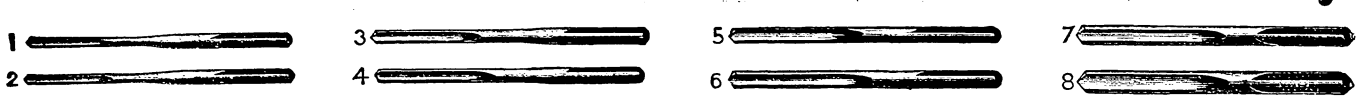
DRILL POINTS Always in the Handle.

THE BEST AUTOMATIC DRILL IN THE WORLD.

SEND FOR CIRCULAR.

GOODELL No. 3.





H. H. MAYHEW CO., - - - - SHELBURNE FALLS. MASS., U. S. A.
Manufacturers of Fine Mechanics' Tools.

SNELL MANUFACTURING CO., 72 Reade St., New York,

MANUFACTURERS OF

Ship Augers, Auger Bits, Boring Machines and Boring Implements.

ESTABLISHED 1790.

FIRST PREMIUM AWARDS: Mass., 1841, 1848, 1850; International Ex., Paris, 1878; Centennial Ex., Phila., 1876



Manufacturers of Car Bits, Jennings' Pattern Auger Bits, Boring Machine Augers, Carpenters' Augers. Mill Augers, Rafting Augers, Gimlets and Gimlet Bits, and Screw-driver Bits.

All Kinds of Machine Bits Made to Order.

All Goods made of the Best Quality of Cast Steel and Warranted. First Premium Medals taken for Superior Quality and Excellence of Finish.

Factory, - - - Fiskdale, Mass.



N. Y. Office, 103 Chambers St., W. H QUINN, Manager

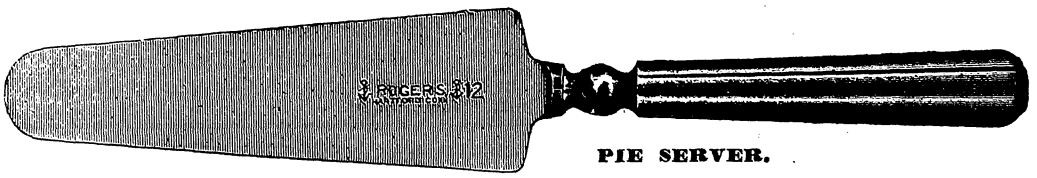
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THAN THE

TRADE Rogers TRADE MARK

SILVER PLATED WARE.



PIE SERVER.

MANUFACTURED BY

THE WM. ROGERS MFG CO.,

Office and Factory, HARTFORD, CONN. P. O. Drawer 30.

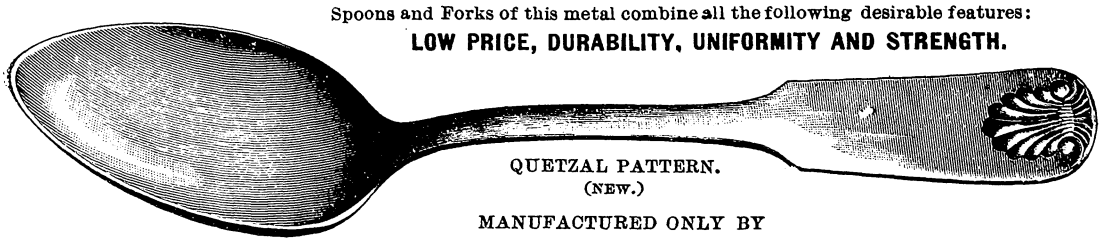
NEW CATALOGUE FOR THE ASKING.

AZTEC COIN METAL

MADE INTO SPOONS AND FORKS.

Spoons and Forks of this metal combine all the following desirable features:

LOW PRICE, DURABILITY, UNIFORMITY AND STRENGTH.



QUETZAL PATTERN.
(NEW.)

AZTEC COIN METAL has no plating to wear off. Made of solid metal. Easily kept clean.

MANUFACTURED ONLY BY

THE HOLMES & EDWARDS SILVER CO., - Bridgeport, Conn.

Solid Columbian Silver Flat Ware, a Substitute for Solid Silver.

WARRANTED FOR 25 YEARS.



There is no plating to wear off and no rusty edges. The cost is no more than silver plated goods Hotels and restaurants appreciate this great change, which will, no doubt, in time revolutionize the steel knife trade. We ask the trade not to confound this metal with silver metals, nickel silver or any other quack named goods which are flooding the market at the present time.

—THE—

UPSON & HART CO.,

UNIONVILLE, CONN.

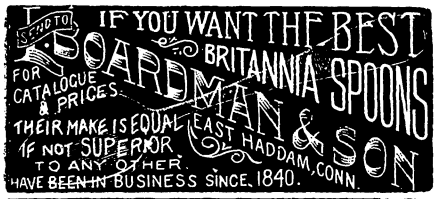
SELL AT SIGHT.

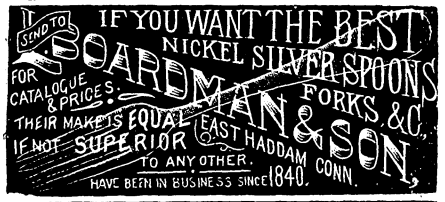
KNIVES, FORKS & SPOONS



Also manufacturers of Silver Plated Flat Ware in Knives, Forks, Spoons, Sugar Shells, &c

☞ A sample dozen will be sent on approval to any house in the United States, with prices and discounts. Remember it costs nothing to investigate.







BAILEY

Single Spiral Double Cutter Auger Bits and Augers.



We have purchased from the assignee of the Bailey Auger Bit Co. the entire stock of their auger bits, car bits and augers, and offer them at prices that defy competition. Note why this bit is superior to many others.

The large receptacle in the spiral is so arranged as to hold the chip back from the wall of the hole, and force it up and directly out, thus making it impossible to choke and easily turned by the operator. It is a rapid cutter, because it has a double threaded screw point, put on by a machine specially designed for that purpose, which causes the point to cut its way into wood, and thus obtain a firmer hold. In quality of steel, workmanship and style of tool it has no equal.

SMITH, LYON & FIELD,

WHOLESALE HARDWARE,

139 DUANE STREET. - - NEW YORK CITY.

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THE AMERICAN AXE AND TOOL CO.,

STEWART BUILDING, Rooms 63 to 67,

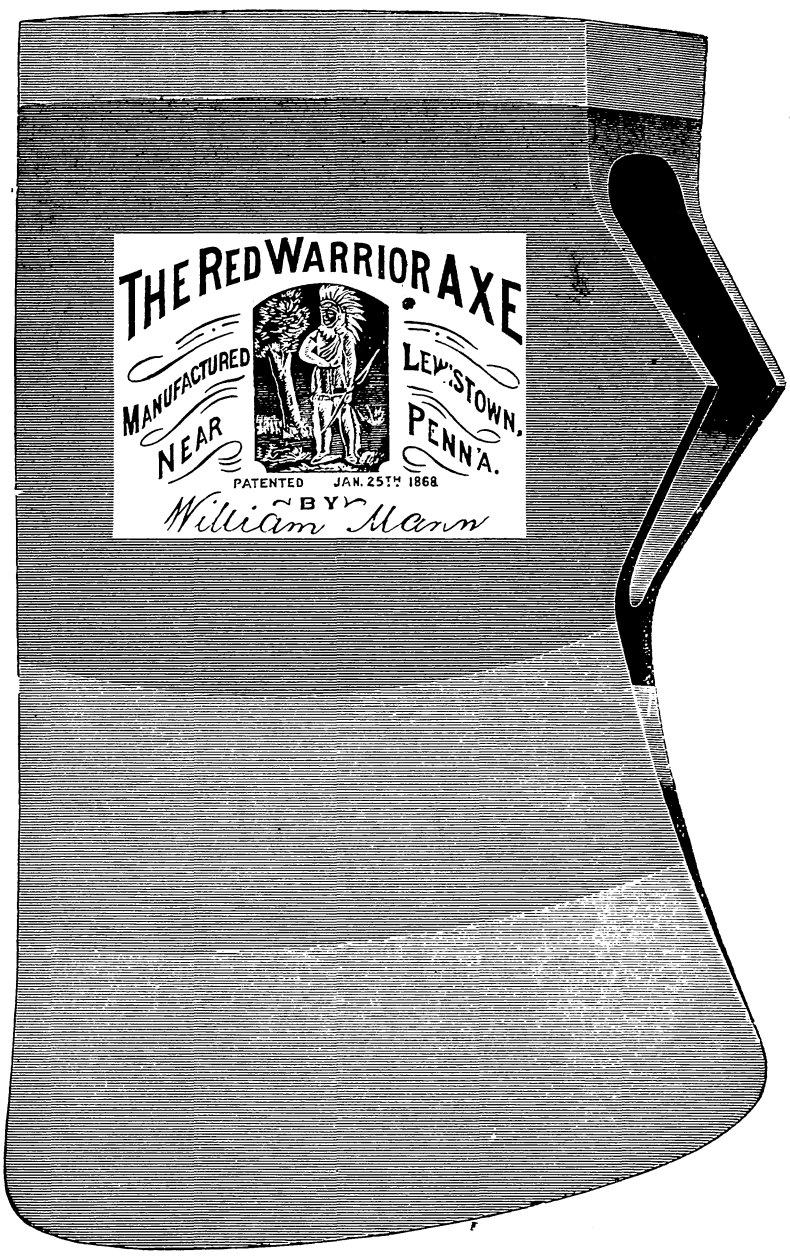
280 Broadway, - - - NEW YORK.

Manufacturers of

BLOOD, HUNT, LIPPINCOTT, RED WARRIOR, MANN, HURD, PEERLESS, JAMESTOWN, ROMER, FRANCIS, SHARPS, UNDERHILL, STEWART,

Brands of

AXES, HATCHETS, BROAD AXES and ADZES, also "Blood's" Champion and "Hubbard's" Diamond Blade SCYTHES.



Grass Hooks, Corn Knives, Bush Hooks, Planters' Eye Hoes, Ice Axes, Ice Hatchets and Firemen's Axes, Wood Chisels, Picks, Mattocks, Brick Hammers, Box Openers, Ice Chisels, Butchers' Handled Axes, Meat Hatchets.

ALWAYS IN STOCK: Best Leading Brands of Axes and Edge Tools. Cheap Handled Axes. Medium Grade Axes. Boys' and Hunters' Axes. **Job Lots of Axes, all Grades and Patterns.**

ADDRESS ALL CORRESPONDENCE TO NEW YORK OFFICE.

Warranted Better than the Best

ENGLISH ANVIL

Face in one piece of BEST TOOL CAST STEEL, PERFECTLY WELDED, perfectly true, of hardest temper, and never to come off or "settle." Horn of tough *untempered steel*, never to break or bend. *Only Anvil made in the United States fully warranted as above.*

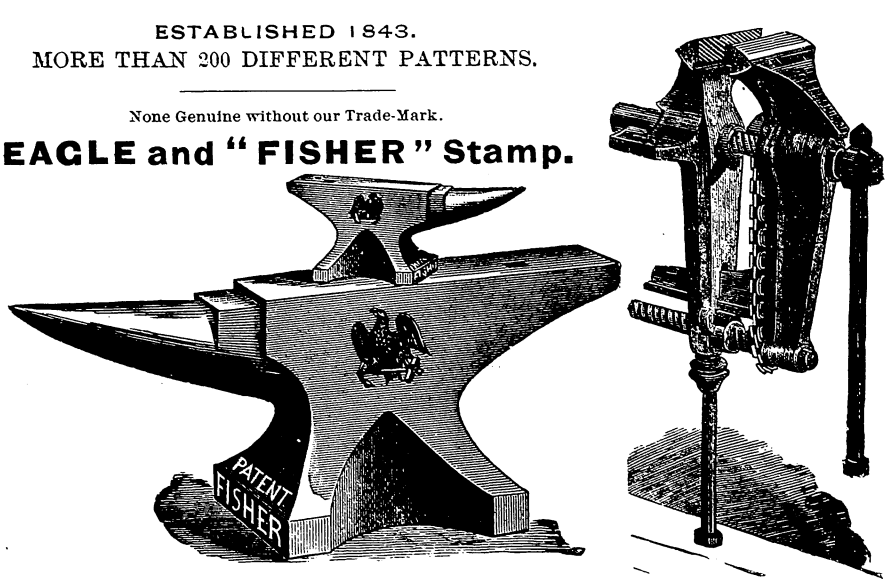
FISHER DOUBLE-SCREW VISE

IS FULLY WARRANTED STRONGER THAN ANY OTHER LEG VISE, AND ALWAYS PARALLEL. Is the best Vise for Machine Shops and Blacksmiths, and for all heavy work. ACCURATE AND DURABLE. Send for Circular.

ESTABLISHED 1843.
MORE THAN 200 DIFFERENT PATTERNS.

None Genuine without our Trade-Mark.

EAGLE and "FISHER" Stamp.



EAGLE ANVIL WORKS, - Trenton, N. J.

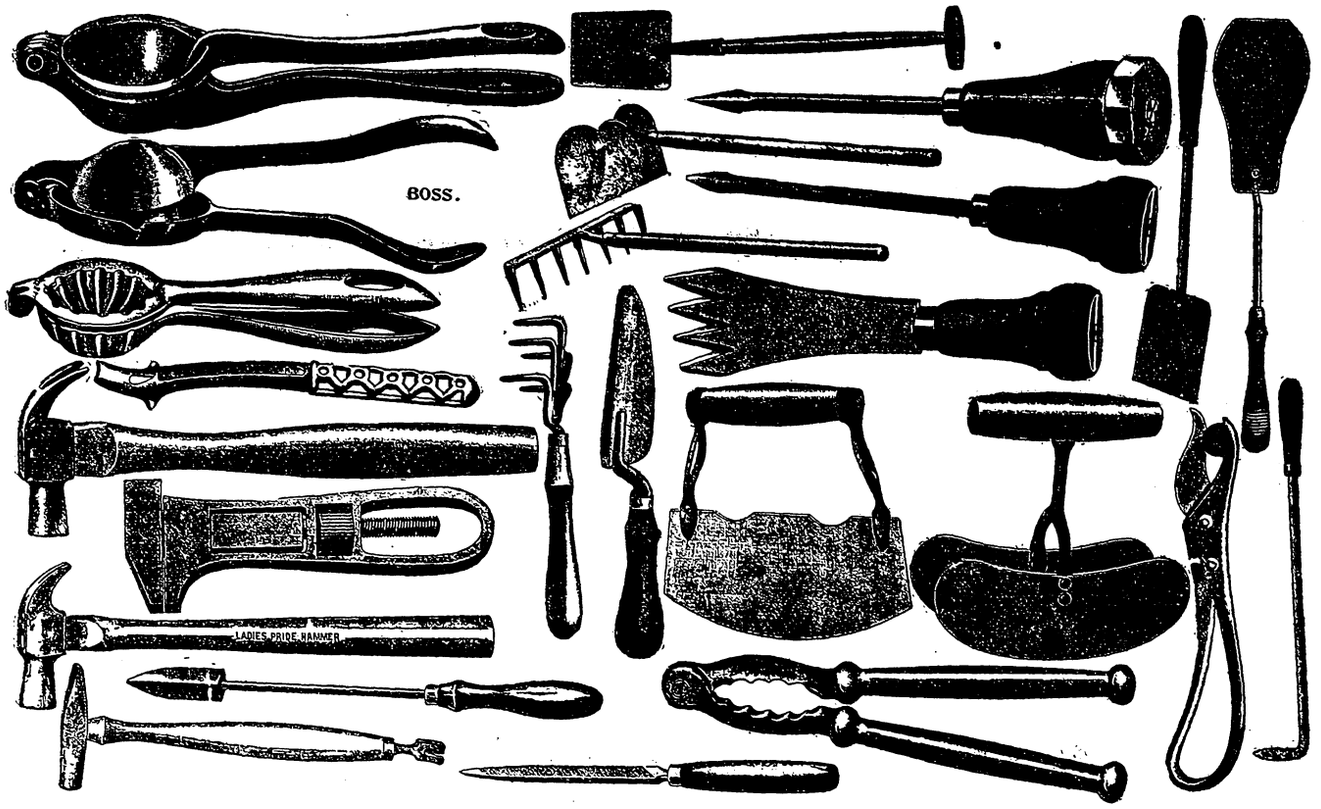
Sold in New York by our agents, J. C. McCarty & Co., 97 Chambers St., The Russell & Erwin Mfg. Co., 45 Chambers St.

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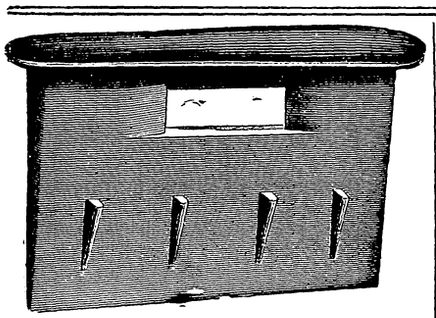
=:= EDWIN HILLS, =:=

Manufacturer of HARDWARE SPECIALTIES,

PLAINVILLE, - - - CONN.



——SEND FOR CATALOGUE AND PRICE-LIST.——



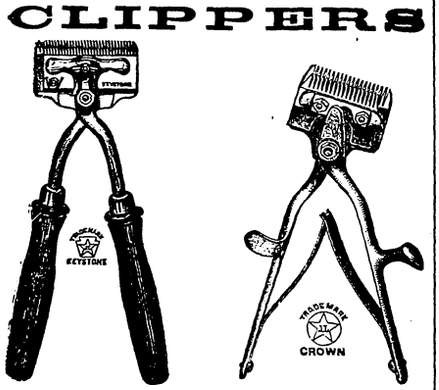
I still manufacture and sell the above axe wedge, which has more practical merit than any other thus far made.

F. V. WOOSTER,

66 BEVERLY STREET, BOSTON.

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CLIPPERS



For HORSEMEN OR BARBERS

Send Postal Card for our new **Illustrated Catalogue.**

JESSE LEE & SON,

37 SO. FOURTH ST., PHILADELPHIA.



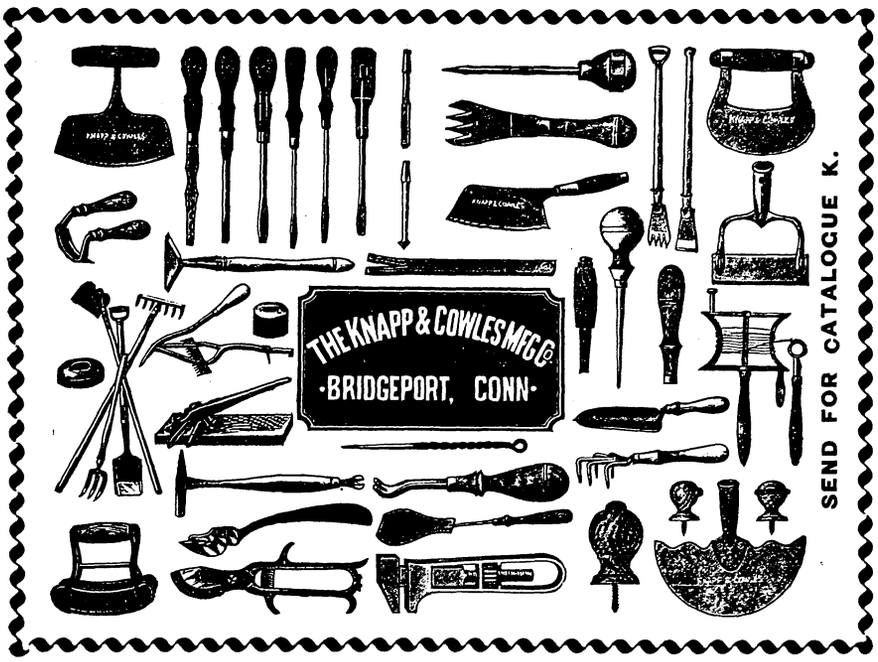
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MANUFACTURER OF A LARGE VARIETY OF SUPERIOR QUALITY HOUSEKEEPER'S HARDWARE AND GARDEN TOOLS.

ILLUSTRATED CATALOGUE AND PRICE LISTS TO TRADE.

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CARY'S METAL STRAP,

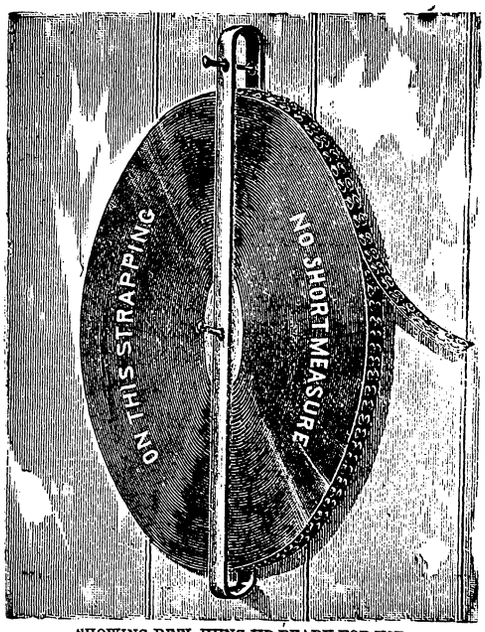
PATENTED IN ALL COUNTRIES.

A SUBSTITUTE FOR

STRAP IRON AND WOOD STRAPS,

—FOR—

Binding Packing Cases, Crates, etc.



SHOWING REEL HUNG UP READY FOR USE.

Put up in Coils of 300 Feet in Length and Packed in Cases Containing 20 Reels Each.

Made in different widths of a Soft Steel through which nails can be readily driven without the necessity of first punching holes for same.

SAVES TIME AND WASTE.

CARY MANUFACTURING CO.,

5 to 9 Elm Street, NEW YORK.



HIGH GRADE AXES AND TOOLS.

DOUBLE BIT AXES. CARPENTERS' ADZES,
SINGLE BIT AXES, MINING PICKS,
BROAD-AXES, MACHINE KNIVES,
HAND-AXES, BARK SPUDS.

We make all patterns and styles of Axes, including PEELING AXES, RAFTING AXES, BOYS' AXES, Etc., Etc. Our "BLACK EAGLE" AXE is made by a Chemical Process, known only to us, and never fails in frozen or knotty timber.

STANDARD AXE & TOOL WORKS,
RIDGWAY, PA., U. S. A.



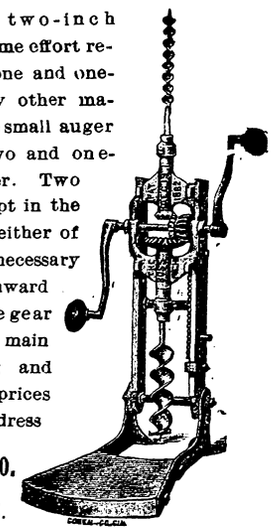
Increased demand and increased facilities for production enable us to make lower prices than ever before. Holds firmly anything it cuts and can be instantly released by the operator. Samples by mail to the trade at wholesale prices and postage.

BEST MATERIAL. WELL MADE. CHEAP.

The J. T. HENRY MFG. CO. Hamden Conn., U. S. A.

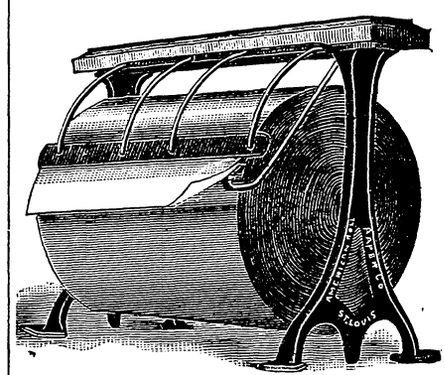
The Boss 2-speed Boring Machine.

Will operate a two-inch auger with the same effort required in using one and one-half inch in any other machine, and for the small auger have a speed two and one-half times faster. Two augers may be kept in the machine, to use either of which it is only necessary to point it downward by first taking the gear frame out of main frame, inverting and replacing it. For prices and discounts address



Buckeye Mfg. Co.

Union City, Ind.



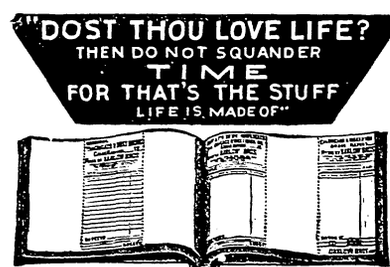
THE ECONOMIC HOPKING ROLL PAPER CUTTER.

Made in all sizes, 6 to 36 inches, at $1.50 each Japan and Hardwood Finish.

Made by the

American Roll Paper Co.,

St. Louis, Mo.



SAVE TIME TROUBLE AND CASH
BY USING
BARLOW'S PAT. MANIFOLD
SHIPPING BLANKS
BARLOW BROS. GRAND RAPIDS, MICH.

NEW ADJUSTABLE BENCH LEVEL.

WITH GROUND AND GRADUATED VIAL.

4-6 and 8 inch.



Three Sizes.

MANUFACTURED BY

C. F. RICHARDSON & SON,

ATHOL, MASS.

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Your Stock of Oilstones
and Razor Hones

Is low, but don't think of buying till you have learned our prices.

We undoubtedly have the best assorted stock of

Belgian and German Razor Hones in America,

AND WE ARE GOING TO SELL THEM.

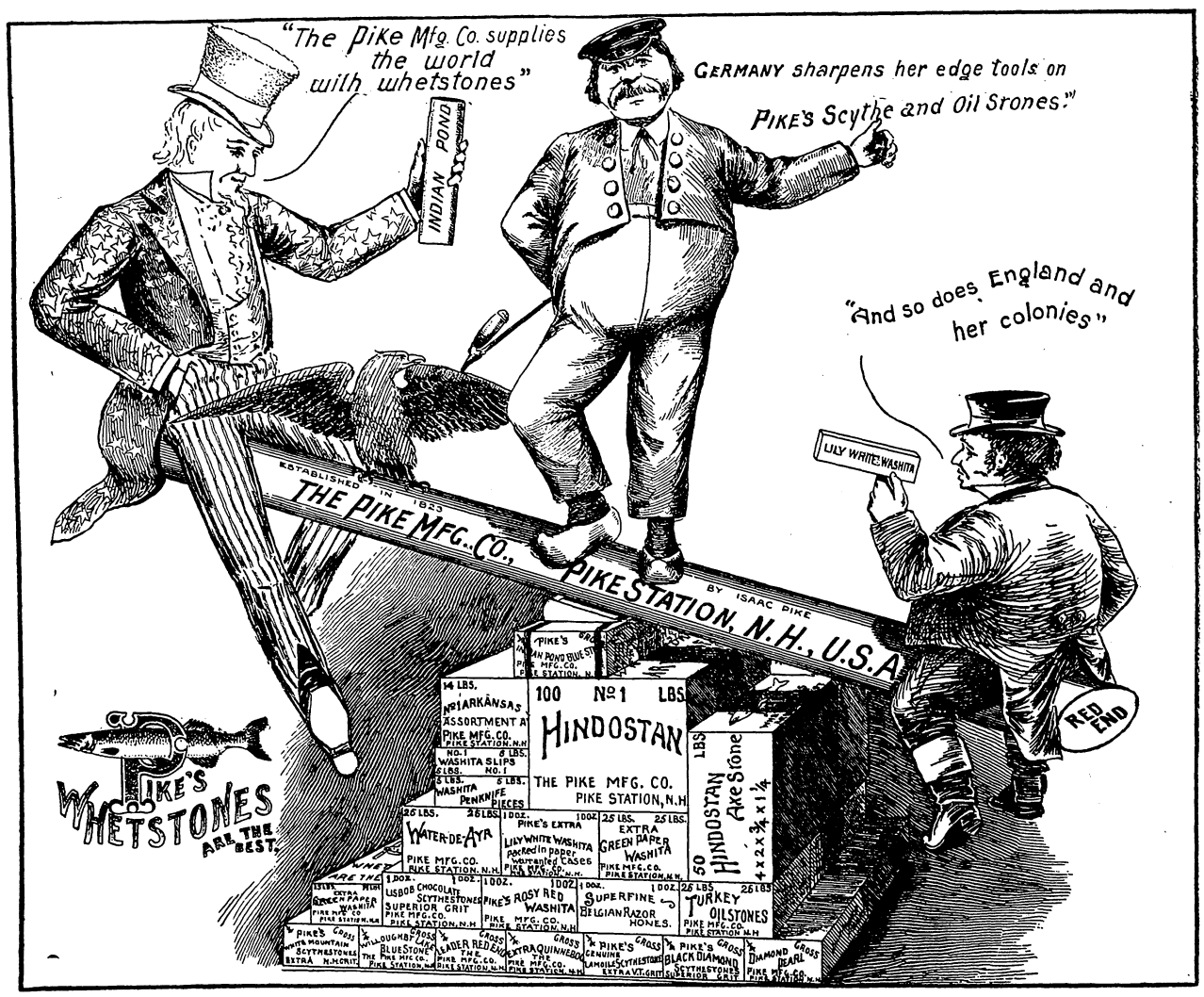
The same is also true of our stock of

Washita and Arkansas Oilstones, Hindostan, Turkey, Scotch, Water-of-Ayr, Sandstone, Etc.

An Everlasting Edge is imparted to a tool by the use of **PIKE'S**

LILY WHITE WASHITA,

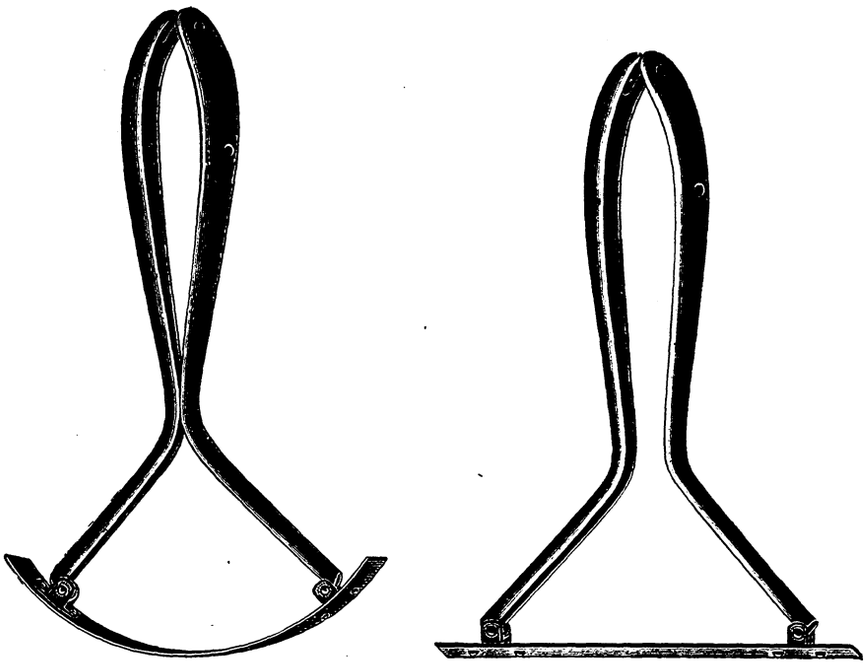
"The Best Oilstone in the World."



THE PIKE MFG. CO., - PIKE STATION, N. H.

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The Flexible
POT AND KETTLE CLEANER.

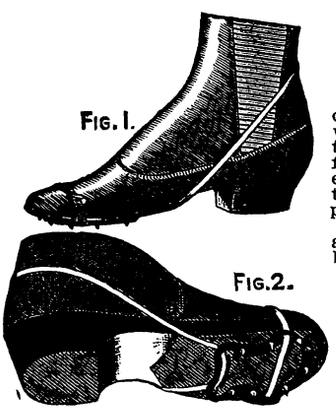


NOTHING LIKE IT EVER INVENTED!!

It takes the lead, and already *Unscrupulous Persons are Trying to Imitate it.*

The blade being flexible will conform to any surface necessary to be cleaned. Write for prices.

THE UNSINGER MFG. CO. Fremont, Ohio.



ARCTIC ICE DOGS.

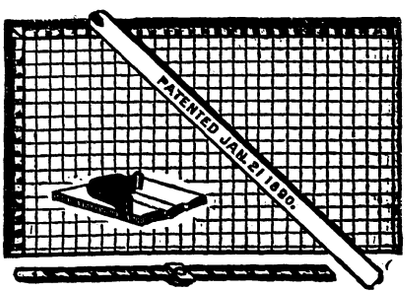
These Ice Dogs, or Creepers, designed to secure safe footing on slippery pavements, are the simplest and best ever invented. They consist of a very light, malleable casting of the best quality of iron, fitted for the sole of the shoe and fastened to the foot by means of a toe-strap and an endless elastic band drawn high over the heel, thus holding the dog to its place, and being easy of adjustment, is very quickly put on or taken off.

There are two sizes, for ladies and gentlemen respectively, and the peculiar adjustment attaches them equally well to boots, shoes or rubbers, without difficulty or delay.

Retail at **50c.** per pair. Liberal discount to dealers.

PATENTED AND SOLD BY

GEORGE A. WALLER,
SENECA FALLS, N. Y.



The Canton Glass Board.

Cuts any Fraction of an inch by Eighths.

Unequaled for accuracy and quick work in cutting square or at any angle. Saves breakages, &c.

—ALSO—

IMPROVED TRAMMEL RULE for Cutting Circles
From 3 inches up to 48 inches, Segments, Gothic Shapes, &c.

Send for Circular.

The Canton Saw Co., Canton, Ohio.

THE CLARK MFG. CO.,

Blind Hinges, Gate Hinges, Door Butts,
And other HARDWARE SPECIALTIES
BUFFALO, N. Y.

M

PHILLIPS SCREENS
Are Reliable.

DO YOU USE

LEATHER PARTS,

Straps, Washers, or Special Shapes in Leather, hand or machine sewed Leather Work of any description,

Skate Straps or Mountings?

Write for Estimates, mentioning this paper, to

J. FRANK GREENE & CO.,
276 Water and 14 Dover Sts., NEW YORK.

JOHN LOYD,



Machine Knives, Shear Blades, Presses and Dies.

Nos. 558 to 562 Water Street, New York.

You ought to.

A GREAT many merchants are using

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Every day adds to the number of those who highly esteem this valuable work. Very many people both in America and abroad have commended it highly as a time-saver and money-earner. It is positively

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Practical, As proved by its constant use by those who would not now do without it.

The cost is small, the book will last for years, you can depend upon the results without proving.

A great many bright people are using LADD'S DISCOUNT BOOK, and

You ought to.

Regular Edition, $3.00 } Sent postpaid
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Publisher and Bookseller,
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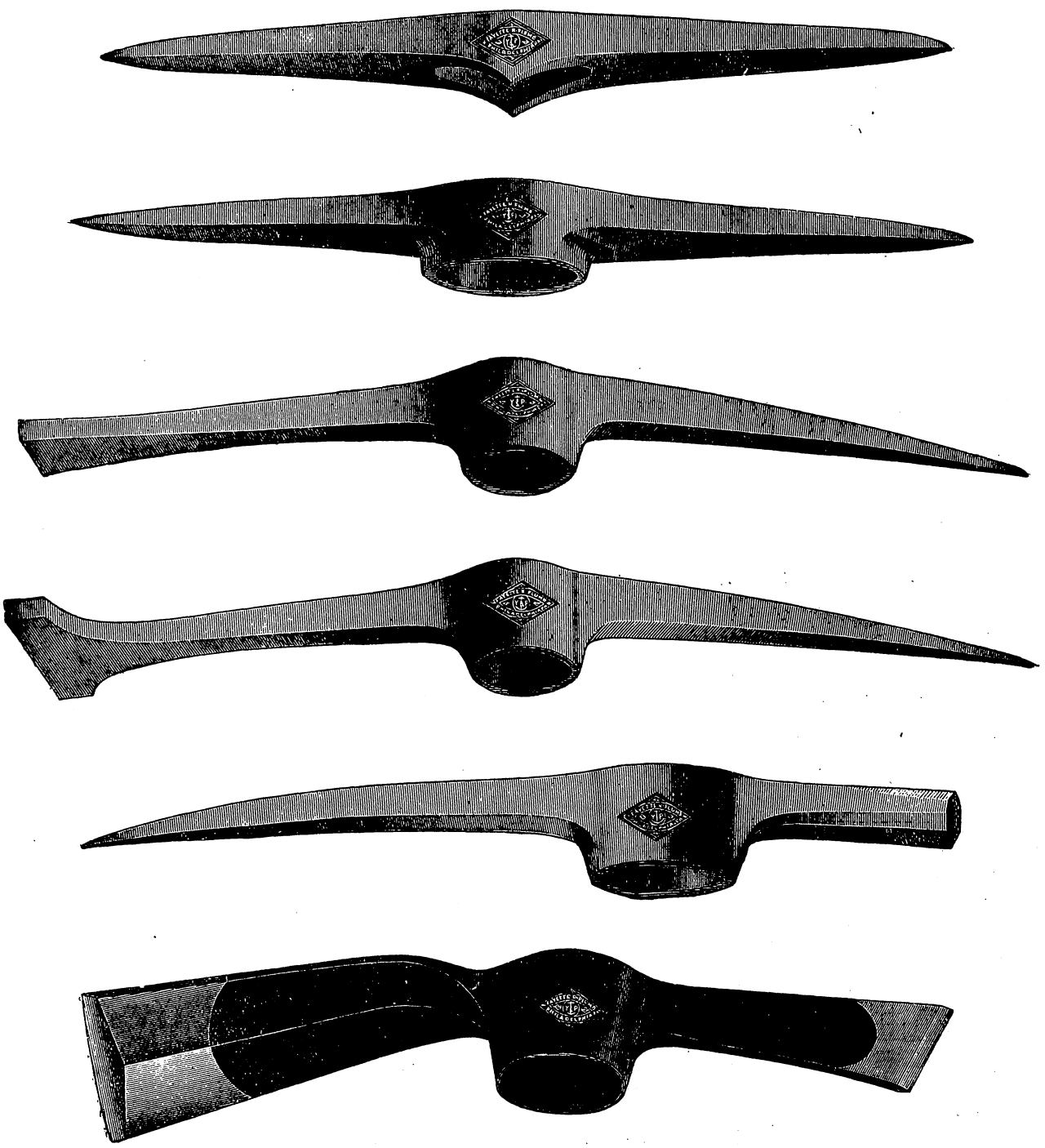
Fayette R. Plumb,

MANUFACTURER OF

Edge Tools, Hammers and Sledges,

Railroad, Miners' and Blacksmiths' Tools.

PICKS, MATTOCKS and GRUB HOES.



PHILADELPHIA, PA., U. S. A.

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PHILLIPS SCREENS
Are Reliable.

YOU will remember that last season there was a great scarcity of Wire Cloth, of Window and Door Screens and of all Screen goods.

In the hurry and rush many very poor goods were marketed. This condition of things was partially owing to the delay of buyers in placing specifications.

Assuming that you are able to profit from experience, we think you will take it kindly and perhaps act on our suggestion that

NOW IS THE BEST TIME TO BUY

SCREEN GOODS.

Aside from the fact that, notwithstanding his former experience, now is the time when the manufacturer rushes around, crazy to get orders at any price, and in consequence better prices are obtainable now than later, early specifications enable the maker of season goods to secure material and to shape his product to fit his orders.

We did not "lose our head" last fall. Sufficient orders were obtained at fair prices to enable us to run our factory to its full capacity, 4,000 to 5,000 screens per day. There was no rush and hurry, except in our department of "Screens to Order," and for a short time in our Screen Door Department. Our customers received good goods in reasonable time.

On account of the hard times and for other reasons, some screen makers will cut down their product for next year. In anticipation of the usual shortage, we have bought more largely than ever of lumber and wire cloth, a very large share of which is already in stock at the factory, which has been running since September 15th.

Buyers of Phillips Screens will secure for the coming season a well known, reliable article and a reasonable certainty of getting goods on time if specified for early.

SOLD BY THE BETTER CLASS OF JOBBERS.

Phillips Screens
FOR DOORS AND WINDOWS, ARE WELL MADE, FROM GOOD MATERIALS BY
A. J. Phillips & Co., Fenton, Mich.

No. 4 RATTAN MIXED BROOM.

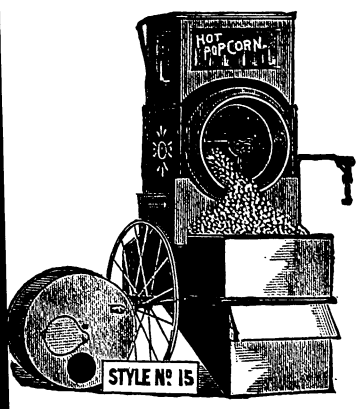
The Best Warehouse, Stable, Shop, Factory and Railroad Broom in the Market.

Made of Broom Corn and Rattan Reed mixed together, flat in shape, with an iron band, as shown in the cut, making it solid, substantial, and stiff, for handling the heaviest dirt. Will last longer than any other similar broom.



Brooms and Brushes for Railroad Shops, Warehouses, Street, Stable, Bloom. Chill, Casting and Moulding purposes a specialty. Write for prices.

JOSEPH LAY & CO., RIDGEVILLE, IND.



OLSEN'S AUTOMATIC
King of Corn Poppers, Peanut and Coffee Roasters.

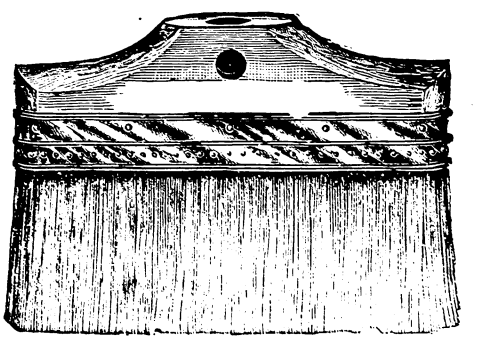
The greatest wheel of fortune out, for any person 12 years and upward; $1.00 to $50.00 profit per day; 1500 now in use,

Guaranteed to have no equal. Agents wanted.

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Whitewash, Horse, Paint, Window, Shoe,
And Every Variety of Brushes and
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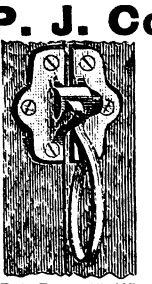
Close prices and prompt shipments. Get samples and catalogue for the asking.

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American Stamping Co.,
Manufacturers of
All Kinds of Tinware and Sheet Metal Goods.

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P. J. Conroy & Co.,
Paschall, PHILADELPHIA.


Pat. Dec. 15, '85

"CONROY"
Refrigerator Door Fasteners
Have rapidly supplanted all others.
Refrigerator Trimmings.

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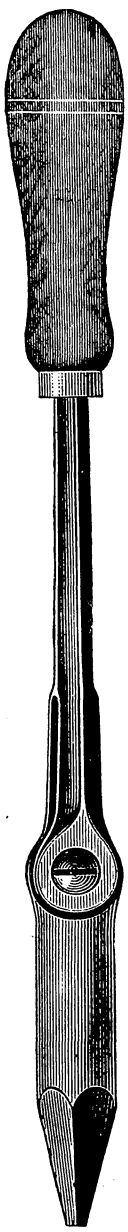


The Great Copper Trusts are Broken.



The *exorbitant* and *ruinous figure* to which copper had been driven by the trust caused us to desist from manufacturing the *Adjustable Soldering Copper Irons* for the time being.

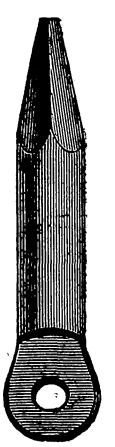
The demand for the goods from old customers, and the many orders we were thus unable to fill, is good evidence that it is the *only soldering iron* that meets the demands of the *Tinsmith* and *Plumber*.



With new and improved machinery we are once more in a position to receive and fill orders with the *best soldering iron in the market*. It is a complete tool in every respect, and can be as easily adjusted at any angle while hot as cold. The handle can be used indefinitely, as when the copper is worn out it can be *replaced* in the *same handle*, making the iron as good as new and at about *half the cost* of the ordinary soldering iron. These *soldering irons*, like our other goods, are guaranteed *first class* in every respect, and if for any reason they are not satisfactory or do not meet with ready sale, the purchaser can return them and we will replace with other goods of our make or refund the money.



Thus the dealer runs no risk in handling these goods, as we assume it all ourselves.



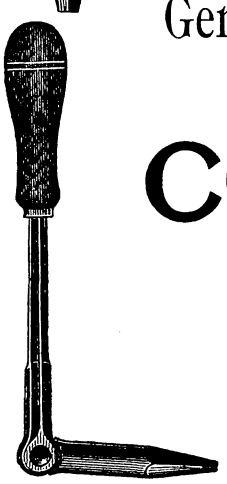
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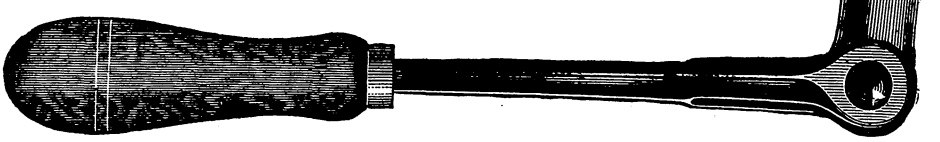
General Hardware and Plumbers' Supply Houses

AT MANUFACTURERS' PRICES.

COVERT MFG. CO.,

WEST TROY, N. Y.

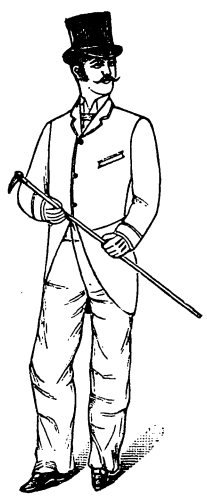




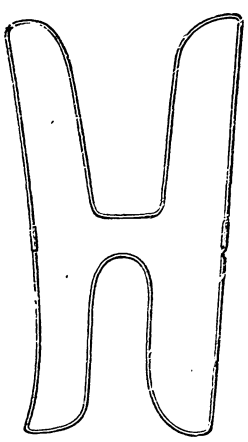
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—THE—

COVERT PANTS STRETCHER.

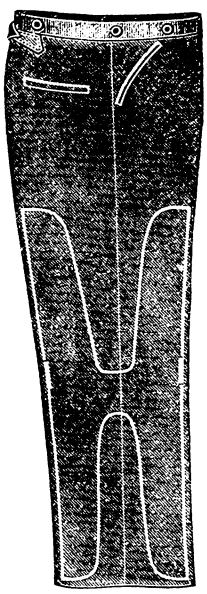


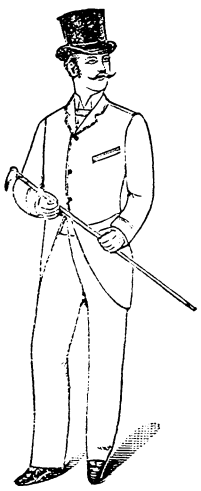
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Stretcher Ready for Use

Patented.





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GENTLEMEN using the Covert "Pants Stretcher" will find that their pantaloons will be restored to their original shape and length.

It removes all **WRINKLES and BAGGING AT THE KNEES,** and gives them the appearance of having just left the tailor's hands.

It is also very useful for holding the pants in a convenient position for brushing and cleaning.

The invention is simplicity itself, and cannot get out of order, and can be adjusted in the pants in a few seconds.

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It is made of steel wire, light and compact, and being made in sections can be packed in a valise when traveling. Sold by the trade, or

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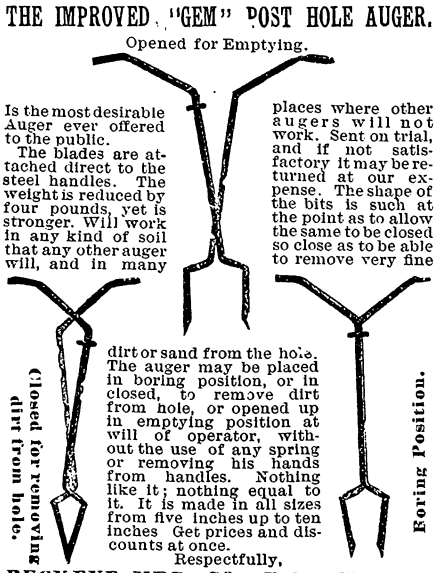
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The blades are attached direct to the steel handles. The weight is reduced by four pounds, yet is stronger. Will work in any kind of soil that any other auger will, and in many places where other augers will not work. Sent on trial, and if not satisfactory it may be returned at our expense. The shape of the bits is such at the point as to allow the same to be closed so close as to be able to remove very fine dirt or sand from the hole. The auger may be placed in boring position, or in closed, to remove dirt from hole, or opened up in emptying position at will of operator, without the use of any spring or removing his hands from handles. Nothing like it; nothing equal to it. It is made in all sizes from five inches up to ten inches Get prices and discounts at once.

Respectfully,

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Boring Position.

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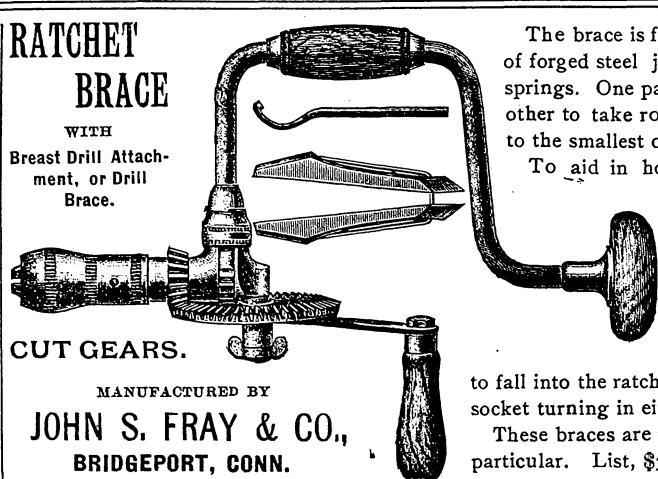
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WITH Breast Drill Attachment, or Drill Brace.



CUT GEARS.

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The brace is furnished with two sets of forged steel jaws having our patent springs. One pair for ordinary bits; the other to take round shank drills down to the smallest ordinary size.

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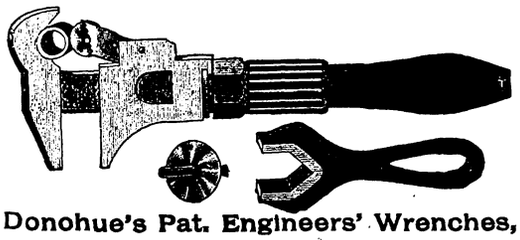
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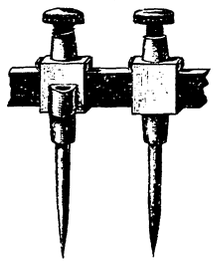
HIGH QUALITY TOOLS

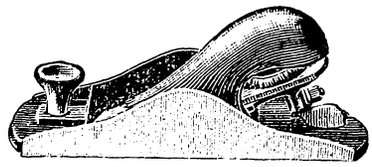


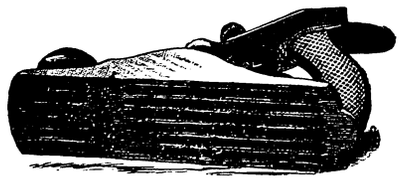


Donohue's Pat. Engineers' Wrenches, Short or Long Sleeve Nuts, and with Pipe Cutter.

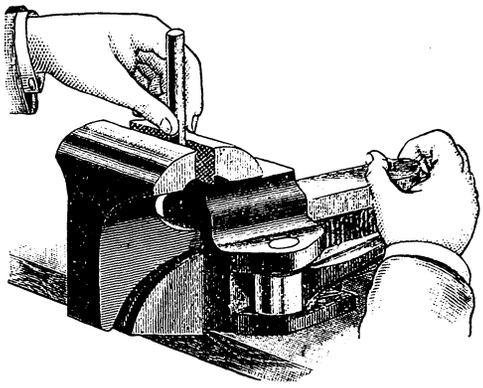




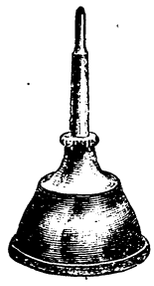


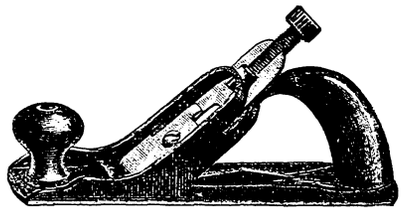


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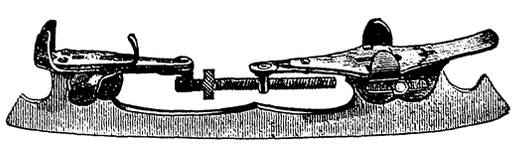
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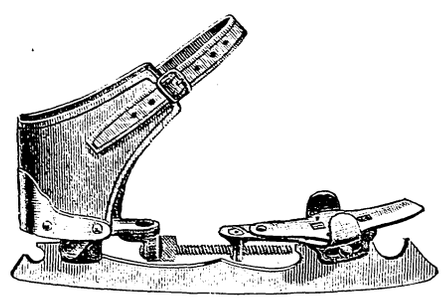
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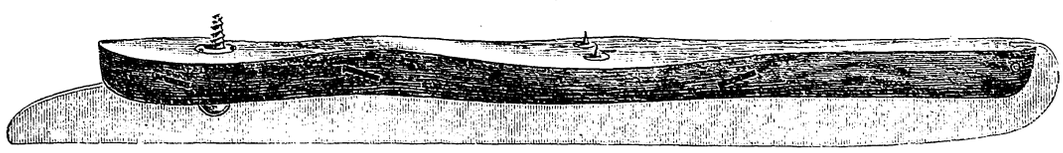
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Torrington, Conn.





DONOGHUE RACING SKATE.



SUPERIOR QUALITY, STYLE AND FINISH.

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IMPORTERS AND WHOLESALERS,

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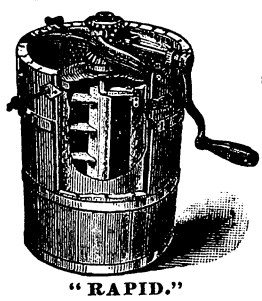
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Sundry Ice-Cream Apparatus.

Send for Descriptive Catalogue and Attractive Quotations.

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IF YOU USE

PARAVASELINE.

It is a Lubricant that will prevent all kinds of metals from rusting.

WHEN YOU COME HOME AFTER SKATING

apply a light coat of Paravaseline to your skates and it will keep them in good condition.

ONE TUBE WILL LAST A YEAR

and will be mailed to any address on receipt of 25 cents or you can get them at all hardware or skate stores.

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Diamond Cycle Wrench,

WITH SPOKE GRIP ATTACHMENT.

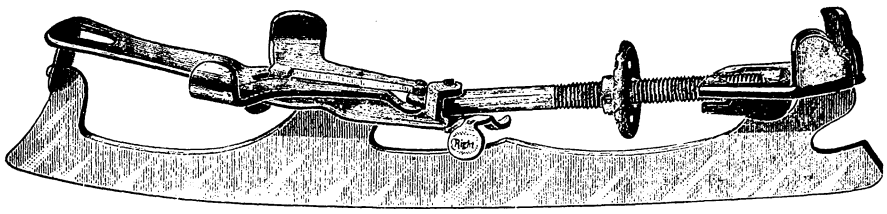
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Manufactured by the **GENDRON IRON WHEEL CO.,** Sold by all Cycle and Hardware Dealers. **TOLEDO.**

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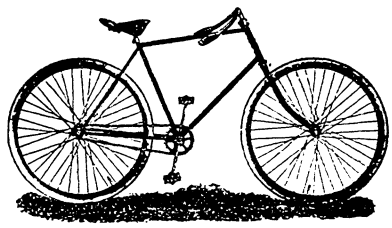
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Wholesale Hardware.

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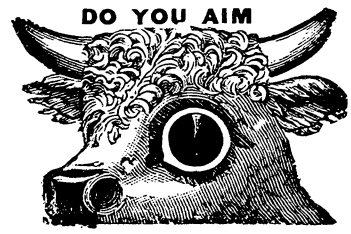
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Please mention *The Iron Age* when you write.

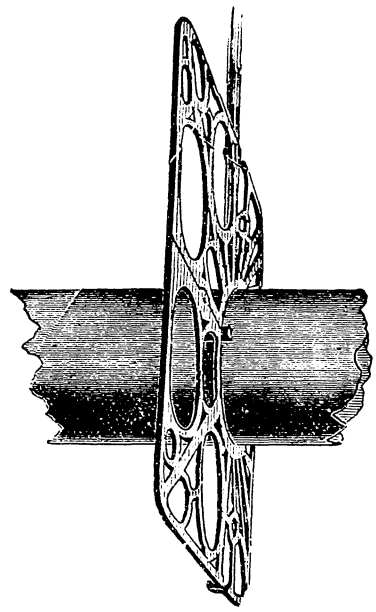
The Henry C. Hart Mfg. Co.

DETROIT, MICH.,

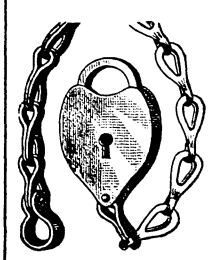
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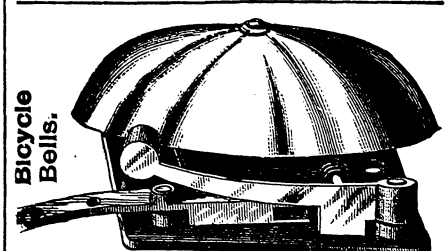
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Especially Low Prices

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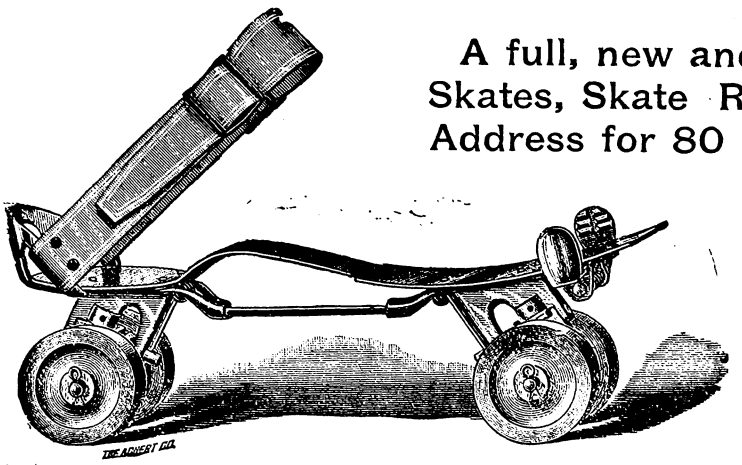
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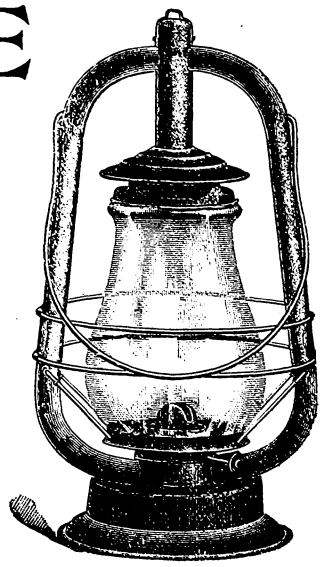
Ohio Lantern Co.,

TIFFIN, OHIO.

W. W. PRYOR & CO., 81 Chambers Street, New York

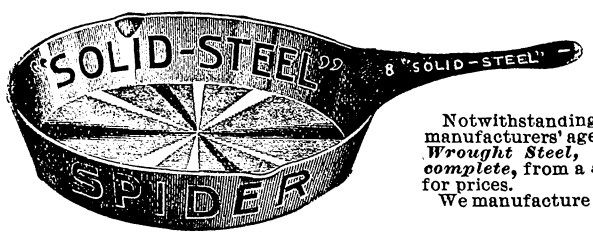
EASTERN AGENTS.

A full line of samples can be seen and the trade supplied at factory prices.



SURPRISE TUBULAR.

"SOLID-STEEL" SEAMLESS HOLLOW WARE.

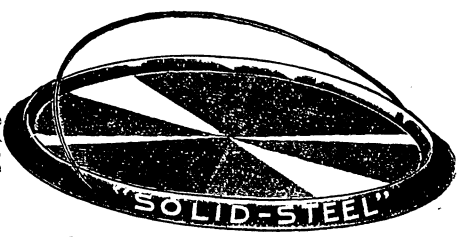


No Seams, no Rivets in "Solid-Steel" Ware.

BRILLIANT FINISH.

Notwithstanding the claims made by some manufacturers' agents, *our* spiders are made from *Wrought Steel, Without Seams or Rivets, complete*, from a *single piece of metal.* Write for prices.

We manufacture our own goods.



Made either with Balls or Solid Handles.

The Cleveland Stamping & Tool Co., Cleveland, O.

We do Light and Heavy Stamping and Blanking. Also build Dies and Stamping Machinery.

Just the thing for the HARDWARE TRADE.

HANDSOME.
TRUE.
HANDY.

PRICE LOW.

SEND FOR DESCRIPTION.



NEW HAMMERLESS DOUBLE GUN,

—MADE BY—

Forehand Arms Co.,

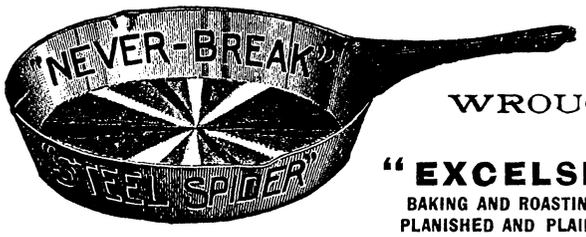
Worcester, Mass.

Also makers of a large line of popular

REVOLVERS.

Send for Catalogue.

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"MIRROR POLISH," the only Perfect Plain Steel Finish.

"NEVER-BREAK"

WROUGHT STEEL COOKING UTENSILS.

MIRROR POLISHED—TINNED—PORCELAINED.

"EXCELSIOR" BAKING AND ROASTING PANS, PLANISHED AND PLAIN STEEL.

"PURITAN" COOKERS, COFFEE POTS AND OTHER SPECIALTIES.

"IDEAL" BRASS, BRONZE, NICKEL UMBRELLA STANDS, CUSPIDORS, ETC., ETC., ETC.

THE BRONSON SUPPLY CO., CLEVELAND AND NEW YORK.



No. 3 Globe Street Lamp.

Light your Streets and Driveways.

The S. G. & L. CO.

Tubular Globe Street Lamp

IS THE Best Street Lamp Manufactured.
Equal to the best Gas Light.
Will not Blow Out in the Strongest Wind.
Will not Smoke.
Will not Freeze.
Automatic Extinguisher.
Outside Wick Regulator.
Will Burn Four Hours for One Cent.

MANUFACTURED BY

STEAM GAUGE AND LANTERN CO.,

SYRACUSE, N. Y.

Western Branch, 25 Lake St., Chicago, Ill.

Harrington & Richardson Arms Company,

MANUFACTURERS OF THE



Improved Automatic Double Action, 3 1-4, 4 & 5 in. Bbls., 32 & 38 Cal.

IMPROVED EJECTING DOUBLE ACTION, 3 1-4 in. Bbls., 32 & 38 Cal.

"Premier" Automatic Double Action Revolvers, 3 1-4, 4 & 5 in. Bbls., 32 & 38 Cal.

This line is unsurpassed for Style, Finish and Convenience in Manipulation.

The Safety Hammer Double Action,—Patented April 5th, 1887,—made in 3 Calibers, 32, 38 and 44. The American Double Action Revolver in 32, 38 and 44 Caliber, with 2½, 4½ and 6 inch barrels.
The Young America Double Action Line, 22 and 32 Caliber, and
The Vest Pocket Self-Cocker, 32 Caliber, Altogether making the most desirable line of Double Action Fire-arms manufactured by any Company in the world.

SOLD BY DEALERS IN HARDWARE AND FIRE-ARMS.

WORCESTER, MASS., U. S. A.

John Chatillon & Sons,

85, 87, 89, 91, 93 CLIFF ST., NEW YORK.



ESTABLISHED 1835.

SEND FOR PRICE LIST.

MANUFACTURERS OF SCALES —AND— BUTCHER TOOLS.

Sole Agents for

Foster Bro.'s Butchers' Cutlery.



John Chatillon & Sons, N. Y.

THE QUEEN ANNE SCREEN CO., Burlington, Vt.,

MANUFACTURERS OF

Improved Adjustable Window Screens.

THE QUEEN ANNE. With box panels; the only screen made and finished alike on both sides.
THE EUREKA. The best cheap extension screen on the market.
SCREEN DOORS. Finished all ready to hang Sticks, Corners, Improved Frames, &c.
Write for circular and Price-list.



PAT. NOV. 8, 1892.

BUY BRADLEY RACKETS!!!

Your Customers will like them. They are made of steel and are not brittle. They are light, strong and artistic. They can be put up with nail and hammer. Write for prices.

ATLAS MFG. CO.,

New Haven, - - Conn.

—:OUR:—

PURE ALUMINUM COOKING UTENSILS

Meeting with such universal appreciation we think it to our interest to appoint ONE responsible firm of Hardware Merchants in EACH town and city as our sole agents.

ILLINOIS PURE ALUMINUM CO., LEMONT, ILLINOIS.

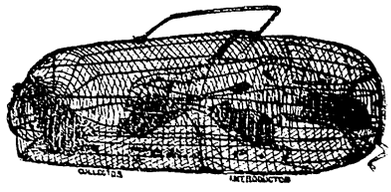
Manufacturers of Sheets, Medals, Utensils.

PHILLIPS SCREENS

Are Reliable.

GENUINE MARTY RAT AND MOUSE TRAPS

ALWAYS IN STOCK.



THEY DO THE WORK.

Orders solicited. Prices on application.

BURDITT & WILLIAMS,

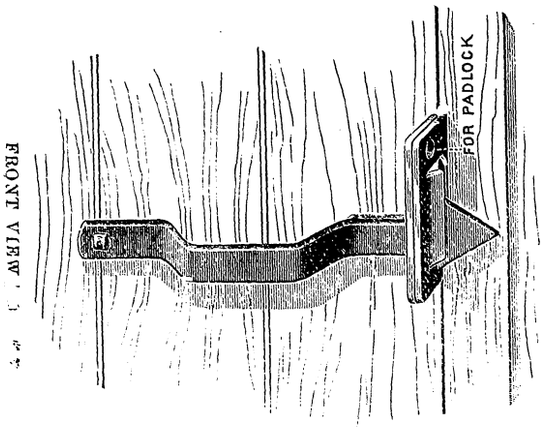
20 Dock Square, Boston, Mass.

—SOLE AGENTS AND IMPORTERS.—

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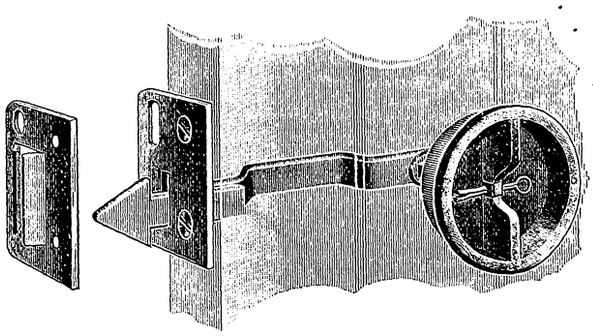
LANE'S SLIDING DOOR LATCH.

MADE OF STEEL.



IT IS DESIGNED especially for sliding doors. It is strong, durable and practically unbreakable. It is adapted for either right or left edge of door. It may be applied to either the inside or outside of door. It is also adapted for use on double door. It has no exposed screws or bolts that can be tampered with from the outside.

1 DOZEN IN BOX. LIST, $4.00 PER DOZEN.



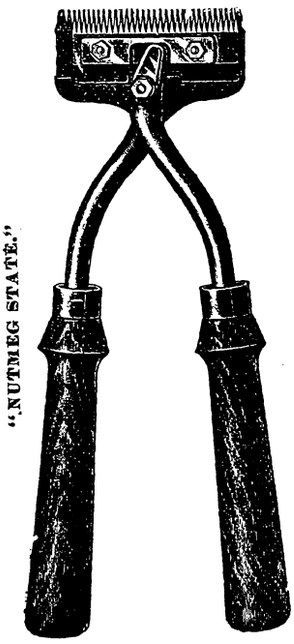
GENERAL AGENTS:

John H. Graham & Co,

113 Chambers St., New York.

Edward S. Hotchkiss,

MANUFACTURER OF HARDWARE,
BRIDGEPORT, CONN.

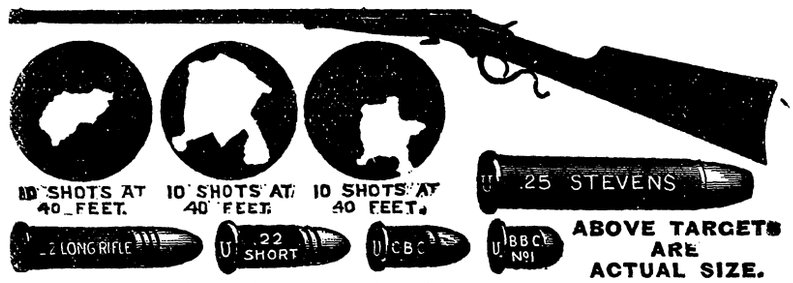


SATISFACTORY PRICES. Standard goods. Don't fail to write when in want of Horse and Barber's Clippers, No. 20 Steel Rat Killers, Curry Combs, Metal and Wood Choker Mouse Traps, Lemon Squeezers, Baxter Pattern Wrenches, &c., &c.

AMERICAN TOOL COMPANY,
NEW YORK,
MANUFACTURERS OF
TOOL CHESTS
Of all sizes, complete with tools, for Hardware, Toy, Notion and Variety trades
Factory and Salesroom,
200 West Houston Street, near Varick.
Also Machinists' Tool Chests, empty. Illustrated Catalogue and prices furnished on application.

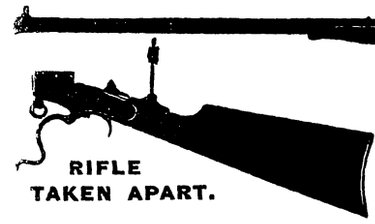
A Triumph in Small Bore Rifles.

STEVENS' "FAVORITE" RIFLE.



ABOVE TARGETS ARE ACTUAL SIZE.

Made for the 22 or 25 Rim Fire Cartridge.



WEIGHT, 4½ POUNDS.
22-INCH BARREL.
LEVER ACTION LIKE SHARPS.
TAKEN APART IN TEN SECONDS.
IT IS SIMPLY IMPOSSIBLE TO MAKE MORE ACCURATE SHOOTING BARRELS THAN ARE ON THIS RIFLE.

No. 17. Plain Open Sights.....$12.50
No. 18. Vernier, Open Back, and Beach Front Sights..... 17.00
No. 19. Lyman Peep, Open Back, and Lyman Front Sights, 17.00

A 60 Page Catalog showing our full line of Fire Arms with TRADE PRICE LIST sent, with pleasure to all dealers.

J. Stevens Arms & Tool Co.,
P. O. Box 5729.
Chicopee Falls, Mass. U. S. A.

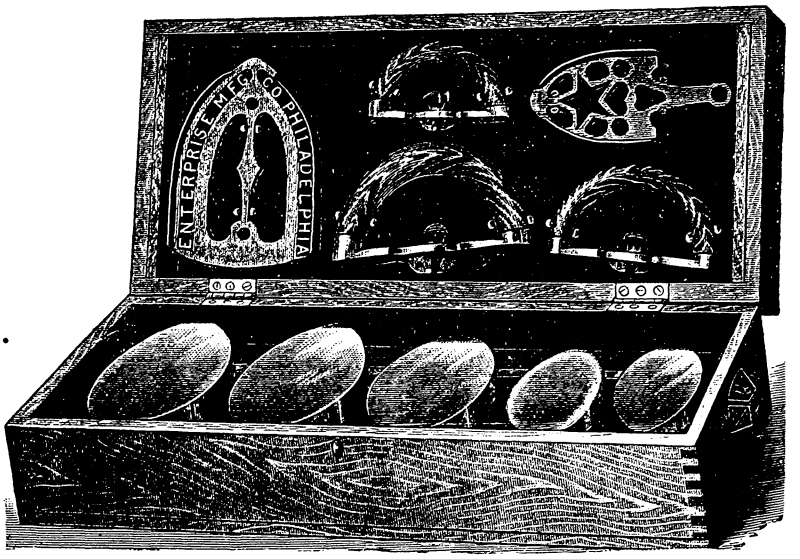
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FAMILY OUTFIT OF SAD IRONS.

SPECIALTIES.

Meat Choppers,
Sausage Stuffers,
Mole Traps,
Mrs. Pott's Sad Irons,
Sad Iron Heaters,
Shoe Stand & Lasts,
Lawn Sprinklers,
Family Outfit of
Sad Irons,
Tincture Presses,
Tobacco Cutters,
Vegetable Slicers,
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Attachments,
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Corn Mills,
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Fruit, Wine and
Jelly Presses.

Send for Catalogue, FREE.



A USEFUL PRESENT.

SPECIALTIES.

Coffee Mills,
Beef Shavers,
Measuring Faucets,
Cheese Knives,
Barrel Jack, Truck
and Stand,
Molasses Gates,
Bung-Hole Borers,
Cherry Stoners,
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Sugar Augers,
Cork Pullers,
Bullfrog Door Weight,
Flag Holders,
Ice Shredders,
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For Sale by the Hardware Trade.

THE ENTERPRISE MFG. CO. OF PA., Third and Dauphin Streets, Philadelphia.
Branch Office and Warehouse with J. C. McCARTY & Co., 97 Chambers Street, New York.

"SHUT DOWN! What's the Matter?"

"BELT BROKE AGAIN!"

"See here, Mr. Foreman, if you don't have fewer stoppages I'll——"
"Stop, Mr. Proprietor, the fault is yours. Quit buying belts that crack, peel, open between plies, stretch and break, and I'll give you a smooth run. You think it economy to buy cheap belts from Worthless & Co. Why! the time lost and trouble and annoyance caused by shut-downs would pay the difference between good and bad belts ten times over. Why don't you buy Cleveland's 'Shield High Grade,' sold by Reliable & Co.? It has an established reputation, has been thoroughly tested, and is in use in all the large mills and elevators here. You take no chances on it. Besides, a strong warrantee is indelibly branded upon it, such as no manufacturer would dare put or a poor belt. You remember that threshing machine man, whose engine we repaired, said he had a Cleveland High Grade Belt in use over five years, and if it will stand such severe work, it certainly will ours."

Trade  Mark.

LABEL INDELIBLY STAMPED ON EVERY 30 FEET OF BELT.

We are the only manufacturers who indelibly stamp a warrantee on each and every belt (see copy of label) and it remains as long as the belt lasts; and who give a written guarantee (see fac-simile). Our threshing machine belts have made a wonderful record, and our endless belts have given splendid service, the splice being as strong as the solid part of the belt. Suction Hose for Portable Engines and all other purposes.

We Want Your Trade.
Send for 60-page Catalog.
Write for Prices and Samples.

GUARANTEE.

We Guarantee *our "Shield High Grade" Belt to be made of best long staple, 30 & 32-oz. cotton duck; To be the most durable, because it is made of best materials, by special machinery; To be the best selling belt, because it has the best reputation, a cleaner record of long service, and because its warrantee is stronger, bolder, broader than any other, and is irrevokable, protecting both dealer and consumer. We further guarantee that, should any belt, under fair and reasonable service, fail or give out from any defect in material or manufacture, to replace same free of charge, on return to us.*

Witness *our hand and seal.*



Cleveland Rubber Works
Of the Mechanical Rubber Co.

CLEVELAND RUBBER WORKS
OF THE MECHANICAL RUBBER CO., CLEVELAND, OHIO.

LIGHT YOUR DARK SHOPS CHEAPLY.

Give your men plenty of Light and they will do double work.

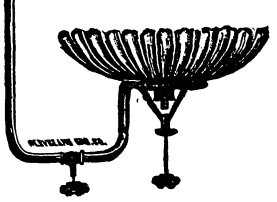


The Wall Torch has been used for several years as a means of illumination in **Mills, Foundries, Machine and Car Shops, Tunnels, Street Stands, Band Stands, Smith Shops,** etc.

While there are many cheap, inferior torches made which injure the sale of a good article, and condemn the **Torch** in general, our "Incandescent" Wall Torches are recognized as the best, and are now in use in the largest manufacturing establishments in the country giving **PERFECT SATISFACTION,** as is evidenced by the **DUPLICATE ORDERS** we receive from year to year.

They burn 150° Coal Oil, or 74° Naphtha, requiring a different burner for each.

In ordering be careful to state which is desired.



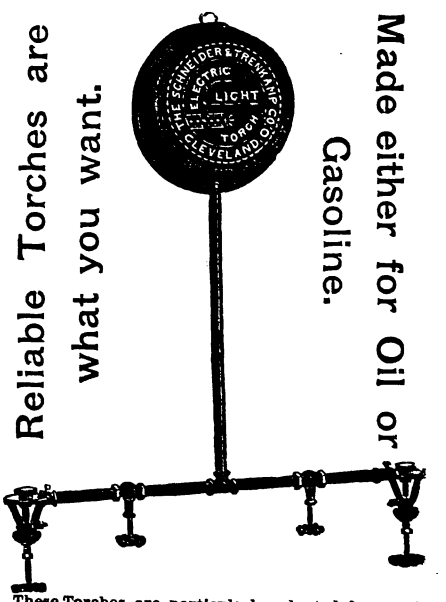
Price, for Single Torch, complete, $2 each.

SPECIAL PRICE QUOTED FOR QUANTITIES.

THE STANDARD LIGHTING CO.,

100 to 118 Perkins Ave., - - - - Cleveland, Ohio,

Reliable Torches are what you want.



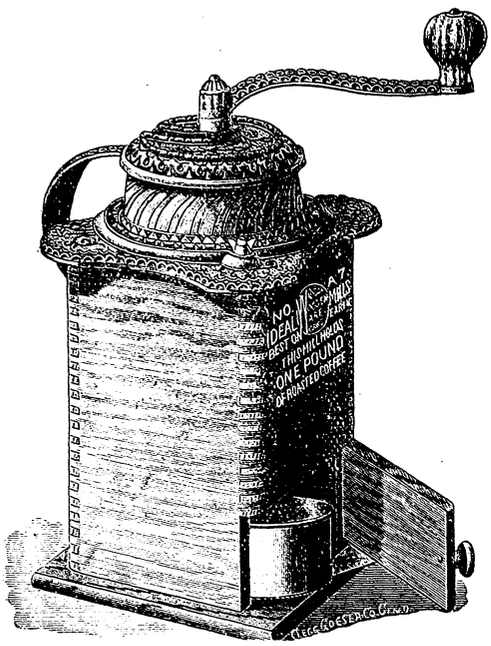
Made either for Oil or Gasoline.

These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner.

Write us for prices. A liberal discount given to the trade. Manufactured by

THE SCHNEIDER & TRENKAMP CO.,
Nos. 479 to 497 Case Ave., Cleveland, Ohio.

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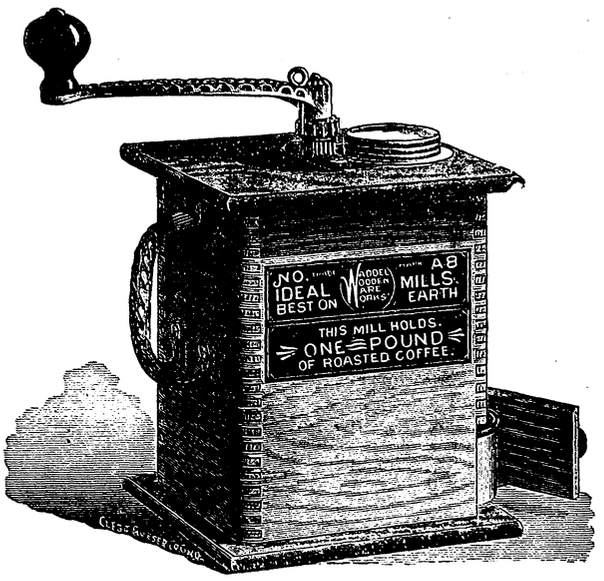


"Ideal"

Coffee Mills are fast becoming the Popular Sellers.

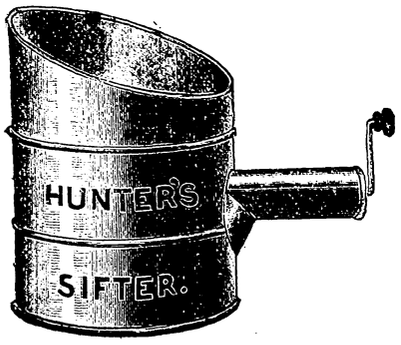
WHY ?

Because they Grind faster, are newer and have a better reputation. We can fit you in size and price.



WADDEL WOODEN WARE WORKS, Wholesale Manufacturers,
COFFEE MILLS, MONEY DRAWERS, ANIMAL TRAPS, &c., GREENFIELD, OHIO.

TWO FEATURES,
" MERIT and QUALITY,"
THAT THE
WORLD FAMOUS



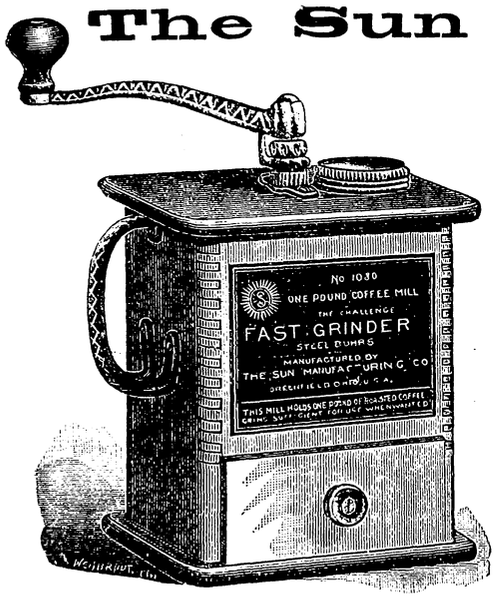
Hunter Sifters

excel in. They can be used for more purposes, last longer and sell quicker than any other make. Why ? . Simply because the public appreciates a good article. There are others, but ***Hunter's Sifters are Best.***

——ADDRESS——

The FRED J. MEYERS MFG. CO.,
COVINGTON, KY. F. J. MATTISON, Eastern Agent NEW YORK.

The Sun Manufacturing Co.



Successors to the Jno. M. Waddel Mfg. Co.,
ARE SOLE OWNERS AND MANUFACTURERS OF

Waddel's Improved Coffee Mills,

Cathedral Gong Money Drawer and Surprise Rat Traps.

Beware of Infringements.—We will protect our Patents.

"THE 'SUN' ONLY, SHINES FOR ALL."

A New Name, A New Reputation,

A New Line of Coffee Mills

That under the SUN Brand shine as leaders.

RAPID GRINDERS that will STAND THE WEAR.

STEEL ALLOY BUHRS,

A metal of recent discovery for this purpose used solely and only by the SUN. Warranted to outwear, outgrind and outsell any Coffee Mill ever put on the market.

We Challenge a Competing Test for Rapid Grinding and Wearing Surface.

Our New Line bears the Sun Trade Mark and is labeled **Steel Alloy Buhrs.**

Write for Our Catalogue and New Prices.

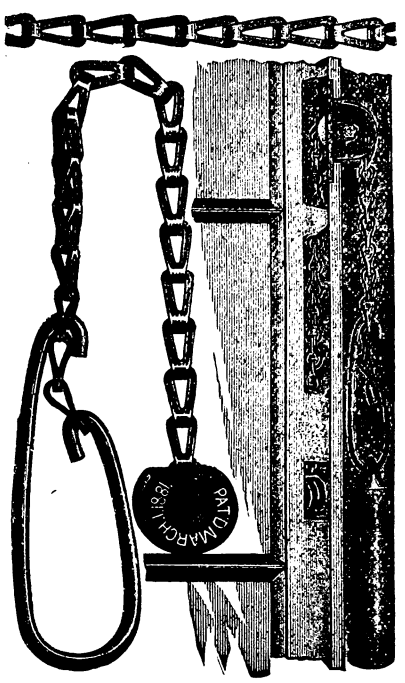
Order a Sample Mill.

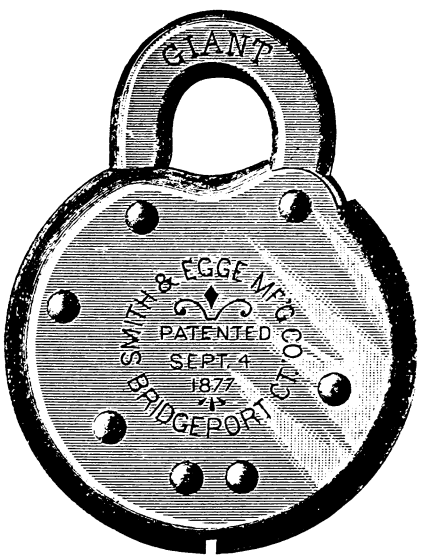
THE SUN MANUFACTURING CO.,
Greenfield, - Ohio, U. S. A.,
MANUFACTURERS OF
Cash Registers, Money Drawers, Coffee Mills and Wooden Ware Specialties.

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THE SMITH & EGGE MFG. CO.,

BRIDGEPORT, CONN.





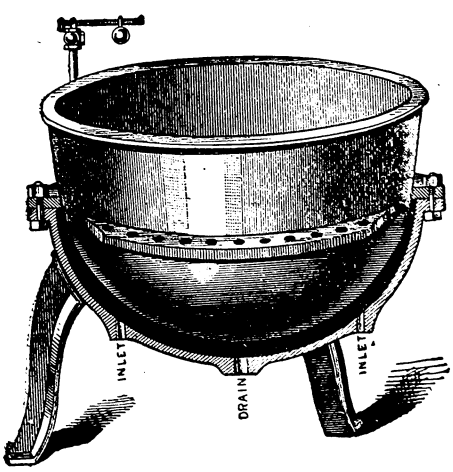
THE GIANT PADLOCK.

Centennial Award. "Superior in Every Respect."

This is one of the best selling locks in the market, and affords the dealer a large profit. It is thoroughly and strongly made—of the best material—very handsome in appearance, and every Lock is warranted. Orders solicited.

THE GIANT METAL SASH CHAIN

is a substitute for cord in hanging weights to windows. It is manufactured by us only, and by automatic machinery, patented and owned exclusively by ourselves, and whereby we secure uniformity of construction and quality. We have been to great expense in producing a metal having all the qualities and conditions requisite for making suitable chain for this purpose, and to prevent other chain of the same pattern of link and of the same general appearance, but made from an inferior metal, being offered as the same thing, we patented the word "Giant" as a Trade-Mark, as applied to either metal or chain. Trade-Mark Registered April 16, 1878, and October 22, 1878, and our metal is therefore known in the market as "Giant Metal," and our chain as "Giant Metal Sash Chain."



Jacketed Kettles.
Jacketed Kettles.
Jacketed Kettles.

Soup Digesters.
Soup Digesters.
Soup Digesters.

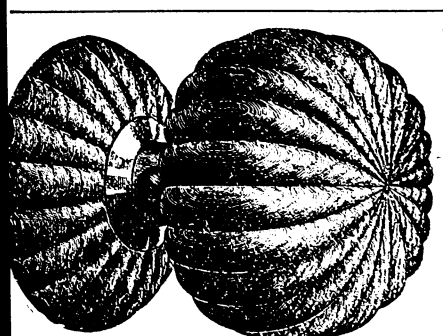
Reversible Griddles.
Reversible Griddles.
Reversible Griddles.

Hollow Ware.
Hollow Ware.
Hollow Ware.

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BURLINGTON, N. J., U. S. A.

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DOOR SPRINGS AND CHECKS
AND CHECKING SPRING HINGES

NEW GOODS. NEW PRICES.
Send for New Price-List.
. BARDSLEY, 149 & 151 Baxte St New York.

HARDWARE DEALERS

CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

MANUFACTURED ONLY BY

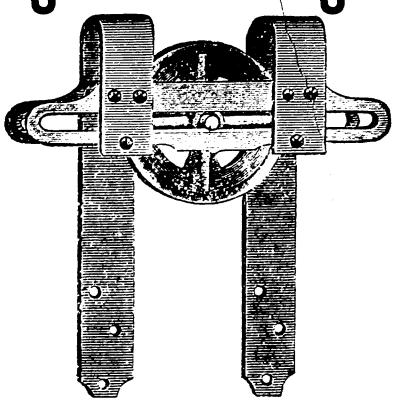
"THOMAS MORTON,"

65 Elizabeth Street,

Write for Prices. **NEW YORK.**

CHICAGO

Big Twin Hanger.



Also a Complete Line of this Class of Goods.

MANUFACTURED BY

Chicago Spring Butt Co.,

Chicago, Ill.



Dangler

Electric

Torches

FOR

GASOLINE

OR

OIL.

14 JETS OF LIGHT



3 to 6 INCHES LONG.

FOR lighting manufacturing establishments, such as Rolling Mills, Foundries, Machine Shops, Engine Rooms, &c., &c., with a convenient, portable, brilliant, steady light, and by cheaper means than by Coal Gas.

SOLE MANUFACTURERS,

The Dangler Stove & Mfg. Co.,

Cleveland, Ohio.



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World's Columbian Exposition.

1893.

RUSSELL & ERWIN MANUFACTURING COMPANY

Received a Medal and the Highest Awards in the several Classes in which they entered their products for competition, as follows:

Builders' Hardware.—Department H, Group 119.

Highest Award for Excellence of construction and workmanship, Artistic order of Designs and Extensive Variety.

Door Locks of Wrought Steel—for Lightness and Strength.

Door Locks, Cylinder—Security and Simplicity.

Door Checks and Springs, "Home"—Simplicity, Efficiency and Durability.

Screws and Bolts.—Department H, Group 119.

Highest Award for Screws and Bolts made from Iron, Steel, Brass and Bronzè for Wood and Metal, with Patented Helicoid Ribs on the Shanks. This feature of the Helicoid Ribs on the Shanks is the most important improvement in Screws and Bolts of recent years.

Diamond Point Steel Screws.

Kuhn's Hinge Pins for Stove Doors.

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Highest Award for Excellence and Merit. Fire Irons and Stands, "Home" Meat Cutters and Stuffers. Hale's Meat Cutters and Stuffers.

Carpenters' Tools.—Department H, Group 119.

Highest Award for Excellence of Quality and Workmanship. Chisels, Gouges, Drawing Knives, Boring Implements (James Swan) and Steel Squares.

FACTORIES:

New Britain, Conn., and Dayton, Ohio.

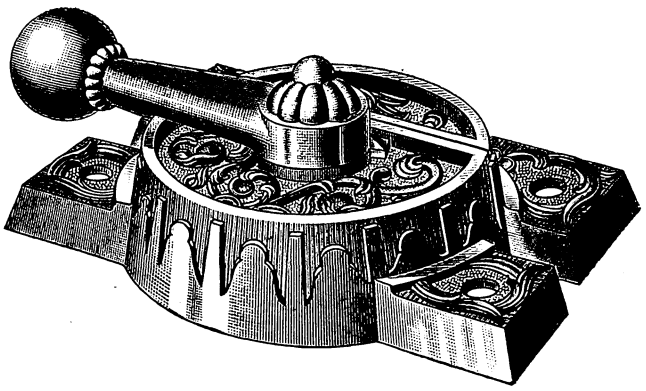
WAREHOUSES:

New York, Philadelphia, Baltimore, and London, Eng.

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READING HARDWARE CO.

ANTIQUE COPPER PLATED ON IRON



No. M 789.

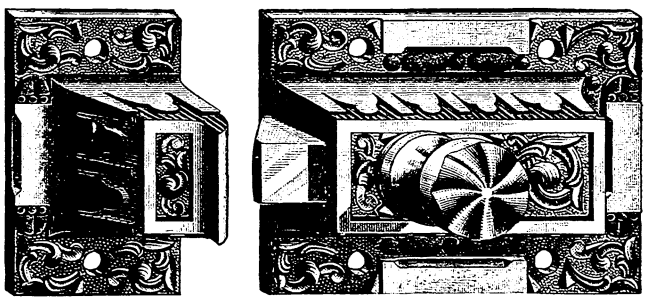
COLUMBIAN DESIGN

HARDWARE

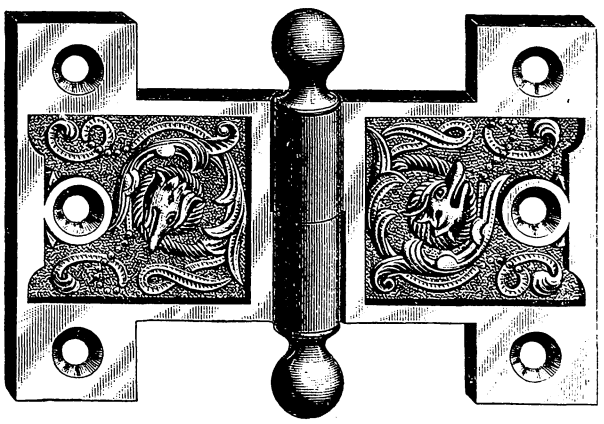
AND —

LOCK SETS,

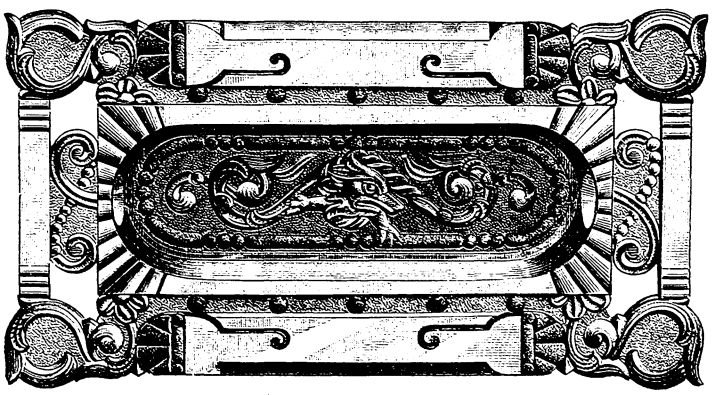
For INSIDE DOORS.



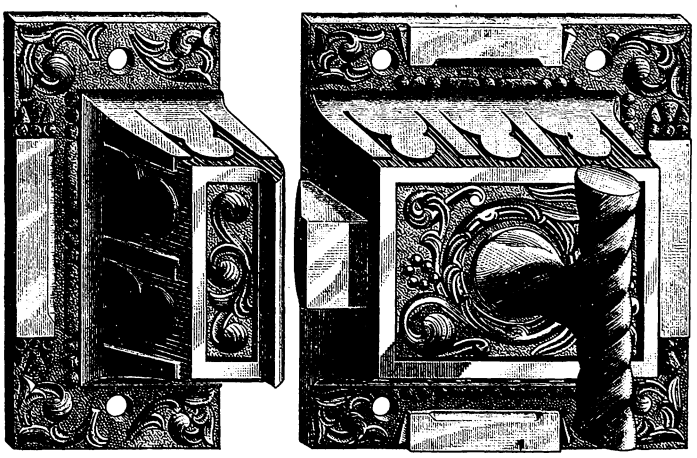
No. M 369.



No. M 297.



No. M 318.



No. M 444.

Catalogue and Price-List furnished on application.

WAREHOUSES:

81 Reade St., NEW YORK.

514 Commerce St., PHILADELPHIA.

73 Wabash Avenue, CHICAGO.

Factories and Main Office: READING, PA.

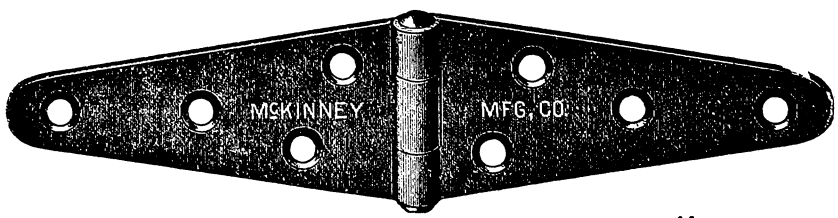
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WE CLAIM

That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

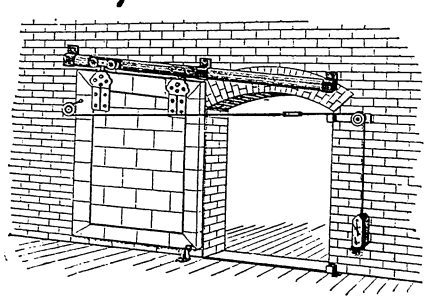
McKINNEY MFG. CO., ALLEGHENY, PA.

Steel 

Hinges.

SEND FOR LIST. **"NONE BETTER."**

BARN, MILL AND FIRE DOOR HANGERS



Fire Door Hangers. Best in the World. Equipped with Automatic Fire Door Fittings.

HIGHEST AWARD

at WORLD'S FAIR, 1893,

—: ON :—

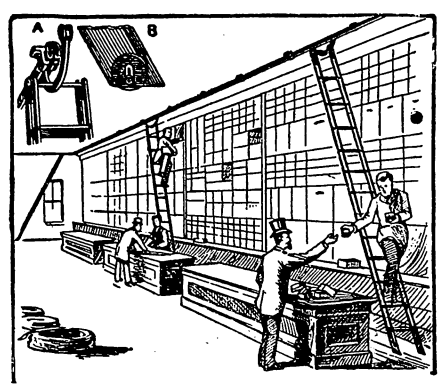
Parlor, Barn and Fire Door Hangers.

SEND FOR CATALOGUE.

COBURN TROLLEY TRACK MFG. CO.

HOLYOKE, MASS.

We make four styles of ROLLING LADDERS to reach shelving of any height.

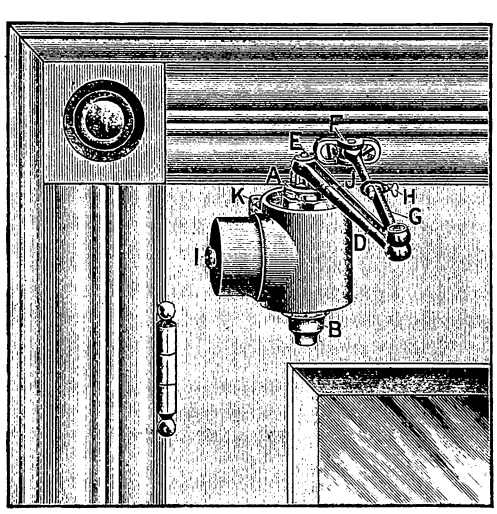


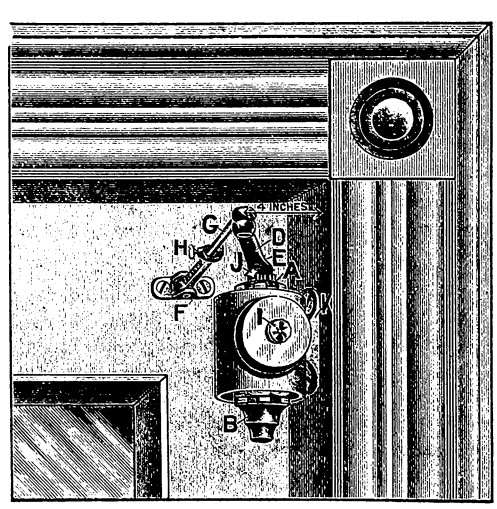
P. & F. CORBIN,

New Britain, Conn. **New York.** **Philadelphia.** **Chicago.**

—) MANUFACTURERS OF (—

Easily Adjusted and Adapted for all Requirements.





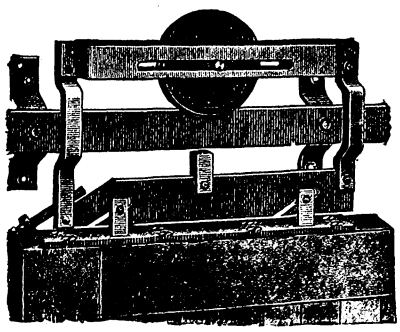
Looks Well, Acts Well, Wears Well.

LIQUID DOOR CHECKS AND SPRINGS,

Fine Builders' Hardware. Wood AND Machine Screws.

Catalogues and Prices Furnished on Application.

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LANE'S PATENT NOISELESS STEEL

PARLOR DOOR HANGER.

This Hanger is made of Steel.
The Wheel is also Steel, except the filling or tread.
The Track is of Steel—a single one only.
The Hanger is Anti-Friction.
More nearly Noiseless than any other.
Ease of adjustment.

Can be erected with half the labor others require.
Track will not swell, shrink or warp out of true.
No cutting of doors.
No matching of hardware.
Simplicity in all its parts.
Durability.

ALSO LANE BARN DOOR HANGER AND TRACK. SEND FOR CIRCULARS.

Manufactured by

LANE BROS., Poughkeepsie, N. Y.

JOHN H. GRAHAM & CO., General Agents, 113 Chambers St., New York.

He had in his possession 55 skeleton keys which the police claim would open any door. —*Chicago Tribune.*

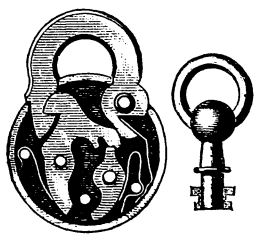
You are selling that kind of a lock every day and your customers think you are selling the best the market affords.

ARE YOU SELLING the best the market affords?

The Craig Locks are guaranteed Sneak Thief Proof.

Send for Catalogue. **KEYLESS LOCK CO., I. A. 197 So. Canal St., Chicago, Ill.**

PATENT PERFECTION PADLOCK.



Eight Tumblers, Key Turning Both Ways.

Sizes, ¾ inch to 2½ inches, of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also ½ and ⅝ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.
Adopted by the United States Treasury for bonded warehouses.

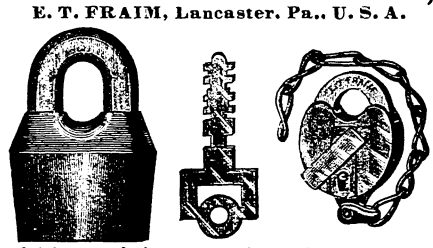
AMES SWORD CO., Chicopee, Mass.

Send for Price-Lists and Circulars.

ESTABLISHED 1879.

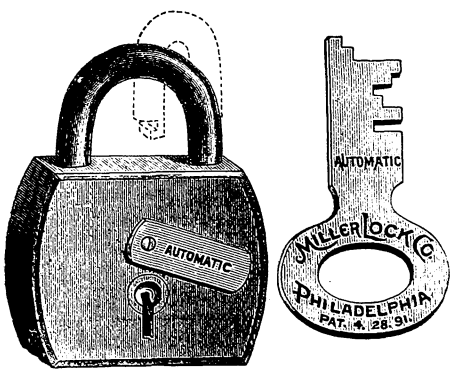
KEYSTONE LOCK WORKS,

E. T. FRAIM, Lancaster, Pa., U. S. A.



Originators, designers, patentees and manufacturers of all the leading popular styles of **PADLOCKS**, Key-Locking Scandinavian with our patent Inter-Locking Tumblers; the only reliable lock of this style ever made. **SELF-LOCKING** Scandinavian of the highest type of perfection. Dust Proof Railroad, Freight Car and Switch Padlocks. Brass, Bronze, Steel and Malleable Iron Padlocks for all purposes and in all finishes. 131 different kinds. Write for our new 100-page catalogue.

SURPLESS, DUNN & ALDER, General Agents, 97 Chambers St., NEW YORK.



No Padlocks ever struck the American Market so favorably as the

"AUTOMATIC."

They are novel and durable, and have tenfold more changes of key than are usual in locks at the price.

			Per Doz
No. 406—	Steel, Dark Finish,	2-Keyed,	$7.20
" 407—	Brass, Bright "	2 "	8.50
" 400—	" Plated,	1 "	6.60

For sale by the jobbing trade.

MILLER LOCK CO., Lock Manufacturers,

Frankford, Philadelphia, Pa.

SIMPLEST IN CONSTRUCTION.
EASIEST FITTED.



Cheapest and Best Balance Made.

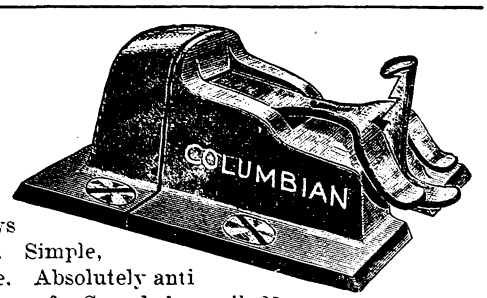
WRITE FOR CATALOGUE.

The Vanderbilt Sash Balance Co.,

CANANDAIGUA, N. Y.

General Agents, Harmon & Dixon, 118 Chambers St. New York.

Columbian Sash Lock.



Locks three ways with one motion. Simple, strong and durable. Absolutely anti rattle and burglar proof. Sample by mail, 35c.

COLUMBIAN SASH & DOOR LOCK CO.,

WAUSEON, OHIO.

CLOTHES WRINGERS.

COLBY WRINCER CO.,

MONTPELIER, VT.

HAVE YOU Our Price-List?

C. H. WOLFF,

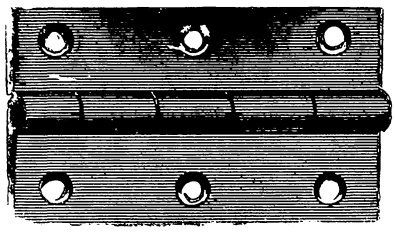
177 William St., N. Y.



STENCIL DIES.

Send for Catalogue.

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Cast Brass Butt Hinges

IN STOCK AND FOR SALE BY

W. & J. TIEBOUT,

Nos. 16 & 18 Chambers Street, New York,

MANUFACTURERS OF

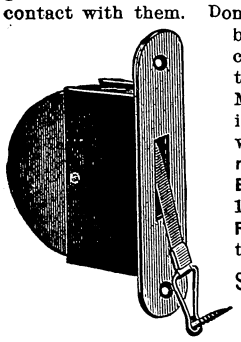
BRASS, GALVANIZED & SHIP CHANDLERY HARDWARE.

A Well Balanced Sash

IS LIKE

A Well Balanced Business Man,

gives satisfaction to those who are brought in contact with them. Don't be inveigled into buying anything called Sash Balances that have no record. Made from light cast iron. Ask your Hardware dealer for **Pullman Steel Frame Sash Balance.** Warranted 15 years. Only **Steel Frame** Sash Balance in the world.

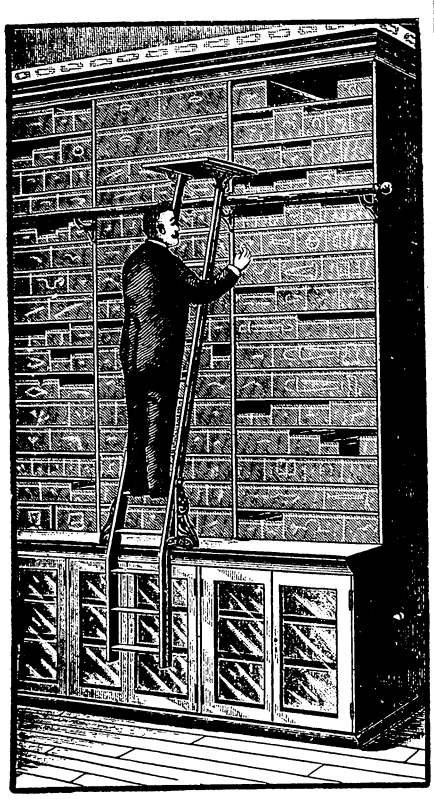


SIMPLE, CHEAP AND DURABLE.

PULLMAN SASH BALANCE CO., Rochester, N. Y.

New York Office, 142 Chambers St.

Chicago Office, 235 Lake St.



THE BICYCLE STEP LADDER.

The Newest, Neatest, Simplest, Easiest Operated and Safest Store Ladder made.

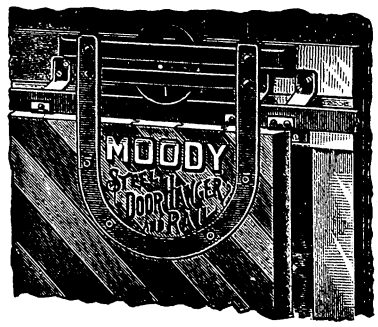
Ladders are not *Suspended*, but *Supported* from below on wheels. Move easier with operator on than others when empty. Highly finished, and very handsome. Made in different grades and prices to suit.

Send for illustrated catalogue and prices.

See this space next week for other styles.

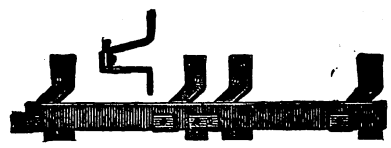
The Bicycle Step Ladder Co., 50 State Street, Chicago. Ills.

VICTOR MFG. CO., Newburyport, Mass.



Showing one-half set of hangers attached to door.

STEEL RAIL.



The Only Bracing Bracket Made.

PRICE-LIST.

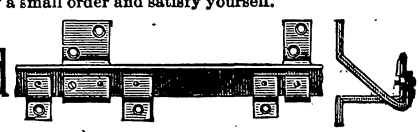
HANGERS.	Per Doz. prs.
No. 5, to run 6 feet, 3½ in. wheel,	$10.00
No. 6, to run 10 feet, 4½ in. wheel,	15.00
No. 7, to run 15 feet, 5½ in. wheel,	22.00
RAIL, per foot	6½ cents



Per Doz. pr.
No. 1 5 foot run $15.00
" 1½, 8 " " 18.00
" 2, 10 " " 22.00
" 3, 15 " " 26.00
Double Braced Steel Track, 4, 6, 8 and 10 feet lengths, 10c. per foot.

We are the original makers of steel covered hangers and all others are imitations. Beware of infringements, as we shall protect our rights.

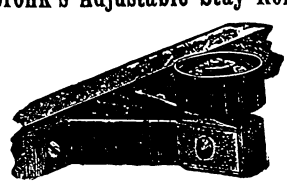
In our Steel Covered Hangers we have all the desirable features of the Best Hangers in the market, and with that we combine the cover for wheels SO NO ICE OR SNOW can reach the wheels, and making this cover as we do, we stiffen it so it is the strongest Hanger in the market, and we believe it is just perfect. Would be glad to have you try a small order and satisfy yourself.

Double-Braced  Steel Rail.

PATENTED JUNE 12, 1888.

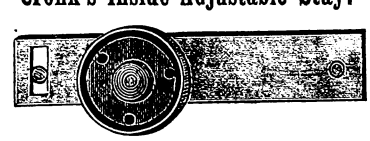
This rail being double-braced and double-riveted is the strongest rail in the market. Being braced both ways it will not sag. The joint is made so it is perfectly solid. It comes complete and ready for use, requiring only screws and screw driver for any man or boy to put it up in short order. It can be used for any grooved wheel Hanger, and a heavy door will not make it spring or tremble. Guaranteed to hold a door weighing 2,000 pounds, and used in connection with our Anti-Friction Hanger will work perfectly on large or small doors.

Cronk's Adjustable Stay Roller.



Made of wrought steel strap; cast block with slot adjusted by loosening bolt.

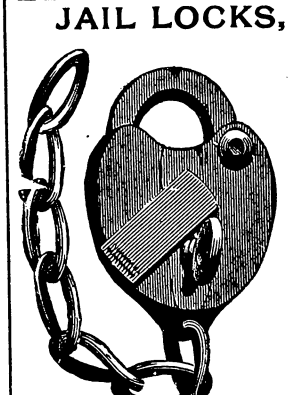
Cronk's Inside Adjustable Stay.

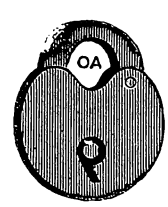


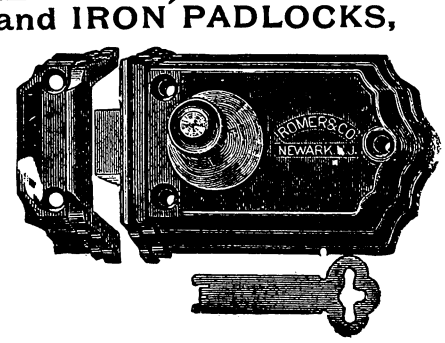
Is cheap, simple and durable, and much better than a cleat nailed on the floor, for this avoids all friction and leaves no place for dirt to accumulate. $2.00 per doz. No inside door can be properly hung without this stay.

Pacific Coast Agents, CHAS. L. PIERCE & CO., San Francisco, Cal.

ROMER & COMPANY, Manufacturers of PATENT JAIL LOCKS, BRASS and IRON PADLOCKS,





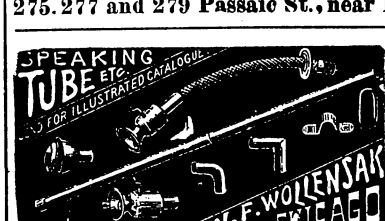


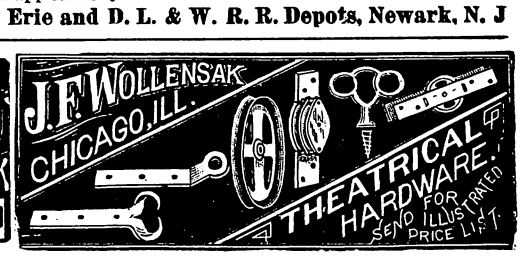
Adjustable Door Knobs and Trimmings,
Front Door Handles.

Patent Horizontal Rim Cylinder Reversible Night Latches.

Illustrated Lists sent to the Trade on application.

275, 277 and 279 Passaic St., near Erie and D. L. & W. R. R. Depots, Newark, N. J





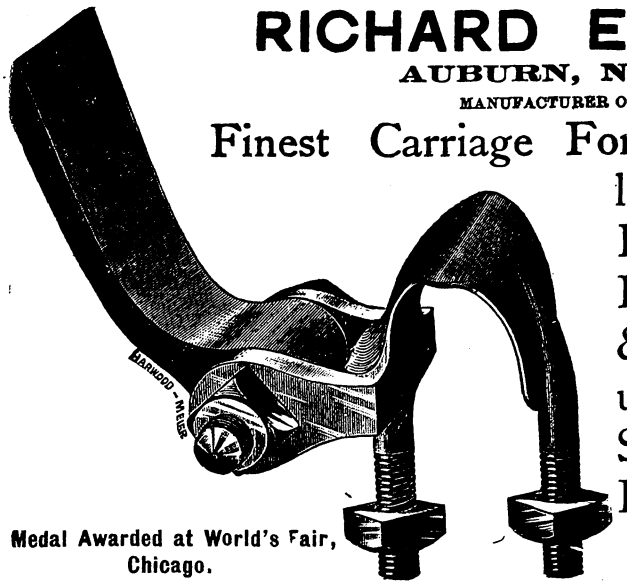
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RICHARD ECCLES,

AUBURN, N. Y.,

MANUFACTURER OF

Finest Carriage Forgings, Couplings, Clips, King Bolts, Fifth Wheels, &c. Manufacture a full line Special Drop Forgings.



Medal Awarded at World's Fair, Chicago.

Send for New Catalogue for Season 1893-94.

WHY USE WOODEN OR HEAVY STEEL BLOCKS

WHEN THE STEEL AND IRON

TACKLE BLOCKS

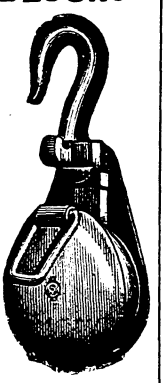
—MADE BY—

The Cleveland Block Co.

CLEVELAND, OHIO, U. S. A.,

ARE BETTER IN EVERY WAY.

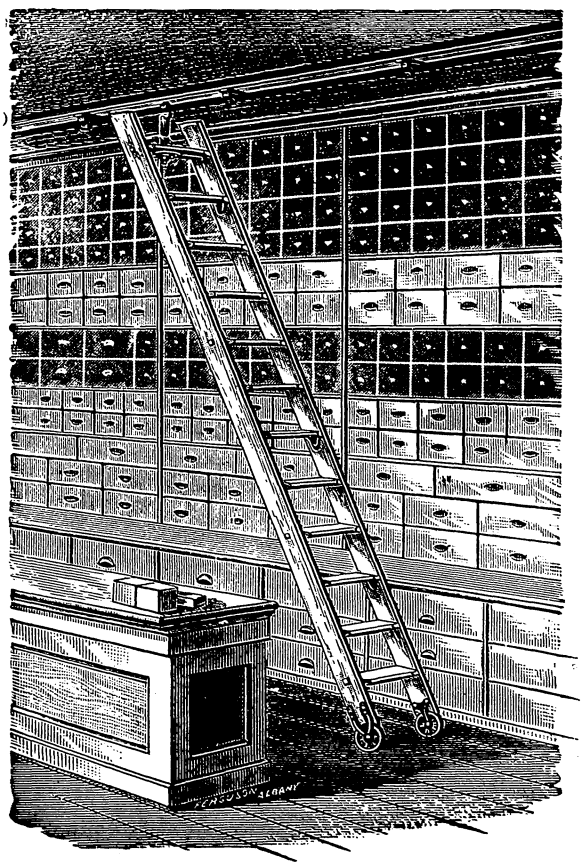




No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

General Agents: Topping Brothers, 92 Chambers Street, New York
The H. Channon Co., 22 Market Street, Chicago.
New England Agents, - Dodge, Haley & Co., 212 High Street, Boston.

THE "NOISELESS" STORE LADDER.

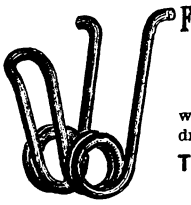


The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by

M. CROISSANT,

ALBANY, N. Y.



FROST'S ANTI-RATTLER

Pat. Jan. 20, 1880.

Cut One-half Size.

Sample pair sent to any hardware or saddlery firm by addressing

The Frost Thill Spring Co.,

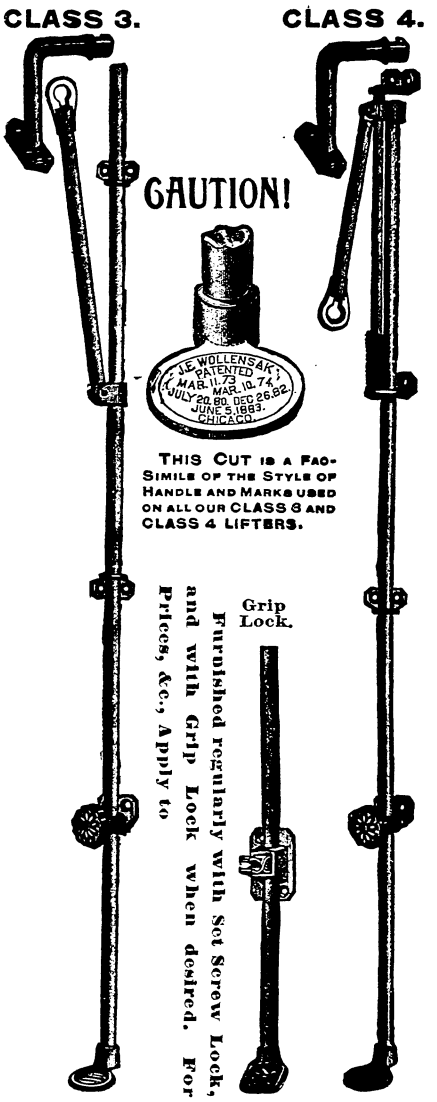
Boston, Mass.

Transom...Lifters

OLD RELIABLE

J. F. WOLLENSAK'S PATENT.

CLASS 3. CLASS 4.



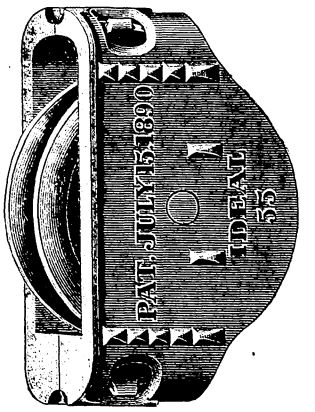
THIS CUT IS A FAC-SIMILE OF THE STYLE OF HANDLE AND MARKS USED ON ALL OUR CLASS 3 AND CLASS 4 LIFTERS.

Grip Lock.

Furnished regularly with Set Screw Lock, and with Grip Lock when desired. For Prices, &c., Apply to

J. F. WOLLENSAK. - CHICAGO, ILL.

Ideal Sash Pulley, No 55.



Adapted for auger socket or machine made mortise. Applied without chisel or screws, quickly and a perfect fit in every case. The only all round Sash Pulley made. Sample free. Price on application.

STOVER MFG. CO.,

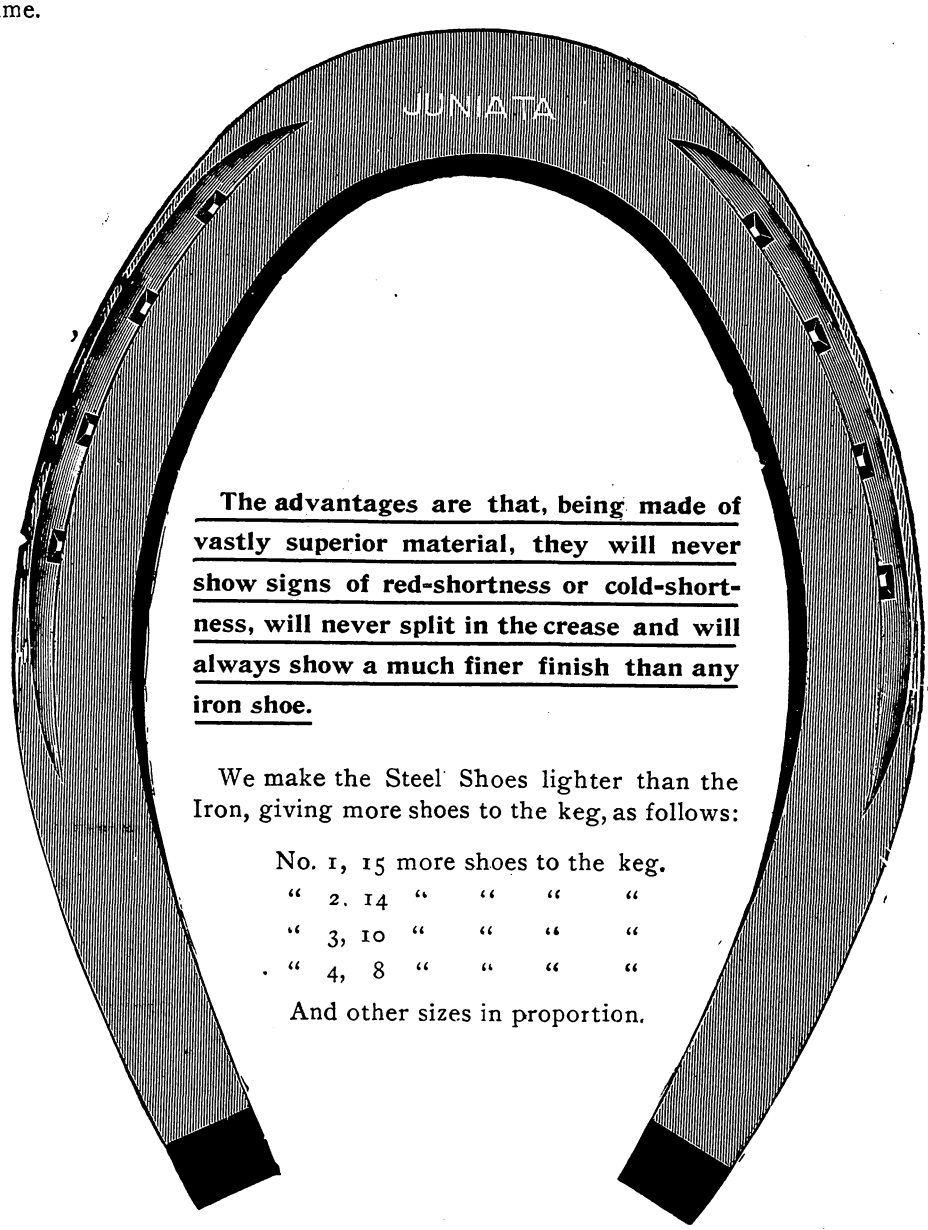
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After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged, and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



The advantages are that, being made of vastly superior material, they will never show signs of red-shortness or cold-shortness, will never split in the crease and will always show a much finer finish than any iron shoe.

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No. 1, 15 more shoes to the keg.
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And other sizes in proportion.

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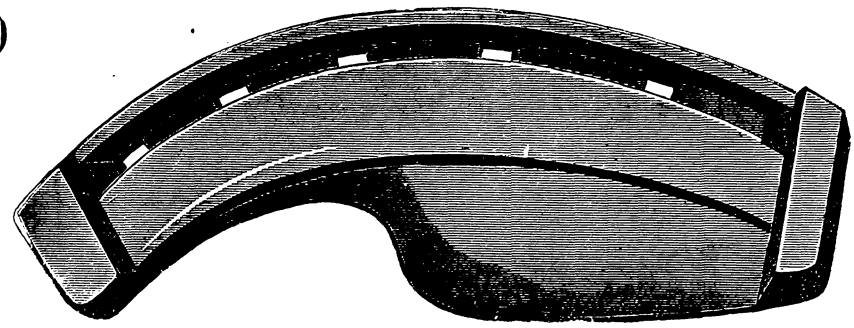
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Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

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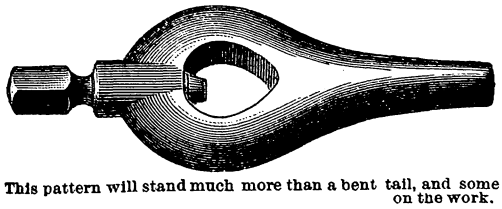
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4	1⅛	80	14	4	2 10
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6	1⅜	95	16	5	3 25
7	1½	95	17	5½	4 00
8	1¾	1 10	18	6	5 00
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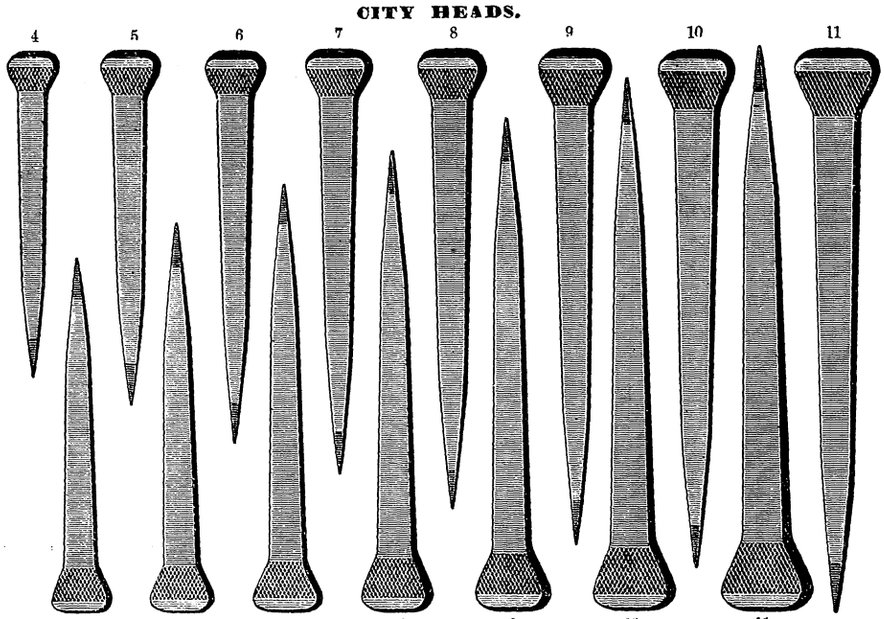
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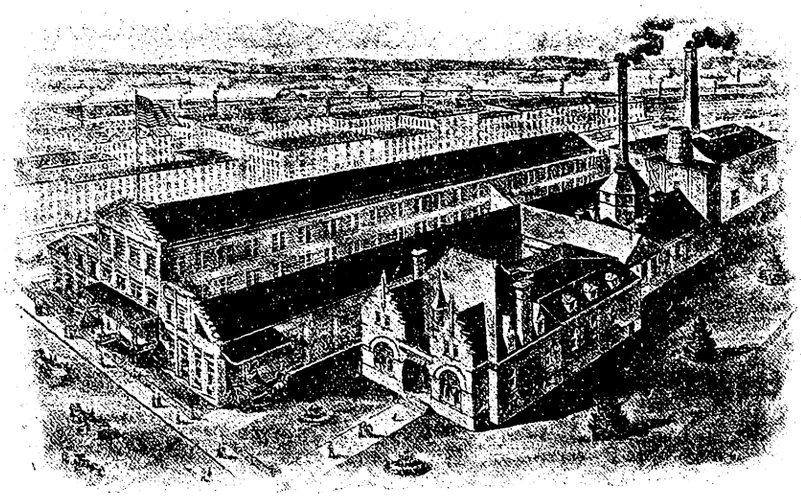
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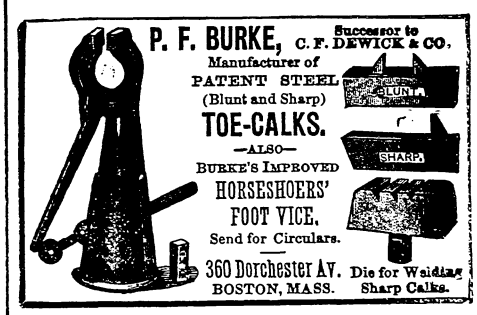
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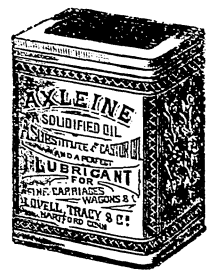
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It allows the use of very small nails."

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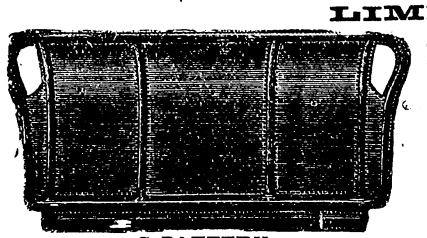
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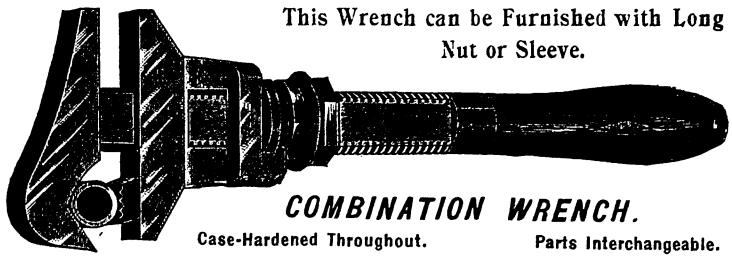


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COMBINATION WRENCH.

Case-Hardened Throughout. Parts Interchangeable.

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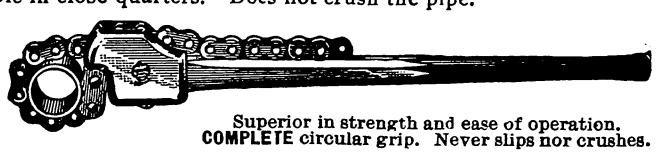


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Forged Steel
All parts interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

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Superior in strength and ease of operation. COMPLETE circular grip. Never slips nor crushes.



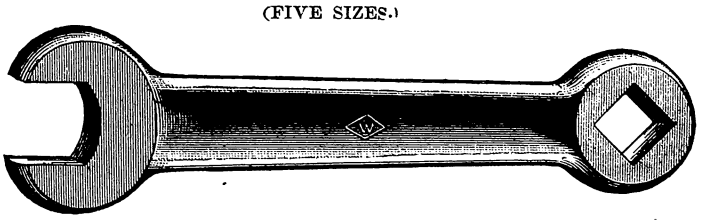
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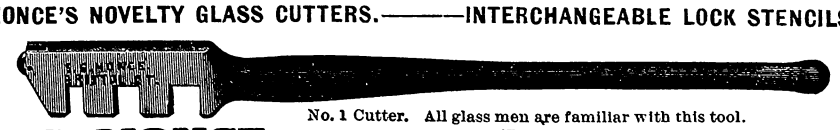
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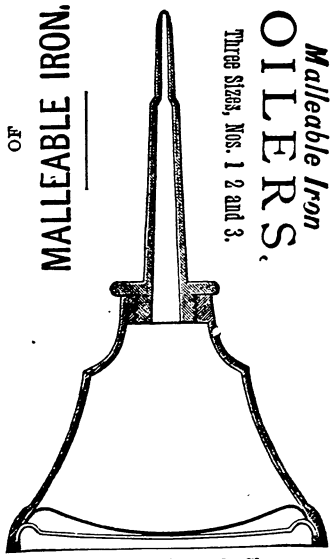


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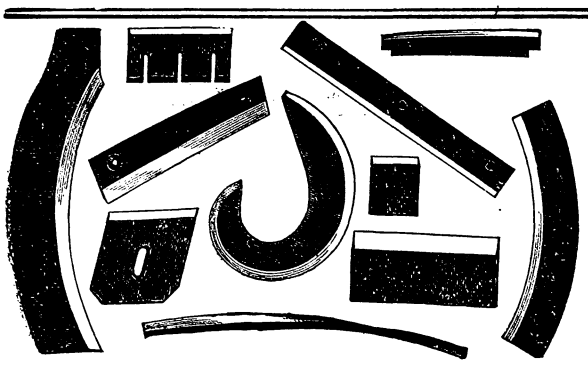
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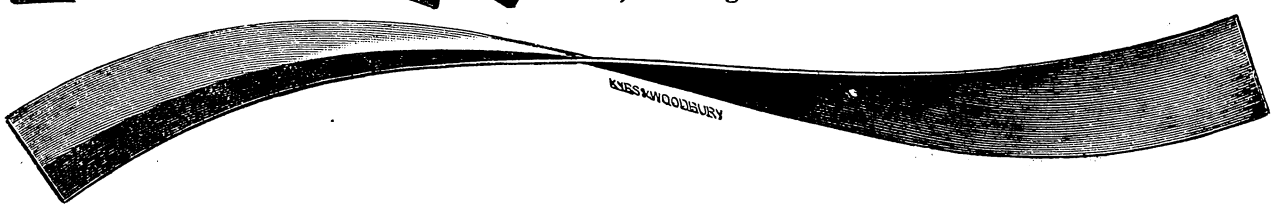
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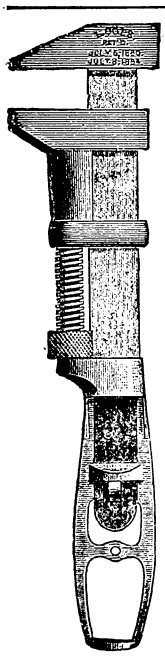
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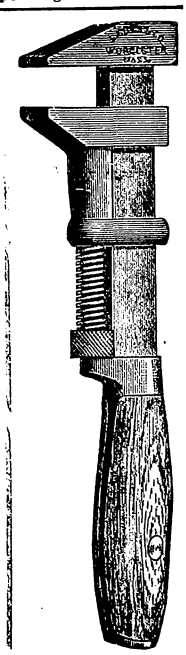
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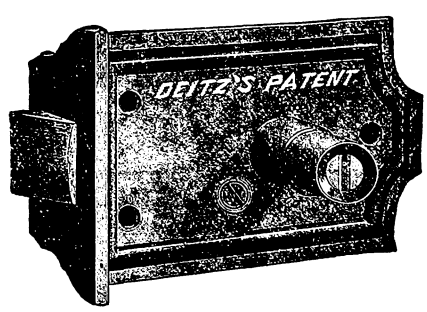
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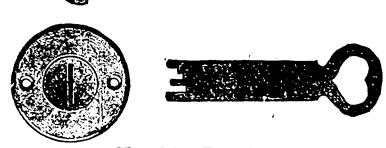
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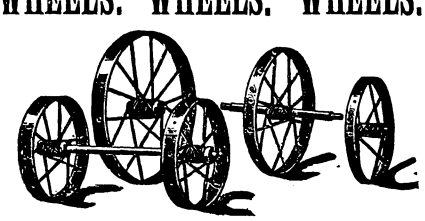
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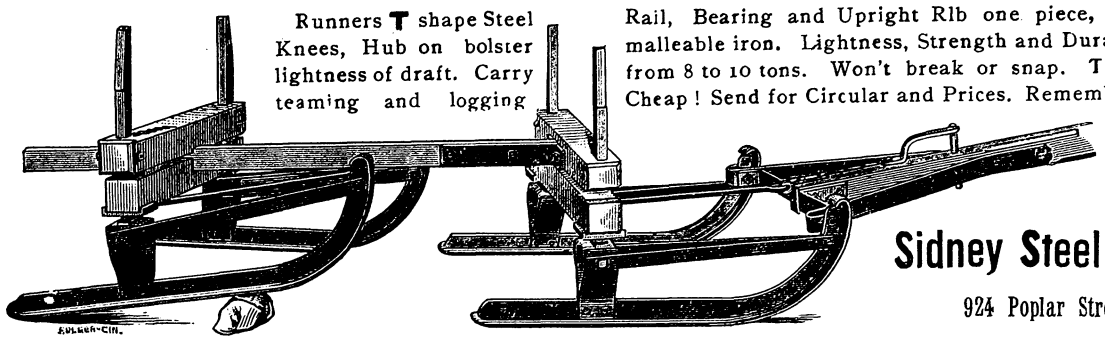
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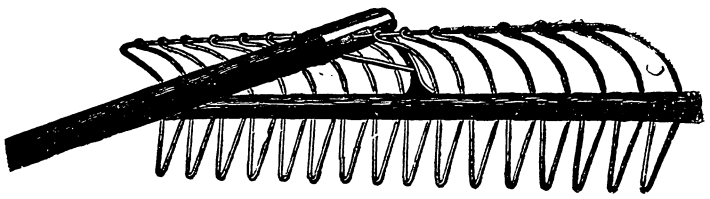
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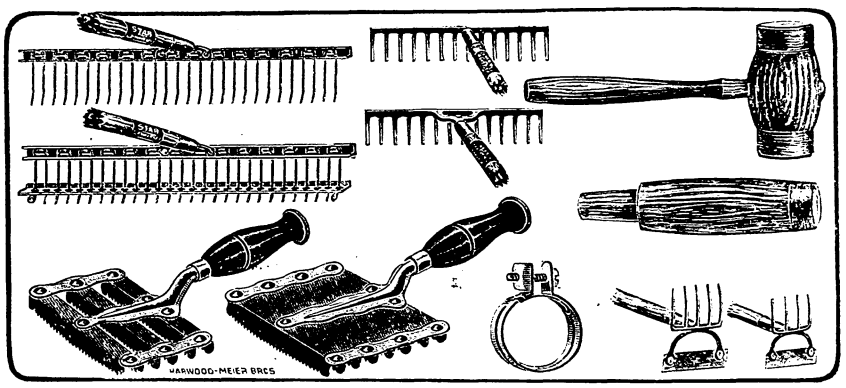
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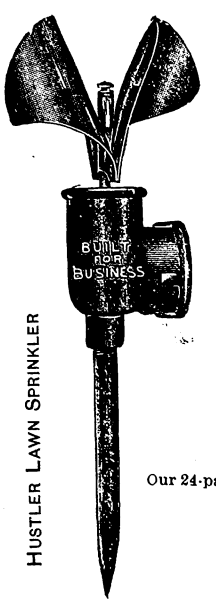
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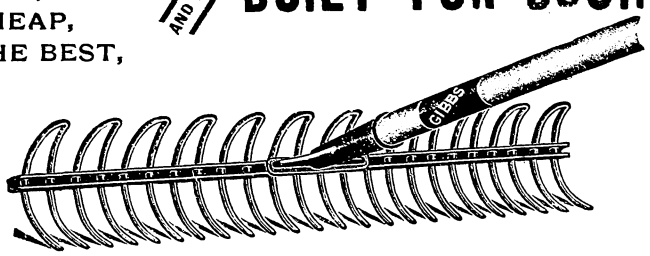


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Each—NEW,
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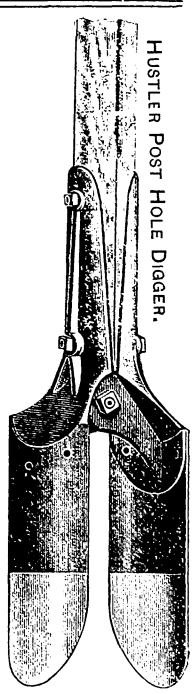
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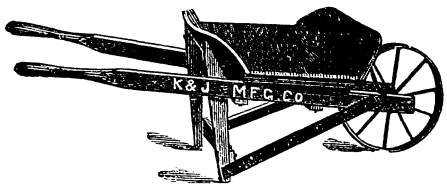
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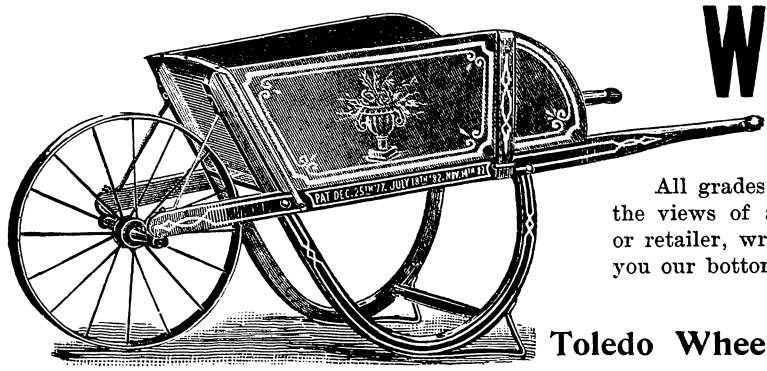


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COLDWELL LAWN MOWER COMPANY.

3

HIGHEST AWARDS.

WORLD'S COLUMBIAN COMMISSION.
OFFICE OF THE
Director-General of the Exposition.
CHICAGO, ILL., U. S. A., Sept. 1, 1893.

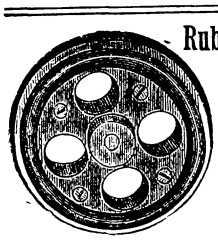
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Chief Dept of Horticulture.

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Imperial, High Wheel, Standard, New York, Horse Mower.

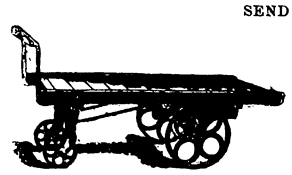
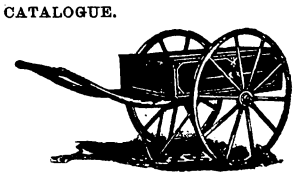
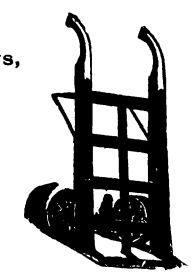


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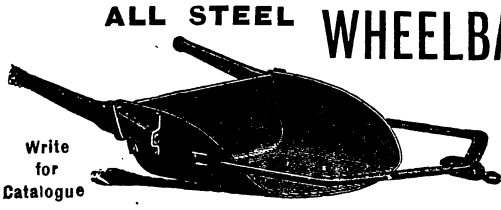
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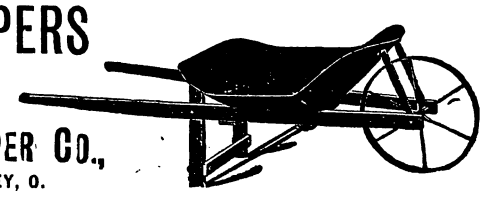




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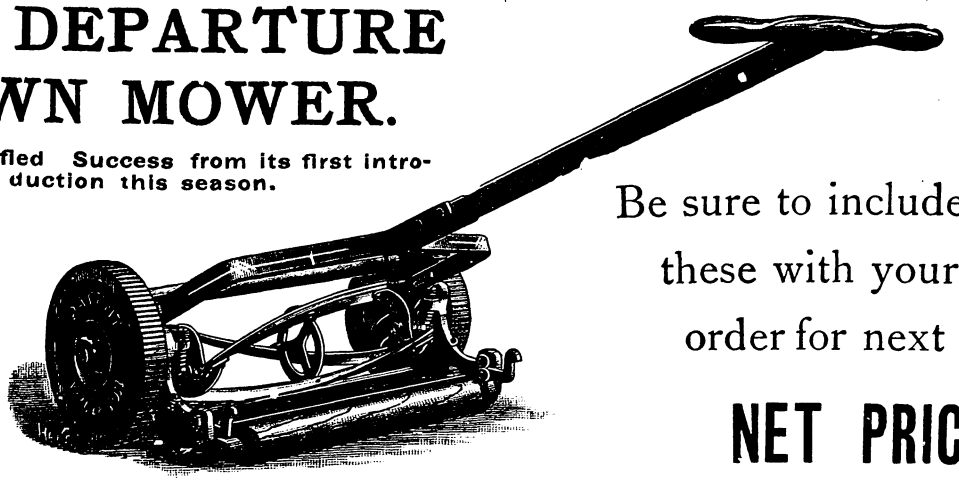
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McGuire's Edging Shears

With Detachable Handles.

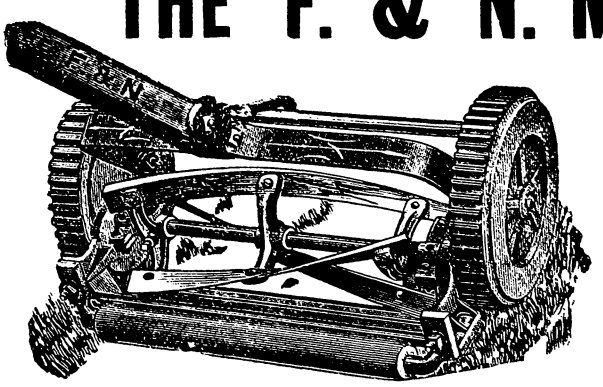


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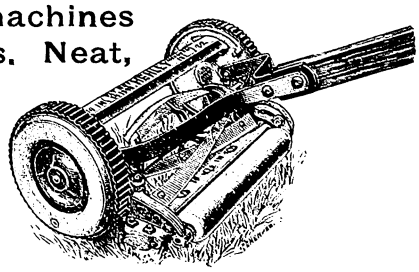


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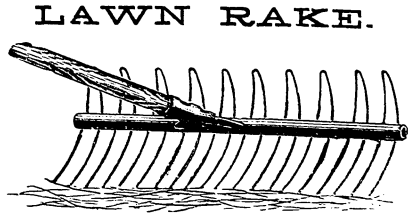


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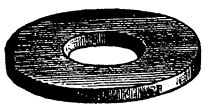
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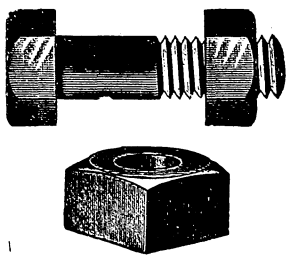
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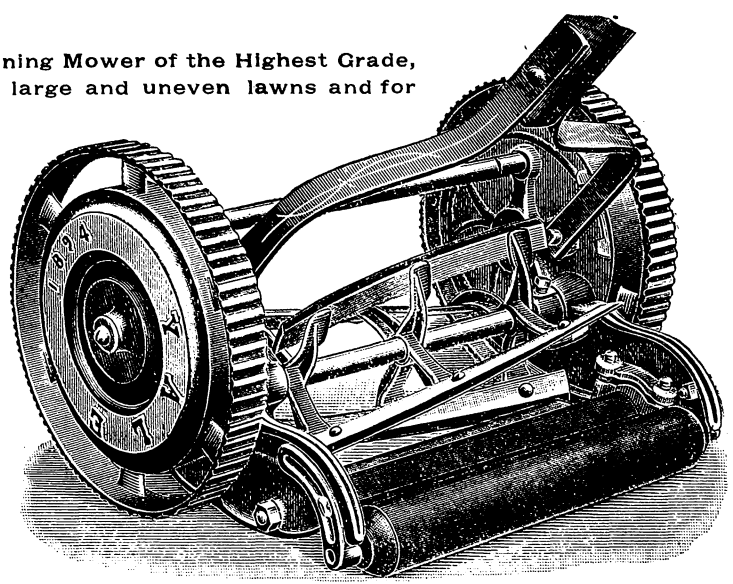
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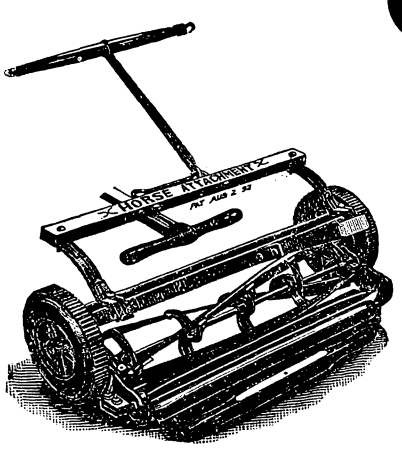
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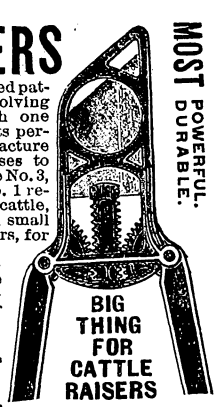
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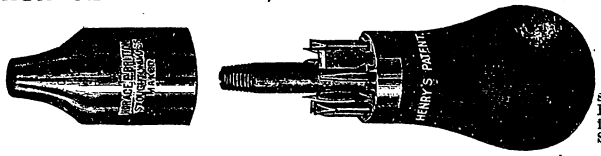
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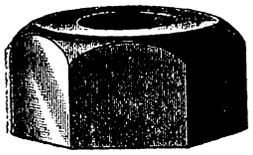
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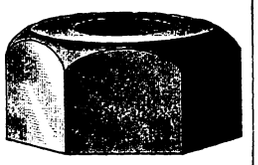
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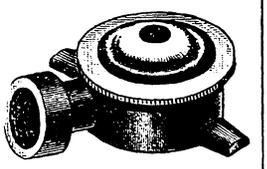
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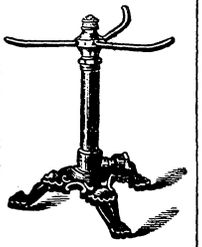


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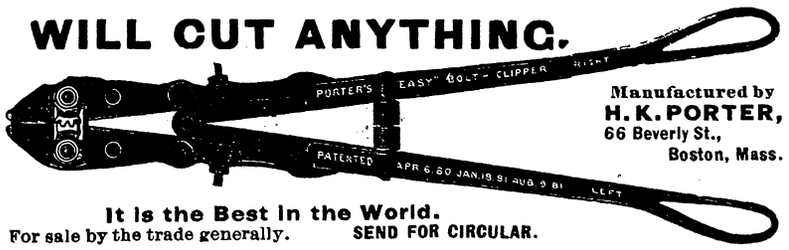
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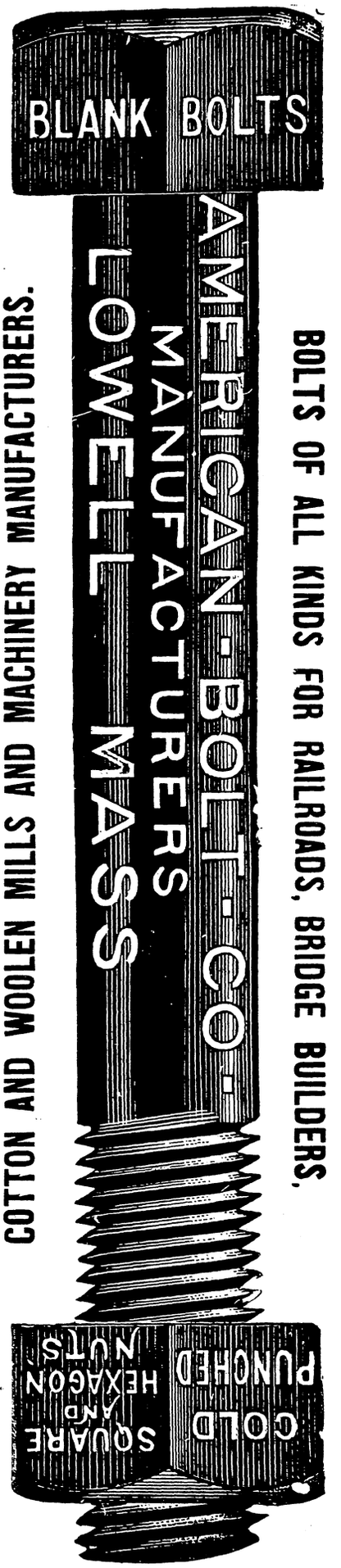
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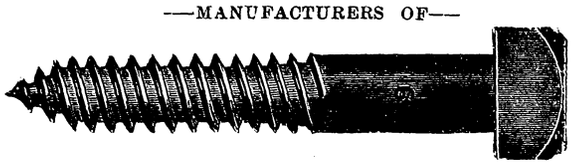
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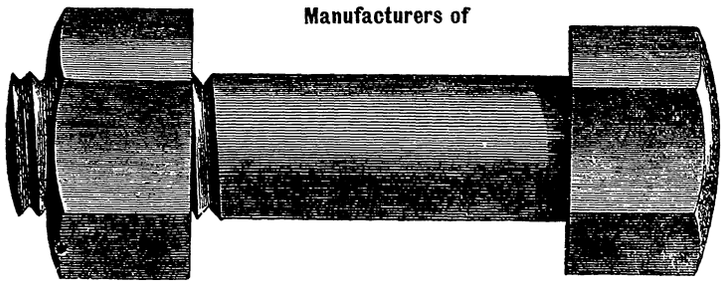
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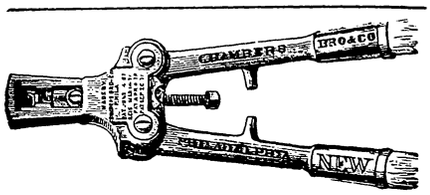


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For Fastening all Kinds of Structure to Brick and Stone Work.
Patentee and M'f'r, ISAAC CHURCH.
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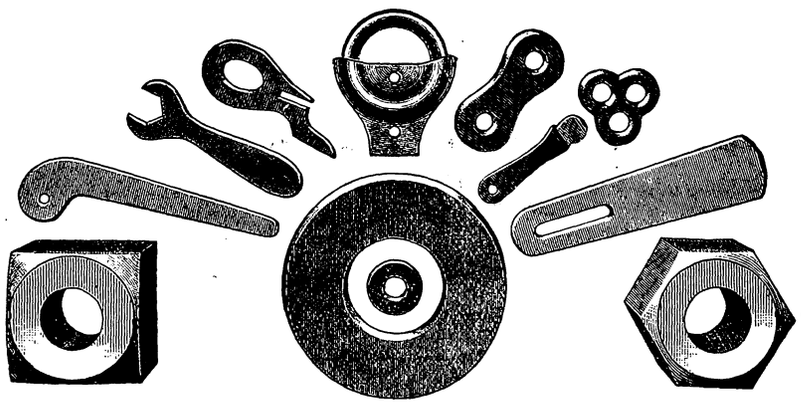
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Enterprise Mfg. Co. Philadelphia, Pa.

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Garden Tools.
Dunlap, C. W., Box 2703. New York

Gas Producers.
Wood, R. D. & Co. Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast, Henry B. & Co., Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
D. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston, Mass.
Poole, Robt. & Son Co., Baltimore, Md.

Glass Boards.
Canton Saw Co., Canton, O.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glass Tubes.
Ashcroft Mfg. Co., 111 Liberty St., N.Y.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.
Supplee Hardware Co,, Phila., Pa.

Grinding and Polishing Machines.
Herrick & Cowell, New Haven, Conn.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grinding Mills.
Foos Mfg. Co., Springfield, O.

Grindstone Dressing Machinery
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gun Implements.
Union Hdw. Co., Torrington, Conn.

Gunpowder, *Makers of.*
Laflin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich.

Handles.
Hartwell, E. B., Gallipolis, Ohio.
New York Mallet and Handle Wks. 456 E. Houston St., N. Y.

Hangers, Door.
Chicago Spring Butt Co., Chicago. Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Cronk Hanger Co., Elmira, N. Y.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N.Y.

Hardware Manufacturers.
Dunlap, C. W., Box 2703, New York.
Hotchkiss, E. S. Bridgeport, Conn
Russell & Erwin Mfg. Co., Chambers St., New York.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Clarke Thomas, St. John, New Brunswick.
Graham, John H. & Co., 113 Chambers,
McCoy, Jos F. Co., 26 Warren St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co. New Haven, Conn.
Clark Mfg. Co., Buffalo, N. Y.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Gwinner Mfg. Co., Hamilton, O.
Haines & Zimmerman, Phila. Pa.
Hart, H. C Mfg. Co., Detroit, Mich.
Hills, Edwin, Plainville, Conn.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Philadelphia, Pa
Peabody & Parks, Troy, N. Y.
Welland, Chas., 149 Chambers St., N.Y
Wilson, J. Fred, Worcester, Mass.

Hardware, Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N.Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co. Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Stuart & Peterson Co., Phila., Pa.

Hollow Ware, Aluminum.
Illinois Pure Aluminum Co. Lemont, Ill

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, *Makers of.*
Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt,
Putnam Nail Co., Neponset, Boston, Mass.

Horse and Mule Shoes. *Makers of.*
Bryden Horse Shoe Co., Catasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phœnix Horse Shoe Co., Poughkeepsie N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.

Hose.
Cleveland Rubber Works, Cleveland, O.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N.Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
Clement & Dunbar, Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Dogs.
Waller, Geo. A., Seneca Falls, N. Y.

Injectors.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York
Sherwood Mfg. Co., Buffalo, N. Y.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. Hartford Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y

Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron, *Merchants.*
Barnes, C. K. & Co., Philadelphia, Pa
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Bradley & Co., Philadelphia
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co. 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St. N. Y
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, *Importers.*
Abbott Wheelock & Co. N.Y. and Boston
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet. *Manufacturers of.*
Cambridge Iron & Steel Co., Cambridge Ohio
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Lange Fence & Wire Co., St. Louis, Mo.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladders, Rolling.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.

Ladles.
Detroit Fdy. Equipment Co., Detroit, Mich.

Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.

Lamps.
Standard Lighting Co., Cleveland, O.

Lanterns.
Ohio Lantern Co., Tiffin, Ohio.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls N. Y.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mowers.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Champion Mfg. Co., Richmond, Ind.
Coldwell Lawn Mower Co., Newburg, N. Y.
Dille & Anderson, Richmond, Ind.
Dille & McGuire Mfg. Co., Richmond, Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Mast, Foos & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila. Pa.

Lawn Rakes.
Gibbs Mfg. Co., Canton, Ohio.
Kohler, F. E. & Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse N. Y.

Lawn Sprinklers.
Ette & Henger Mfg. Co., St. Louis,
Gibbs Mfg. Co., Canton, Ohio.
McGowan, John H. Co., Cincinnati, O.

Leather Parts.
Greene, J. Frank & Co., 276 Water St. New York.

Lemon Squeezers.
Ripley Mfg. Co., Uxbridge, Conn.

Letters and Figures, Metallic
White, A. A. & Co., Providence, R. I.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.

Locks & Knobs, *Manufacturers of*
Deitz, A. E., 97 Chambers, N. Y
Keyless Lock Co., Chicago, Ill.
Reading Hdw Co., Reading, Pa.
Romer & Co., Newark, N. J.
Russell & Erwin Mfg. Co., New York.
Smith & Egge Mfg Co. Bridgeport, Conn
Yale & Towne Mfg. Co., Stamford, Conn

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Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Sement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N.Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N.Y
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila. Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct
Henley Mch. Tool Wks, Richmond Ind.
Hill, Clarke & Co., Boston, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield Vt
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co, Rochester, N.Y
Manville, E. J. Mch. Co, Waterbury, Conn
National Machinery Co., Tiffin, Ohio
Newark Mch. Tool Works, Newark, N.J.
New Haven Mfg. Co., New Haven, Conn
New York Mach'y Depot, N. Y.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn
Prentiss Tool & Supply Co., N. Y
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ld., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa
Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.
Adt, Jno. & Son, New Haven, Conn.

Machine Knives.
Loring Coes & Co., Worcester, Mass
Loyd, John, 558-562 Water St., N. Y.

Machine Tools.—*See Machinery.*

Machine Work.
Papping, J., 58th St., & 11th Ave., N.Y. City.

Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y
Starrett, L. S., Athol, Mass
Vallentine Tool Co., Hartford, Conn.

Machinists' Tools and Supplies.
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.

Mallets.
N. Y. Mallet & Handle Works, N. Y

Manufacturing Sites.
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St,, N.Y.
Lufkin Rule Co., Saginaw Mich

Meat Cutters and Stuffers.
Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Instruction.
Correspondence School of Mechanics Scranton, Pa.

Metals.
Fearing, Wm. S., 100 Chambers, N. Y
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
American Metal Co., N. Y.

Metallurgists.
Britton J. Blodgett, Phila.

Milling Machines.
Cin. Milling Mch. Co., Cincinnati, Ohio.

Mincing Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
Darby, Edw. & Sons Phila. Pa
Leonard, B. E., Scranton, Pa.

Mining Screens.
Harrington & King Perforating Co Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y

Mirrors.
Rice, C. F., Chicago, Ill.

Models, *Makers of*
Franklin, H. H. Mfg. Co., Syracuse, N. Y.

Molding Sand.
Obermayer, S. Co., Cincinnati, O.

Motors, Water and Electric.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington, Pottstown Iron Co., Pottstown, Pa
Riverside Iron Wks, Wheeling, W. Va.

Neck Yokes.
Johnson, S. C., Racine, Wis.

Nickel Platers' Supplies
Colburn Electric Mfg. Co., Fitchburg, Mass.
Eddy Electric Mfg. Co., Windsor, Conn
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett Chemical Company, 10 to 14 Grand St., N. Y

Norway Shapes, *Rollers of.*
Bowland, William & Harvey, Frankford, Philadelphia

Novelty Manufacturers.
Franklin, H. H. Mfg., Syracuse, N. Y.

Nut Machines.
Dunham Nut Mch. Co., Unionville, Ct

Nuts, Bolts, &c., *Makers of.*
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R.
Blake & Johnson, Waterbury, Conn.
Haskell, Wm. H. Co., Pawtucket, R. I
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Port Chester Bolt and Nut Co., Port Chester, N. Y.
Russell, Burdsall & Ward, Port Chester
Sternbergn, J. R. & Son, Reading, Pa
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R. I.

Oil Cups and Lubricators.
Sherwood Mfg. Co., Buffalo, N. Y.

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
Glazier Stove Co., Chelsea, Mich.

Orange Shears.
Henry, J. T., Mfg. Co., Hamden, Conn.

Ores.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Morrison, Robt., St. Louis, Mo.
N. Y. Belting & Packing Co. Ltd., N.Y.

Padlocks.
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Miller Lock Co., Philadelphia, Pa.

Paint.
Dixon, Jos. Crucible Co., Jersey City, N.J
Garry Iron & Steel Roofing Co., Cleveland, O.

Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O

Paint Cans.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

Patent Solicitors.
Howson & Howson, Phila. & Wash'gton.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Peanut and Coffee Roaster.
Olsen, A. B., Kansas City, Mo.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co. Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.
Crescent Phosphorised Metal Co., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., Boston, Mass.
Falk & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

File Drivers.
Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast Henry B. & Co., Philadelphia.
Saunder's Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y,

Pipes, Fittings, &c., *Makers of.*
McNab & Harvin Mfg. Co., N. Y.

Pipe, Water and Gas. *Makers of.*
Cumberland Nail & Iron Co., Phila, Pa
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W Va.
Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.

Planes, *Manufacturers of.*
Stanley Rule & Level Co., N. Y

Plated Ware.
Boardman, L. & Son, New Haddam, Ct
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Rogers & Hamilton, Waterbury, Ct.
Upson & Hart Co., Unionville, Ct.

Plate, Iron and Steel, *Mfrs of*
Etna-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa
Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.

Polishing Machines.
Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
La Massena, C. E. & Co., Newark, N.J.

Post Hole Diggers.
Gibbs Mfg. Co., Canton, Ohio.
Buckeye Mfg. Co., Union City, Ind.
Wister, L. & R. & Co., Philadelphia, Pa.

Pot and Kettle Cleaner.
Unsinger Mfg. Co., Fremont, Ohio.

Poultry Nettings.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Wks. Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
Laflin & Rand Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y

Power Hack Saws.
Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Jenkins & Lingle, Bellefonte, Pa.

Presses, Dies, &c.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J.
Stark Mch & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn

Presses, Power, *Makers of.*
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct,
Merriman, A. H., Meriden.
Robinson, J. M. & Co., Cincinnati, O.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
Keystone Clutch Mch. Wks., Phila., Pa.
Lake, J. H. & D. Co., Massillon, Ohio,
Reeves Pulley Co., Columbus, Ind.

Pulley Fixings.
Foley, J. W. & Co., Cincinnati, O.

Pulverizing Mill.
Bradley Fertilizer Co., Boston, Mass.

Pumping Machinery.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Hooker-Colville Steam Pump Co., Chicago, Ill.
Lucas, C. O. & Co., Greenville, Ohio.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa
Valley Pump W'ks, Easthampton, Mass
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, *Makers of.*
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Mast, Foos & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.
Bertsch & Co., Cambridge City, Ind.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J.
Henderer, A. L., Wilmington, Del.
Robinson, J. M. & Co., Cinn., Ohio.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
Perry, W. H. & Co., Providence, R. I.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Estey, W. S. 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.
Sun Mfg. Co., Greenfield, O.

Razors.
Electric Cutlery Co., 113 Chambers, N. Y
J. R. Torrey Razor Co., Worcester, Mass

Reels.
Hendryx, A. B. Co., New Haven, Conn

Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.

Rivets.
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Troy, N. Y.
Cobb & Drew, Plymouth, Mass.
Henderson, Jas. S., 165 Greenwich, N.Y.
New England Screw Co., Boston, Mass.
Sternbergn, J. R. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Rock Drills.
Sand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd, Co., Youngstown, O.
Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning F'dry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd, Co., Youngstown, O.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh Pa.

Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Cincinnati Corrugating Co., Piqua, O.
Johns, H. W Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y

Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa.

Rubber Goods.
Canfield, H. O., Bridgeport, Conn.

Rules, *Manufacturers of.*
Keuffel & Esser Co., 127 Fulton St., N.Y
Lufkin Rule Co., Saginaw, Mich.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,

Rust Preventive.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.

Sad Irons.
Enterprise Mfg. Co., Philadelphia, Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Pulman Sash Balance Co., Rochester, N. Y.
Vanderbilt Sash Balance Co., Canandaigua, N. Y.

Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.
Cincinnati Corrugating Co., Piqua, O.

Sash Locks.
Columbian Sash & Door Lock Co., Wauseon, Ohio.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Portable Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.

Saw Filing Machines.
Disston, Henry & Sons, Philadelphia, Pa.

Saws, *Makers of.*
Disston, Henry & Sons, Phila., Pa.
Hiles, C. A. & Co., 336-338 Carroll Ave Chicago, Ill.
National Saw Co., 96 Reade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Taintor Mfg. Co., 84-86 Chambers, N Y.

Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N.Y

Scrapers, Road.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.

Screens, Coal and Ore.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Screens, Door and Window.
Phillips, A. J. & Co., Fenton, Mich.
Queen Anne Screen Co., Burlington, Vt.

Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Capitol Mfg. Co., Chicago, Ill.
Gay & Parsons, Augusta, Me.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.

Screws, *Makers of.*
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
National Screw & Tack Co., Cleveland, Ohio.
New England Screw Co., Boston Mass.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls N.Y

Scythe Stones and Whetstones.
Pike Mfg. Co., Pike Stat'n, N. H.
Cleveland Stone Co., Cleveland, O.

Shafting, *Makers of.*
Cresson, Geo. V., Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Fitzsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc. Phila. Pa.
Stow Co. Mfg. Binghamton, N. Y.

Shaped Iron and Steel,—*Manufacturers of.*
Etna-Standard Iron & Steel Co. Bridgeport, O.

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Allentown Rolling Mill, Allentown, Pa
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phœnix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn
Heinischs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, *Manufacturers of.*
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh, Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ld., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch. A. B. & Co., Peoria, Ill.

Shipping Blanks.
Barlow Bros., Grand Rapids, Mich.

Sinks.
Douglas, W. & B., Middletown, Conn.

Skates. Ice.
Barney & Berry, Springfield, Mass.
Dame, Stoddard & Kendall, Boston, Mass.
Lovell, Jno. P. Arms Co., Boston, Mass.
Sickels, Sweet & Lyon, 35 Barclay St., N. Y.
Winslow, Sam'l, Skate Mfg. Co. Worcester, Mass.

Skates. Roller.
Barney & Berry, Springfield, Mass.
Henley, M. C., Richmond, Ind.
Union Hardware Co., Torrington, Conn
Winslow, Saml., Skate Mfg. Co., Worcester, Mass

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.
Clendenin Bros., Baltimore, Md.
Covert Mfg Co., West Troy, N. Y.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.

Spelter.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
Rogers & Hamilton Co., Waterbury, Conn.
Upson & Hart Co., Unionville, Ct.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y

Springs.
Cary, Alanson, 240-242 W. 29th St., N.Y
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y
Morgan Spring Co., Worcester, Mass
Nourse, Fred. Co., 315 to 319 E. 22d St., N. Y.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Bardsley, J., 149 & 151 Baxter St., N.Y.
Chicago Spring Butt Co. Chicago, Ill.
Pullman Sash Balance Co., Rochester N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St. New York.

Stamping Works.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co. Binghamton N.Y

Steam Gauges.
Ashcroft Mfg. Co., 111 Liberty St., N.Y
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., *Makers of*
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Camden, N.J.

Steam Separators.
Goubert Mfg. Co., 32 Cortland St N. Y.
Harrison Safety Boiler Wks. Phila. Pa

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.

Steel Figures and Alphabets.
Hoefig, C. W., 52 Fulton St., N. Y.
Krogarud, W., 61 Fulton, N. Y.
Wolff, C. H., 177 William St., N. Y.

Steel Importers.
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 9 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Bethlehem Iron Co., S. Bethlehem, Pa
Boker, Hermnan & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Elken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
Gautier Steel Department or Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 9 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa
Moorhead-McCleane Co., Pittsburg Pa
Moss, F. W., 83 John N. Y
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co. High Bridge, N.J
Wardlaw, S. & C., Sheffield, Eng.
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn

Steel, *Manufacturers' Agents.*
Barnes, C. K. & Co., Philadelphia, Pa
Corning, Edw, & Co., 29 B'way, N. Y
Frasse Co., 19 Warren St., New York.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, *Manufacturers of.*
Bethlehem Iron Co., S. Bethlehem, Pa
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville Pa
Riverside Iron Wks., Wheeling, W. Va

Steel, Tool.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill.
Croissant, M., Albany, N. Y.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunder's Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y

Stove Pipe Thimbles.
Cheney, S. & Son Manlius, N. Y

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.
Gwinner Mfg. Co., Hamilton, O.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse N. Y.

Strops.
Electric Cutlery Co, 113 Chambers, N.Y
J. R. Torrey & Co., Worcester, Mass.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co. La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation, Boston, Mass
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland O.
Phillips, E. & Sons, South Hanover.
Trafant, W. E., Whitman, Mass.

Taps and Dies.
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila.

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tin Plate Machinery.
Lloyd Booth Co., Youngtown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St.,

Tire Upsetters.
Butts & Ordway, Boston, Mass,

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N.Y.

Tools.
Britton, Horace E., Stoughton, Mass.
Brown, R. H. & Co., New Haven, Conn.
Frasse Co., 19 Warren St., New York.
Fray, Jno S. & Co, Bridgport, Conn,
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.
Tower & Lyon, 95 Chambers St., N. Y.

Tools, Blacksmith and Wheelwrights.
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R., Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasolene.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
Standard Lighting Co., Cleveland, O.

Transom Lifters.
Wollensak, J. F. Chicago, Ill.

Trucks, *Manufacturers of.*
Berger Bros., Philadelphia, Pa.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co. Lansing Mich.

Tubes, Seamless Drawn Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.
Ellwood Shafting & Tube Co., Ellwood City, Pa.
Leng's John S. Son & Co., 4 Fletcher St., New York.
Shelby Steel Tube Co., Shelby, O.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Central Iron & Steel Co., Brazil, Ind.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills. *Makers of.*
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 56 John N. Y.
Mason Regulator Co., Boston, Mass.

Ventilating Fans.
Huyett & Smith Mfg. Co., Detroit, Mich

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vises.
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Tower & Lyon, 95 Chambers St., N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Weather Strips.
Thomas, Jno. H. Mfg. Co., Piqua, Ohio.

Wheelbarrows.
Amer. Steel Scraper Co., Sidney, Ohio.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Toledo Wheelbarrow Works, Toledo, Ohio.

Wheels.
Arnold Metal Wheel Co., New London, Ohio.

Whips.
American Whip Co., Westfield, Mass,

Window Cord, *Makers of.*
Samson Cordage Works, Boston, Mass

Wire, *Manufacturers of.*
Consolidated Steel & Wire Co., St. Louis, Mo,
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co. Worcester, Mass

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Wks. Milwaukee, Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.
Cronk Hauger Co., Elmira, N. Y.
Higganum Hdw. Co., Higganum, Conn
King, J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.

Wire Fences.—*See fencing, Iron and Wire.*

Wire Goods, *Manufacturers of.*
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y.
Lange Fence & Wire Co., St. Louis, Mo
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros. Cortland, N. Y.
Williamson, C. T. Wire Novelty Co. Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester Mass.
Waterbury Mch. Co., Waterbury, Conn

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wire Nails.
Consolidated Steel & Wire Co., St. Louis, Mo.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle Pa.
Phillips, E. & Sons, South Hanover Mass
Phillips, Townsend & Co., Phil., Pa.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City

Wire Rods, Steel.
Consolidated Steel & Wire Co., St. Louis, Mo.
New Castle Wire Nail Co., New Castle Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y

Wire Rope, Iron and Steel *Makers.*
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Wire Spool.
Malin & Co., Cleveland, O.

Wood-Working Machinery.
Fay, J. A. & Egan Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Wrapping Paper.
Amer. Roll Paper Co., St. Louis, Mo.

Wrenches, *Manufacturers of.*
Bemis & Call Hardware & Tool Co. Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn
Capitol Mfg. Co., Chicago, Ills.
Coes Wrench Co., Worcester, Mass
Gendron Iron Wheel Co., Toledo, O.
Keystone Mfg. Co., Buffalo, N. Y.
Tower & Lyon, 95 Chambers St., N. Y.
Trimont Mfg. Co., Roxbury, Mass
Williams, J. H., Brooklyn, N. Y.

Wringers.
Colby Wringer Co., Montpelier, Vt.

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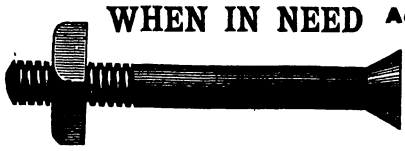
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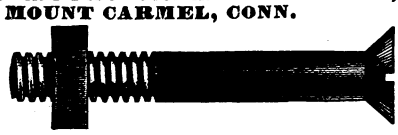
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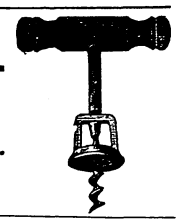
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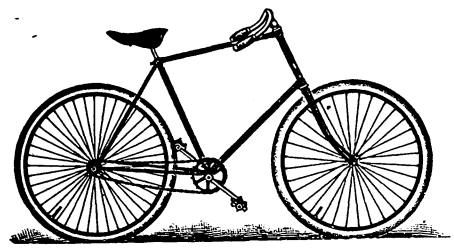
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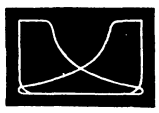
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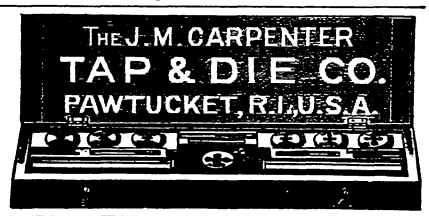
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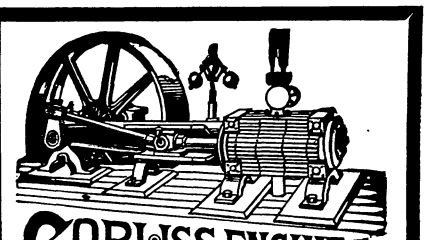
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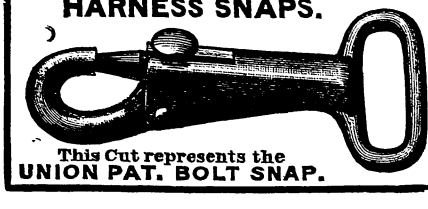
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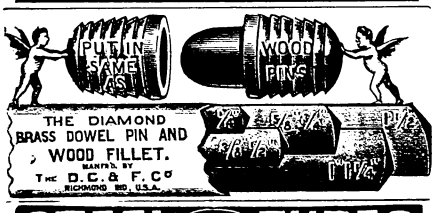
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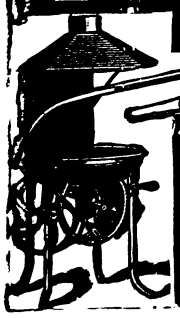
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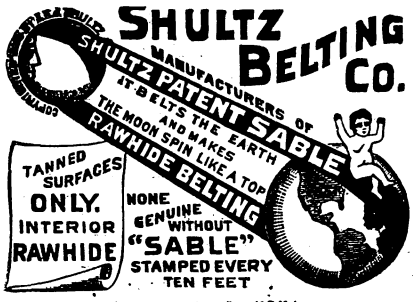
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Published every Thursday Morning by David Williams, Nos. 96, 98, 100 & 102 Reade St., New York.

Vol. LII: No. 24. *New York, Thursday, December 14, 1893.* $4.50 a Year, including Postage. Single Copies, Ten Cents.

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Alphabetical Index to Advertisers " 95
Advertising and Subscription Rates " 1113

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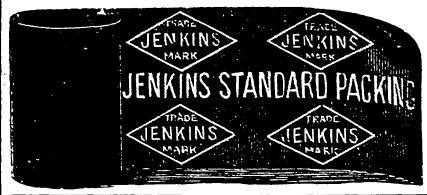
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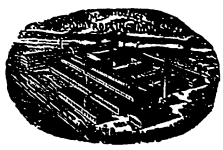
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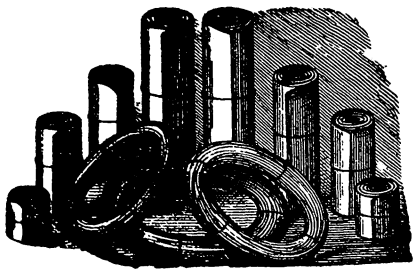
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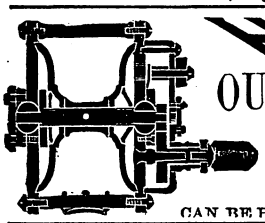
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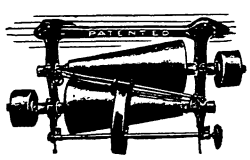


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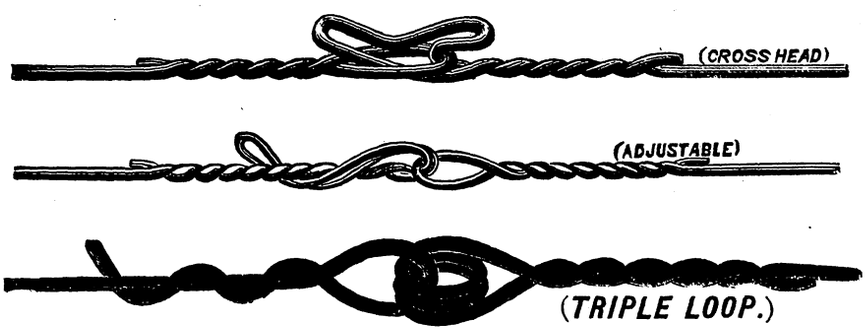
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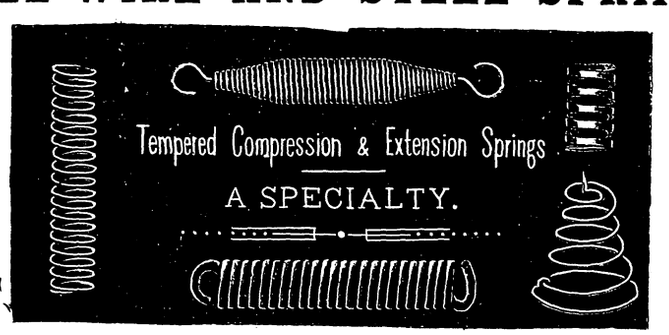
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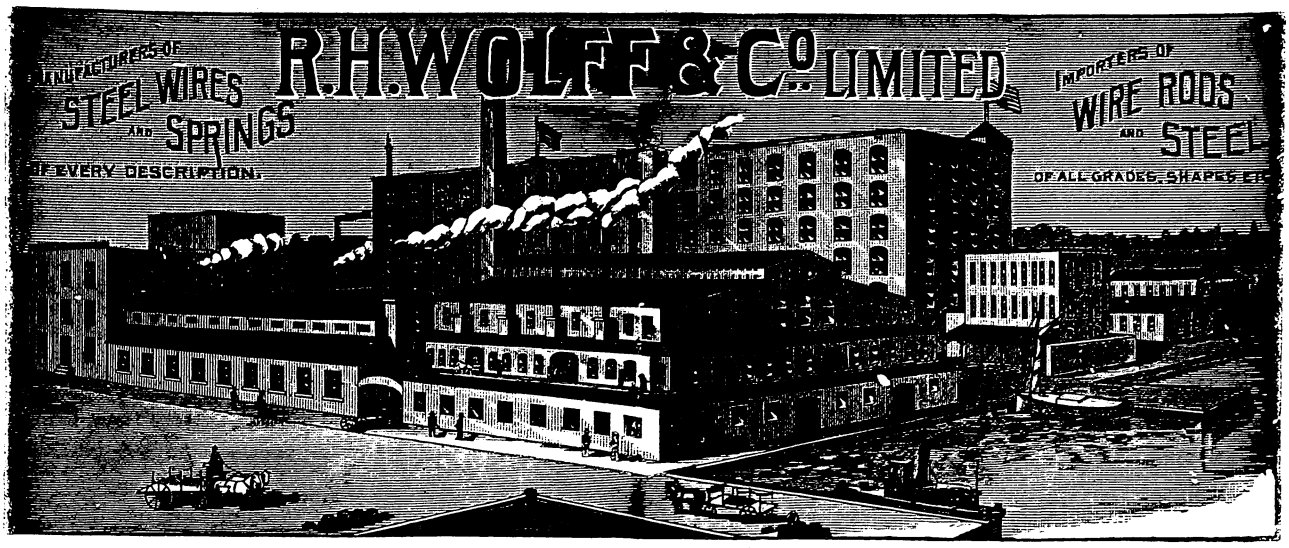
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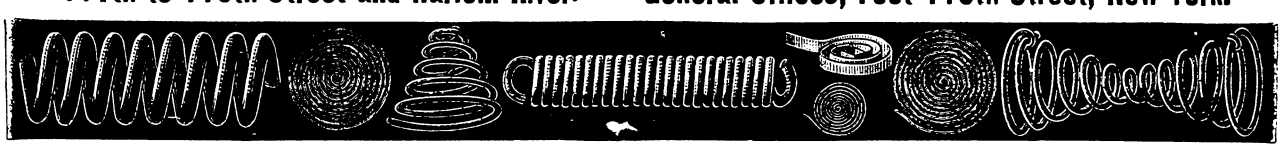
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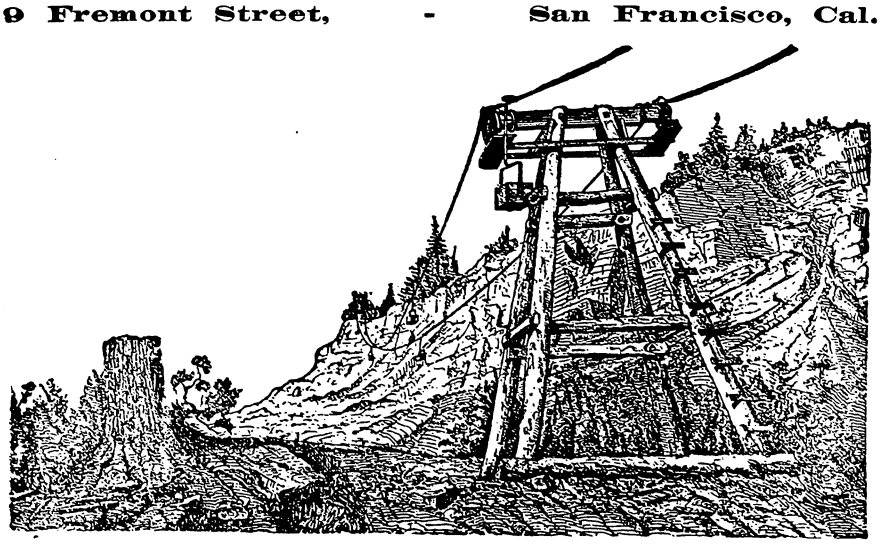
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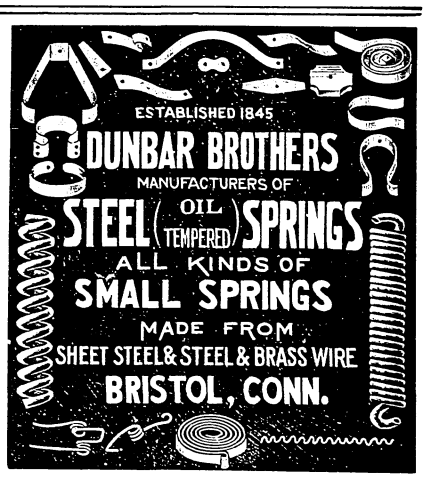
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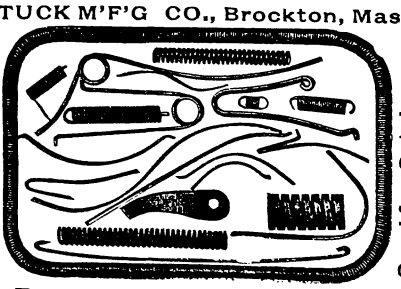
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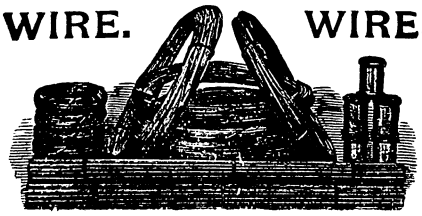
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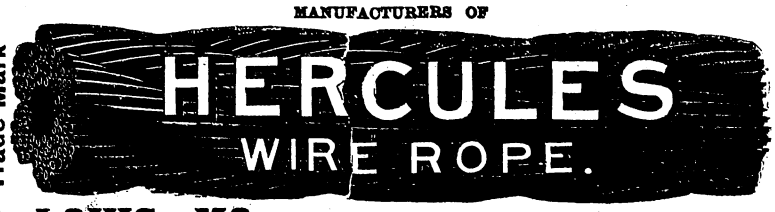


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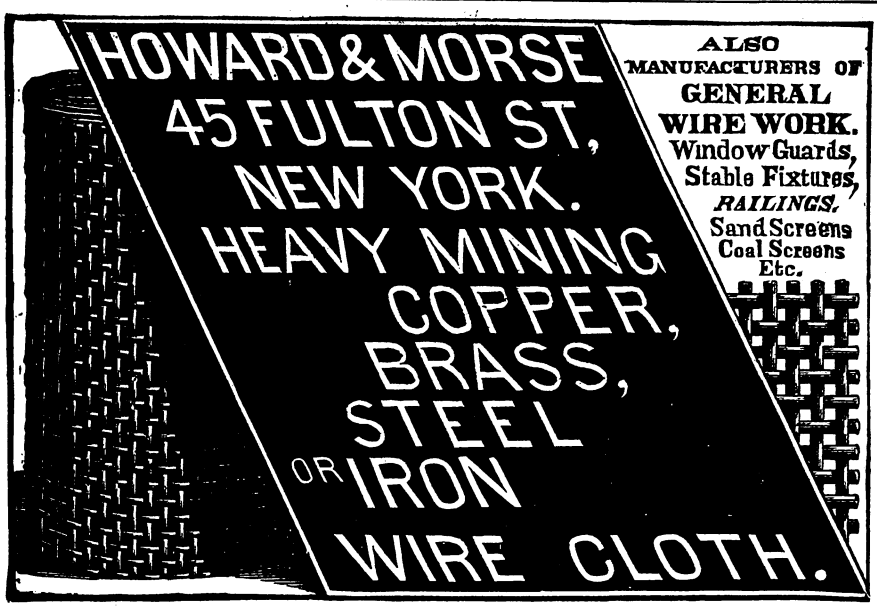
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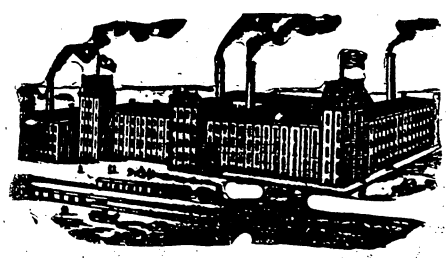
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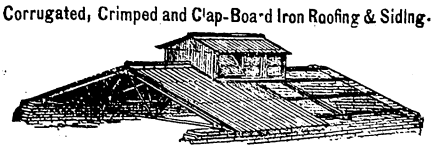


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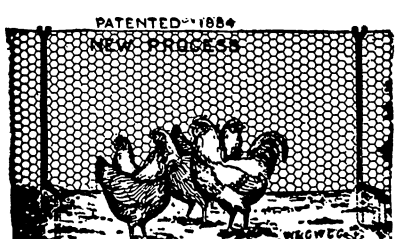
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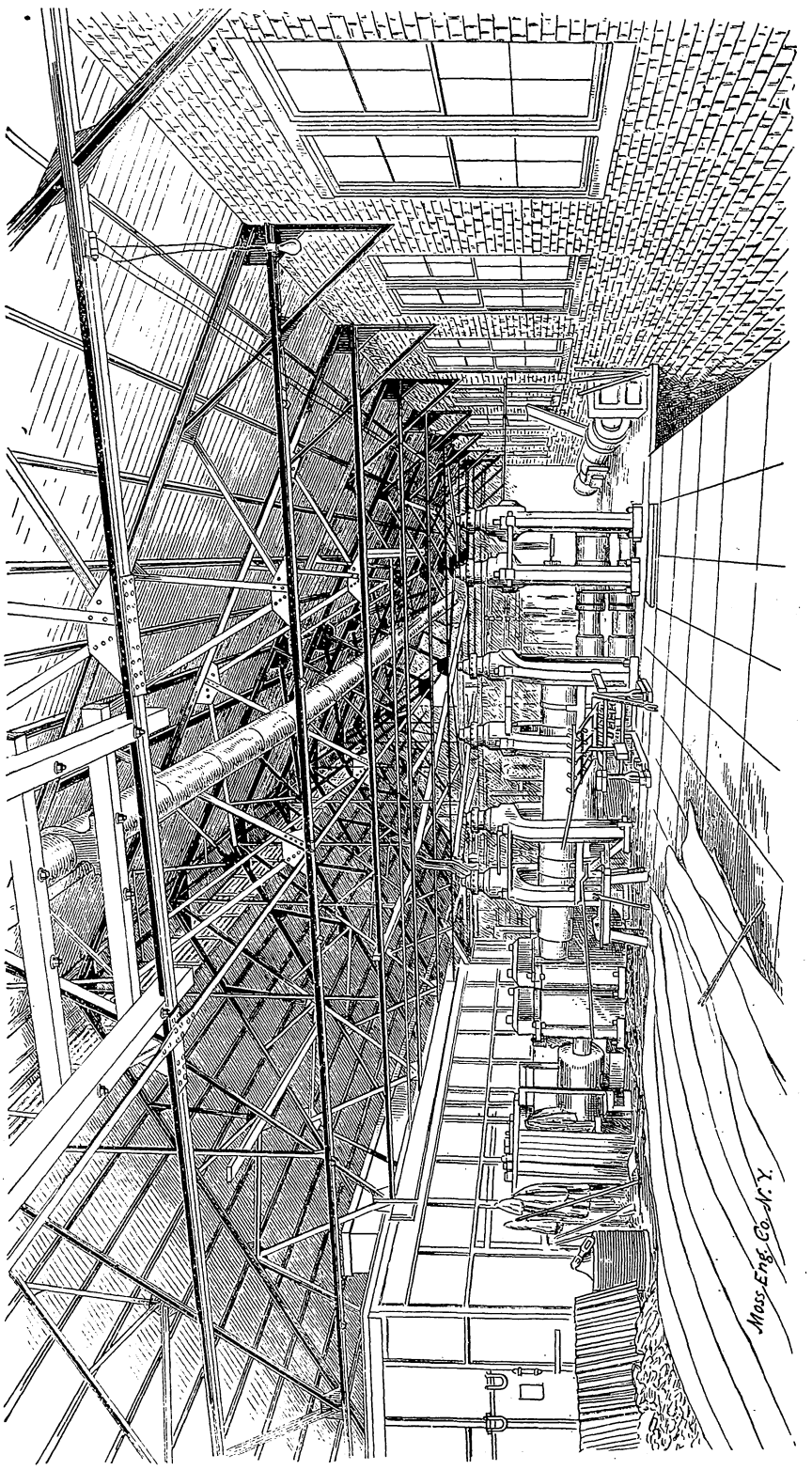
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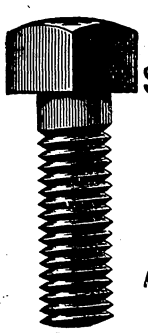
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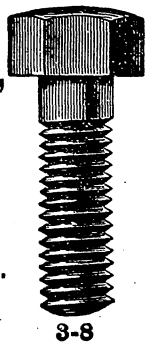


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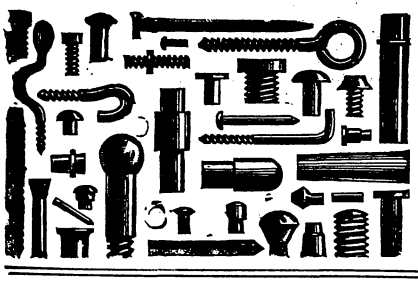
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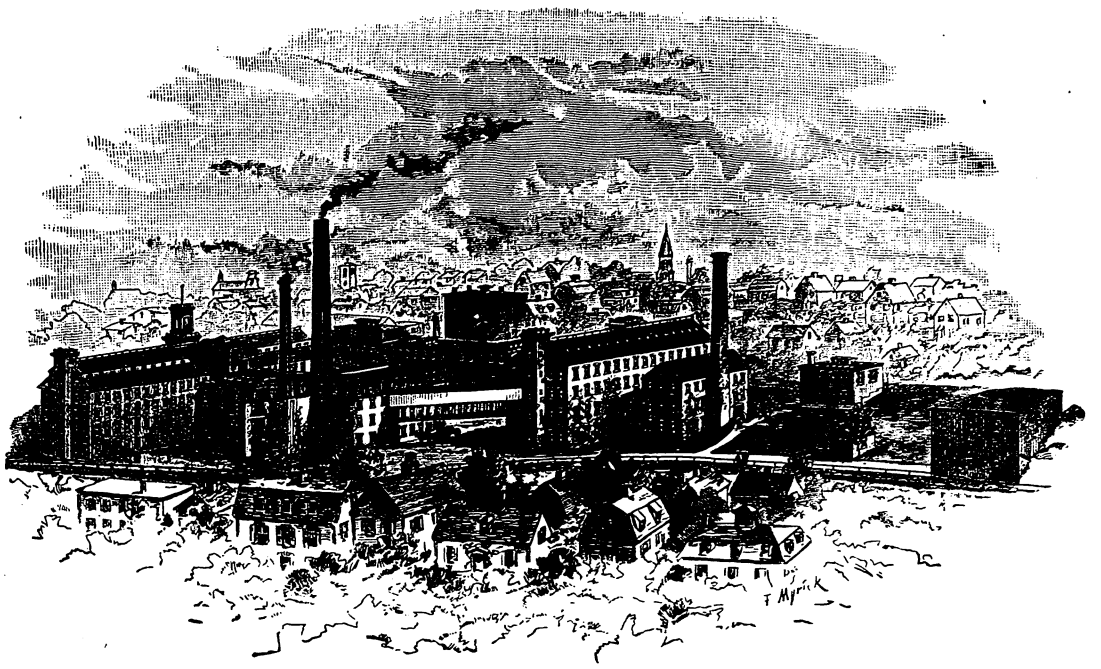
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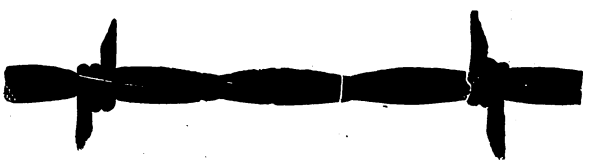
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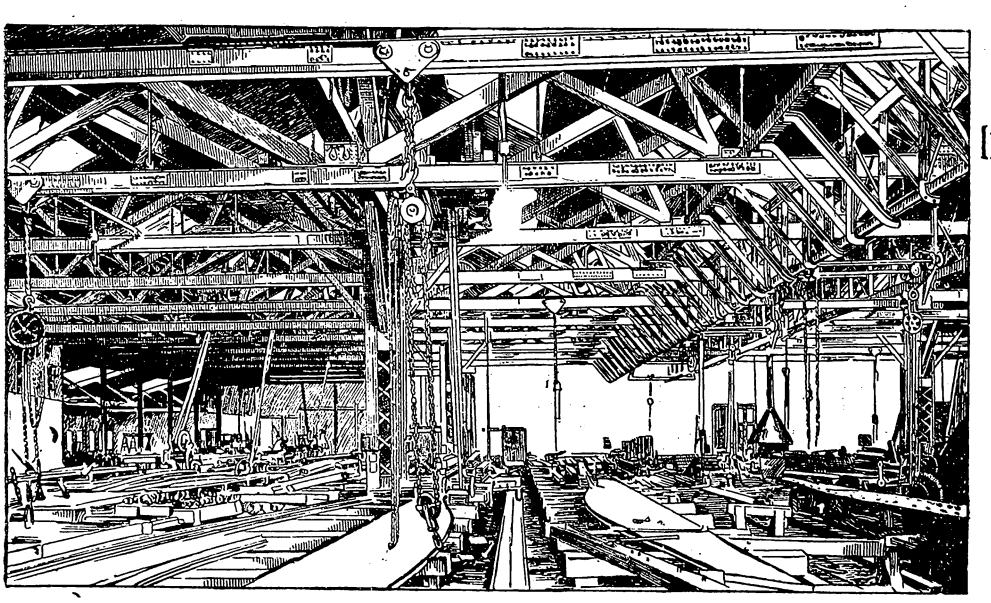
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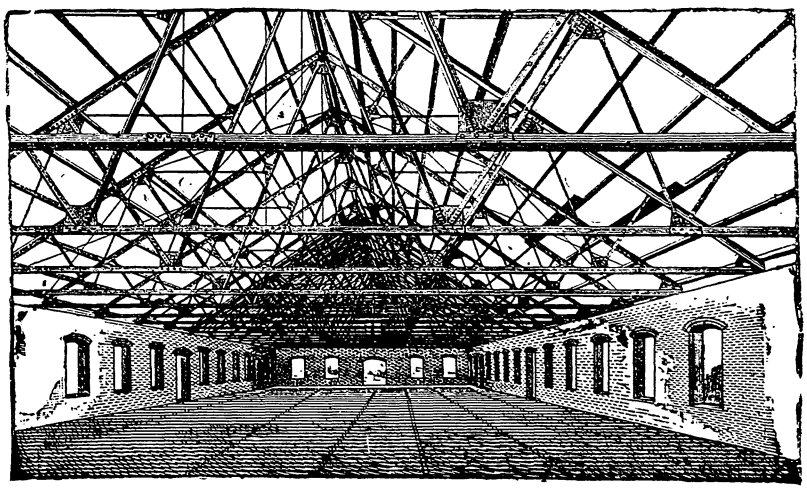
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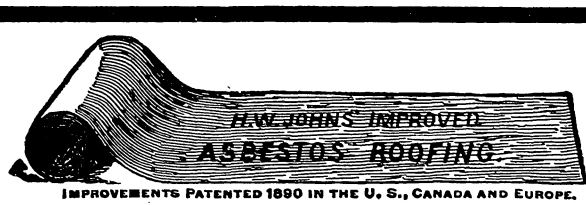
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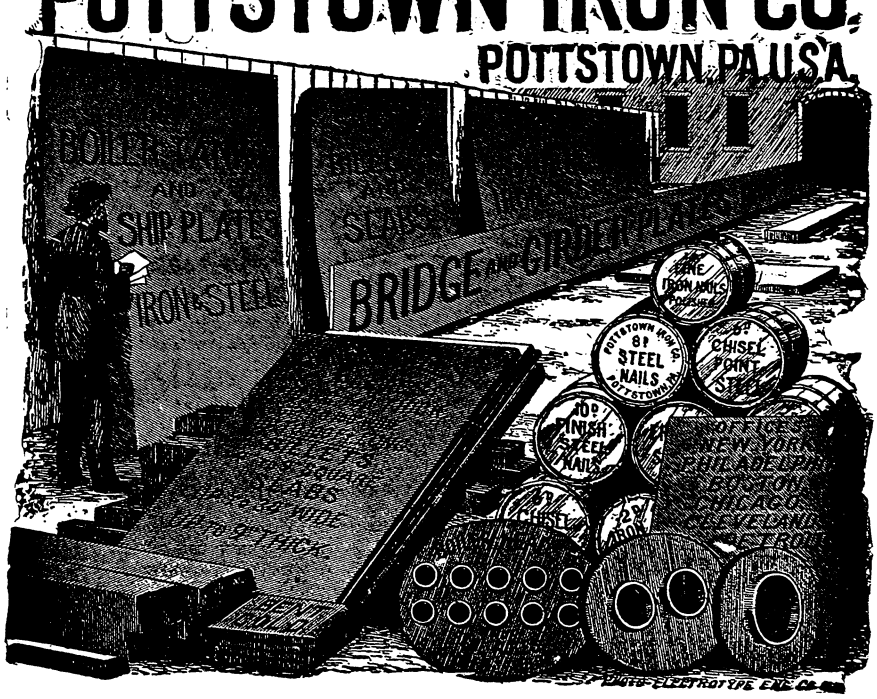
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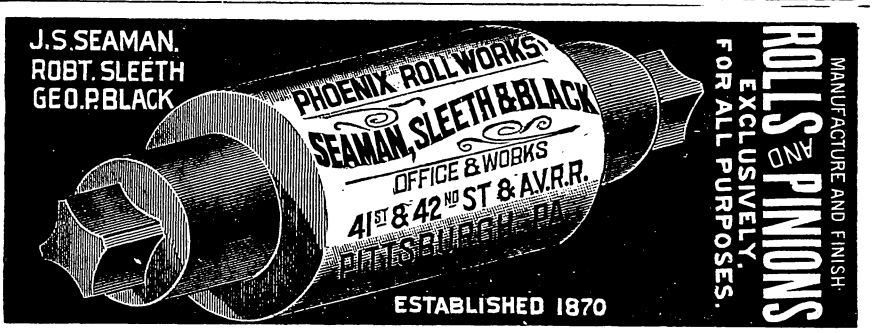
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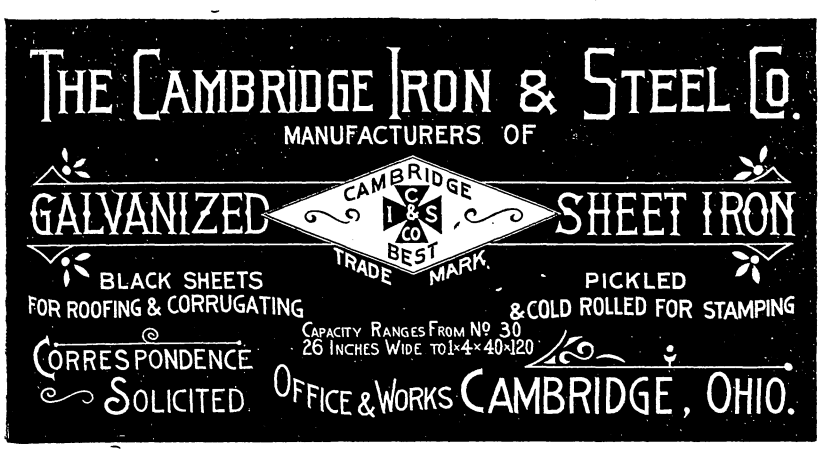
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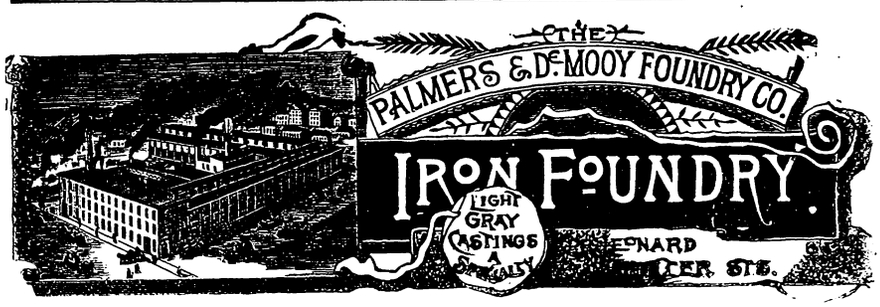
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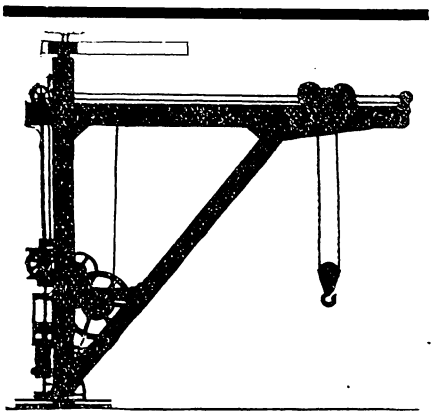
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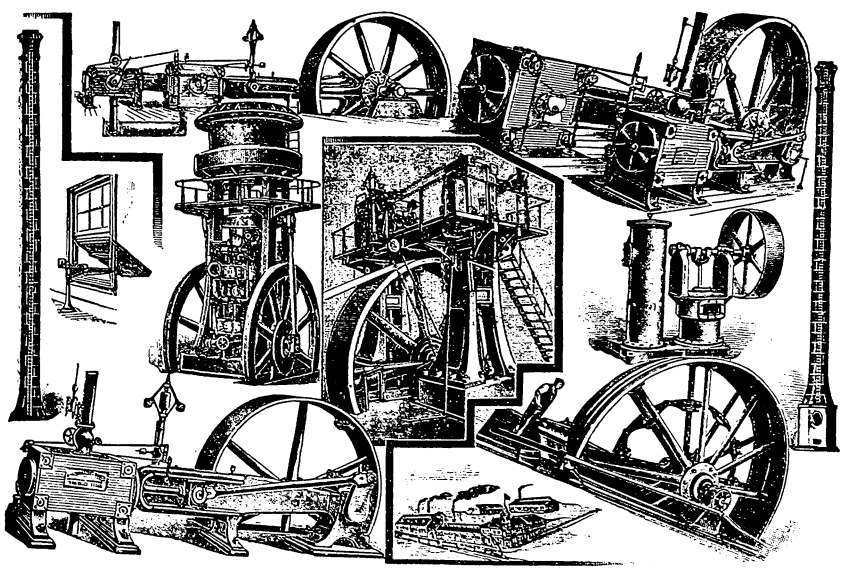
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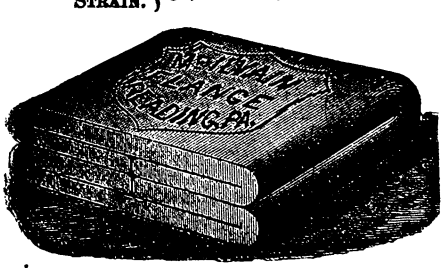


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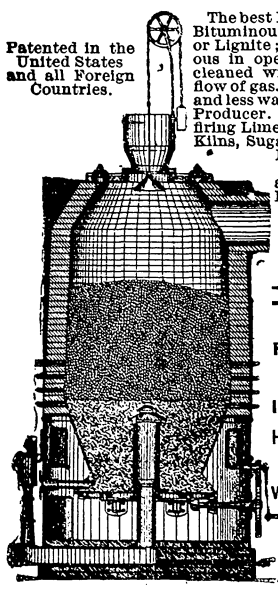
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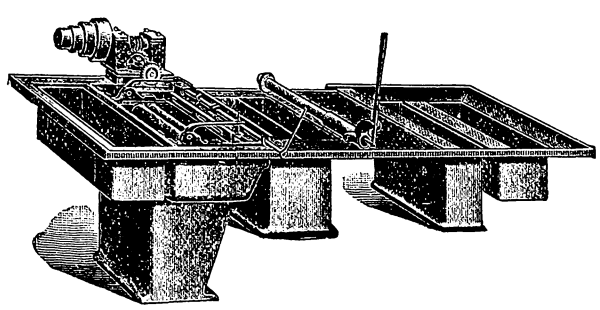
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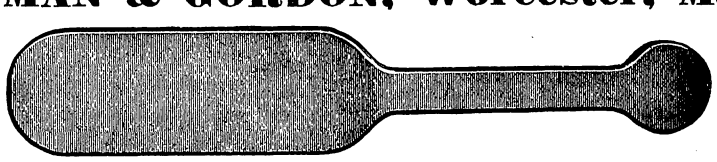
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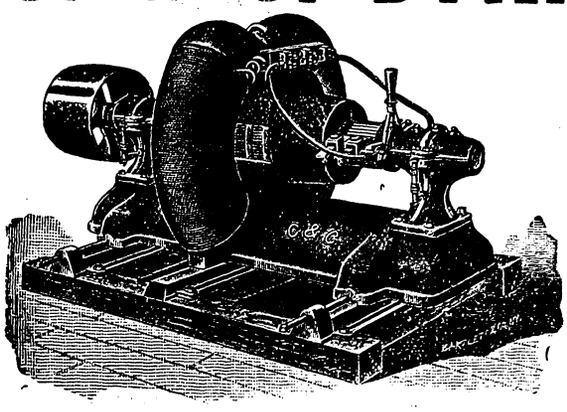
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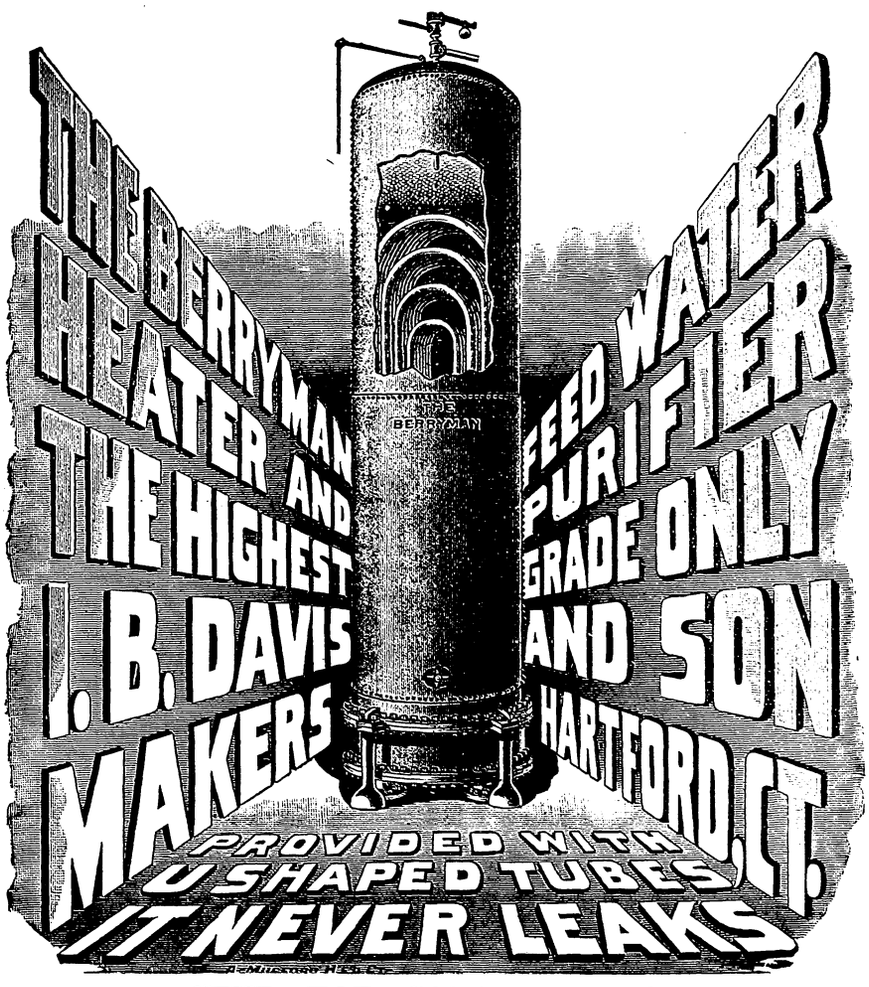
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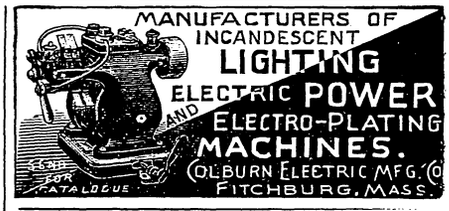
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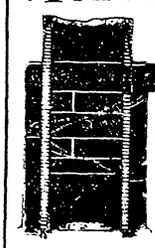
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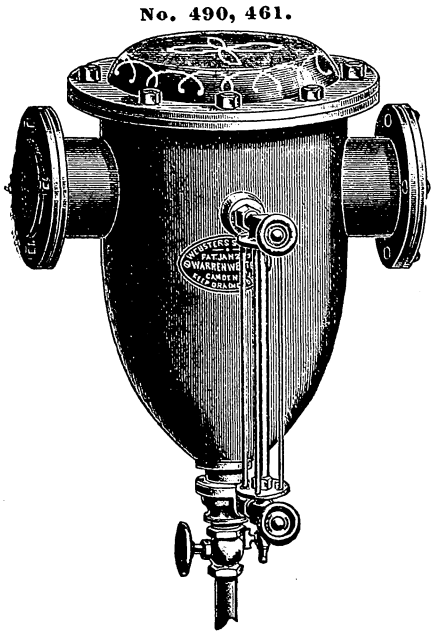
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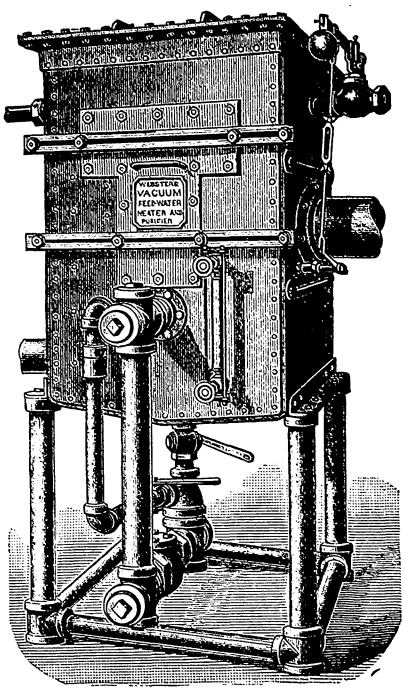
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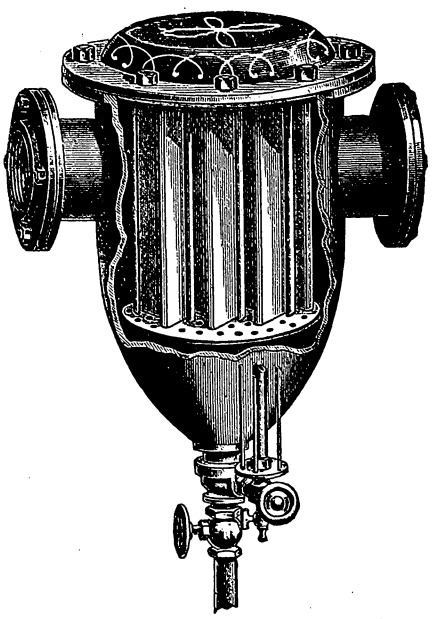
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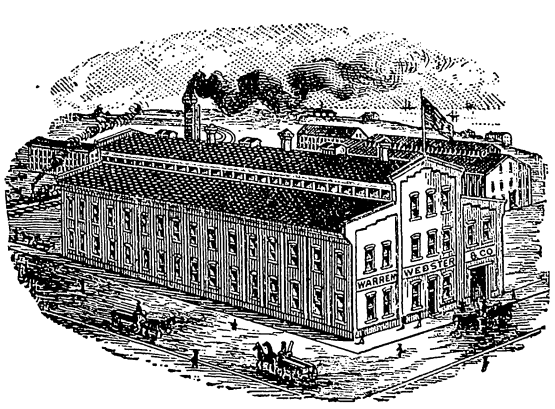
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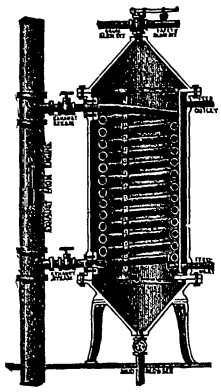
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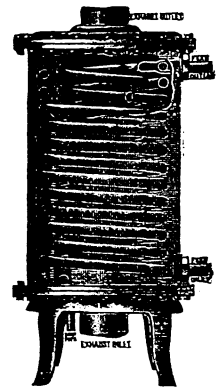
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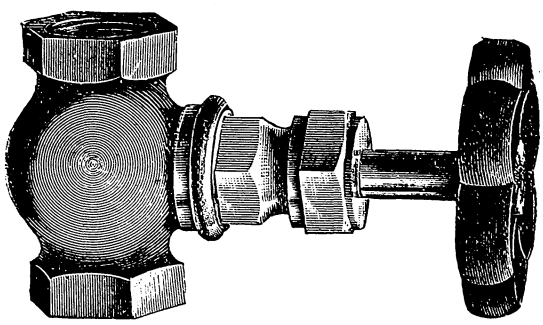
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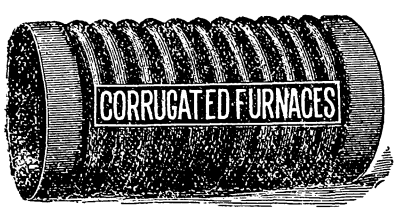
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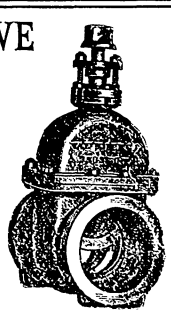
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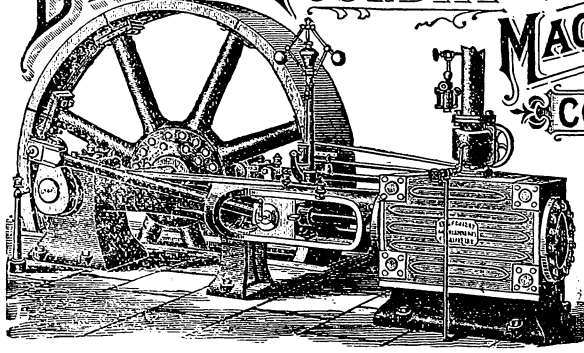
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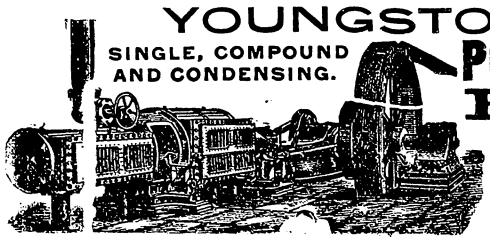
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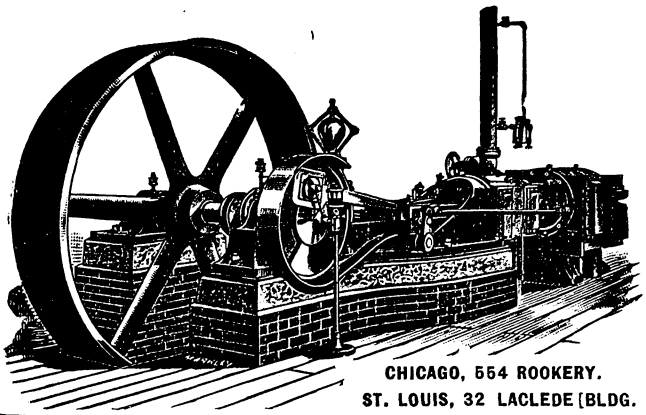
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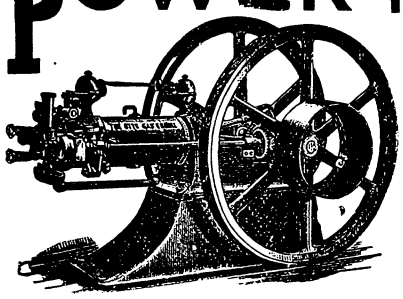


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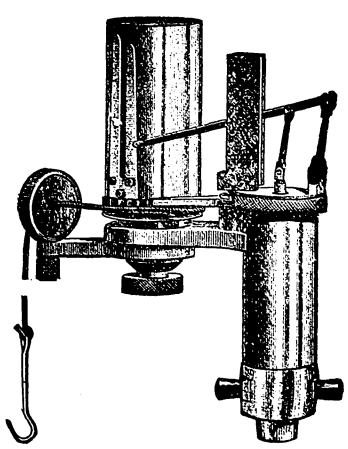
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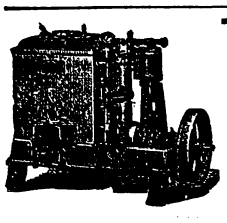
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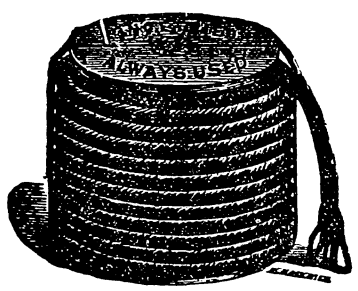
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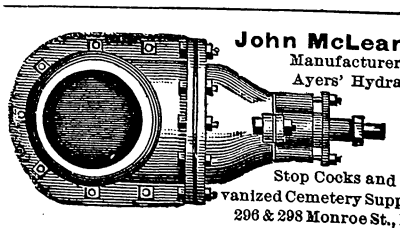
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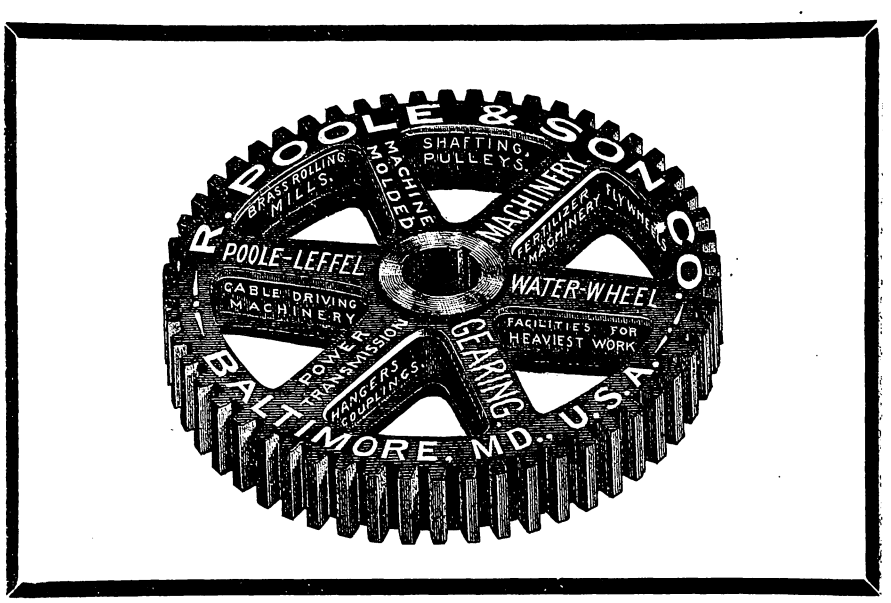
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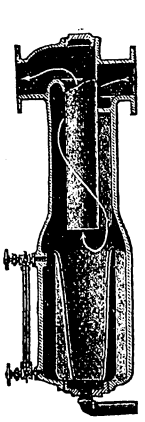
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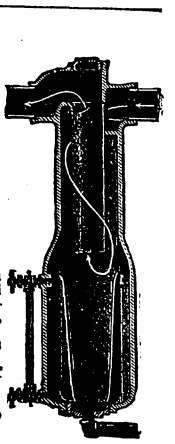
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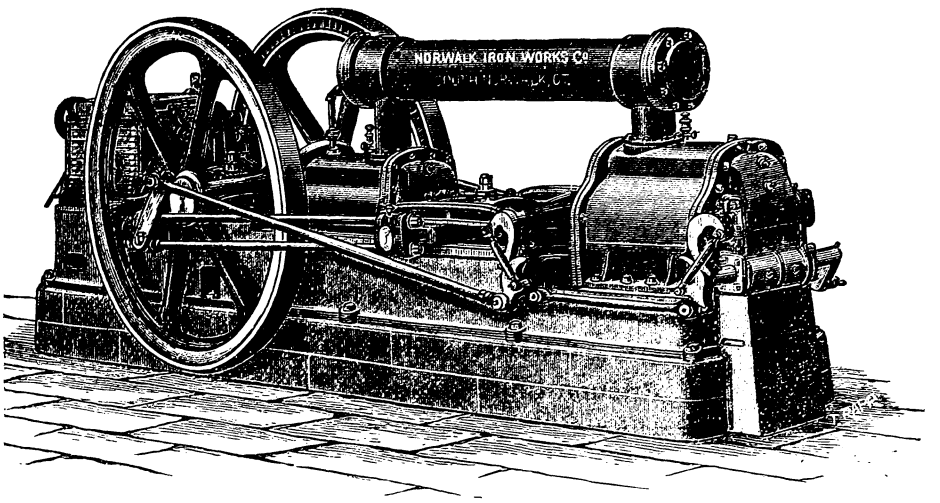
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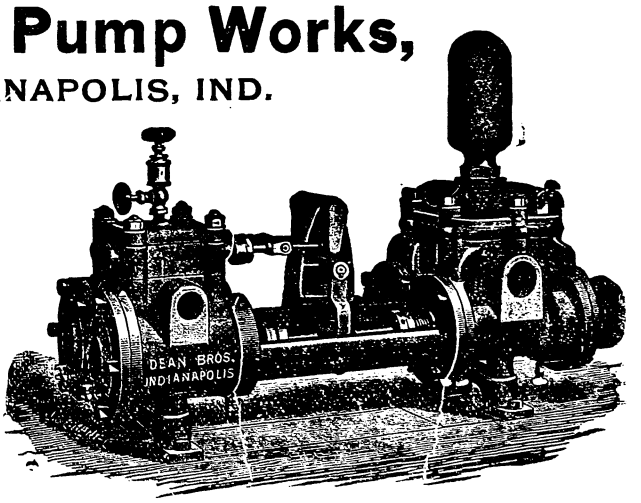
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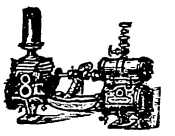
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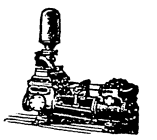
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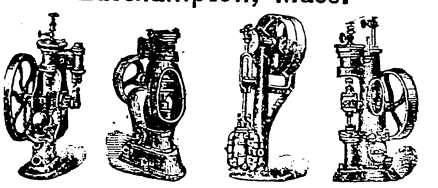


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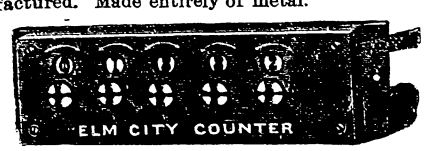
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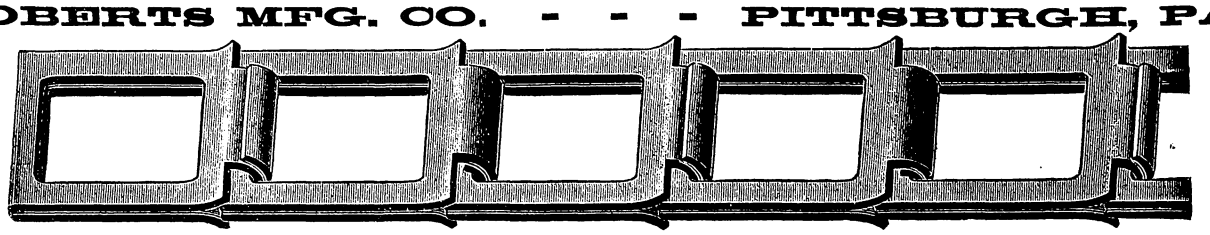
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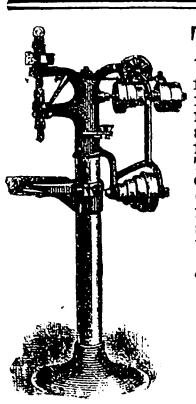
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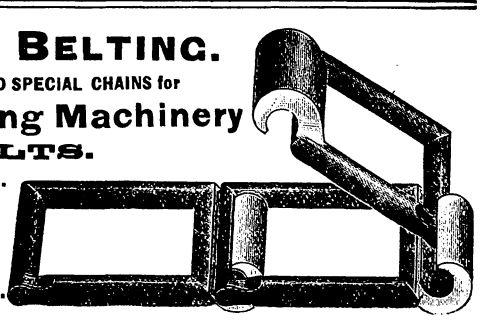
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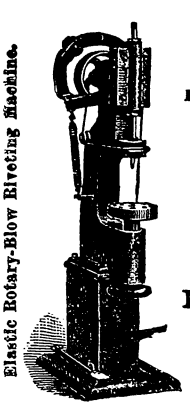
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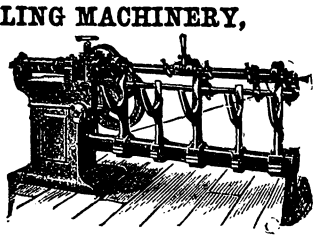
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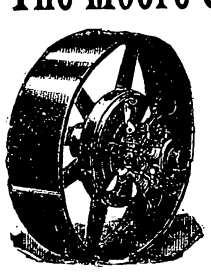
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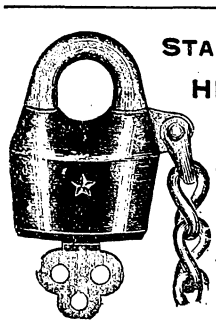
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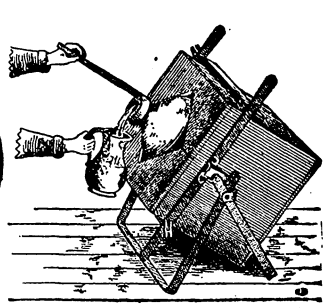
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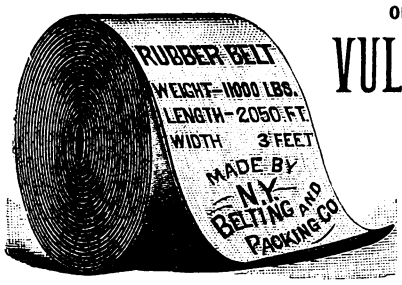
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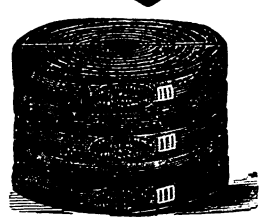
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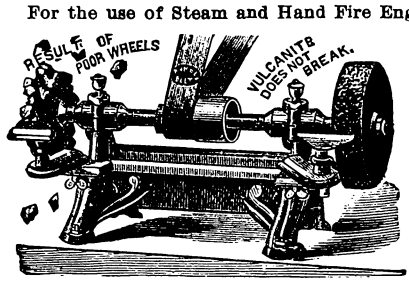


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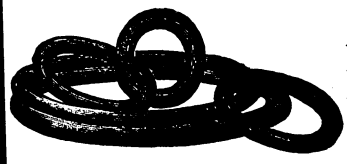
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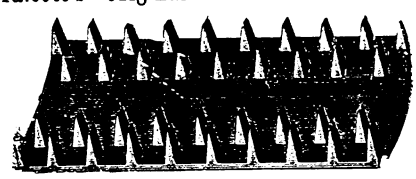
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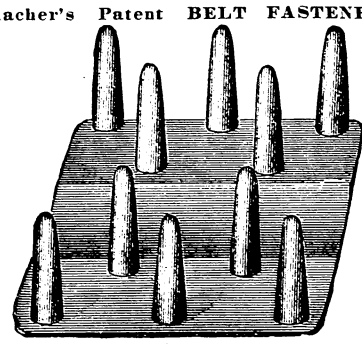
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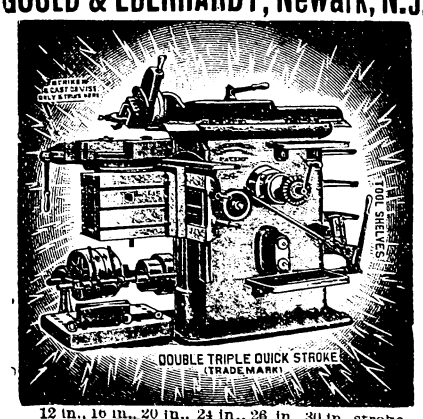
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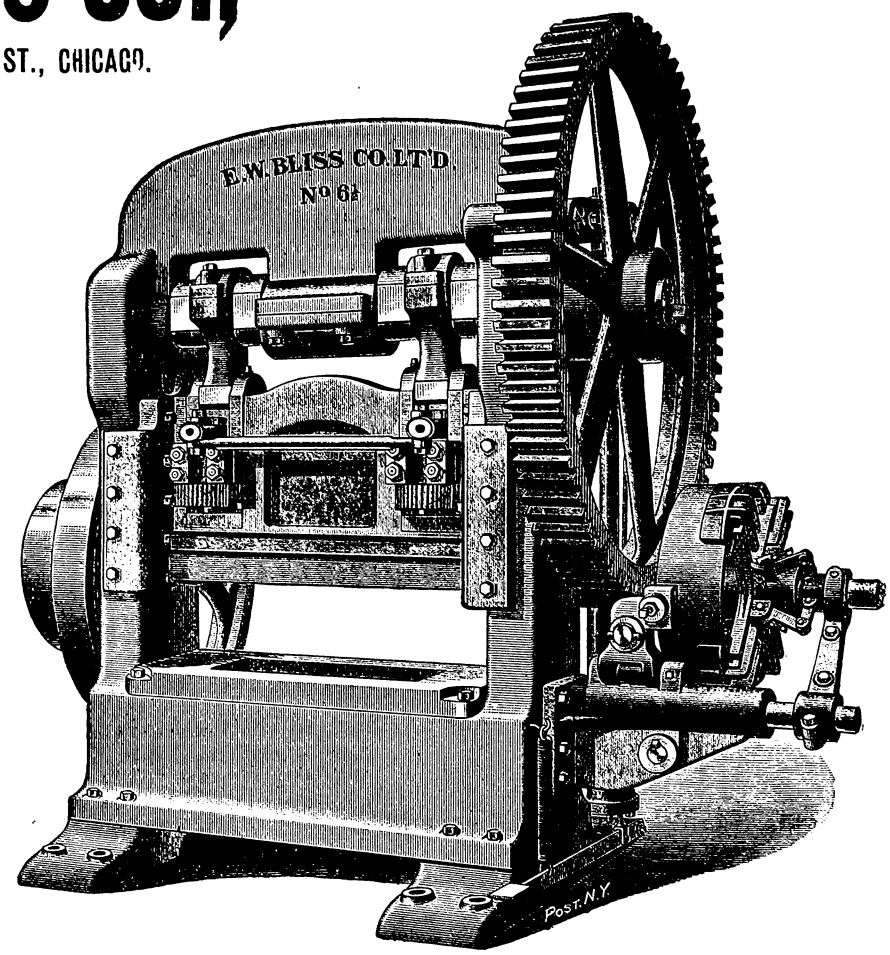
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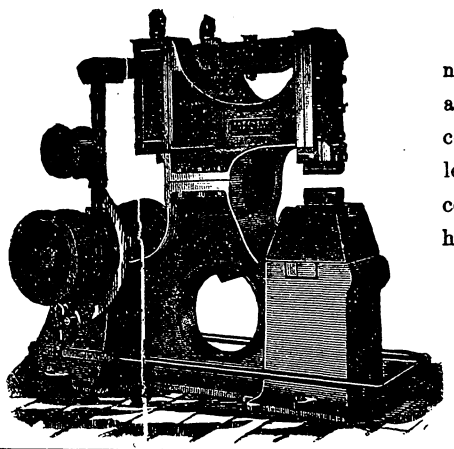
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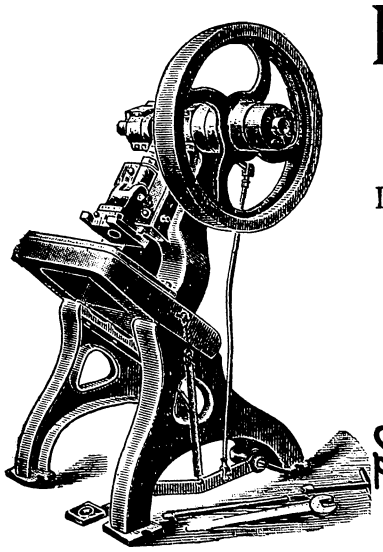
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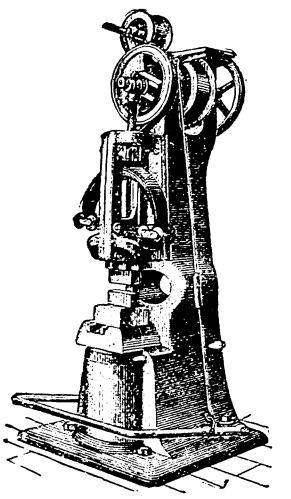


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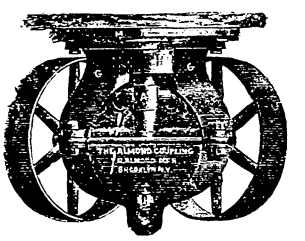
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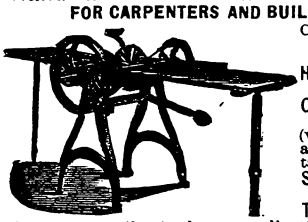
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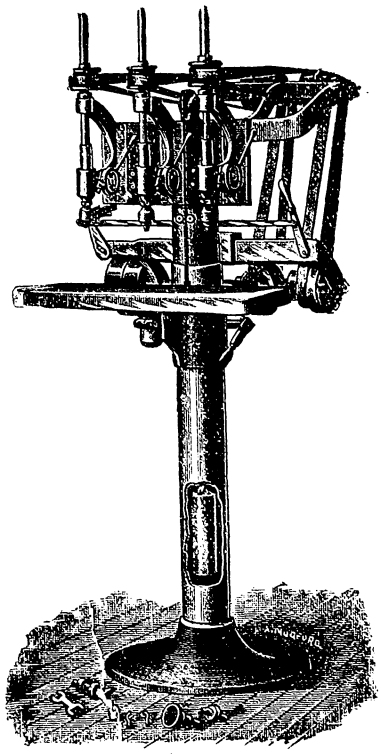


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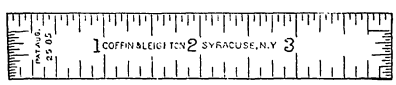
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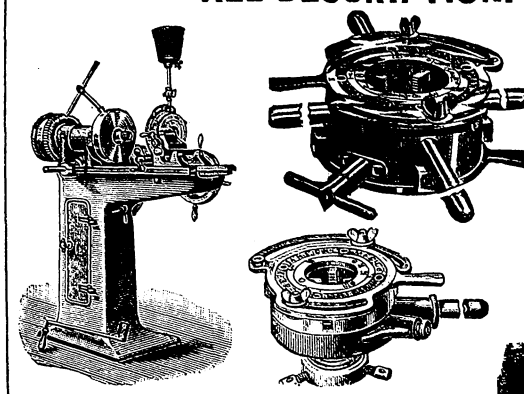
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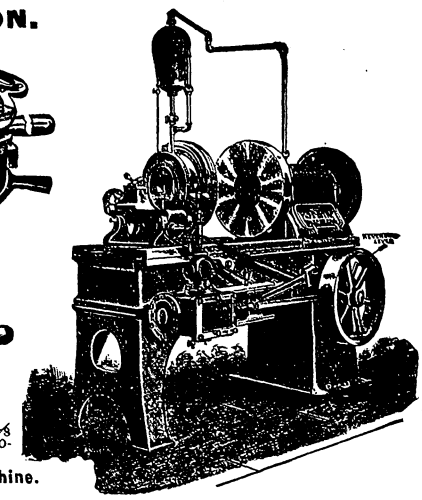


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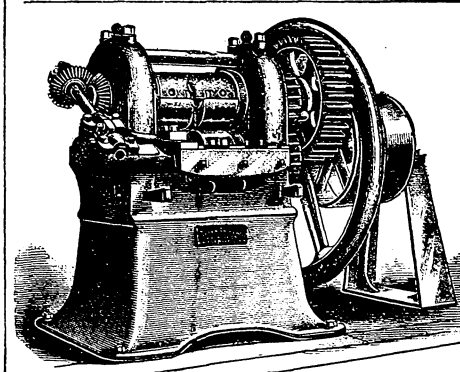
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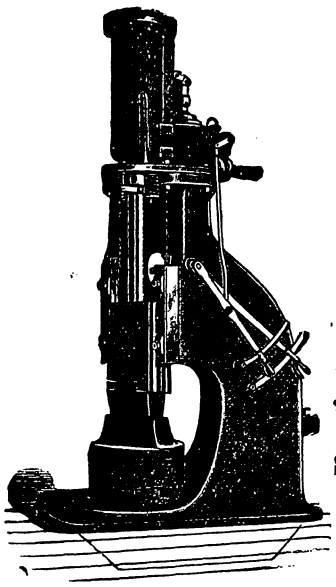
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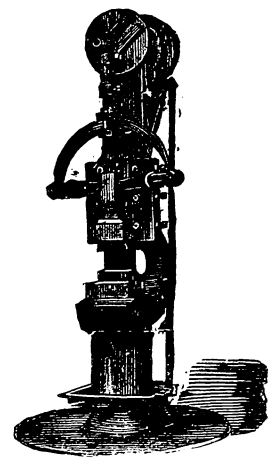
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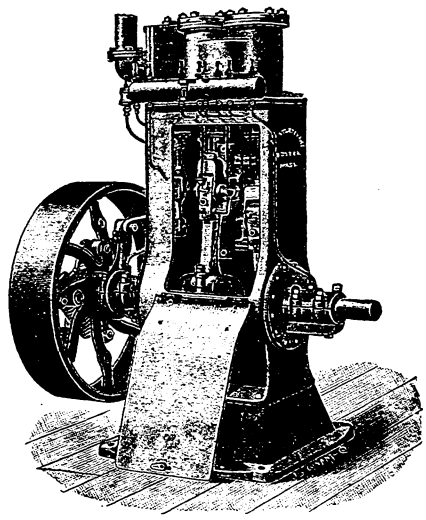
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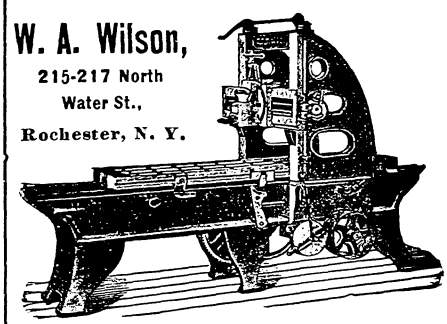
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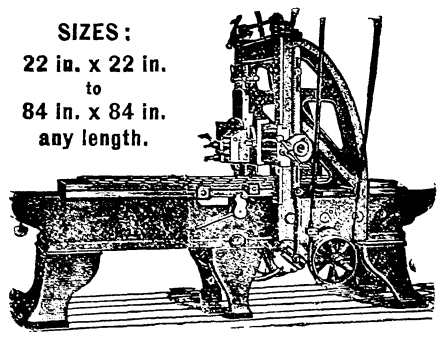
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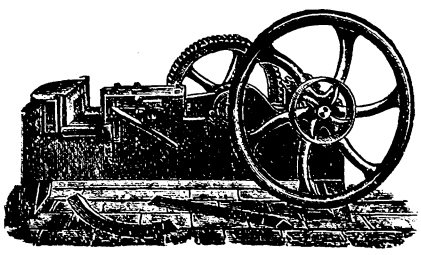
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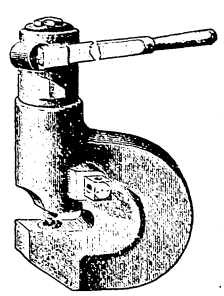
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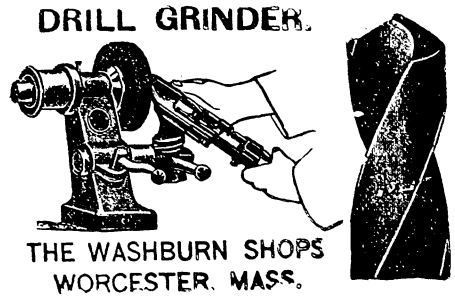
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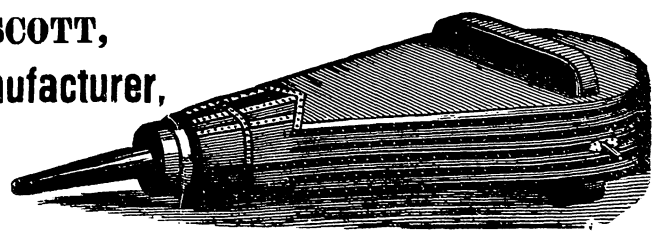


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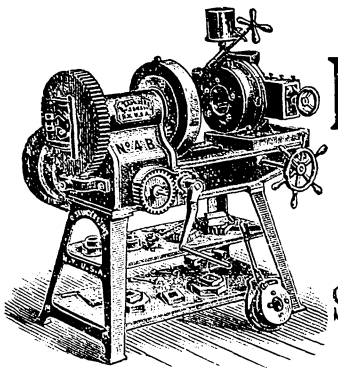
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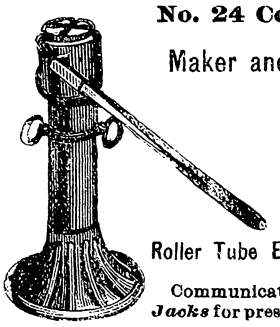
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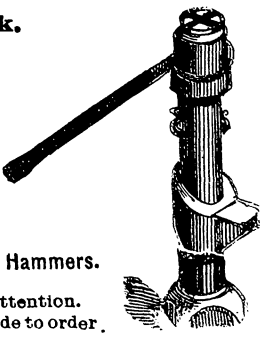
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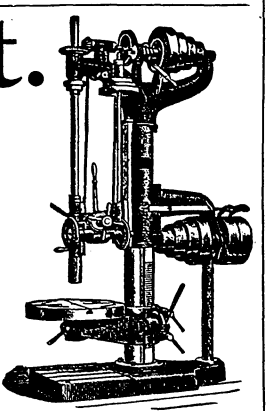
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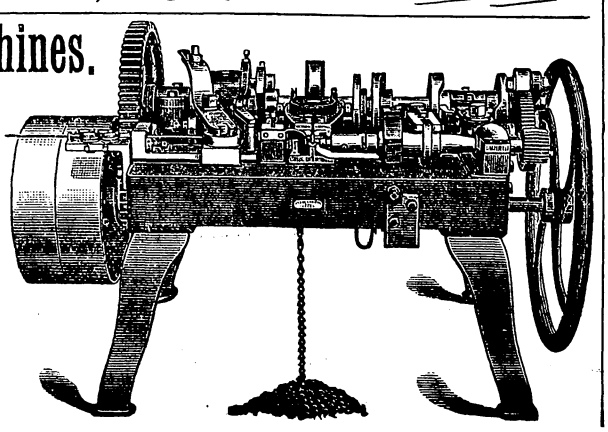
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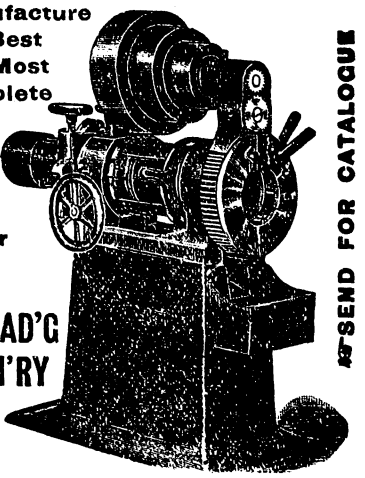


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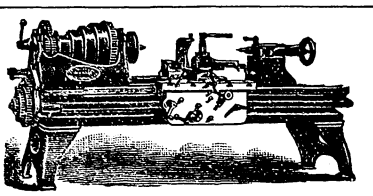
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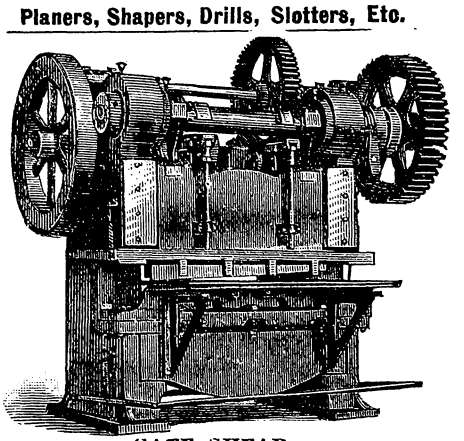
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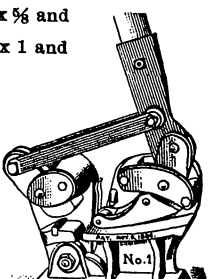
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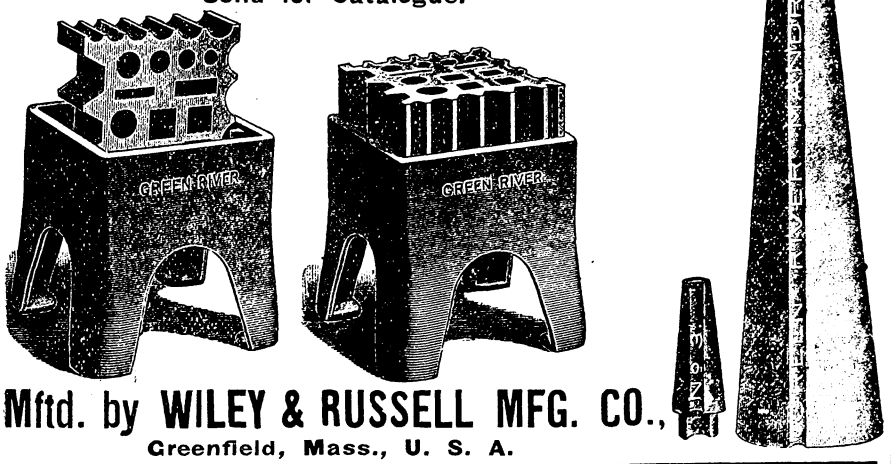
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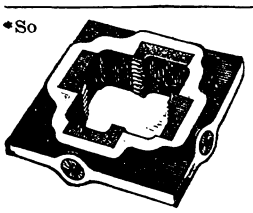
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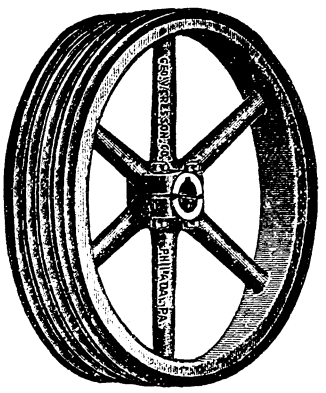
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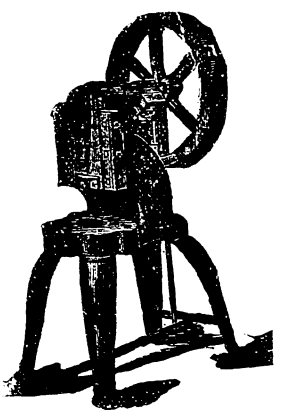
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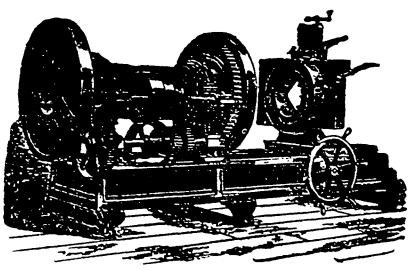


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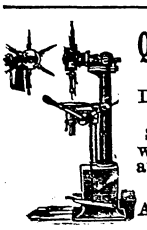
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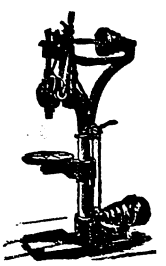
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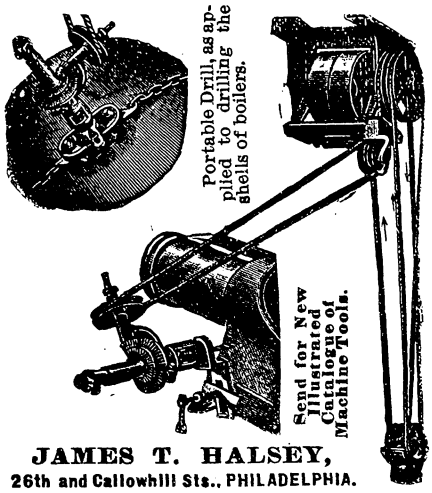
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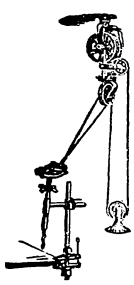
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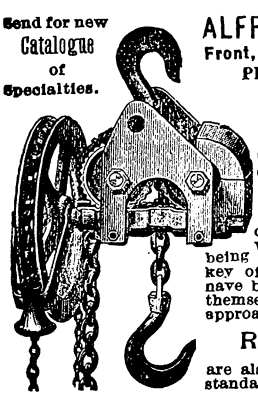
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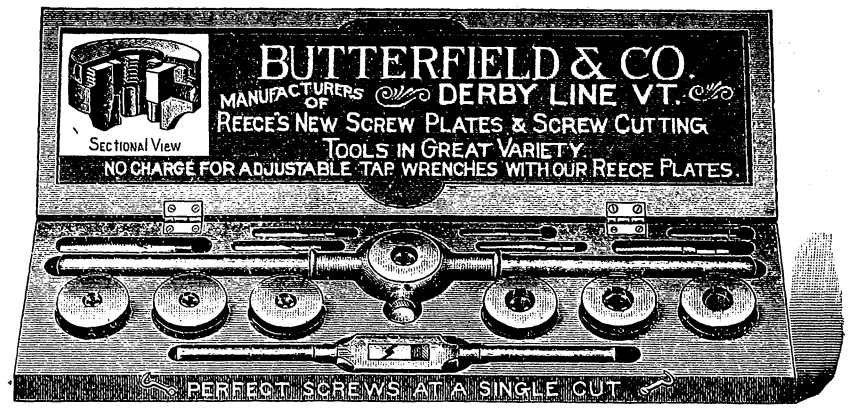
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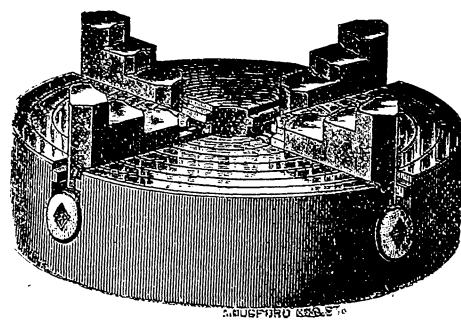
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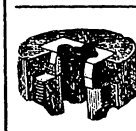
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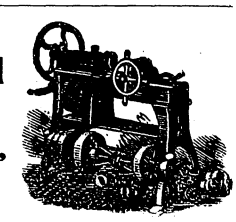
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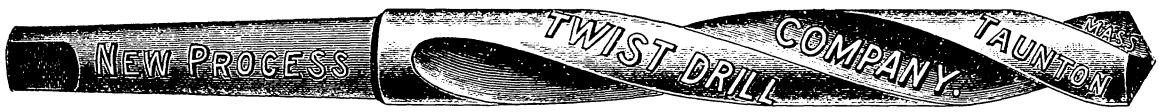
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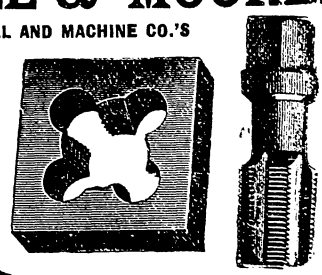


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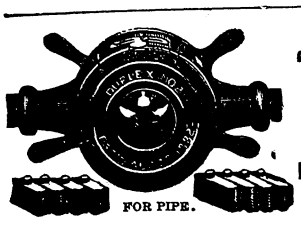




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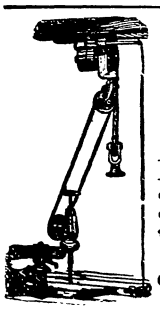
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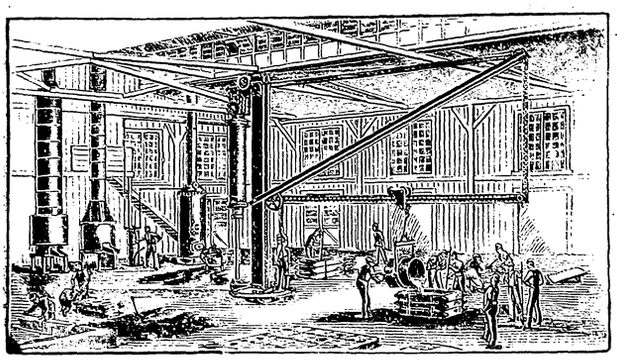
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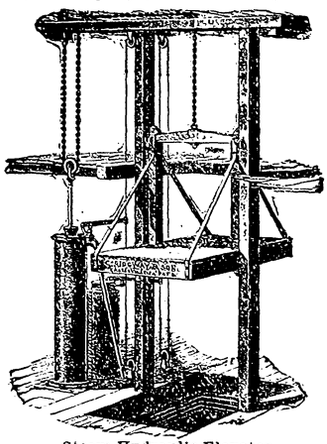
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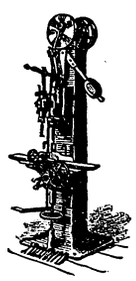
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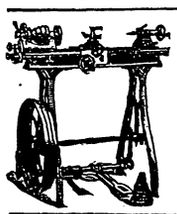


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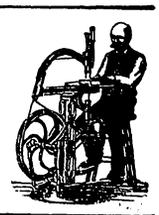
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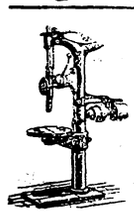


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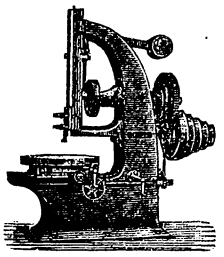
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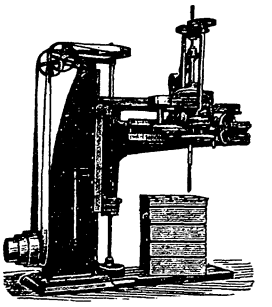
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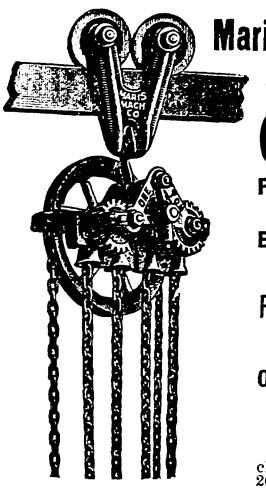
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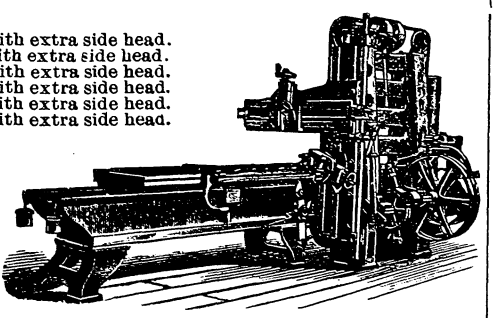
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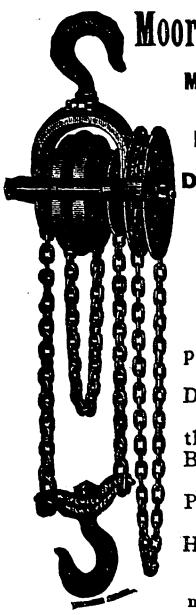
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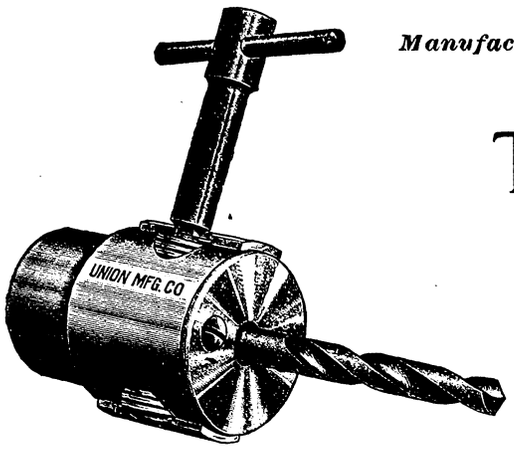
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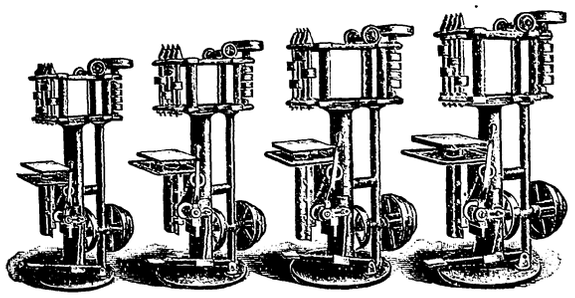


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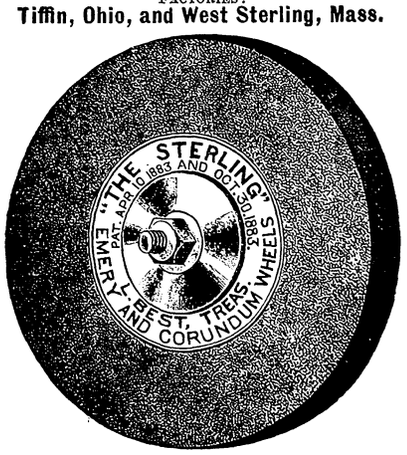


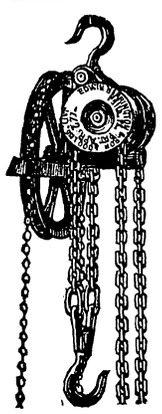
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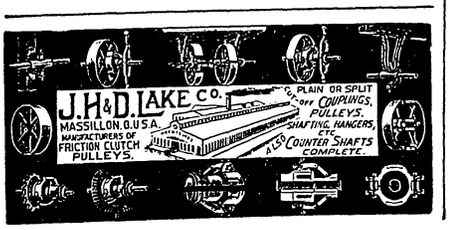
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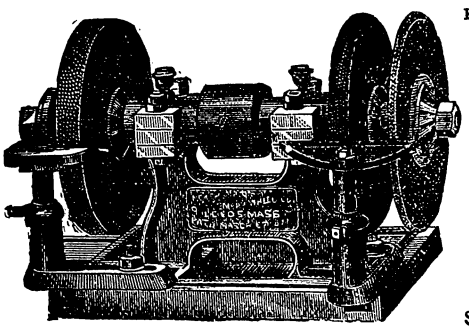
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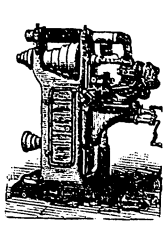
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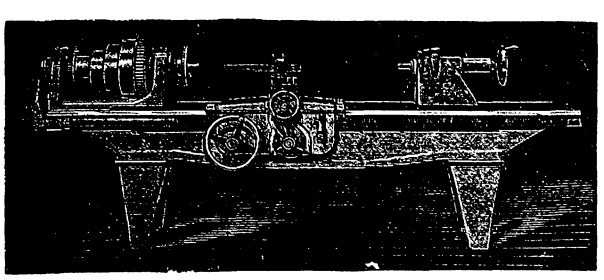


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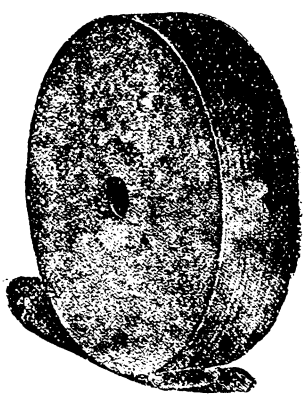
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" " Radial, H. & Jones, 48 "
Gang Drills, 2 Spindle and 4 Spindle.
Lot of Special Drills for Butt Drilling.
Special Butt Milling Machine.
No. 12 Turret Lathe, 3¼ inch hole, Jones & Lamson.
No. 12 " " 24 inch Swing by 8 ft. Bed, Am. T. & Mch. Co.
Lot of Polishing Mchy., Leather Covered Wheels, etc.
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Boiler Shop Outfit of Machinery.

Send for our latest list or state what is required.

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Geo. Place Machine Co.

32-INCH UPRIGHT DRILL PRESS.

TWO OF THEM; SECOND HAND.

Makers' Name, - KERKHOFF & CO.
Height, - - - - - - 8 ft. 2 in.
Greatest Distance Spindle to Base Plate, - 52 in.
Greatest Distance Table to Spindle, - 38 in.
Weight complete, - - 2600 lbs.

Back Geared and Power Feed, Quick Return, Balanced Spindle; Shafts and Studs made of Steel.

THE SCRANTON SUPPLY & MACHINERY CO.,
SCRANTON, PA.

For Sale, Very Low for Cash.

500 tons Relaying Steel Street Rails, side bearing, 35 to 47 lb. sections. Also 65-lb. Steel T's.

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FOR SALE.

2 Stokes & Parrish 7 in. x 9 in. Hoisting Engines.
3 No. 7 Knowles Pumps.
1 Worthington Duplex Pump, 10 x 6 x 10 in.
Lot 30 and 36 in. Plain Cylinder Boilers.
Lot I Beams, Stacks, &c.
At Merion Furnaces, West Conshohocken, Pa.
Apply for particulars to

POULTERER & COMPANY,
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SEE HERE!

1 each Garvin No. 2 & No. 4 Milling Machines, 2d hand.
1 Pratt & Whitney Lincoln Miller No. 3, 2d hand.
1 Muller 16 x 6 Engine Lathe, 2d hand.
1 Lodge & Davis 17 x 6 Engine Lathe, 2d hand.
1 Pratt & Whitney 19 x 6 Engine Lathe, 2d hand.
1 each Lodge & Davis, 21 x 8 and 21 x 10 do., 2d hand.
1 Dietz Gang 22 x 8 Engine Lathe, 2d hand.
1 New Haven 28 x 8 " "
1 Dietz Gang 80 in. Radial Drill, " "
1 20 in. Lever Drill, new.
1 each Lodge & Davis 15 in. and 20 in. Shaper, new.
1 Gear Cutter, will cut up to 40 in., 2d hand.
1 Baker Bros. Universal Saw Bench, new.
A full line of the most improved Turret Lathes.

THE LODGE & SHIPLEY MACHINE TOOL CO.,
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FOR SALE.

Corliss Engine and Boilers for sale, nearly new, 250 H.-P., also a large assortment of Bundy Radiators, Quarry Pumps, Boilers, Engines and miscellaneous Machinery.

WILSON & ROAKE,
Front and Dover Sts., New York City

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Great Bargains.

Must be Sold and Removed.

16 in. x 30 in. Horizontal Engine.

18 in. x 36 in. Horizontal Engine.

24 in. x 36 in. Horizontal Engine.

19½ in. x 48 in. Beam Engine, with Knowles Condenser.

Write us for what you want.

LOVEGROVE & CO.,

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SECOND-HAND MACHINERY.

One American Tool Co.'s No. 2 Cabinet Turret Lathe, with slide rest; in fine order.
One Pratt & Whitney 36-in. Gap Chucking Lathe.
One Pratt & Whitney No. 3 Lincoln Milling Machine.
One Iron Planer, 52 in. wide, 44 in. high, 12 ft. long, with two heads.
One Springfield Universal Grinding Machine No. 3, swing 18½ in. over the ways and take 6 ft. between centers. Has been used but a very few times and is practically new.
One L. W. Pond Gear Cutter, to cut gears 36 in. diameter, 5 in. face, also arranged for cutting beveled gears.

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156 Oliver St., Boston, Mass.
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ENGINE LATHES.

1 15 in. x 5 ft. Flather.
1 15 in. x 6 ft. Jones & Lamson.
2 15 in. x 7 ft. S. C. Wright.
1 15 in. x 8 ft. Fitchburg.
1 16 in. x 7 ft. Bement.
1 16 in. x 6 ft. New Haven.
7 16 in. x 6 ft. F. E. Reed.
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2 16 in. x 6 ft. Prentice Bros.
1 16 in. x 6 ft. Perkins.
1 16 in. x 8 ft. Ames Mfg. Co.
2 18 in. x 8 ft. Wm. Munzer.
1 20 in. x 6 ft. E. P. Bullard.
1 26 in. x 10 ft. New Haven.

PLANERS.

2 15 in. Lathe & Morse. Crank.
1 20 in. x 20 in. x 6 ft. Pratt & Whitney.
1 22 in. x 22 in. x 4 ft. Pond.
1 24 in. x 24 in. x 5 ft. Pond M. T. Co.
1 24 in. x 24 in. x 5 ft. New Haven.
1 28 in. x 28 in. x 7 ft. New Haven.
1 36 in. x 36 in. x 9 ft. Enterprise Mch. Co.

DRILL PRESSES.

1 10 in. 3-Spindle Slate.
2 Garvin, Light Bench.
2 Garvin No. 2, 4-Spindle.
1 Pratt & Whitney, 3-Spindle.
2 Pratt & Whitney, 4-Spindle.
1 Garvin No. 4, 6-Spindle.
1 20 in. Blaisdell, Sliding Head.
1 22 in. Prentice, B. G., P. F.
1 24 in. Cincinnati, Sliding Head.
1 25 in. Blaisdell, B.G., P. F.
1 24 in. Prentice, B. G., P. F.

SHAPERS.

1 6 in. Boynton & Plummer.
1 10 in. Boynton & Plummer.
2 15 in. Juengst, Friction.
2 24 in. Hendey, Friction.
2 15 in. Wood, Light & Co.
1 18 in. Putnam, Traverse Head.

MISCELLANEOUS.

2 14 in x 5 ft. Fox Lathes, Square Arbor.
1 Whiton 2-Spindle Centering Machine.
1 Pratt & W. 2-Spindle Centering Machine.
1 No. 1 Brown & S. Surface Grinder.
1 No. 2 Brown & S. Surface Grinder.
2 36 in. G. & E. Auto. Gear Cutters.
2 Garvin Auto. Gear Cutters.
1 6 in. Bement Slotter.
1 10 in. Newton Slotter.
1 No. 2 Nat'l Single Bolt Cutter.
1 No. 2 Nat'l Double Bolt Cutter.

Also, large variety of other machines. Write for complete list and detailed description.

THE GARVIN MACHINE CO.,

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FOR SALE.—A Superior Lot of Cast Iron Plates 2 ft. x 4 ft. They are made to avoid warping and cracking. Will sell in lots to suit.

MATTHEW GILL, JR.,
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RAILS

FOR RELAYING.

10 tons 80 pound Steel T's.
65 tons 65 pound Steel T's.
50 tons 40 pound Iron T's.
650 tons 35 pound Iron T's.
250 tons 30 pound Iron T's.
10 tons 25 pound Steel T's.

STEAM ROCK DRILLS.

2 No. 4 Rands, with Tripods
1 No. 3½ Ingersoll, with Tripod.
1 Bullock Diamond Drill for hand or power. Nearly new.
Send for new list of good things.

THOS. P. CONARD,

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WE ARE OFFERING BARGAINS IN THE FOLLOWING PIECES OF SECOND-HAND MACHINERY.

14 x 18 High Speed Engine, 2 wheels 60 in. dia., 14 in. face.
18 x 48 Corliss Engine, wheel 16 ft. dia., 25 in. face.
16 x 48 Corliss Engine, wheel 16 ft. dia., 9 tons.
2 Horizontal Tubular Boilers, 5 ft. dia. x 17 ft. long.
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Smith Valve Compound Duplex Pump. 14-20 x 15 x 15.
Worthington Compound Duplex Pump, 10-16 x 10¼ x 10.
Davidson Pump, 24 x 12 x 24.
500 H.-P. J. P. Witherow, Pittsburgh, Pa., Heater.
Edison Dynamos of 75, 150, and 300 lights, with lamps, sockets, switches, wire, &c.

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SECOND-HAND MACHINERY.

2 11 in. x 5 ft. Reed Engine Lathes.
2 11 in. x 5 ft. Prentice Lathes.
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2 15 in. x 6 ft. Reed Engine Lathes.
1 15 in. x 8 ft. Young Lathe.
1 16 in. x 6 ft. Young Lathe.
1 16 in. x 6 ft. Perkins Lathe.
2 16 in. x 6 ft. Blaisdell Lathes.
1 16 in. x 6 ft. Flather Lathe.
1 18 in. x 8 ft. New Haven Lathe.
1 18 in. x 8 ft. Dustin Lathe.
2 20 in. x 6 ft. Bullard Lathes.
1 26 in. x 10 ft. Dustin Lathe.
2 20 in. x 8 ft. Bullard.
1 20 in. x 10 ft. Bullard.
1 26 in. x 13 ft. New Haven
1 Dexter Pattern Lathe.
1 Bullard Turret Lathe.
2 Brainard No. 7 Overh'ging Arm Plain Millers
2 Brainard No. 7 Lincoln Plain Millers.
1 B. & S. No. 1 Universal
1 Brainard Heavy No. 6 Lincoln Pattern Miller.
1 Garvin No. 2 Miller and Screw Slotter.
1 No. 3 Garvin Plain Miller.
1 38 x 18 ft. N. Y. S. E. Lathe.
1 Garvin No. 4 Rack Feed Miller.
1 Brainard No. 15 Universal Miller.
2 Brainard No. 5 Universal Millers.
1 Blaisdell 30 in. Single Spindle Drill.
1 Wilder Punch Press.
1 Grindstone and Frame.
1 Garvin one-spindle Profiling Machine.
1 Garvin No. 2 three-spindle drill.
1 Garvin No. 3 four-spindle Drill.
1 Garvin No. 4 four-spindle Drill.
1 Garvin No. 2 Wire Feed Screw Machine.
1 Garvin No. 2 Plain Screw Machine.
1 Garvin Small Gear Cutter.
1 Dustin 18 in. wheel feed one-spindle Drill.
1 Brainard Universal Cutter Grinder.
1 Band Saw.
1 Diamond No. 3 Emery Grinder on column.
1 Diamond Polishing Head.
1 Bullard 15 in. stroke Shaper.
1 16 in. Smith & Mills Shaper.
1 24 in. x 24 in. x 6 ft. New Haven Planer.
1 10 ft. Boring Mill.
1 8 ft. 4 in. Boring Mill.
1 76 in. x 60 in. x 13 ft. Planer.
1 48 in. Car Wheel Borer.
1 Axle Lathe.
Also large stock of New Tools.

NILES TOOL WORKS CO.,

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MACHINERY, TOOLS, &c.

Engines, all sizes, Slide Valve and Automatic.
Boilers, all sizes, Horizontal, Vertical and Locomotive.
Hoisting Engines, Portable Engines, Steam Pumps.
20 Screw Cutting Lathes, 12 in. to 24 in. swing.
20 Bement Milling Machines.
24 in., 30 in. and 36 in. Planers, 6 in., 12 in. and 15 in. Shapers.
44 in. Radial Drill, 1¾ in. National Bolt Cutter.
Power Shears, ½ in. iron, 15 in. Gap.
Hydraulic and Punching Presses.
10 lbs., 25 lbs., 60 lbs. hammers for belt.
4½ Pratt and Whitney cut-off machine.
Brown & Sharpe Grinding Lathe.
FRANK TOOMEY, 131 N. Third St., Philadelphia, Pa.

---

4 3 H.-P. Vertical High Pressure Engines.
2 5 H.-P. " " " "
3 6 x 10 Horizontal Engines.
2 8 x 12 " "
2 10 x 14 " "
8 5 H.-P. Gas Engines.
5 10 H.-P. " "
1 8 x 12 D. C. Hoisting Engine.
3 Rock Crushers.

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Heavy Plate and Bar Shears, Engines, Boilers, Pumps, Cranes, Fairbanks Testing Machine, &c., &c., for sale by

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Philadelphia, Pa.

CORLISS

and other Automatic Engines, Slide Valve Engines Boilers, Steam Pumps, Tanks, &c., &c.

CORLISS, 10 x 20; 10 x 24; 12 x 36; 14 x 30, 16 x 42; 23 x 36; 22 x 48; 26 x 48; 28 x 60; 30 x 60; 30 x 72; Porter-Allen, 14 x 30; Brown, 16 x 42.
HIGH SPEED AUTOMATIC, 12½ x 15; 14 x 16; 12 x 18; 11 x 20; 10½ x 12; 9½ x 12.
HORIZONTAL SLIDE VALVE, 28 x 32; 18 x 36; 16 x 48; 16 x 36; 14 x 24; 13 x 24; 12 x 24; 10 x 24; 12 x 18; 10 x 14; 10 x 12, and others.
VERTICAL SLIDE VALVE, 28 x 30; 20 x 24; 13 x 16; 13 x 12; 10 x 12; 10 x 10; 9 x 9; 8 x 10; 7 x 9; 7 x 7; 6 x 6.
ASSORTMENT OF BOILERS, Horizontal, 6 x 16; 5½ x 16; 5 x 16; 4 x 14; 4½ x 12, and others.
LOCOMOTIVE BOILERS, 15, 30, 45, 50, 60, 70, 100 and 150 H.-P.
ASSORTMENT OF STEAM PUMPS, 1000 gl. Duplex Fire Pump also Brennan Crusher, Bogardus Mill, Rock Drill, Burr Stone Mill, Fan Blowers, Platform Scales, Wood Planer, Rendering Tank, Open Tanks, Hoisters, Berryman Heaters, 600-ton Hydraulic Press, Boiler Rolls. Also some Large Steel Boilers, new, below market price. Send for catalogue.

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PLATE MILLS.

For sale, one 2 high and one 3 high 30-inch Train, will roll heavy and light plates up to 90 in. In complete order. Made by Garrison & Co.

MATTHEW GILL, Jr., Philadelphia, Pa.

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For sale, Morgan, Williams & Co. Guillotine Shear, Engine attached, Knife 104 inches long, will cut heavy steel plates. (Has Auxiliary shear on back.)

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For sale, Horizontal Engine 39 in. x 72 in.; 2 Fly Wheels weighing 53 tons each.

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For sale, one heavy Roll Lathe made by Garrison & Co., will take in 12 ft. Roll and turn to 40 inches. MATTHEW GILL, Jr., Phila., Pa.

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BAKER BLOWERS, Nos. 1, 4½, 5, 6 and 7.
ROOT BLOWERS, Nos. 1, 2, 3, 4, 5, 6 and 7.
Sturtevant Blowers, Nos. 4, 5, 6, &c.
1 Corliss Band Wheel, 12 ft. x 24 in., in halves.
A Variety of Machinery, Such as Boilers, Engines, Pumps, Crushers, &c., very cheap.
Do you want to buy or sell Machinery? If so, write

C. R. BIGELOW, Machinery Expert,
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TRAIN OF ROLLS

WANTED.

Complete, modern Merchant Bar Mill 9 in., 10 in. or 12 in. Also Blooming Mill 26 in. to 32 in., and Alligator Shears to cut 2 in. to 3½ in. iron.

"S.,"
office of *The Iron Age*, 220 South 4th Street, Philadelphia, Pa.

FOR QUICK SALE.

One Otis Steam Shovel in good condition.
Two 12 ton 3-ft. Gauge Locomotives.
Two Standard Gauge Saddle Tank Locomotives.
20 Dump Cars, 3-ft. Gauge, 3-yd. Capacity, Side Dump.
3000 tons Mill Cinder, &c.
Also Pig Iron, Muck Bars, Bar Iron and Steel Billets, Scrap, &c. We are always in the market to buy and sell Equipment and Scrap.

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Trustee's Sale of Machine Shop Equipment.

Lathes, 52 in. swing by 41 ft., 54 in. swing by 22 ft., 30 in. swing by 22 ft. One Pit Lathe.
Planers, 54 in. wide by 20 ft., 36 in. wide by 13 ft.
Drills, 36 in. upright, 5 ft. post, 20 in. post.
Engines, 5 new and 7 second-hand, from 100 H.-P down.
Circular on application.

W. A. BOLE, Trustee,
Liberty Ave., cor. 25th St. Pittsburgh, Pa

SOME BARGAINS HERE.

1 Hendey Shaper, 15 in. stroke, imp. vise.
1 14 x 6 Screw Cutting Engine Lathe. New.
1 5 in. hole in Turret Screw Machine and Counter, $25.
2½ Hendey Cutting-off Machine. New.
1 3-Spindle Garvin Drill Press, used 1 month.
100 H.-P. Woodbury Engine. 2d-hand. Good order.
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And other machinery, new and second hand. Write for prices. **Machinists' Supply Company,**
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In lots to suit, and ready for delivery.

3000 tons 60 lb. Steel T Rails.
450 tons 56 lb. Steel T Rails.
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350 tons 40 lb. Steel T Rails.
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500 tons 35 lb. Iron T Rails.
250 tons 30 lb. Iron T Rails.
120 tons 30 lb. Steel T Rails.
150 tons 25 lb. Iron T Rails.
140 tons 20 lb. Steel T Rails.
60 tons 16 lb. Steel T Rails.
1700 tons Johnson Girder Rails, 38, 48, 52 and 66 lb. Rails.

All selected and in excellent condition for relaying and only slightly worn.

Second hand selected and sound rails furnished in specified lengths for builders' use. For prices and particulars apply to

JOSEPH JEWKES,
Railway Equipment, Pittsburgh, Pa.

FOR SALE.

2 Double Deck Boilers about 40 H.-P. each, cheap. Hoisting Engine. Cylinder Boilers for Stacks, 30, 36 and 42 in. diameter. Round and Square Iron Tanks. Blow Offs. 5 Brass Cannons about 1400 or 1500 pounds each Good order. All kinds of Scrap Iron and Metals on hand.

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DON'T INVEST in expensive tools or machinery or let a contract before getting our estimate for making novelties or parts. Fine, difficult and accurate parts a specialty. White metal work at prices that cannot be duplicated. Inventions perfected. Models made. Secrecy and satisfaction guaranteed, and no extra charge for new ideas or improvements To insure reply to letters of inquiry only, enclose stamp. THE H. H. FRANKLIN MFG. CO., Syracuse, N. Y.

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Bids on Heavy Machinery Castings, carload lots. Address

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WANTED.

A large sized, new or second-hand, Blake Crusher. Must be in good condition, and cheap for cash. Address

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In quantities to suit, 1000 feet of 2¼ in. four ply water hose, at 30¢ per foot, with couplings either to fit 2 in. wrought iron pipe, or thread to fit regular 2 in. hose coupling. Address

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AT LOW PRICES.
NEW SOFT STEEL PLATES.

About 100 tons ¼, 5-16, 7-16 and 9 16 in. thick. We have limited quantity of ⅜ and ½ in. The sheared plates are 12 to 25 in. wide, mostly 16 to 22 in., and average 7 ft. long. The universal rolled are 10 to 34 in., average 18 in. wide, and average 8 to 9 ft. long. Are parallel on sides and edges and just the thing if you buy plates for cutting up. Are nice and flat and splendid quality. Car lots or less. Write for prices.

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For sale, to settle an estate, the machine shops of the late firm of Carter & Allen, adjoining and connecting with the Philadelphia & Reading Railroad at Tamaqua, Pa. The improvements include Boiler Shop, Foundry, Machine Shop, Erecting Shop, Pattern House, Boiler House, Blacksmith Shop, etc., etc. Also Machinery, including Engine, Shafting Drills, Lathes, Forges, etc., etc. Also large stock of patterns for various work, including furnace and mine machinery, hoisting and stationery engines, etc., etc. Buildings are well adapted for their purposes. May be examined on application to WALLACE GUSS,
Cashier First National Bank of Tamaqua, Pa.,
or to the ESTATE OF WILLIAM T. CARTER,
Deceased.
THE FIDELITY INSURANCE, TRUST & SAFE DEPOSIT CO.,
327 Chestnut St., Philadelphia,
WAYNE MacVEAGH,
Bullitt Building, Philadelphia,
Executors.

FOR SALE, CHEAP.

400 tons of 60-pound, 200 tons 52-pound and 400 tons of 30-pound second-hand Steel Rails, suitable for relaying. For prices, etc., address

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HARDWARE STOCK

Good stock of Hardware, invoice $4000, good store building with living rooms above, valued at $2500, in a good town in Southwestern Minnesota; only hardware store in the town; good established trade of $15,000 a year. This is a rare chance to go into business. Address

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Stock of Hardware, Stoves, Paints and Glass, no agricultural implements, invoicing about $30,000; no indebtedness or book accounts. One of the most solid towns in the middle West. Present owner has been in same business in same town for 40 years and wishes to retire. Stock can be reduced considerably if desired. This is the cleanest stock in Minnesota. Address T. H. LOYHED, Faribault, Minn.

FOR SALE.—An established retail hardware business in one of the best towns in Southern Mich., pop. 10,000. Two other stores. Stock will invoice between 7 and 8 M. Clean, nice assortment; will sell for cash only; good chance. Reason for selling, have other business. Address "O.," No. 1130, office of *The Iron Age*, 96-102 Reade St., New York.

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FOR SALE.

The undersigned are producing **daily,** at their works, at Winifrede Junction, Kanawha County, W. Va., upon the line of the Chesapeake & Ohio Railway, about **SIX HUNDRED GALLONS COAL TAR,** free from water and other impurities, and are prepared to sell the same in barrels, in car load lots, at their works as above, or delivered.

Contracts solicted from consumers. Address

ELERSLIE GAS & COKE COMPANY,
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WANTED

Cupola, 55 to 60 inches diameter. New or second-hand. BALTIMORE MALLEABLE IRON & STEEL CASTING CO., Charles and Wells Sts., Baltimore, Md.

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for a capable energetic party with $10,000 to $15,000 to assist in managing a well established business. A good position assured. Address

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Eight States are traversed by the 6,150 miles of the Chicago, Milwaukee & St. Paul Railway's tracks, namely: Illinois, Wisconsin, Northern Michigan, Iowa, Missouri, Minnesota, South Dakota and North Dakota.

The company is daily in touch with the people in its territory, and from the number and varied nature of the industries locating and springing up on the line, and its acquaintance with the natural resources, has the facilities at hand to promptly furnish manufacturers with reliable information as to locations adapted to particular industries.

LUIS JACKSON,
Industrial Commissioner,
C., M. & St. P. R'y, 160 Adams Street,
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MANUFACTURING SITE WANTED.

A Manufacturing Company on a sound financial basis, with a monthly pay roll of $8000 to $10,000, is looking for a site where fuel is cheap, gas preferred. Any parties having inducements to offer, please address

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The "Electric" trains of the **Cincinnati, Hamilton & Dayton R R** and "**Monon**" **Route** between **Cincinnati and Chicago** are provided with the latest product of the Pullman Co. built expressly for this service. There are 10 compartments in each car, which may be converted at will into complete drawing rooms, most beautifully and harmoniously decorated, lighted by the Pintsch gas system, and are positively the most modernly equipped sleeping cars in the world. This is the only line running Pullman Vestibule and Dining Cars between the cities named. THE World's Fair Route. See that your ticket reads **C., H. & D. and Monon Route.**

D. G. EDWARDS, G. P. & T. Agent,
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An established shelf and heavy hardware business in a thriving town in Nebraska. Address

"HEAVY HARDWARE,"
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WANTED.

Practical Boiler Maker with small capital and business, to take interest in small shop. Fair business established and a good opportunity to an energetic man of ability. Applicants must be well recommended as to mechanical ability and moral character, and other things equal American preferred. Address

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To furnish reasonable estimates on specialties in light metal work.
CLARK & COWLES, Plainville, Conn.
Manufacturers of Clock Trimmings, Rivets, Springs, &c.

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Two 80-lb. Lever Trip Hammers, about new, first-class condition, made by Williams, White & Co., Moline, Ill., weight about 7500 lbs. each.
One 100-lbs. Jenkins' Upright Cushioned Helve Hammer, practically new, made by Jenkins & Lingle, Bellefonte, Pa.
One set of small Rolls for Rolling Carriage Springs and other light work.
All of the above at reasonable prices, or will exchange for medium sized Steam Hammers or large Power Press.
DANIEL L. HEISKELL, Wheeling, W. Va.

WANTED.

An Automatic Engine, about 24 x 34, to run about 135 revolutions a minute. Good second-hand Engine of that power, in good condition, preferred. Address
"ROOM 40,"
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WANTED.

We make a specialty of jobs and overstocks of Merchandise of any kind. We are in touch with all kinds of trade. Correspondence solicited. LANGDON & CO., Room 25, 206 La Salle St., Chicago, Ill.

TO HARDWARE MANUFACTURERS.

An old established firm, having intimate acquaintance with all the large buyers of the West, Northwest, South and East, with the exception of New England States, wishes to represent manufacturers of hardware Have had many years' experience, and can furnish first-class references. Address
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FOR SALE.

Manhattan Rolling Mill, 445 West St., New York, established 30 years, where the celebrated brand of J. L. Horse Shoe Iron is made. There is also a large trade in Blacksmiths' Supplies and Scrap Iron. Reason for selling, death and sickness.
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WANTED MANUFACTURED,

TWO PLAIN AND SIMPLE TOOLS

of good steel, Drop Forgings, in large quantities and steady demand. Samples furnished. Manufacturers address
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WANTED.

Agency for Canada for good selling specialties in Hardware or Paints.
LUNDY & KENNEDY,
37 Yonge St., Toronto, Canada.

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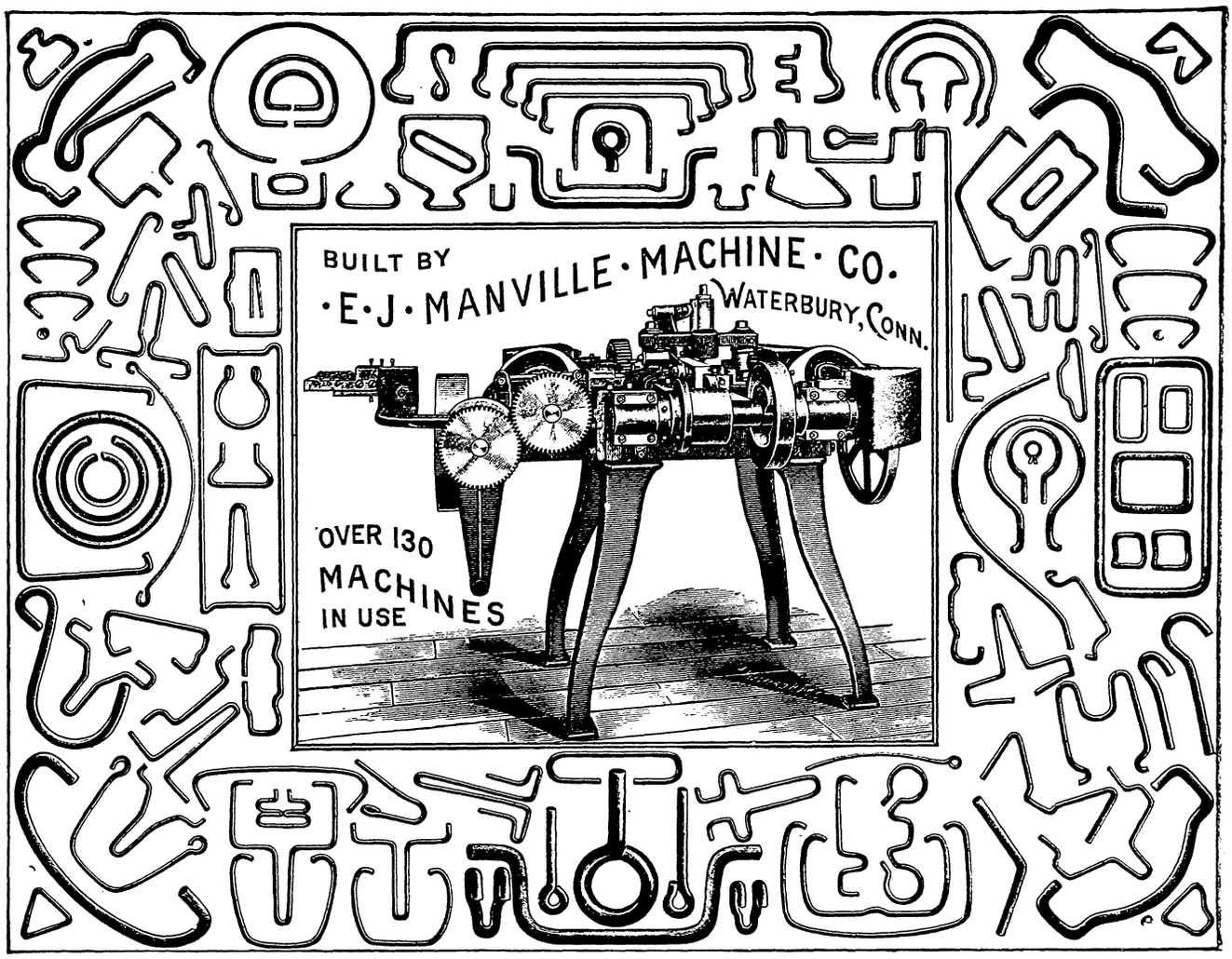
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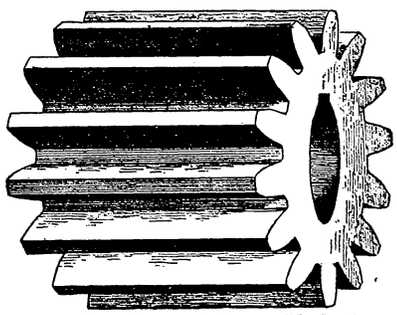
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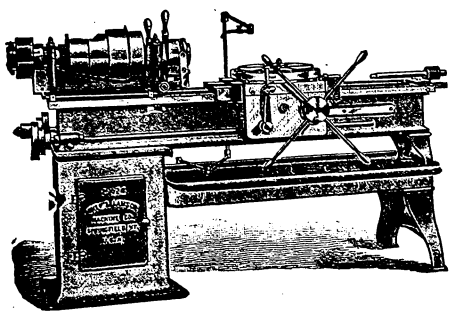
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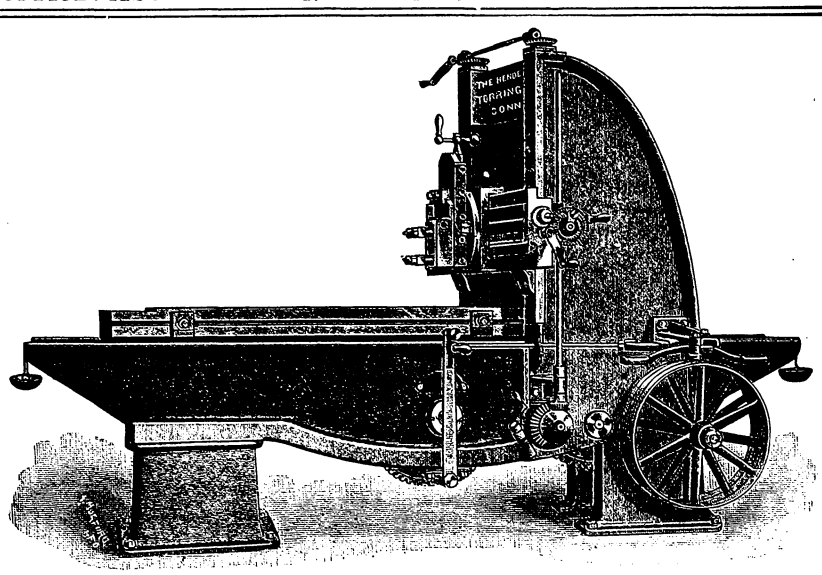
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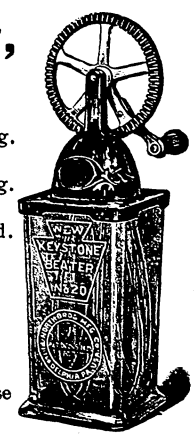
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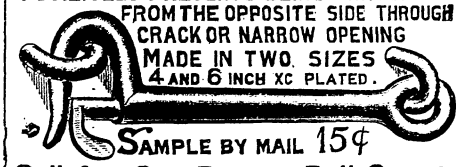
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Gives directions and working drawings for making an electric motor to run sewing machines, small lathes, etc., with rules for constructing the battery to furnish the electrical current, and much practical relative information.

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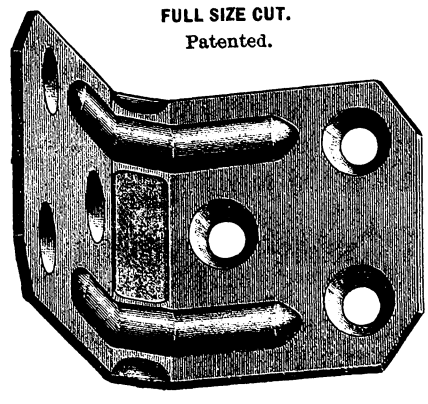
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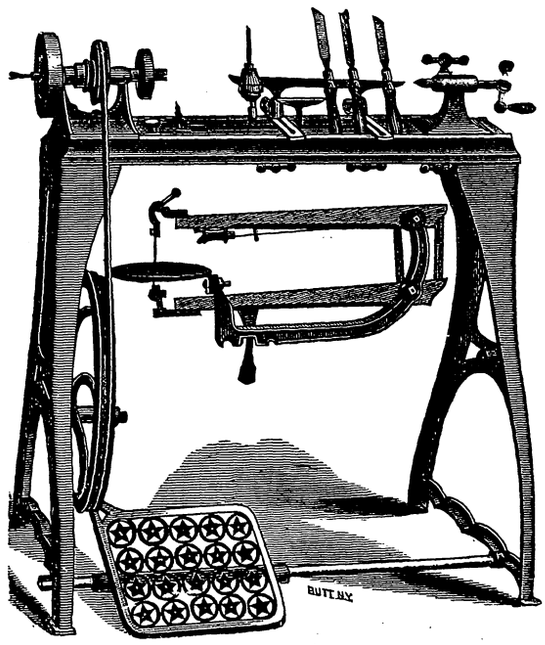
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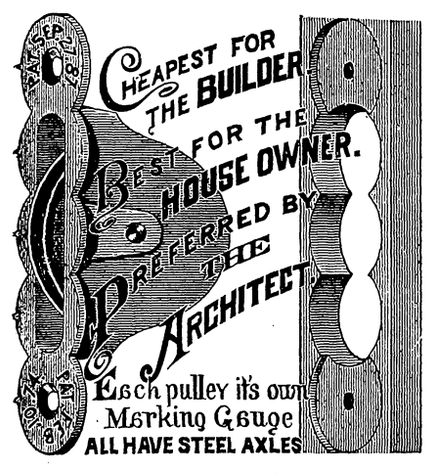
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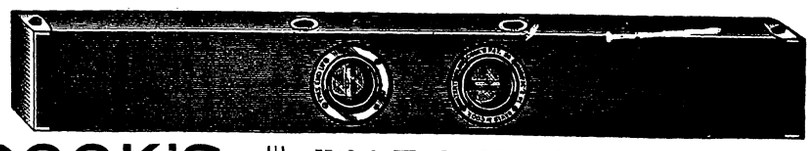
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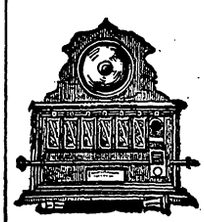


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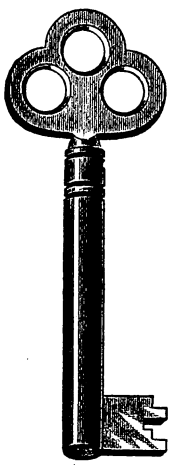
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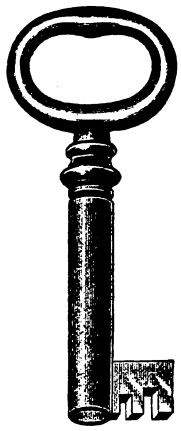
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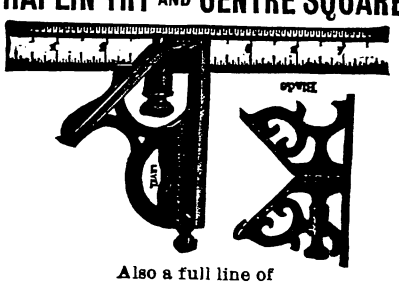
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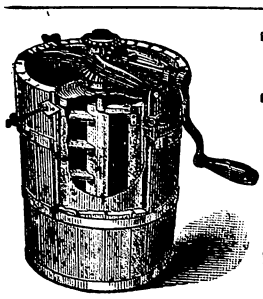
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for drill shank and feed nut. The jaws on this wrench open from 3-16 to 1¼ inches.

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"Home" Freezers, 2 to 10 quarts.

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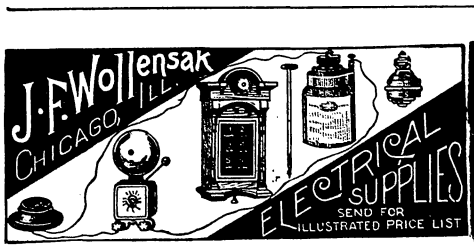
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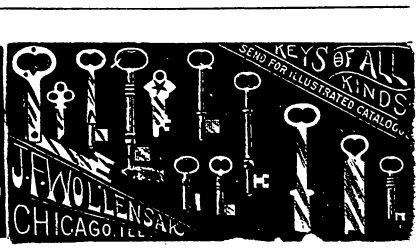
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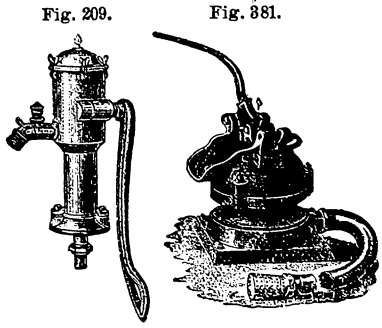
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Fig. 209. Fig. 381.



or wherever it is desired to raise a large quantity of water by

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from 3,000 to 4,500 gallons per hour.

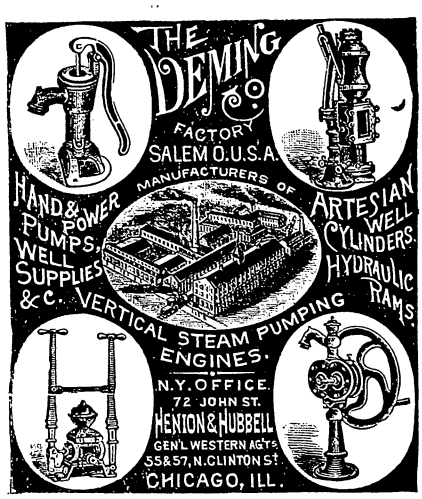
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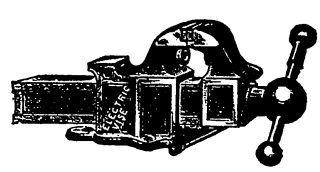
Fig. 145.



C. I. Grindstone Frame.



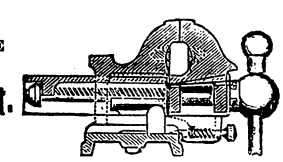
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IT HAS QUALITIES THAT ARE UNDISPUTED.

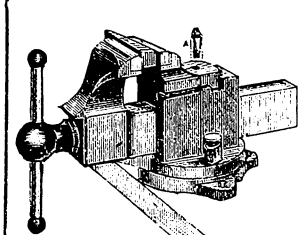
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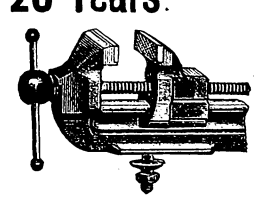


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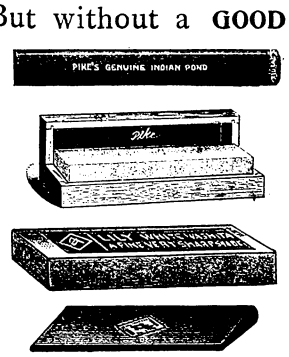
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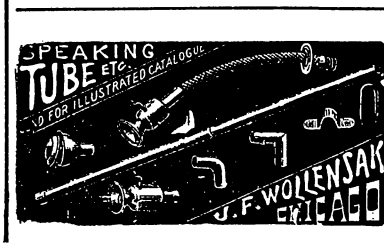
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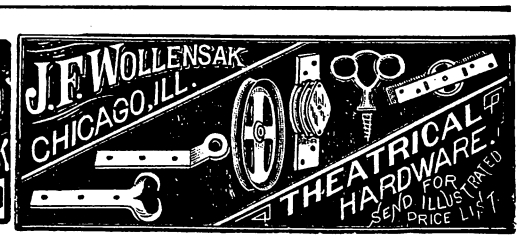
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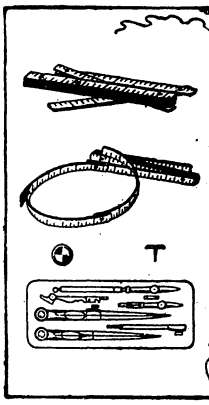
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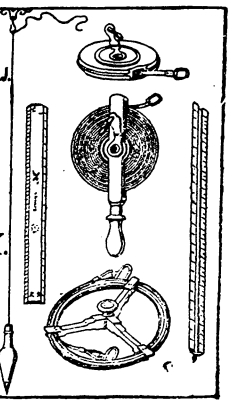


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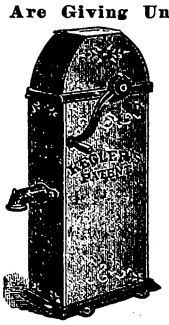


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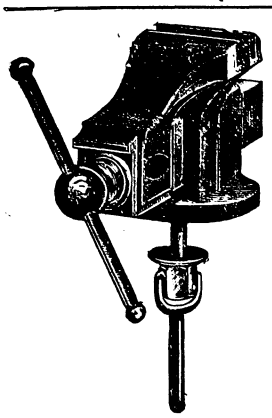
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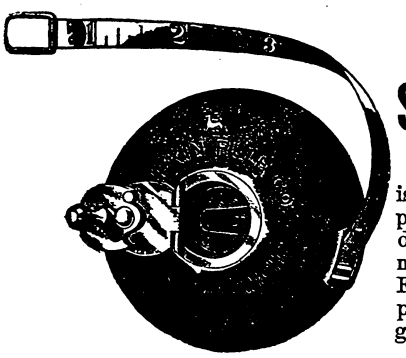
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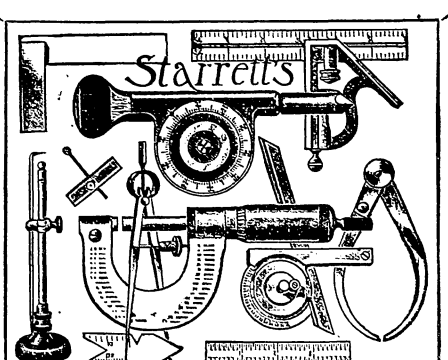
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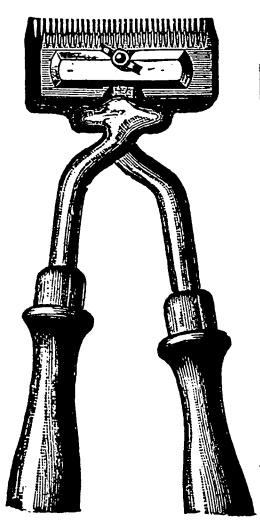
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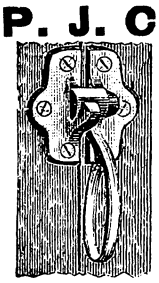
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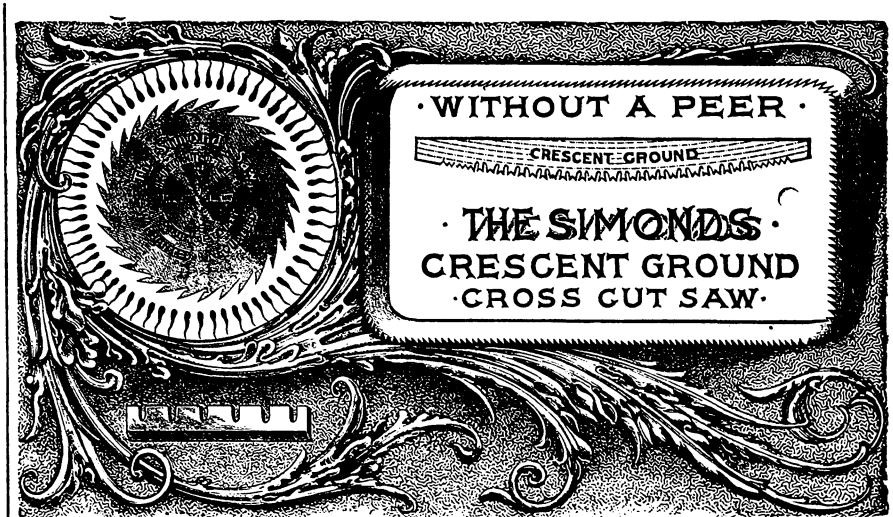
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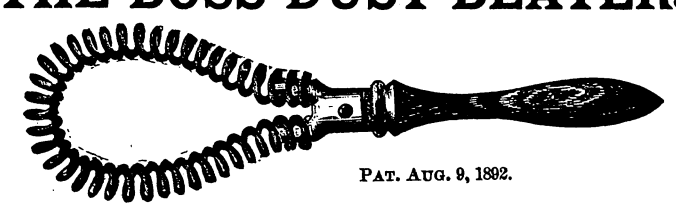
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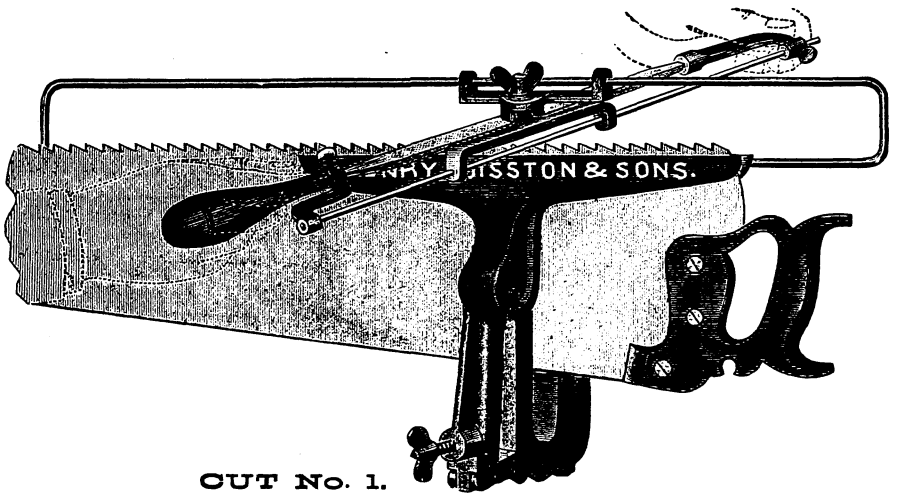
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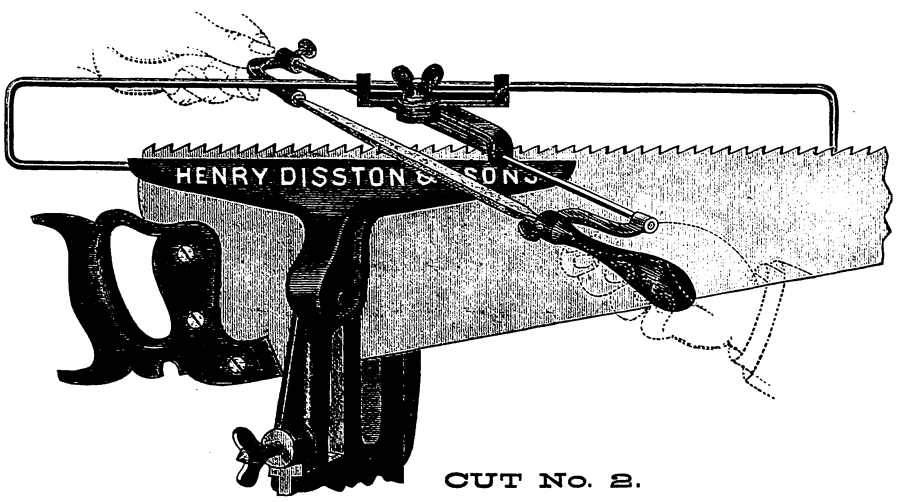
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ESPECIALLY DESIGNED TO ASSIST THOSE NOT SKILLED IN THE ART OF SAW FILING TO FILE A SAW CORRECTLY.



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Cut No. 1 shows a saw and the attachment in proper position for filing the first side; and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



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To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth Always keep the file as nearly horizontal as possible.

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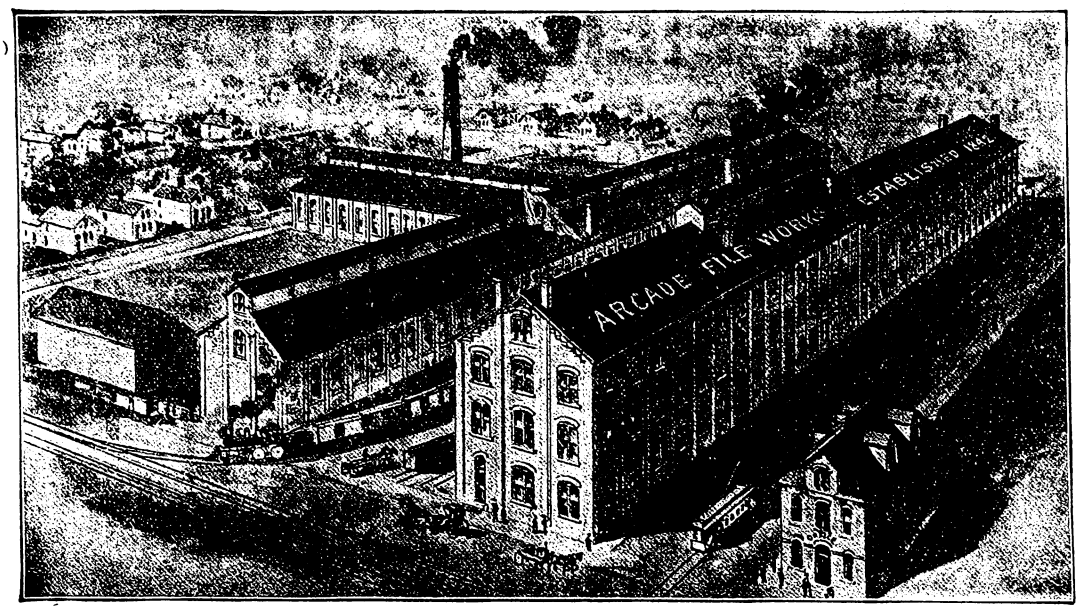
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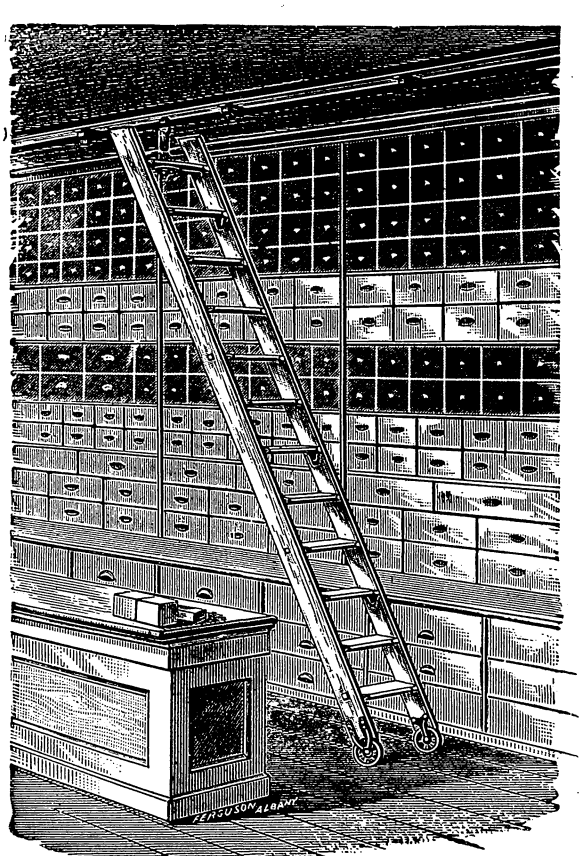
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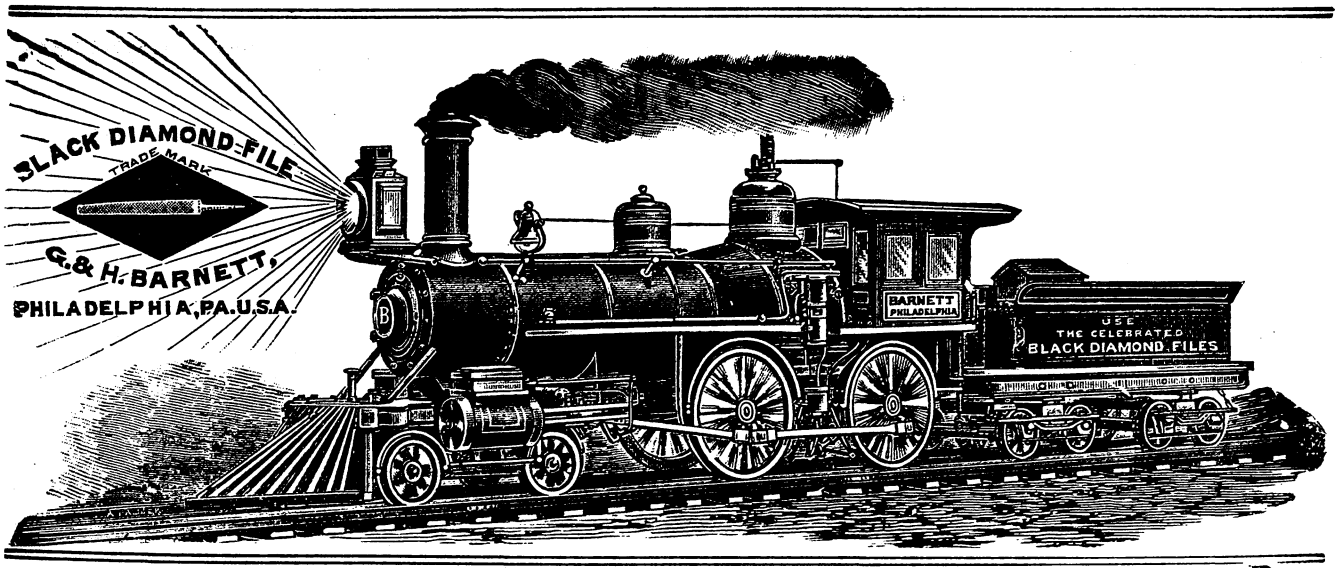
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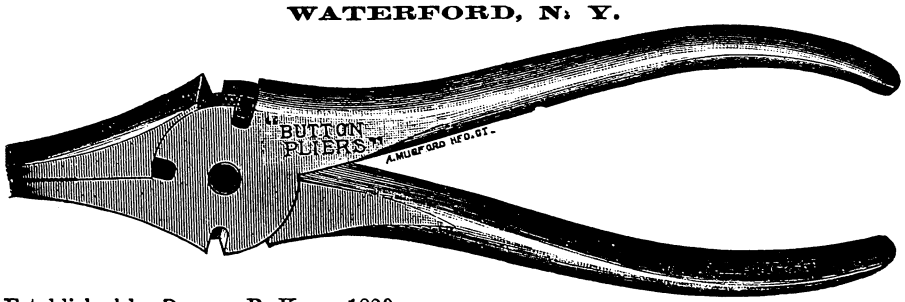
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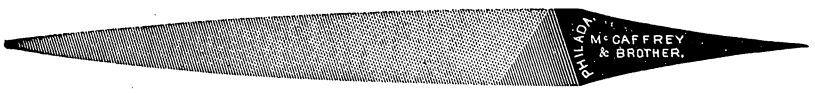
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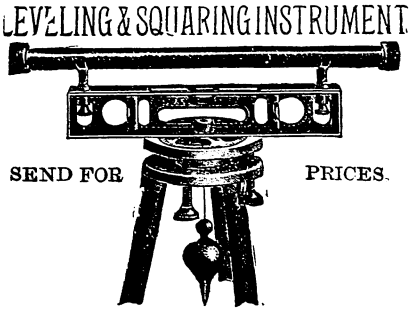
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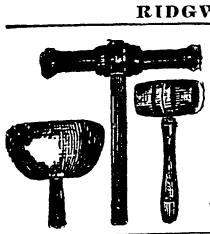
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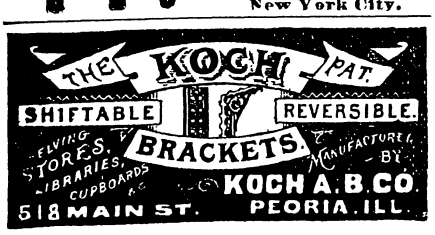
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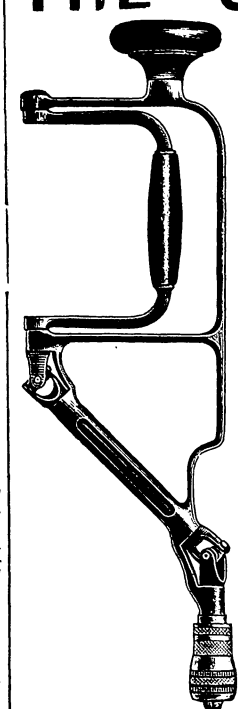
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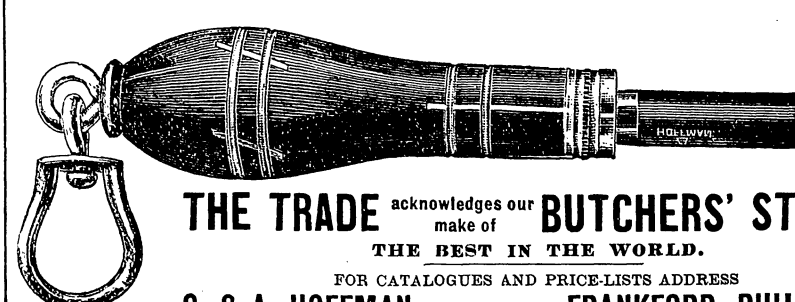
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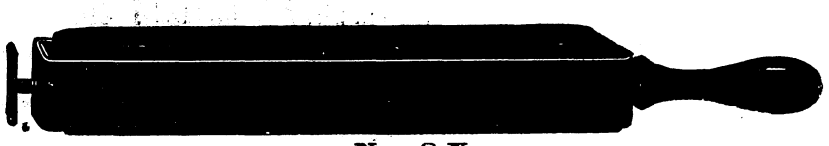
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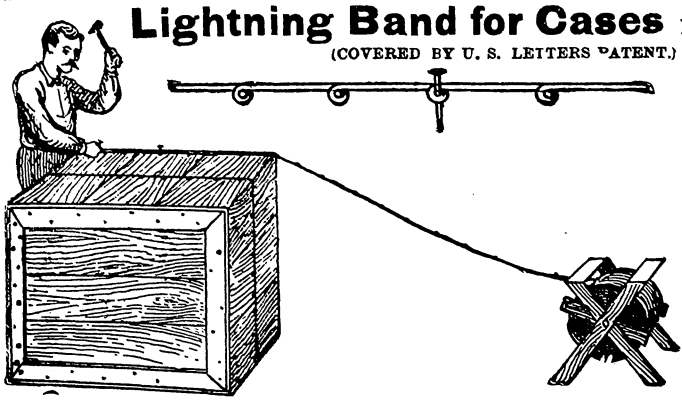
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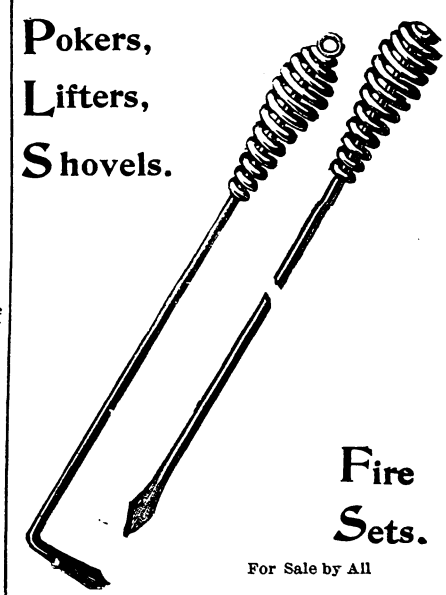
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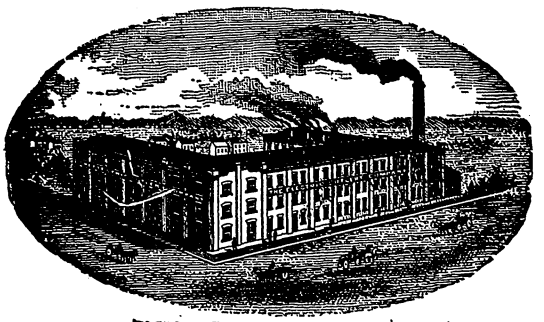
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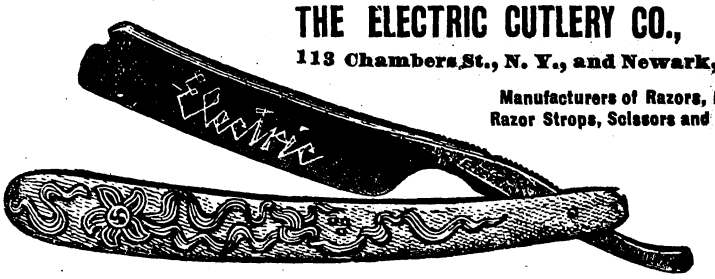
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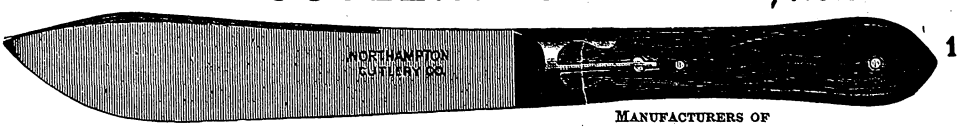


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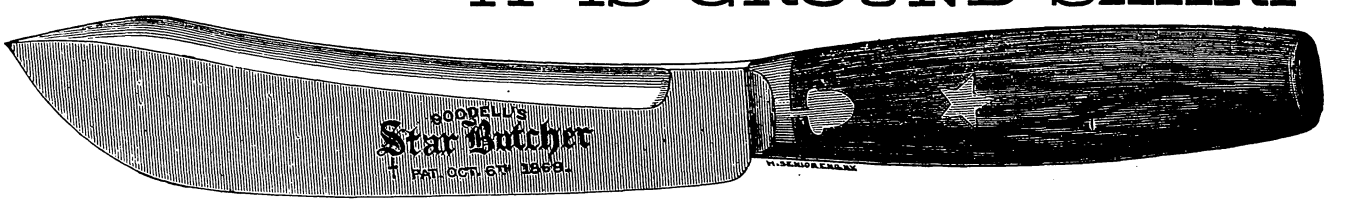


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Made in sizes from 5 inch to 8 inch; a strictly first-class butcher knife at a moderate price.

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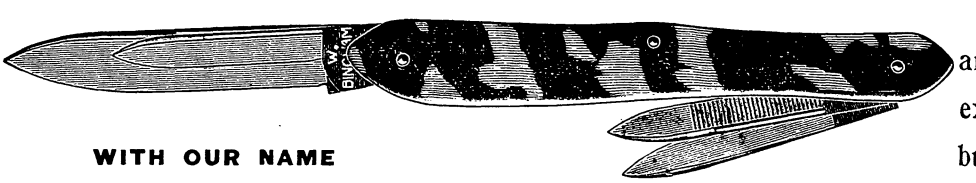
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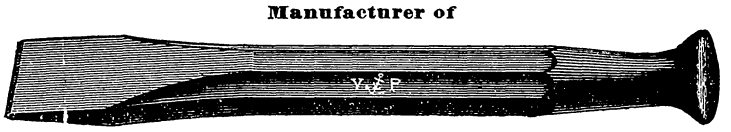
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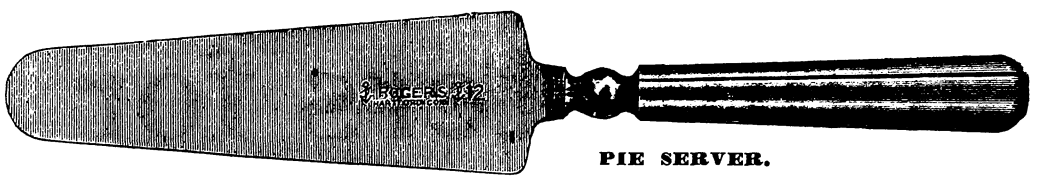
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THAN THE

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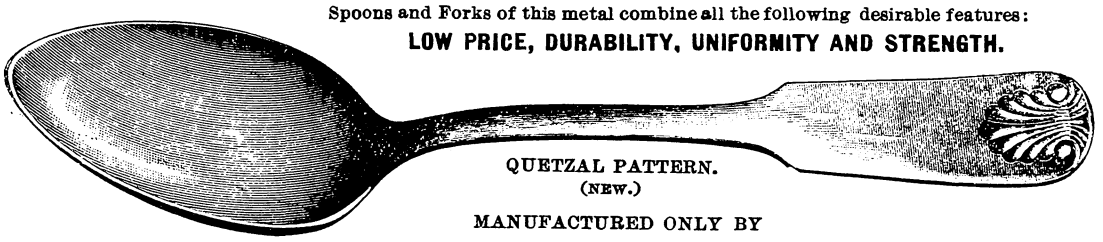
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Spoons and Forks of this metal combine all the following desirable features:

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SPOONS

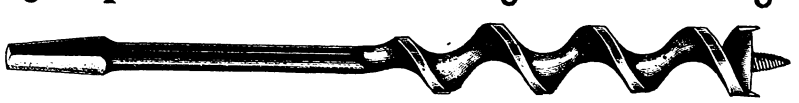


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Single Spiral Double Cutter Auger Bits and Augers.



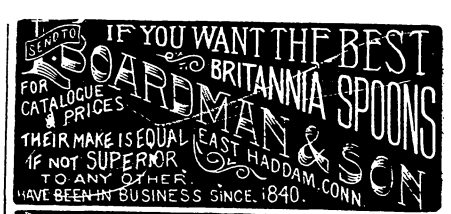
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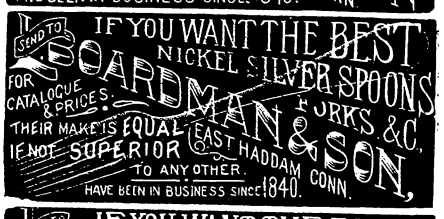
The large receptacle in the spiral is so arranged as to hold the chip back from the wall of the hole, and force it up and directly out, thus making it impossible to choke and easily turned by the operator. It is a rapid cutter, because it has a doubl threaded screw point, put on by a machine specially designed for that purpose, which causes the point to cut its way into wood, and thus obtain a firmer hold. In quality of steel, workmanship and style of tool it has no equal.

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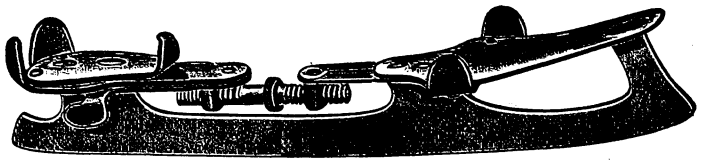
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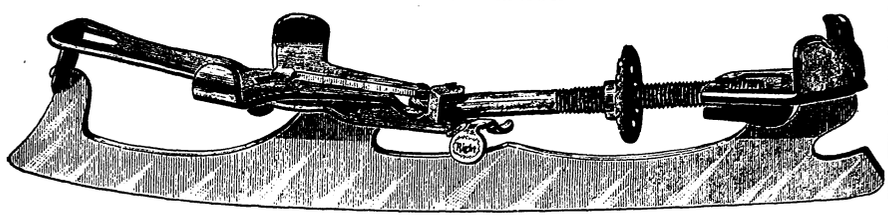
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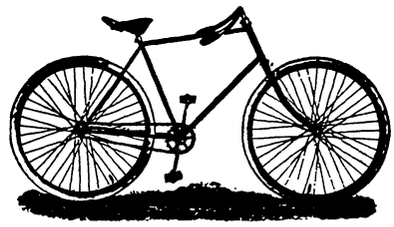
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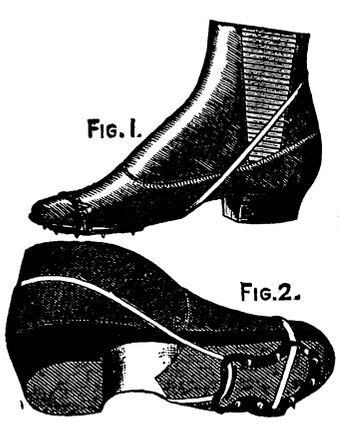


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FIG. 2.

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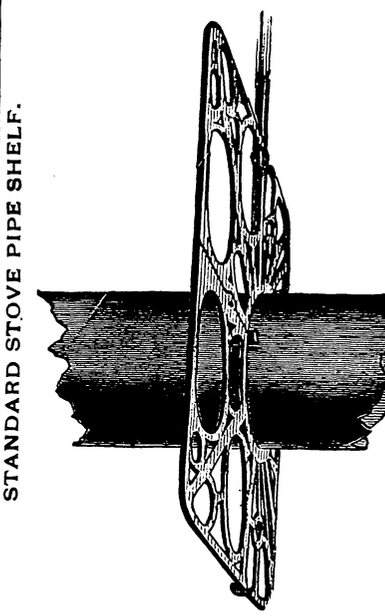
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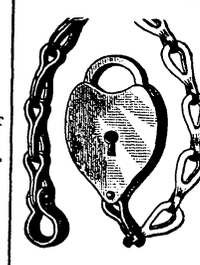
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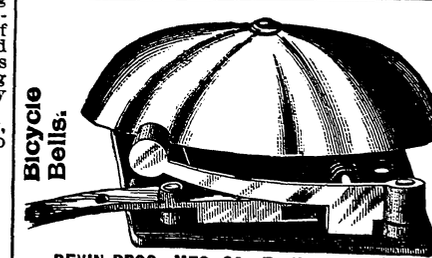
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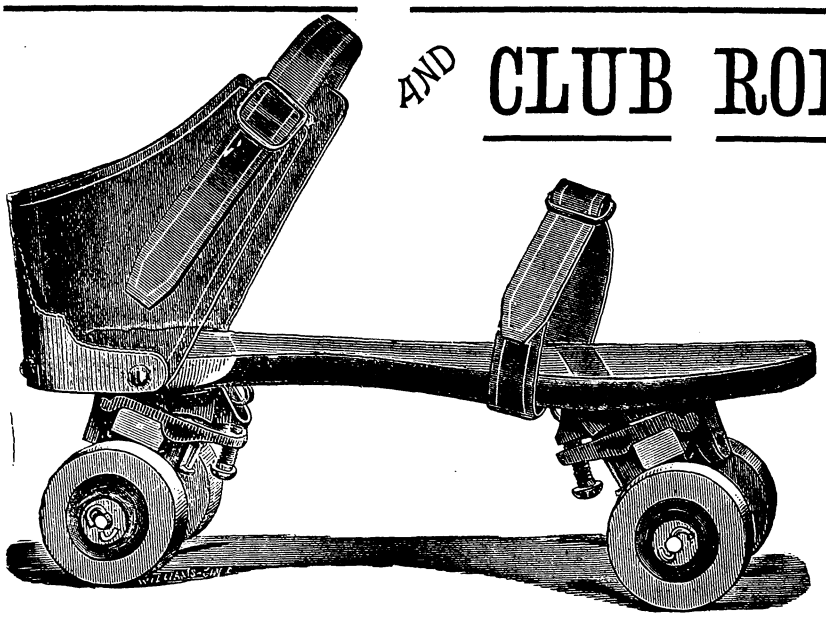
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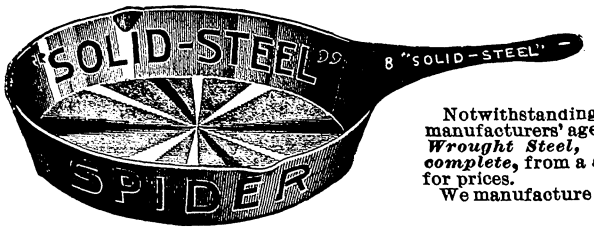


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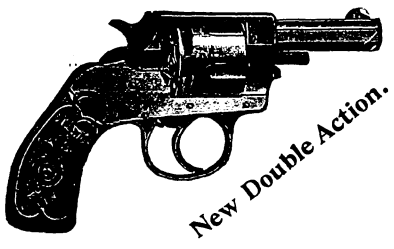
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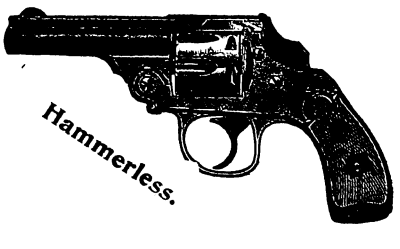
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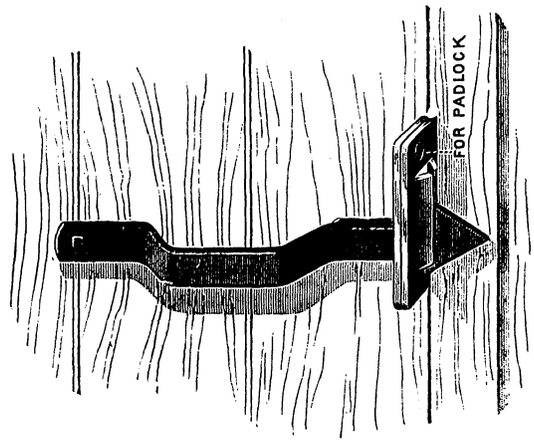
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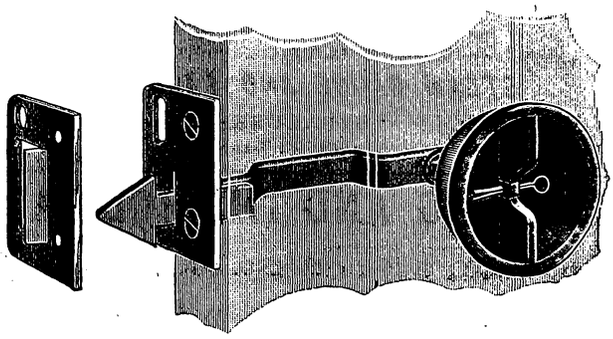
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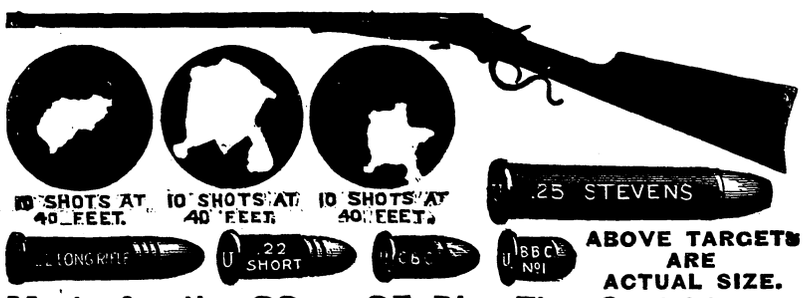
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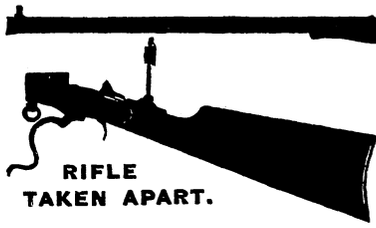
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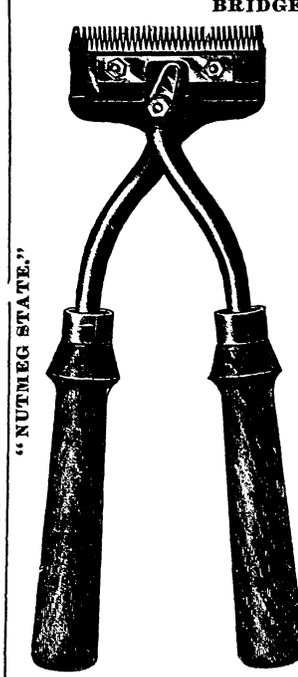
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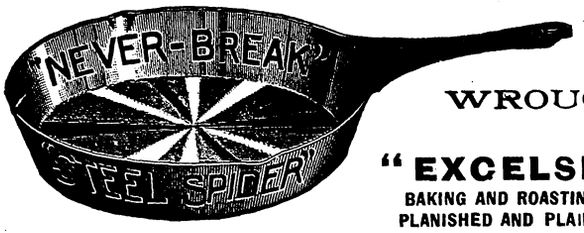
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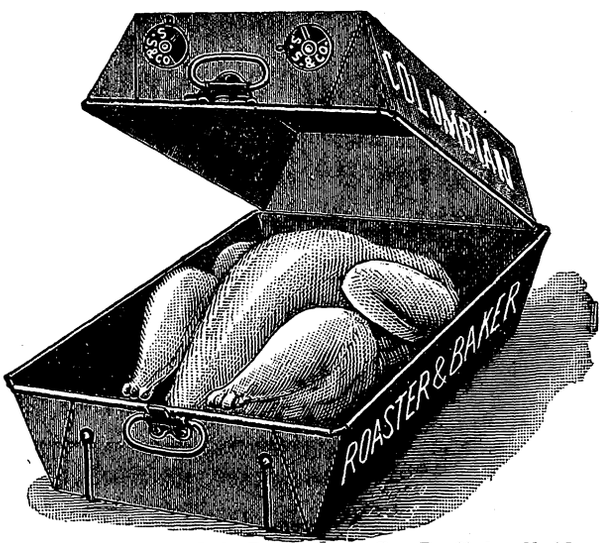
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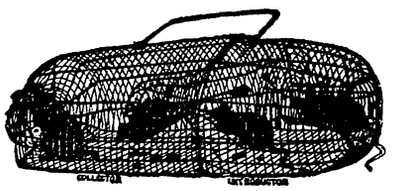
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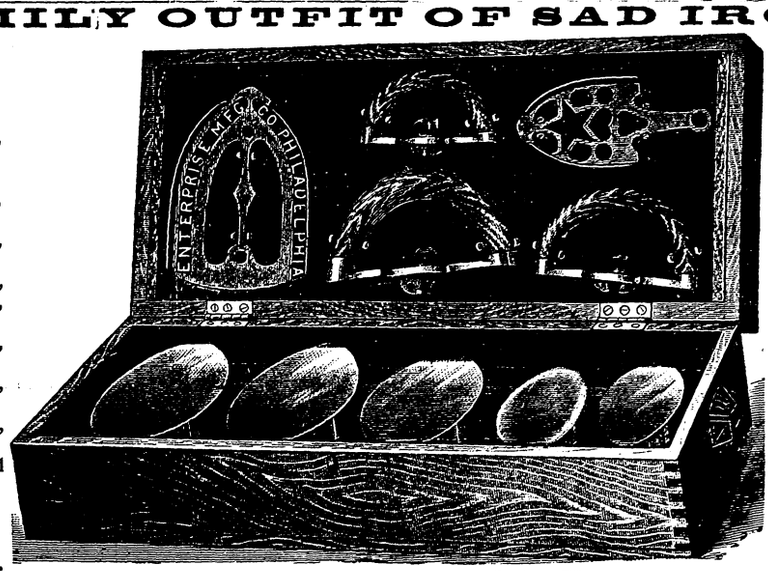
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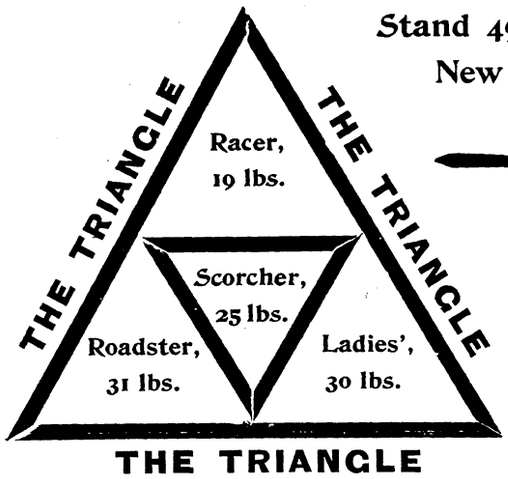
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Branch Office and Warehouse with J. C. McCARTY & Co., 97 Chambers Street, New York.



Stand 49,
New York Show.

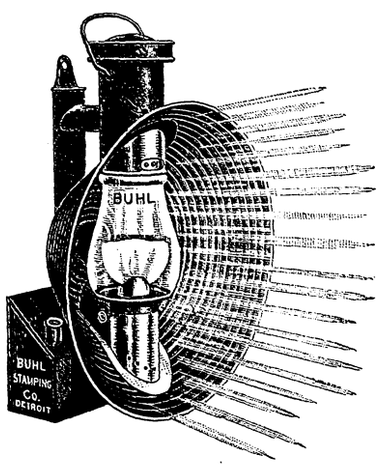
Bicycles '94

Come and See Us.

Fine Line of Wheels.

THE PEERLESS MANUFACTURING CO.,

CLEVELAND, OHIO.



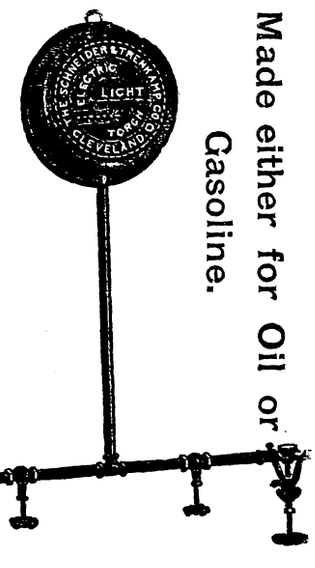
Buhl Tubular Headlight.

IMPROVED FOR 1893-94.

The most brilliant light at least expense for Halls, Factories, Barns, Boat Houses, Traction Engines, etc.

Buhl Stamping Co.,
DETROIT, MICH.,
MANUFACTURERS OF
TUBULAR LANTERNS, STEEL MILK CAN STOCK and BIRD CAGES.

Reliable Torches are what you want.



Made either for Oil or Gasoline.

These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be ran at an expense of about one-half cent to one cent per hour, burning a bright, steacy light which is ten times greater than the light of an ordinary gas burner.

Write us for prices. A liberal discount given to the trade. Manufactured by

THE SCHNEIDER & TRENKAMP CO.,
Nos. 479 to 497 Case Ave., Cleveland, Ohio.

HOWARD IRON WORKS,

BUFFALO, N. Y.

Manufacturers of

BENCH VISES.

Price Lists sent on application.



WM. KROGSRUD,
Engraver and Die Sinker,
61 Fulton St., N. Y.
Manufacturer of
STEEL STAMPS
For Every Purpose.
Steel Letters and Figures.
Burning Brands, Stencils, &c. Send for Illustrated Catalogue.



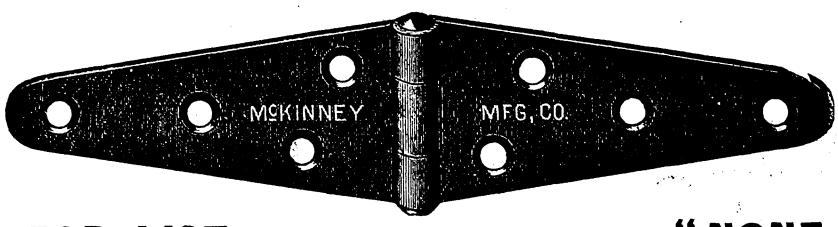
3 NICKLE, Silver and Bronze Metallic Figures and Letters, Sizes ⅛in to 3in. Pattern Letters, Steel Stamps, Brands. Dies &c. Send for Reduced Price List.
We make a specialty of the Hardware Trade.
A. A. WHITE & CO., Providence, R.I.

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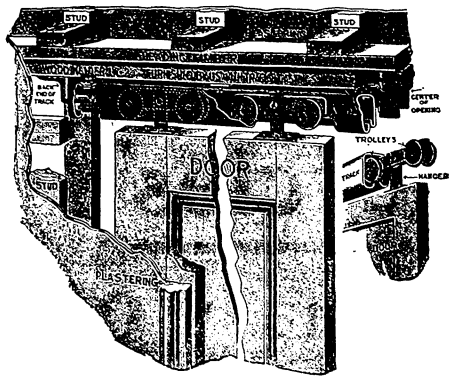
WE CLAIM

That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

McKINNEY MFG. CO., ALLEGHENY, PA.

Steel  Hinges.

SEND FOR LIST. **"NONE BETTER."**



PARLOR DOOR HANGERS

The adjustment is in the Track and not in the Hanger, as in other fixtures.

Track can be taken out of Pocket and replaced without defacing walls after house is finished.

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AT WORLD'S FAIR 1893.

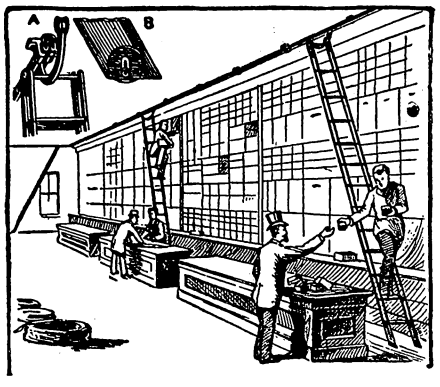
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Parlor, Barn and Fire Door Hangers.

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COBURN TROLLEY TRACK MFG. CO,
HOLYOKE, MASS.

We make four styles of **Rolling Ladders** to reach shelving of any height.

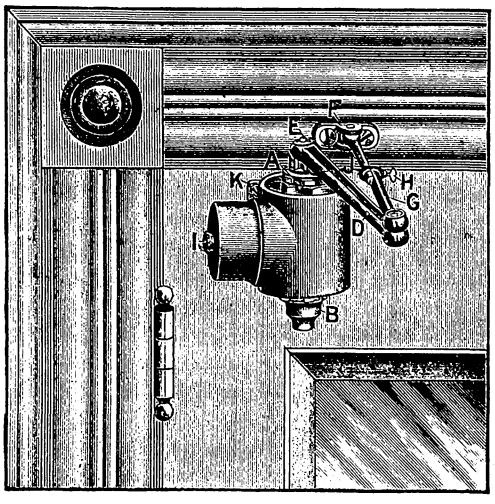


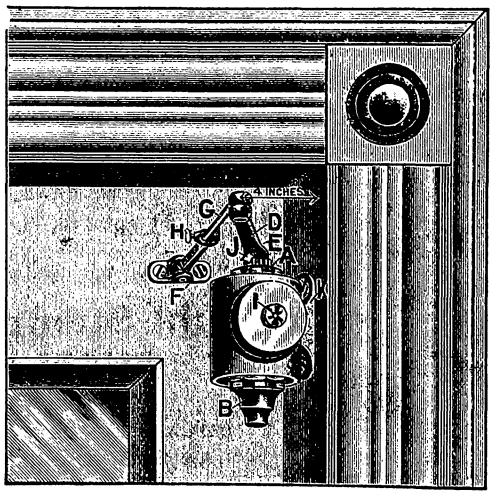
P. & F. CORBIN,

New Britain, Conn. **New York.** **Philadelphia.** **Chicago.**

—) MANUFACTURERS OF (—

Easily Adjusted and Adapted for all Requirements.





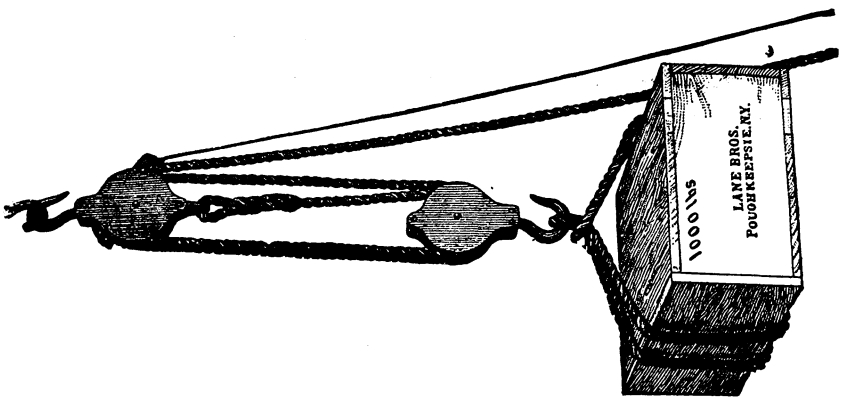
Looks Well, Acts Well, Wears Well.

LIQUID DOOR CHECKS AND SPRINGS,

Fine Builders' Hardware. Wood AND Machine Screws.

Catalogues and Prices Furnished on Application.

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LANE'S SELF-LOCKING

TACKLE BLOCKS,

Anti-Friction Steel Bushings,

Holds the load at any point, and always sure.

SEND FOR CIRCULAR.

For sale by the Hardware trade.

—MANUFACTURED BY—

LANE BROS.

POUGHKEEPSIE, N. Y.

He had in his possession 55 skeleton keys which the police claim would open any door. —*Chicago Tribune.*

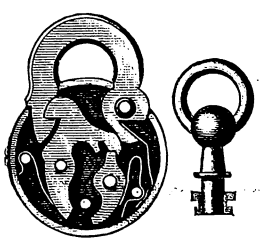
You are selling that kind of a lock every day and your customers think you are selling the best the market affords.

ARE YOU SELLING the best the market affords?

The Craig Locks are guaranteed Sneak Thief Proof.

Send for Catalogue. **KEYLESS LOCK CO., I. A. 197 So. Canal St., Chicago, Ill.**

PATENT PERFECTION PADLOCK.



Eight Tumblers, Key Turning Both Ways.

Sizes, ¾ inch to 2½ inches, of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, ½ and ⅝ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.

Adopted by the United States Treasury for bonded warehouses.

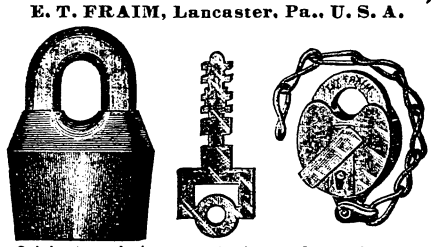
AMES SWORD CO., Chicopee, Mass.

Send for Price-Lists and Circulars.

ESTABLISHED 1879.

KEYSTONE LOCK WORKS,

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Originators, designers, patentees and manufacturers of all the leading popular styles of **PADLOCKS**, Key-Locking Scandinavian with our patent Inter-Locking Tumblers; the only reliable lock of this style ever made. **SELF-LOCKING** Scandinavian of the highest type of perfection. Dust Proof Railroad, Freight Car and Switch Padlocks. Brass, Bronze, Steel and Malleable Iron Padlocks for all purposes and in all finishes. 131 different kinds. Write for our new 100-page catalogue.

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"Champion" 6-Lever Padlock

Never before Equalled what they attained in 1892.

PRICE TALKS. QUALITY TALKS.

Sold by best Jobbers everywhere.

Every Dealer should have on File our Catalogue No. II.

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SIMPLEST IN CONSTRUCTION.
EASIEST FITTED.



Cheapest and Best Balance Made.

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General Agents, Harmon & Dixon, 118 Chambers St. New York.

OUR NEW FINISH.

ANTIQUE COPPER PLATED

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Columbian Design Goods.

READING HARDWARE COMPANY, READING, PA.

NEW YORK. PHILADELPHIA. CHICAGO.

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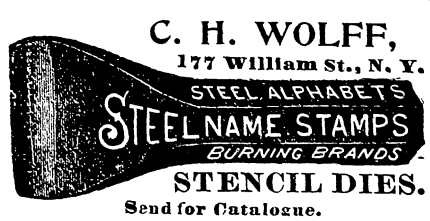
COLBY WRINCER CO.,

MONTPELIER, VT.

HAVE YOU Our Price-List?

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177 William St., N. Y.

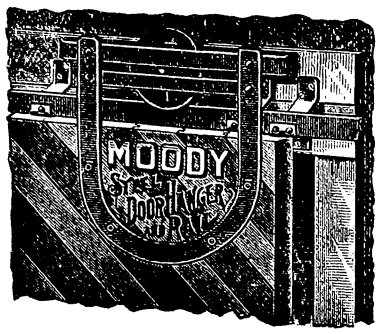


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VICTOR MFG. CO., Newburyport, Mass.



Showing one-half set of hangers attached to door.

STEEL RAIL.

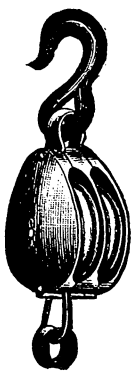


The Only Bracing Bracket Made.

PRICE-LIST.

HANGERS.	Per Doz. pr.
No. 5, to run 6 feet, 3½ in. wheel,	$10.0
No. 6, to run 10 feet, 4½ in. wheel,	15.0
No. 7, to run 15 feet, 5½ in. wheel,	22.0
RAIL, per foot.....	6½ cents

WHY USE WOODEN OR HEAVY STEEL BLOCKS



WHEN THE STEEL AND IRON

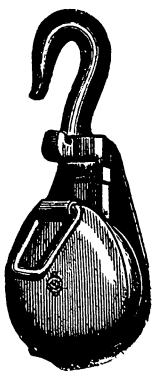
TACKLE BLOCKS

—MADE BY—

The Cleveland Block Co.

CLEVELAND, OHIO, U. S. A.,

ARE BETTER IN EVERY WAY.



No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

General Agents: Topping Brothers, 92 Chambers Street, New York,
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New England Agents, - Dodge, Haley & Co., 212 High Street, Boston.

HARDWARE DEALERS

CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

MANUFACTURED ONLY BY

"THOMAS MORTON,"

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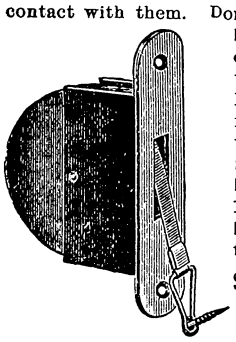
Write for Prices. NEW YORK.

A Well Balanced Sash

IS LIKE,

A Well Balanced Business Man,

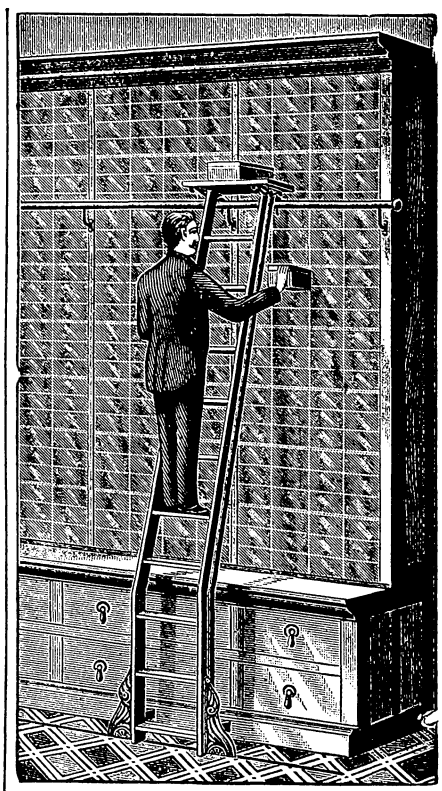
gives satisfaction to those who are brought in contact with them. Don't be inveigled into buying anything called Sash Balances that have no record. Made from light cast iron. Ask your Hardware dealer for Pullman Steel Frame Sash Balance. Warranted 15 years. Only Steel Frame Sash Balance in the world.



SIMPLE, CHEAP AND DURABLE

PULLMAN SASH BALANCE CO., Rochester, N. Y.

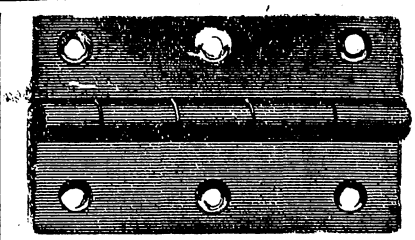
New York Office, 142 Chambers St.
Chicago Office, 235 Lake St.



FLOOR TRACK BICYCLE LADDER

No other Ladder Service can approach the "Bicycle" in ease and convenience of operation. Compared with others they work like a bicycle beside a lumber wagon.
Can be applied to any kind of shelving made.
See this space next week for other styles.
Send for Illustrated Catalogue and prices to
THE BICYCLE STEP LADDER CO.,
50 State street, Chicago, Ill.

THE QUEEN ANNE SCREEN CO.,
Burlington, Vt.,
MANUFACTURERS OF
Improved Adjustable Window Screens
THE QUEEN ANNE. With box panels; the only screen made and finished alike on both sides.
THE EUREKA. The best cheap extension screen on the market.
SCREEN DOORS. Finished all ready to hang Sticks, Corners, Improved Frames, &c.
Write for circular and Price-list.



Cast Brass Butt Hinges

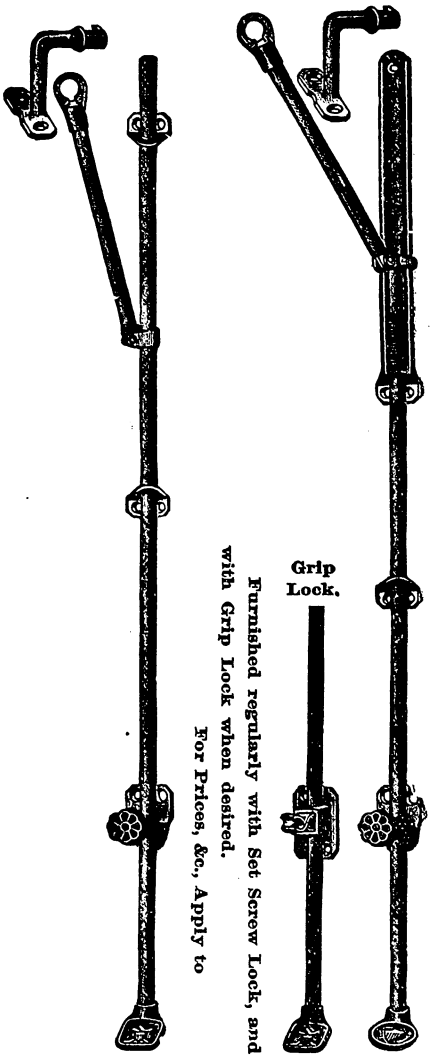
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W. & J. TIEBOUT,

Nos. 16 & 18 Chambers Street, New York,
MANUFACTURERS OF
BRASS, GALVANIZED & SHIP CHANDLERY
HARDWARE.

TRANSOM LIFTERS

"EAGLE." "SHIELD."



Grip Lock.

Furnished regularly with Set Screw Lock, and with Grip Lock when desired.
For Prices, &c., Apply to

J. F. WOLLENSAK, PATENTEE

CHICAGO, ILLINOIS.



PAT. NOV. 8, 1892.

BUY BRADLEY BRACKETS!!!

Your Customers will like them. They are made of steel and are **not brittle.** They are **light, strong** and **artistic.** They can be put up with nail and hammer. Write for prices.

ATLAS MFG. CO.,
New Haven, - - Conn.

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Highest Award

FOR

Supreme Excellence

TO

The PUTNAM Hot-Forged and Hammer-Pointed Horse NAILS,

PUTNAM HOT FORGED & HAMMER POINTED.

At the *World's Columbian Exposition* at Chicago. A medal and diploma worded:

"Supreme excellence in material, method in manufacture, and quality of finished product; elasticity and smoothness combined with holding power in clinch.

It allows the use of very small nails."

There is nothing beyond "supreme excellence," nor is there anything comprised in a horse nail, except the "material from which it is made," "the method of manufacture," and "quality of finished product."

Putnam nails, by their "elasticity," give slightly to the expansion and contraction of the hoof while the horse is in motion; by their "smoothness," do not enlarge the nail holes in the hoof, while their "supreme excellence," in "holding power in the clinch," enables them to hold the shoe in the hardest service until worn out.

By the "use of small nails," large holes are avoided and money saved to the smith.

Thus it will be seen that the officials of the *World's Columbian Exposition* recognize what qualities go to make up a good horse nail and that only the "Putnam" contains them all.

PUTNAM NAIL CO.,

Neponset, Boston, Mass.



All **Tags** and **Labels** on **Covert Goods** bear the above **Trade-Mark,** and are sold by all Leading Jobbers in General and Saddlery Hardware at Manufacturers' Prices.



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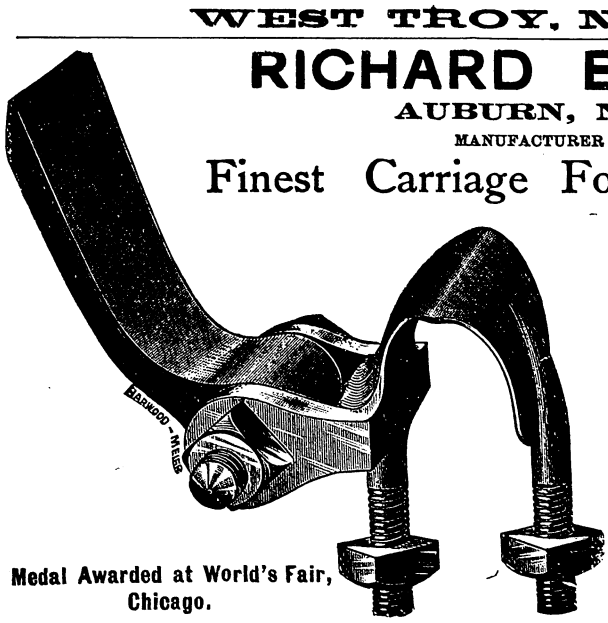
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RICHARD ECCLES,

AUBURN, N. Y.,

MANUFACTURER OF

Finest Carriage Forgings, Couplings, Clips, King Bolts, Fifth Wheels, &c. Manufacture a full line Special Drop Forgings.



Medal Awarded at World's Fair, Chicago.

Send for New Catalogue for Season 1893-94.



FROST'S ANTI-RATTLER

Pat. Jan. 20, 1880.

Cut One-half Size.

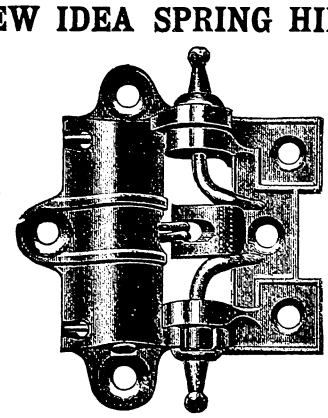
Sample pair sent to any hardware or saddlery firm by addressing

The Frost Thill Spring Co.,

Boston, Mass.

NEW IDEA SPRING HINGE

Holds the door strongest when closed.



Resistance gradually decreases in opening

and increases in closing the door.

A covered (patented) hold-back Spring Hinge. Full particulars, free Sample and Prices by mentioning this paper.

STOVER MANUFACTURING CO.,

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SASH WEIGHTS

E. E. BROWN & CO.,

McKean and Meadow Sts.,

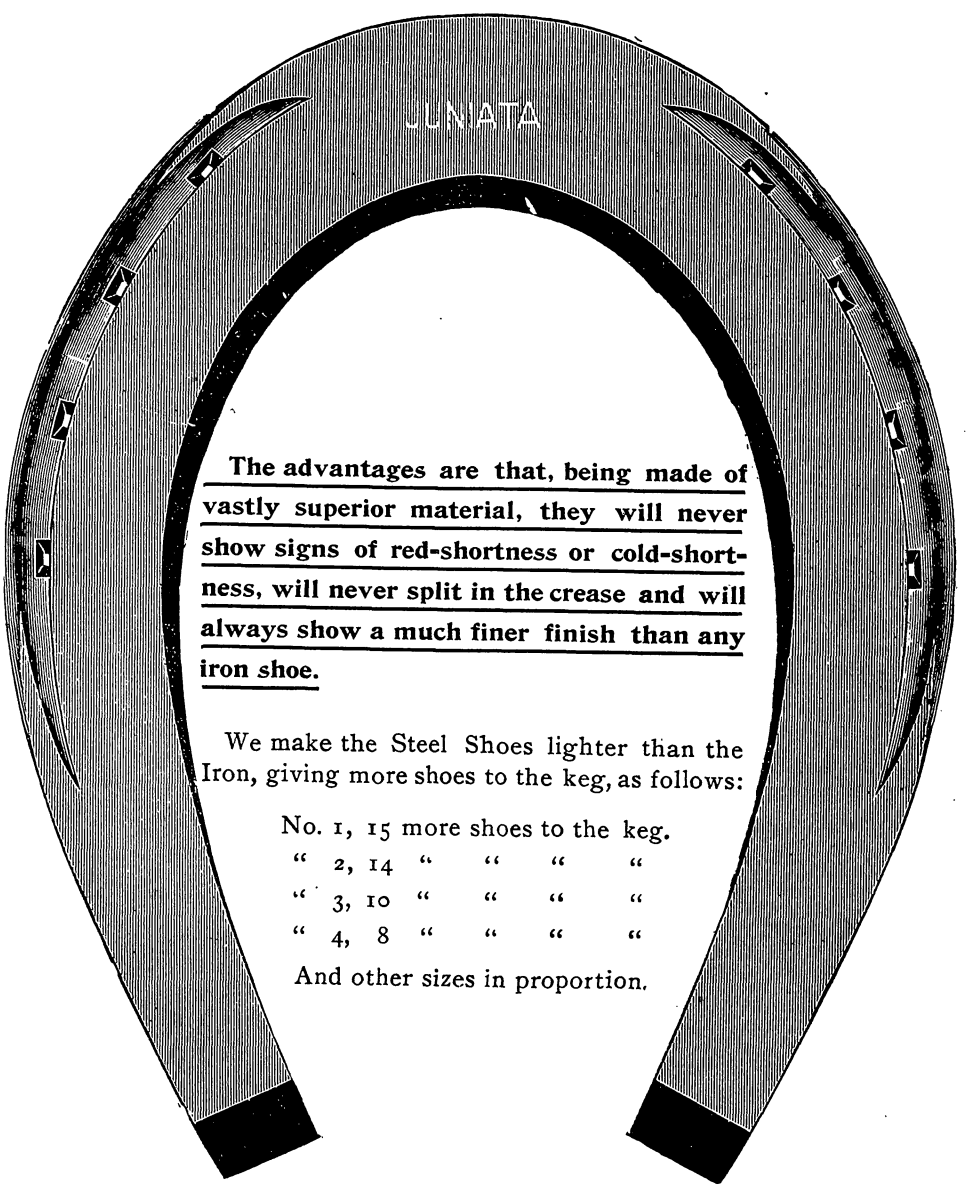
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STEEL HORSE SHOES.

SHOENBERGER & CO., PITTSBURGH, PA.,

After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged, and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



No. 2 EXTRA SWAGED FRONT.

We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

We would also call your attention to our Improved Steel Toe Calk, equal to any in the market. To secure the best wearing qualities use sand or borax in welding on a calk and cool off at a dark red, or still better, cool off without plunging in water. We make sizes numbers 1, 2, 3, 4, 5 and 6, packed in 25-pound boxes.

Write to us for information and prices, or apply to jobbers and dealers, who sell them everywhere.

SHOENBERGER & CO.,

JUNIATA IRON AND STEEL WORKS, - - - PITTSBURGH, PA.

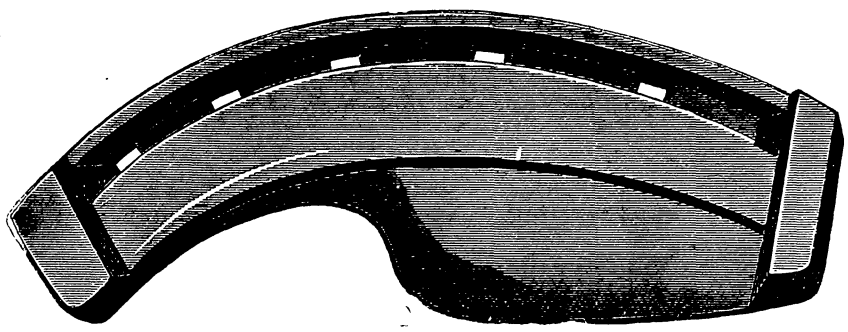
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CARRIAGE HARDWARE AND SPECIAL DROP FORGINGS.

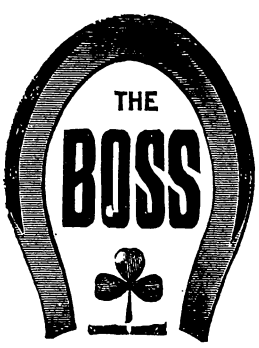
FORGED OX SHOES.



Made under Deeble's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

IT IS JUST RIGHT.



HORSE AND MULE SHOES.

Superior Quality, Shape and Finish.

BRYDEN HORSE SHOE CO.,

CATASAUQUA, PA.

RHODE ISLAND PERKINS HORSE SHOE CO.,

MANUFACTURERS OF

Horse and Mule Shoes of the Perkins Pattern.

SPECIALTIES:—X L Steel Shoes, Toe Weight Shoes and Goodenough Shoes.

Works at Valley Falls, R. I. Office, 31 Exchange Place, Providence, R. I.

F. W. CARPENTER, Pres., C. H. PERKINS, Gen. Manager, R. W. COMSTOCK, Sec'y, CHARLES R. STARK, Treas.

J. C. McCARTY & CO., Agents - 97 Chambers Street, New York.

THE NEW DIAMOND STATE HORSE AND MULE SHOES.

JUST TRY THEM and **YOU** will say they excel all others.

MANUFACTURED BY

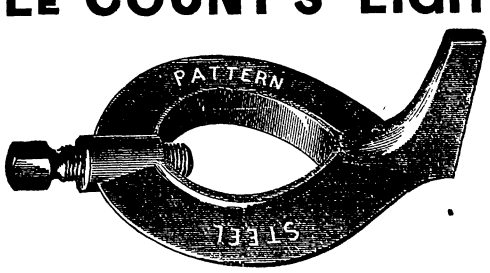
DIAMOND STATE IRON CO.

WILMINGTON, DELAWARE.

Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Blank Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

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LE COUNT'S LIGHT STEEL DOG,



WITH STEEL SCREWS.

U. S. Standard. Points Hardened.

No.	Inch.	Price.	No.	Inch.	Price.
1	3/8	$0 35	7	1¾	$1 00
2	½	35	8	2	1 10
3	¾	50	9	2½	1 40
4	1	60	10	3	1 50
5	1¼	75	11	3½	1 70
6	1½	85	12	4	1 90

Small set of 8, $5.50. Full set of 12, $12.

SEND FOR CATALOGUE OF FULL LINE OF MACHINISTS' TOOLS.

C. W. LE COUNT, MANUFACTURER. SO. NORWALK, CONN., U. S. A

These goods are for sale by CHAS. CHURCHILL & CO., Ltd., 21 Cross St., London, England.

BURDEN'S HORSE SHOES.

"Burden Best" Iron Boiler Rivets.

The Burden Iron Co.

TROY, N. Y.

PHOENIX HORSE SHOES.

PHOENIX HORSE SHOE CO.,

Poughkeepsie, N. Y.

NEW YORK OFFICE, No. 66 Reade St.

Standard Horse Shoe Co.,

Manufacturers of

HORSE AND MULE SHOES.

LEEDS, ROBINSON & CO., General Agents,

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HIGHEST AWARD

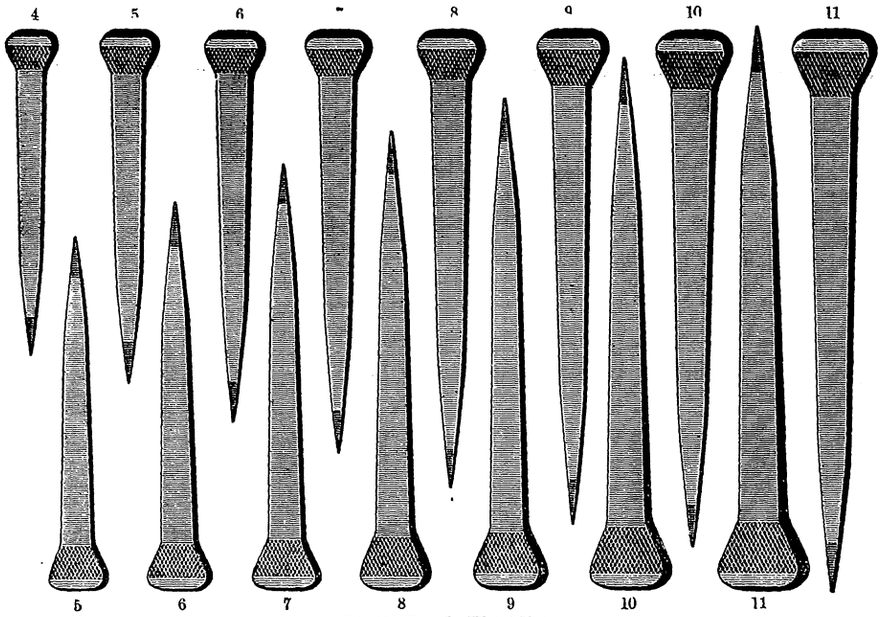
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CAPEWELL HORSE NAILS.

"Tensile strength one-half greater than that of any other nail made."

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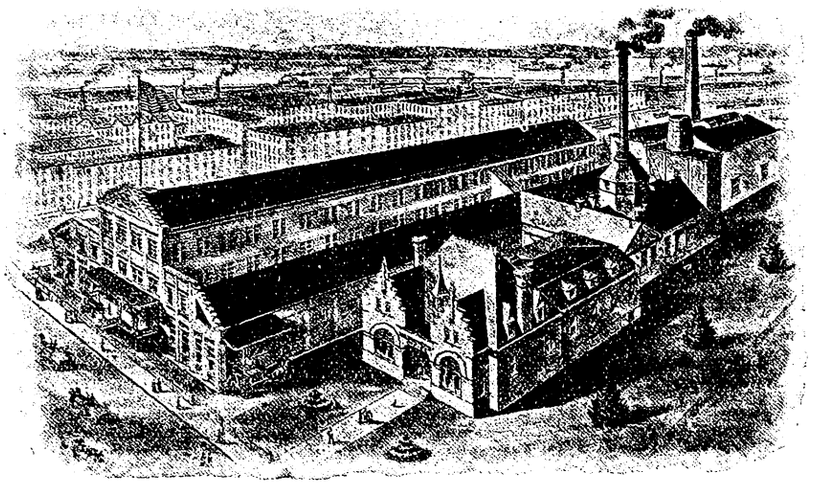
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Needs no Clinching.



Made in All Sizes.

"The Coming Nail to be Used."—JOHN KIERNAN,
Chief Farrier and Instructor in Horseshoeing, U. S. Army.



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MANUFACTURERS OF THE BEST QUALITY

CARRIAGE MAKERS' HARDWARE,

MANUFACTURE THE LARGEST VARIETY OF

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Of Best Material and Workmanship.

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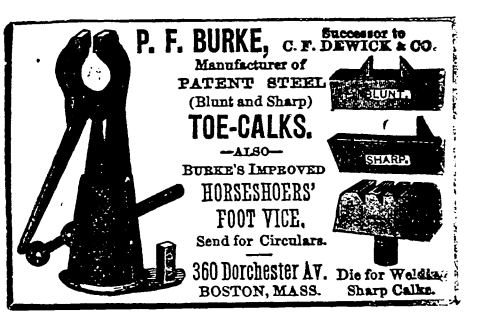
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Manufactured by the NATIONAL HORSE NAIL CO.,

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All Sizes. All Patterns. All Warranted. Sold Everywhere.

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Elegant Iron.

Beautiful Shape.

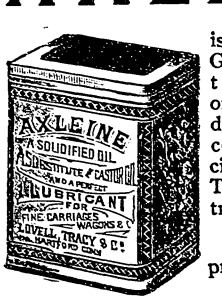
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Light, Medium and Heavy.

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Light, Medium and Heavy.

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is a fine quality of Axle Grease put up in square tin boxes containing one pound; beautifully decorated in assorted colors; designed especially for the Hardware Trade. Showy and attractive shelf goods.

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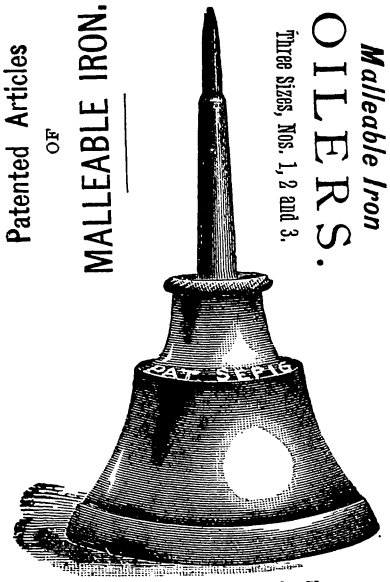
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Patented Articles OF MALLEABLE IRON.

New Improved PATENT *Malleable Iron* OILERS.
Three Sizes, Nos. 1, 2 and 3.



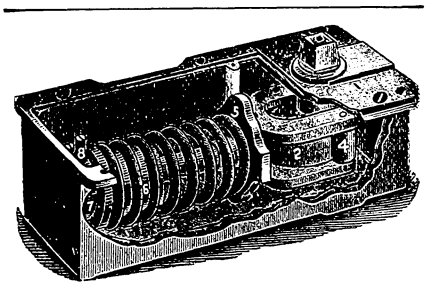
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New Pattern Heavy Screw Clamps.
Strongest in the market.

For Sale by all the Principal Hardware Dealers.
SEND FOR PRICE LIST.
MALLEABLE IRON CASTINGS
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THE WILCOX & HOWE COMPANY,
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CHECKING SPRING HINGES
FOR SWING DOORS.

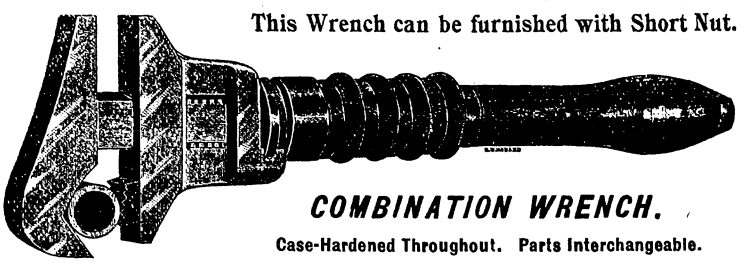
Applied in floor under door. They close the door gently, without noise or violence and stop it at once at the centre. Doors cannot sag, springs do not break or set.

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This Wrench can be furnished with Short Nut.



COMBINATION WRENCH.
Case-Hardened Throughout. Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal.
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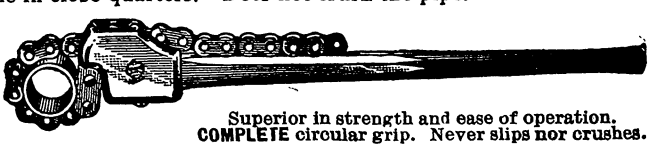
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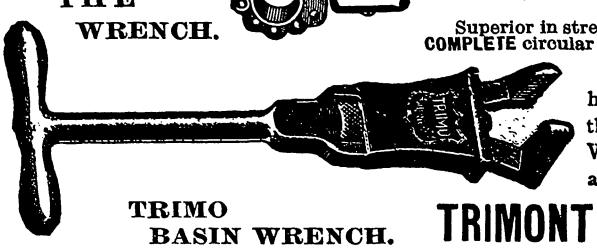
TRIMO PIPE WRENCH,
Forged Steel
All parts interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

TRIMO CHAIN PIPE WRENCH.



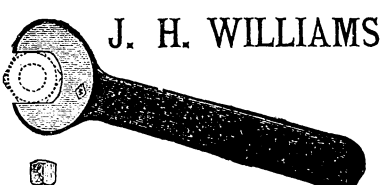
Superior in strength and ease of operation. COMPLETE circular grip. Never slips nor crushes.



Can be used with one hand and in closer quarters than any other Basin Wrench. Parts Interchangeable.

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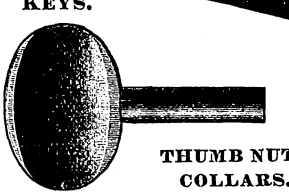


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THUMB NUTS. COLLARS.

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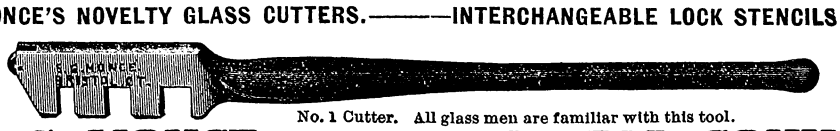


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Best Workmanship
Angle of Jaws the same irrespective of the size of pipe taken

Length 14 inches *Takes Pipe from ¼ to 1½ inches*

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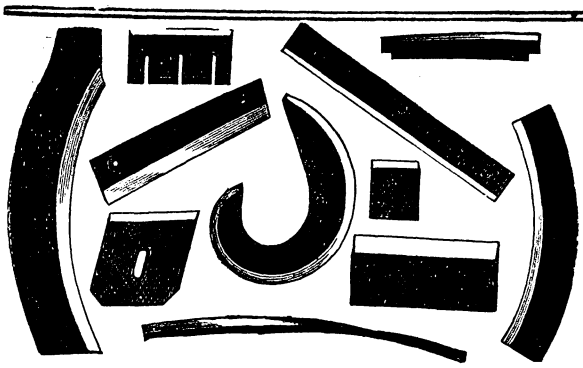
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No. 1 Cutter. All glass men are familiar with this tool.

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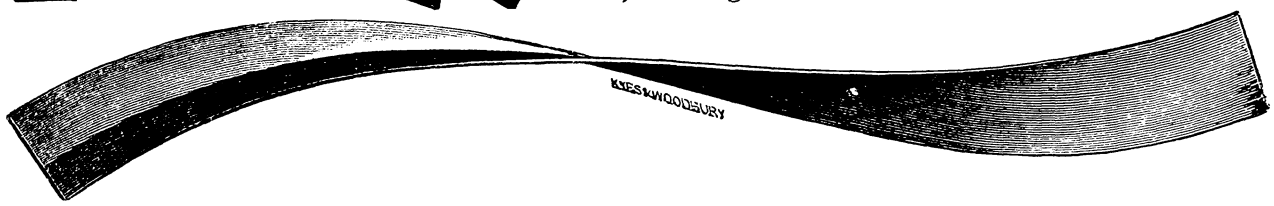
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Shear Blades and Strips, Moulding Cutter Plate, Die Stock for Leather, Cloth and Paper Cutting Dies. Lawn Mower and Hay Cutter Knives of every description.



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HERCULES. Bright Finish.



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This Screw Driver is made from one piece of special cast steel, in all sizes, from 1½ in. to 12 in. The blade is well polished, carefully tempered, and every screw driver is subjected to a severe test and warranted. Handles Japanned with the best quality baking Japan.

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Genuine Improved

KNIFE HANDLE

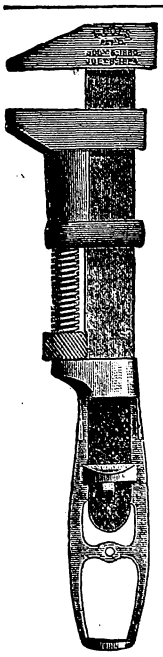
PATENT

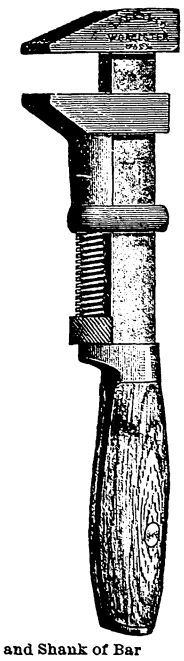
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☞ **Straight Bar, Extra Long Nut for Screw in Jaw.** ☜

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SAMPLE 15¢.

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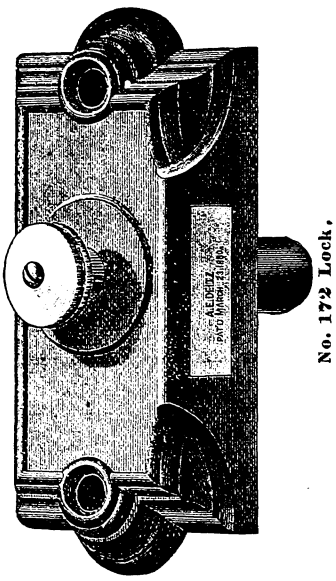
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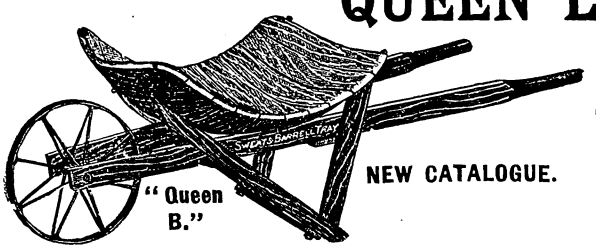
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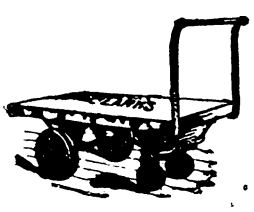
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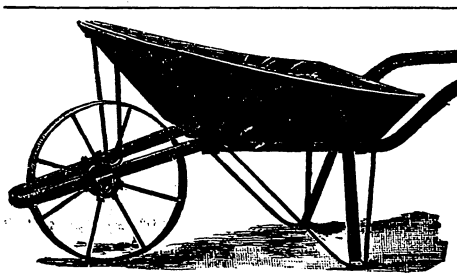
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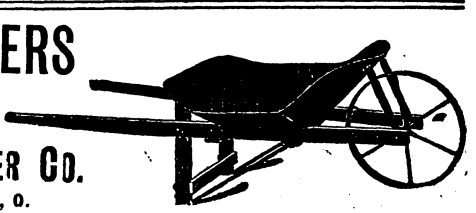
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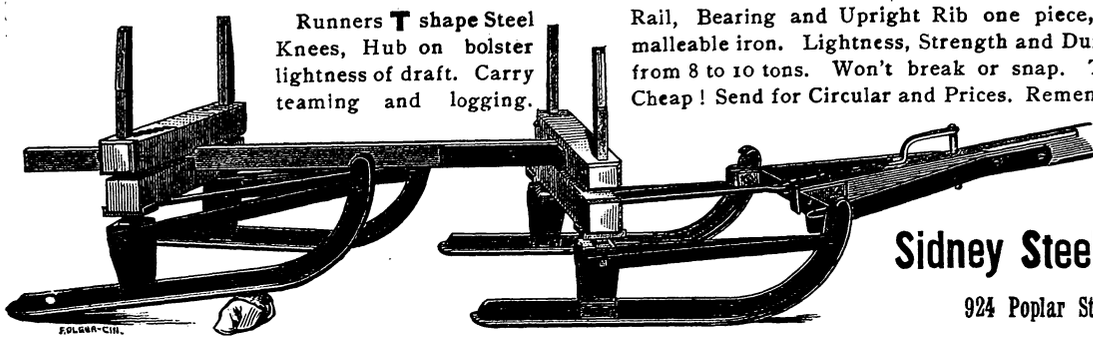
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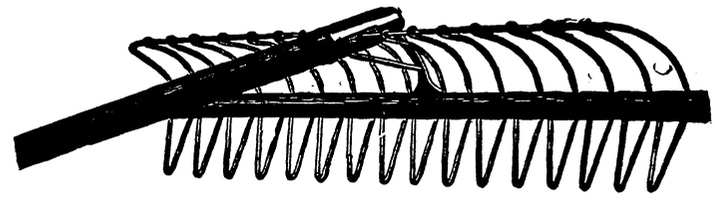
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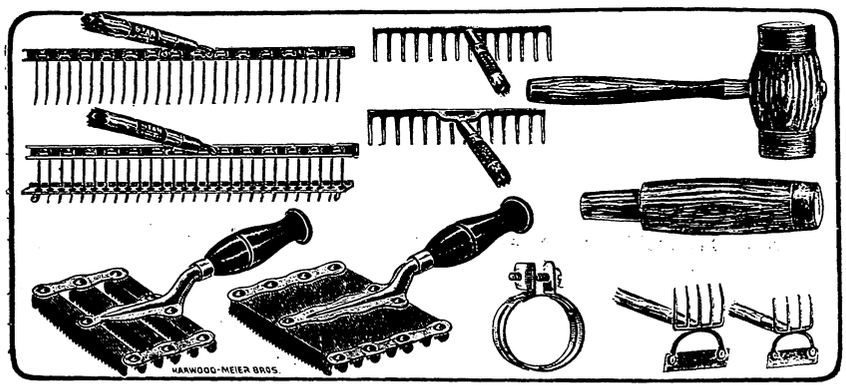
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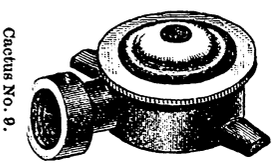
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We manufacture the BEST and CHEAPEST Lawn Sprinklers in the World.

The only Sprinklers which have no revolving parts to leak or wear out.
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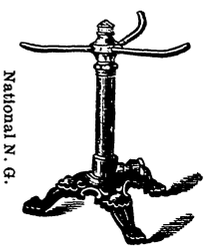
Cactus No. 5.

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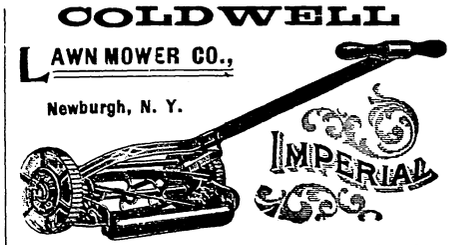
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THE BEST MOWER MADE.

The Lightest Running Mower in the World.

This is the only Lawn Mower that stood the test of working the entire season on the Columbian Exposition Grounds without any repairs



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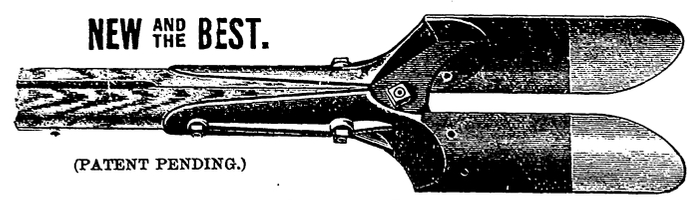
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Fences will always be built and Post Holes dug. We have "The Diggres" in **5** styles at **5** prices to suit all soils.

Strength, Durability and Good Material are essential in such tools.

Post yourself by sending for catalogue and getting new prices.

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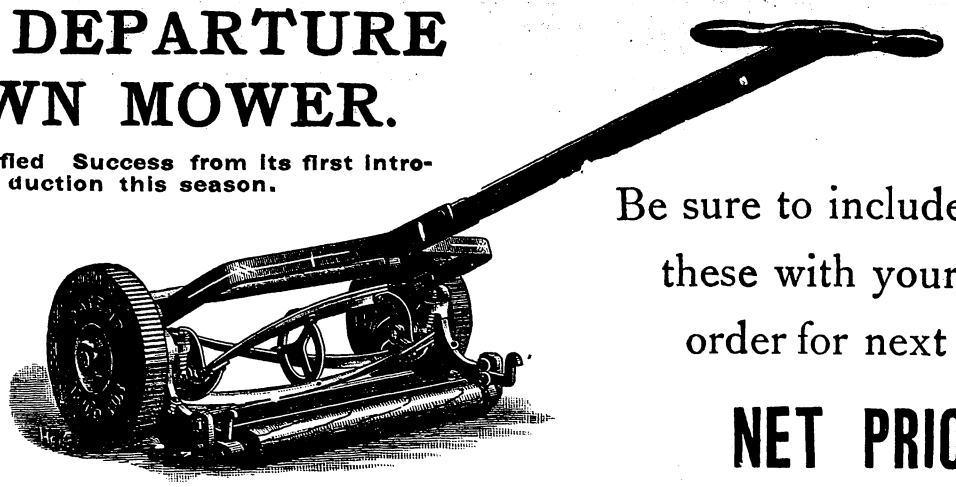
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An Unqualified Success from its first introduction this season.



Be sure to include a line of these with your Mower order for next season.

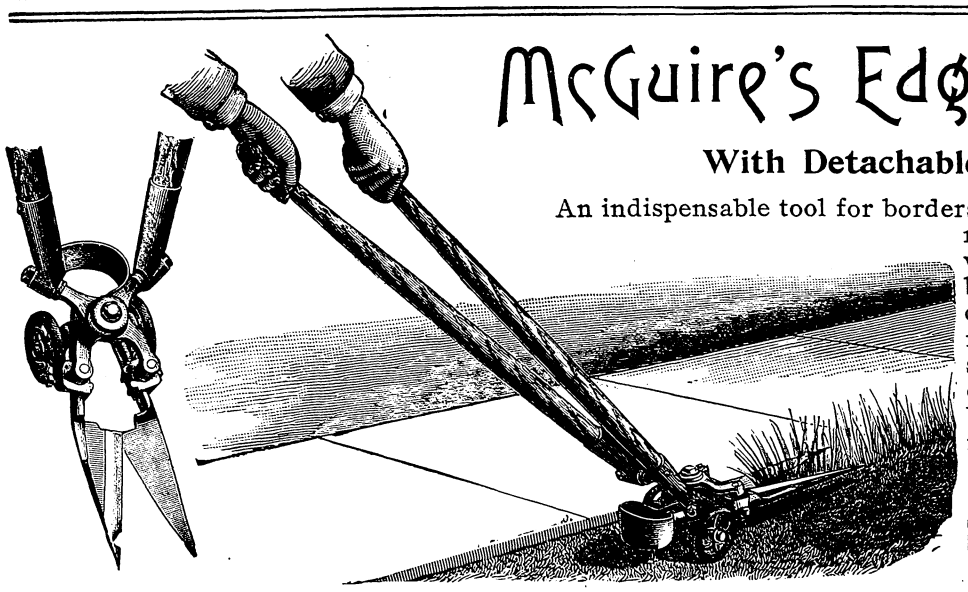
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With Detachable Handles.



An indispensable tool for borders and edges where the ordinary mower cannot cut. Invaluable for trimming shrubbery, both high and low. If desired, the handles may be readily detached, and the shears used by hand in the ordinary manner. First-class best quality shears, nicely finished. Packed ½ Doz. in case. List price, $10.00 each.

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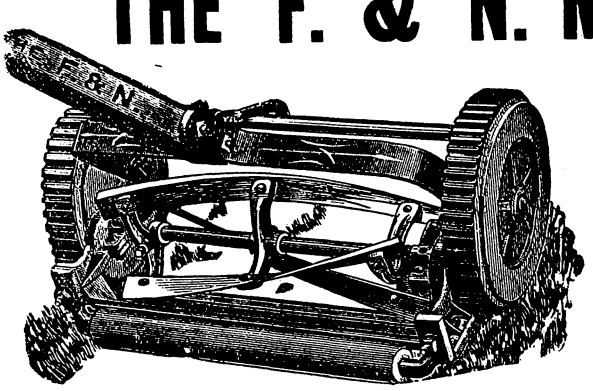
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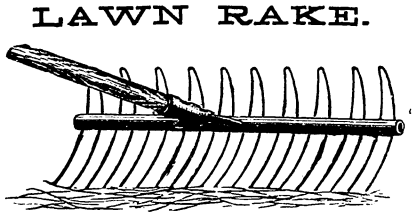


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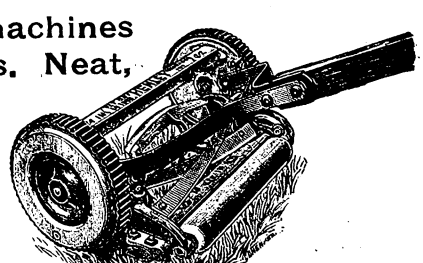
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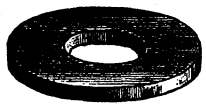
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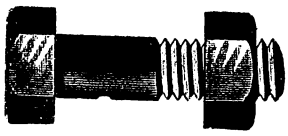
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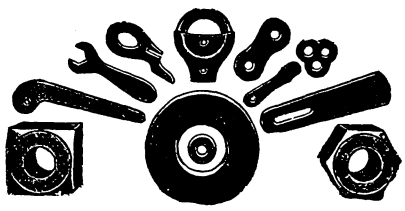
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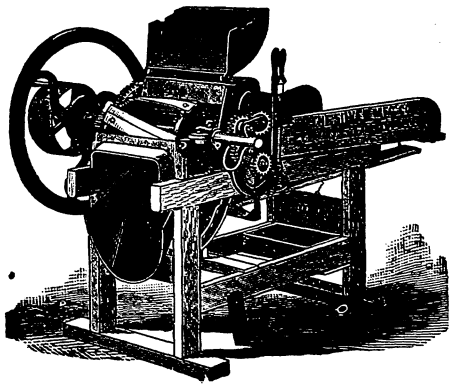
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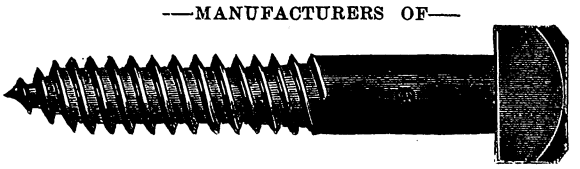
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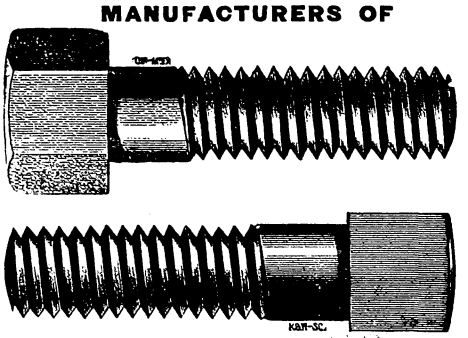
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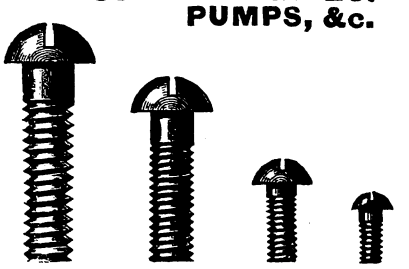
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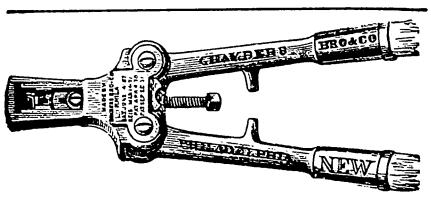
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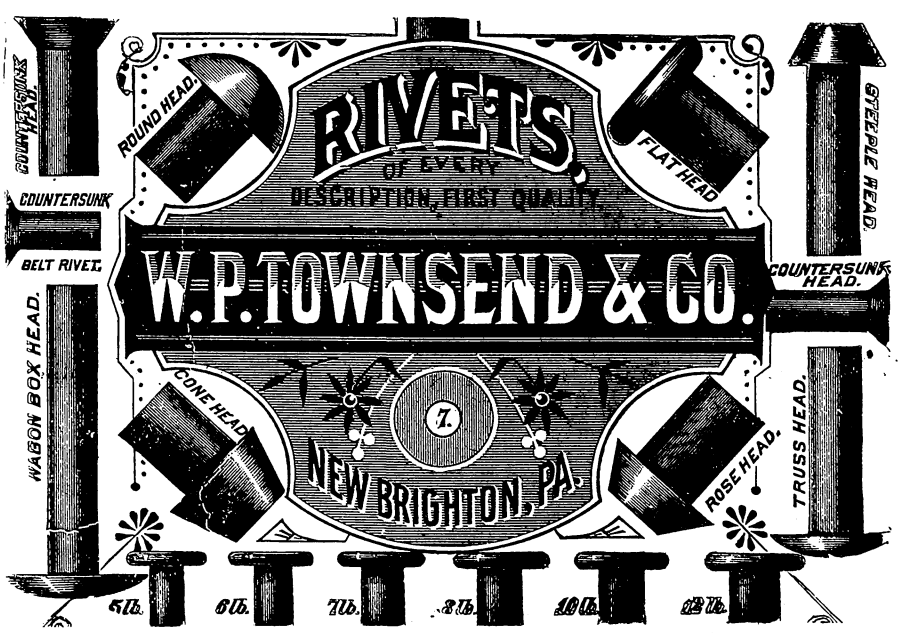
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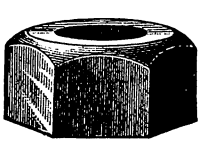
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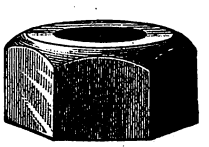
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Detroit Fdry. Equipment Co., Detroi Mich.

Cutlery Cases.
Torrey, J. R. & Co., Worcester, Mass.

Cutlery, *Importers of.*
Field, Alfred & Co., 93 Chambers St. New York.
Gurney, Fred B., 116 Chambers St., N. Y.
Sickles, Sweet & Lyon, 35 Barclay, N.Y.

Cutlery, *Manufacturers of.*
Bingham, W. Co., Cleveland, Ohio.
Dame, Stoddard & Kendall, Boston Mass.
Electric Cutlery Co., 113 Chambers, N Y
Goodell Co., Antrim, N. H.
Northampton Cutlery Co., Northampton, Mass.
Schmactenberg Bros., 98 Chambers Street, N. Y.
Wilson, John, Sheffield, England.

Dampers.
Shepard, Sidney & Co., Buffalo, N. Y.

Dies.
Wilson, J. Fred, Worcester, Mass.

Die Forgings and Castings.
Bliss, E. W. Co., Brooklyn, N. Y.

Dog Collars.
Chapman Mfg. Co., Meriden, Conn.

Door Checks and Springs.
Corbin, P. & F., New Britain, Conn.

Door Knobs.
Bardsley, J., 149 & 151 Baxter St., N. Y

Door Latches.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.

Drawing Instruments.
Keuffel & Esser Co., 127 Fulton St., N.Y

Drilling Machines.
Bickford Drill & Tool Co., Cinn., Ohio
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower and Forge Co., Lancaster, Pa.
Colburn, A. M., New Haven, Conn.
Dallett, Thos. H. & Co., Philadelphia.
Dwight Slate Machine Co., Hartford Conn.
Halsey, Jas. T., Philadelphia, Pa.
Hamilton Mch. Tool Co., Hamilton, O.
Norton & Jones Machine Tool Work Plainville, Conn.
Penna. Diamond Drill & Mfg. Co. Birdsboro, Pa.
Quint, A. D., Hartford, Conn
Sellers, Wm. & Co., Inc., Phila., Pa
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn.
Silver Mfg. Co., Salem, O,

Drop Forgings.
Belden Mach. Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn
Boone, W. C. Mfg. Co., Boonton, N. J
Eccles, Richard, Auburn, N. Y,
Merrill Bros., Brooklyn, E. D.
Miner & Peck Mfg. Co., New Haven, Ct
Phila. Drop Forge Co., Philadelphia, Pa.
Scranton Forging Co., Scranton, Pa.
Spiers, J. C. & Co., Worcester, Mass.
Williams, J. H. & Co., Brooklyn, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.
Wyman & Gordon, Worcester, Mass.

Drop Presses.
Bliss, E. W. Co., Brooklyn, N.Y
Crosby, G. A. & Co., Chicago, Ill.

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Miner & Peck Mfg. Co., New Haven, Conn.
Stiles & Parker Press Co., Brooklyn, N. Y.
Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Dumb Waiters.
Storm Mfg. Co., Newark, N. J.

Dust Beaters.
Peabody & Parks, Troy, N. Y,

Dynamite.
New York Powder Co., 62 Liberty St N. Y.

Dynamos.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Lovell Mfg. Co., Ltd., Erie, Pa.
Zucker & Levett Chemical Co., 10 & 14 Grand St., N. Y.

Edge Tools. *Makers of.*
Buck Bros., Millbury, Mass.
Buffalo Edge Tool Wks., Ridgway, Pa.
Plumb, Fayette R., Philadelphia, Pa
White, L. & I. J. Co., Buffalo, N. Y.

Edging Shears.
Dille & McGuire Mfg. Co., Richmond, Ind.

Egg Beaters.
North Bros. Mfg. Co., Philadelphia.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St., New York
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines.
Colburn Electric Mfg. Co., Fitchburg, Mass.

Elevators. *Makers of.*
Link-Belt Engineering Co., Phila., Pa
Morse, Williams & Co., Phila., Pa.
Salem F'dry & Mch. Co., Salem, Mass.

Emery and Emery Wheels.
Bell, Geo. E , 36 John St. N. Y.
Grant Corundum Wheel Mfg. Co. Worcester, Mass.
N Y. Belting & Packing Co. Ltd., N. Y
Northampton Emery Wheel Co
Leeds, Mass.
Norton Emery Wheel Co., Worcester Mass.
Sterling Emery Wheel Co., 174 Fulton St., New York.

Enamels.
Nubian Iron Enamel Co., Cragin, Ill

Engineers and Contractors.
Aiken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y,
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amsler & Co., Pittsburgh, Pa
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa
Smythe, S. R. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa
Witherow, Jas. P. Co., Pittsburgh; Pa.

Engines, Gas.
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg. N. Y.

Engines, Steam. *Makers of.*
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Erie Engine Works, Erie, Pa.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Phoenix Iron Wks. Co. Meadville, Pa.
Shipman Engine Co., Boston, Mass.
Southwark Foundry and Machine Co. Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.
Sweester, W. A., Brockton, Mass.

Expansion Bolts.
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O
Steward & Romaine Mfg. Co., Phila. Pa.

Faucets, Self-Measuring,
Lane Bros., Poughkeepsie, N. Y

Faucets, Wooden. *Makers of.*
John Sommer's Son, Newark, N. J.

Feed-Water Heaters.
Davis, I B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N. Y
Harrison Safety Boiler Wks. Phila, Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire & Iron Wks., Milwaukee

Files. *Importers of*
Moss, F. W., 80 John, N. Y.

Files and Rasps, *Manufacturers of*
Arcade File Works, Anderson, Ind
Banker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.

Fire Brick. *Makers of.*
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md,
Kreischer B & Sons, foot E. Houston, St
McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro., Woodbridge,

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Fishing Tackle.
Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flue Cleaners.
Mackey, Jas. T., St. Louis, Mo.

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Foreign Periodicals.
Stechert, G. E., 810 Broadway, N. Y.

Forges, Portable, &c.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila. Pa.
Scranton Forging Co., Scranton, Pa
U. S. Projectile Co., Brooklyn, N. Y.

Foundry Facings.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.

Foundry Riddles.
Estey, W. S. 65 Fulton, N. Y.

Foundry Supplies.
Colliau, Victor, Detroit, Mich.
Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O

Friction Clutches.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.
Evans Friction Cone Co., Boston, Mass

Fruit Presses.
Enterprise Mfg. Co. Philadelphia, Pa.

Gas Producers.
Wood, R. D. & Co. Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast, Henry B. & Co., Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
D. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Poole, Root. & Son Co., Baltimore, Md.
U. S. Projectile Co., Brooklyn, N. Y.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glass Tubes.
Ashcroft Mfg. Co., 111 Liberty St., N. Y.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.
Supplee Hardware Co,, Phila., Pa.

Grinding and Polishing Machines.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grindstone Dressing Machinery
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gunpowder, *Makers of.*
Laflin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich.

Handles.
New York Mallet and Handle Wks. 456 E. Houston St., N. Y.

Hangers, Door.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Hotchkiss, E. S. Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Clarke Thomas, St. John, New Brunswick.
Graham, John H. & Co., 113 Chambers,
McCoy, Jos F. Co., 26 Warren St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N. Y,

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co. New Haven, Conn.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Haines & Zimmerman, Phila. Pa.
Hart, H. C Mfg. Co., Detroit, Mich.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
New Britain Hdw. Mfg. Co., New Britain, Conn.
North Bros. Mfg. Co., Philadelphia, Pa
Peabody & Parks, Troy, N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
Weiland, Chas., 149 Chambers St., N. Y
Wilson, J. Fred, Worcester, Mass.

Hardware, Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co. Cleveland, Ohio.
Copeland & Bacon, 85 Liberty St. N. Y
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hollow Ware, Aluminum.
Illinois Pure Aluminum Co. Lemont, Ill

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, *Makers of.*
Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt,
Putnam Nail Co., Neponset, Boston, Mass.

Horse and Mule Shoes. *Makers of.*
Bryden Horse Shoe Co., Catasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.

Hose.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N. Y.

Hydraulic Forging.
U. S. Projectile Co., Brooklyn, N. Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
Clement & Dunbar, Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Dogs.
Waller, Geo. A., Seneca Falls, N. Y.

Injectors.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. Hartford Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y

Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Barclay W.) & Co., Phila.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron, *Merchants.*
Barnes, C. K. & Co., Philadelphia, Pa
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia
Cotton, Barclay W. & Co., Phila.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co. 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St. N. Y
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, *Importers.*
Abbott Wheelock & Co. N. Y. and Boston
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet. *Manufacturers of.*
Cambridge Iron & Steel Co., Cambridge Ohio
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladders, Rolling.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.

Ladles.
Detroit Fdy. Equipment Co., Detroit. Mich.

Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.

Lanterns.
Buhl Stamping Co., Detroit, Mich.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls N. Y.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Lawn Mowers.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Coldwell Lawn Mower Co., Newburg N. Y.
Dille & McGuire Mfg. Co., Richmond, Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Mast, Foos & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila. Pa.

Lawn Rakes.
Gibbs Mfg. Co., Canton, Ohio.
Konler, F. E. & Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse N. Y.

Lawn Sprinklers.
Ette & Henger Mfg. Co., St. Louis,
Gibbs Mfg. Co., Canton, Ohio.
McGowan, John H. Co., Cincinnati O.

Lemon Squeezers.
Ripley Mfg. Co., Thonville, Conn.

Letters and Figures, Metallic
White, A. A. & Co., Providence, R. I.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.

Locks & Knobs, *Manufacturers of*
Deits, A. E., 97 Chambers, N. Y
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg Co. Bridgeport, Conn
Yale & Towne Mfg. Co., Stamford, Conn

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Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Sement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N. Y.
Bignall & Keeler Mfg. Co., St. Louis,
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N.Y
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila. Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield Vt
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co. Rochester, N.Y
Manville, E. J. Mch. Co, Waterbury, Conn
Newark Mch. Tool Works, Newark, N. J
New Haven Mfg. Co., New Haven, Conn
New York Mach'y Depot, N. Y.
Niles Tool Wks., 188 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn
Prentiss Tool & Supply Co., N. Y
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ld., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.
Adt, Jno. & Son, New Haven, Conn.

Machine Knives.
Loring Coes & Co., Worcester. Mass

Machine Screws.
New Britain Hdw. Mfg. Co., New Britain, Conn.

Machine Tools.—*See Machinery,*

Machine Work.
Papping, J., 58th St., & 11th Ave., N.Y. City.

Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y
Starrett. L. S., Athol, Mass
Valentine Tool Co., Hartford, Conn.

Machinists' Tools and Supplies.
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.

Mallets.
N. Y. Mallet & Handle Works, N. Y.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St,, N.Y.
Lufkin Rule Co., Saginaw, Mich.

Meat Cutters and Stuffers.
Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Instruction.
Correspondence School of Mechanics Scranton, Pa.

Metals.
Fearing, Wm. S., 100 Chambers, N. Y
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall. N. Y.

Metal Brokers.
American Metal Co., N. Y.

Metallurgists.
Britton J. Blodgett, Phila.

Milling Machines.
Cin. Milling Mch. Co., Cincinnati, Ohio.

Mincing Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
Darby, Edw. & Sons Phila. Pa.
Leonard, B. E., Scranton, Pa.

Mining Screens.
Harrington & King Perforating Co Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y

Models, *Makers of*
Franklin, H. H. Mfg. Co., Syracuse, N. Y.

Molding Sand.
Obermayer, S. Co., Cincinnati, O.

Motors, Water and Electric.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington,
Pottstown Iron Co., Pottstown, Pa
Riverside Iron Wks, Wheeling, W. Va.

Neck Yokes.
Johnson, S. C., Racine, Wis.

Nickel Platers' Supplies.
Colburn Electric Mfg. Co., Fitchburg, Mass.
Zucker & Levett Chemical Company. 10 to 14 Grand St., N. Y

Norway Shapes, *Rollers of.*
Rowland, William & Harvey, Framford, Philadelphia

Novelty Manufacturers.
Franklin, H. H. Mfg., Syracuse, N. Y.

Nut Machines.
Dunham Nut Mch. Co., Unionville, Ct

Nuts, Bolts, &c., *Makers of.*
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R.
Blake & Johnson, Waterbury, Conn.
Haskell, Wm. H. Co., Pawtucket. R. I
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Port Chester Bolt and Nut Co., Port Chester, N. Y.
Russell, Burdsall & Ward, Port Chester
Sternbergh, J. H. & Son, Reading, Pa
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket. R. I.

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
Glazier Stove Co., Chelsea, Mich.

Ores.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Morrison, Robt., St. Louis, Mo.
N. Y. Belting & Packing Co. Ltd., N.Y.

Padlocks.
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Miller Lock Co., Philadelphia, Pa.

Paint.
Dixon, Jos. Crucible Co., Jersey City, N.J

Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O

Paint Cans.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

Patent Solicitors.
Howson & Howson, Phila. & Wash'gton.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co. Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., Boston, Mass.
Halk & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pilling & Crane, Philadelpnia, Pa.
Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

Pile Drivers.
Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co. St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast Henry B. & Co., Philadelphia,
Saunder's Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay. N. Y,

Pipes, Fittings, &c., *Makers of.*
McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas. *Makers of.*
Cumberland Nail & Iron Co., Phila, Pa
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W Va.
Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.

Planes, *Manufacturers of.*
Stanley Rule & Level Co., N. Y.

Plated Ware.
Boardman H. & Son, New Haddam Ct
Holmes & Edwards Silver Co., Bridgeport. Conn.
Rogers & Hamilton, Waterbury, Ct.
Upson & Hart Co., Unionville, Ct.

Plate, Iron and Steel, *Mfrs of*
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville. Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa
Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pokers and Lifters.
Troy Nickel Works. Troy, N. Y.

Polishing Machines.
Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
La Massena, C. E. & Co., Newark, N.J.

Post Hole Diggers.
Gibbs Mfg. Co., Canton, Ohio.
Wister, L. & R, & Co., Philadelphia, Pa.

Poultry Nettings.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Wks. Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
Laflin & Rand Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y

Power Hack Saws.
Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Jenkins & Lingle, Bellefonte, Pa.
Long & Allstatter Co., Hamilton, Ohio

Presses, Dies, &c.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Niagara Stamping and Tool Co., Buffalo, N. Y.
Stark Mch & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn

Presses, Power, *Makers of.*
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct,
Merriman. A. H., Meriden.
Niagara Stamping and Tool Co. Buffalo, N. Y.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
Keystone Clutch Mch. Wks., Phila., Pa.
Lake, J. H. & D. Co., Massillon, Ohio,

Pumping Machinery.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Hooker-Colville Steam Pump Co., Chicago, Ill.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa
Valley Pump W'ks, Easthampton, Mass
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, *Makers of.*
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Mast, Foos & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Henderer, A. L., Wilmington, Del.
Long & Allstater Co., Hamilton, Ohio.
Niagara Stamping & Tool Co., Buffalo, N. Y.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
Perry, W. H. & Co., Providence, R. I.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Estey, W. S. 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.

Razors.
Electric Cutlery Co., 113 Chambers, N. Y
J. R. Torrey Razor Co., Worcester, Mass

Reels.
Hendryx, A. B. Co., New Haven, Conn

Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.

Rivets.
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Troy, N. Y.
Cobb & Drew, Plymouth, Mass.
Henderson, Jas. S., 165 Greenwich, N.Y.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Rock Drills.
Sand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd, Co., Youngstown, O.
Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning F'dry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel,
Booth, The Lloyd, Co., Youngstown, O.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh Pa.

Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Johns, H. W Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y

Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa

Rubber Goods.
Canfield, H. O., Bridgeport, Conn.

Rules, *Manufacturers of.*
Keuffel & Esser Co., 127 Fulton St., N.Y
Lufkin Rule Co., Saginaw, Mich.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,

Rust Preventive.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.

Sad Irons.
Enterprise Mfg. Co., Philadelphia, Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Pullman Sash Balance Co., Rochester, N. Y.
Vanderbilt Sash Balance Co., Canandaigua, N. Y.

Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.
Cincinnati Corrugating Co., Piqua, O.

Sash Locks.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Portable Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.

Saw Filing Machines.
Disston, Henry & Sons, Philadelphia, Pa.

Saws, *Makers of.*
Disston, Henry & Sons, Phila., Pa.
Hiles, C. A. & Co., 336-338 Carroll Ave Chicago, Ill.
National Saw Co., 98 Reade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass

Saw Sets.
Taintor Mfg. Co., 84-86 Chambers, N. Y.

Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N. Y

Scrapers, Road.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O

Screens, Coal and Ore.
Hendrick Mfg. Co., Ltd., Carbondale Pa.

Screens, Door and Window.
Queen Anne Screen Co., Burlington Vt

Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Capitol Mfg. Co., Chicago, Ill.
Mayhew, R. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.

Screws, *Makers of.*
American Screw Co., Providence, R. I
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
National Screw & Tack Co., Cleveland Ohio.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls N. Y

Scythe Stones and Whetstones.
Pike Mfg. Co., Pike Station, N. H.
Cleveland Stone Co., Cleveland, O.

Shafting, *Makers of.*
Cresson, Geo. V., Co., Philadelphia, Pa
Fairmount Mch. Co., Philadelphia. Pa
Fitzsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc. Phila. Pa.
Stow. Co. Mfg. Binghamton, N. Y.

Shaped Iron and Steel,—*Manufacturers of.*
Ætna-Standard Iron & Steel Co. Bridgeport, O.

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Allentown Rolling Mill, Allentown, Pa
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phœnix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn
Heinisohs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, *Manufacturers of.*
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh, Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ld., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch, A. B. & Co., Peoria, Ill.

Sinks.
Douglas, W. & B., Middletown, Conn.

Skates, Ice.
Barney & Berry, Springfield, Mass.
Dame, Stoddard & Kendall, Boston Mass.
Lovell, Jno. P. Arms Co., Boston, Mass.
Sickels, Sweet & Lyon, 35 Barclay St., N. Y.
Winslow, Sam'l, Skate Mfg. Co. Worcester, Mass.

Skates, Roller.
Barney & Berry, Springfield, Mass.
Henley, M. C., Richmond, Ind.
Winslow, Saml., Skate Mfg. Co., Worcester, Mass

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.
Clendenin Bros., Baltimore, Md.
Covert Mfg Co., West Troy, N. Y.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.

Spelter.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
Rogers & Hamilton Co., Waterbury, Conn.
Upson & Hart Co., Unionville, Ct.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y

Springs.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y
Morgan Spring Co., Worcester, Mass
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt
Tuck Mfg. Co., Brockton, Mass.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Bardsley, J., 149 & 151 Baxter St., N.Y.
Pullman Sash Balance Co., Rochester N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St. New York.

Stamping Works.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co. Binghamton N.Y

Steam Gauges.
Ashcroft Mfg. Co., 111 Liberty St., N.Y
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., *Makers of*
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Camden, N.J.

Steam Separators.
Goubert Mfg. Co., 32 Cortland St N. Y.
Harrison Safety Boiler Wks. Phila. Pa

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.

Steel Figures and Alphabets.
Hoefig, C. W., 52 Fulton St., N. Y.
Leonard, W., 61 Fulton N. Y.
Wolff, C. H., 177 William St., N. Y.

Steel Importers.
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 91 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Ætna-Standard Iron & Steel Co., Bridgeport.
Bethlehem Iron Co., S. Bethlehem, Pa
Boker, Hermman & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Elken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 91 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburg Pa
Moss, F. W., 83 John N. Y
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co. High Bridge, N.J
Wordlaw, S. & C., Sheffield, Eng
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn

Steel, *Manufacturers' Agents.*
Barnes, C. K. & Co., Philadelphia, Pa
Corning, Edw, & Co., 29 B'way, N. Y
Frasse Co., 19 Warren St., New York.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, *Manufacturers of.*
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville Pa
Riverside Iron Wks., Wheeling, W. Va

Steel, Tool.
Frankford Steel Co., Philadelphia. Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill,
Croissant, M., Albany, N. Y.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunder's Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y

Stove Pipe Thimbles.
Cheney, S. & Son Manlius, N. Y

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse N. Y.

Strops.
Electric Cutlery Co. 113 Chambers, N.Y
J. R. Torrey & Co., Worcester, Mass.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co. La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation, Boston, Mass
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland O.
Phillips, E. & Sons, South Hanover.
Trafant, W. E., Whitman, Mass.

Taps and Dies.
Butterfield & Co., Derby Line, Vt.
Carpenter, J. W., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila.

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tinning Process.
Sands, Thomas, Nashua, N. H.

Tin Plate Machinery.
Lloyd Booth Co., Youngtown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St.,

Tire Upsetters.
Butts & Ordway, Boston, Mass,

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N.Y.

Tools.
Brown, R. H. & Co., New Haven, Conn.
Frasse Co., 19 Warren St., New York.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.

Tools, Blacksmith and Wheelwrights.
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R. Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasolene.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.

Transom Lifters.
Wollensak, J. F. Chicago, Ill.

Trucks. *Manufacturers of.*
Berger Bros., Philadelphia, Pa.
Clark, G. F., Windsor Locks, Conn.
Lansing Wheelbarrow Co. Lansing Mich.

Tubes, Seamless Drawn Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.
Ellwood Shafting & Tube Co., Ellwood City, Pa.
Leng's John S. Son & Co., 4 Fletcher St., New York.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills. *Makers of.*
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 56 John N. Y.
Mason Regulator Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vises.
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Wheelbarrows.
Amer. Steel Scraper Co., Sidney, Ohio.
Cookburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Sweatt Mfg. Co., Minneapolis, Minn.

Whips.
American Whip Co., Westfield, Mass.

Window Cord, *Makers of.*
Samson Cordage Works, Boston, Mass

Wire, *Manufacturers of.*
Consolidated Steel & Wire Co., St. Louis, Mo.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co. Worcester, Mass

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Wks. Milwaukee Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.
King, J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods, *Manufacturers of.*
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros, Cortland, N. Y.
Williamson, C. T. Wire Novelty Co. Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester Mass.
Waterbury Mch. Co., Waterbury, Conn

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wire Nails.
Consolidated Steel & Wire Co., St. Louis, Mo.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle Pa.
Phillips, E. & Sons, South Hanover Mass.
Phillips, Townsend & Co., Phil., Pa.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City

Wire Rods, Steel.
Consolidated Steel & Wire Co., St. Louis, Mo.
New Castle Wire Nail Co., New Castle Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y

Wire Rope, Iron and Steel *Makers.*
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco
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A. Leschen & Sons Rope Co., St. Louis
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Wood-Working Machinery.
Fay, J. A. & Egan Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

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Bemis & Call Hardware & Tool Co. Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn
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Keystone Mfg. Co., Buffalo, N. Y.
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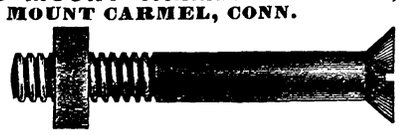
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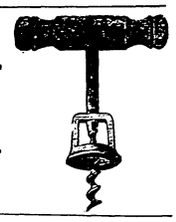
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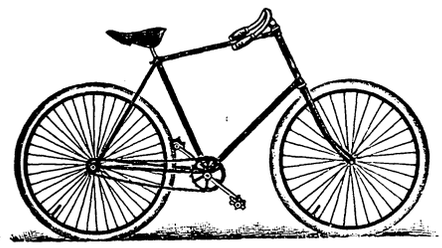
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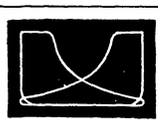


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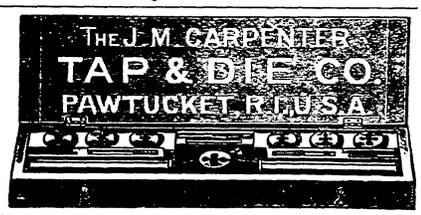


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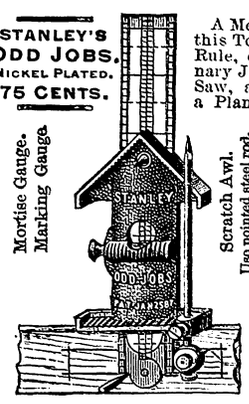
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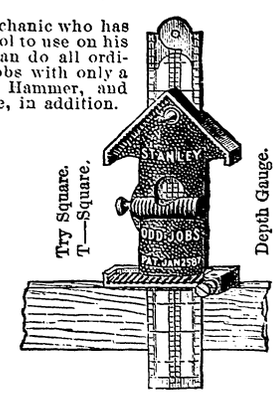
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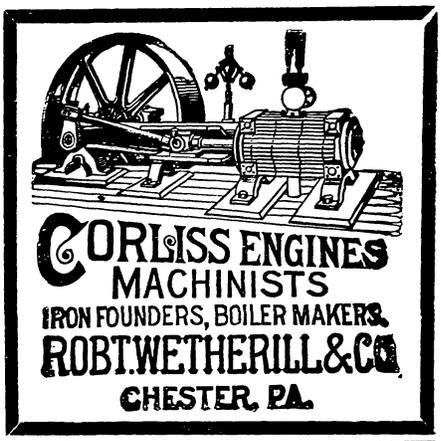


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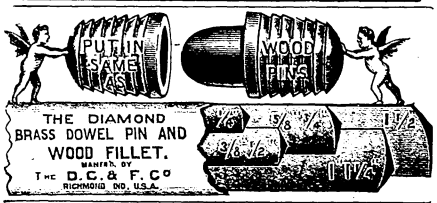
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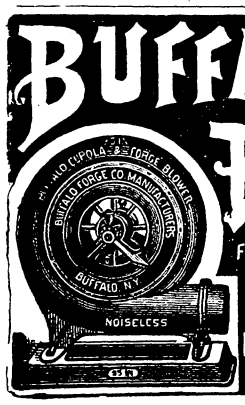
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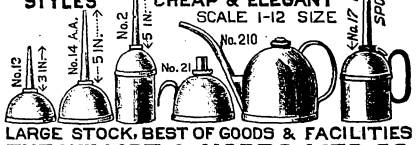



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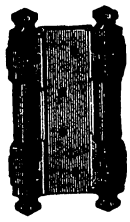
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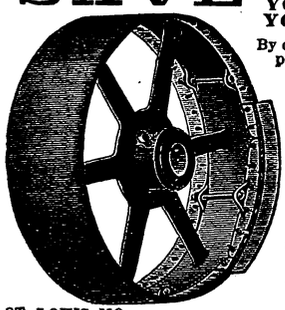
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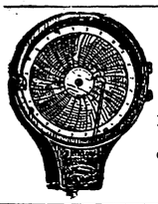
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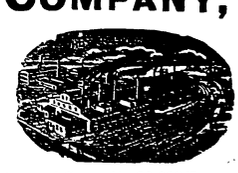
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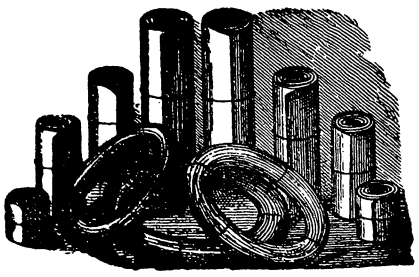
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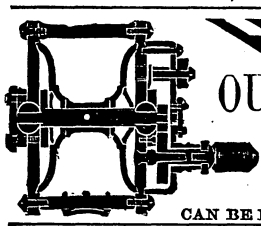
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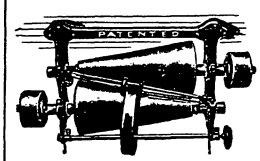


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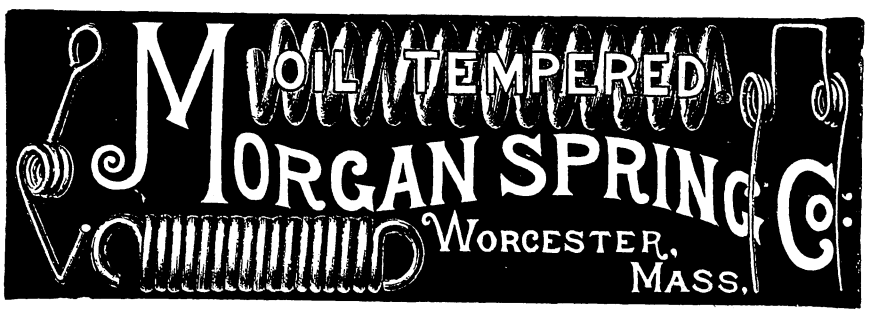
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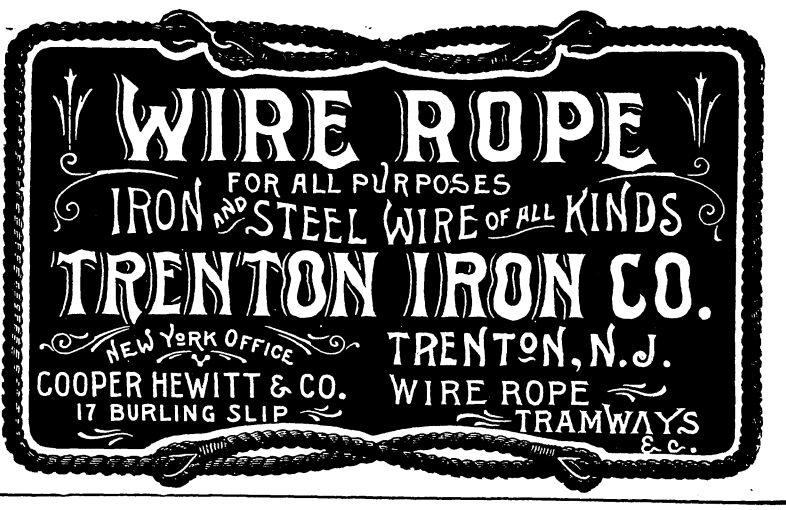
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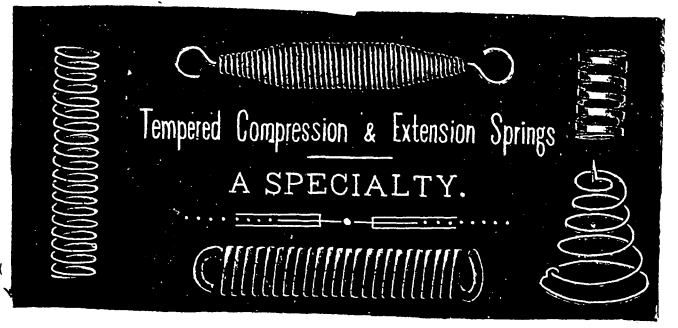




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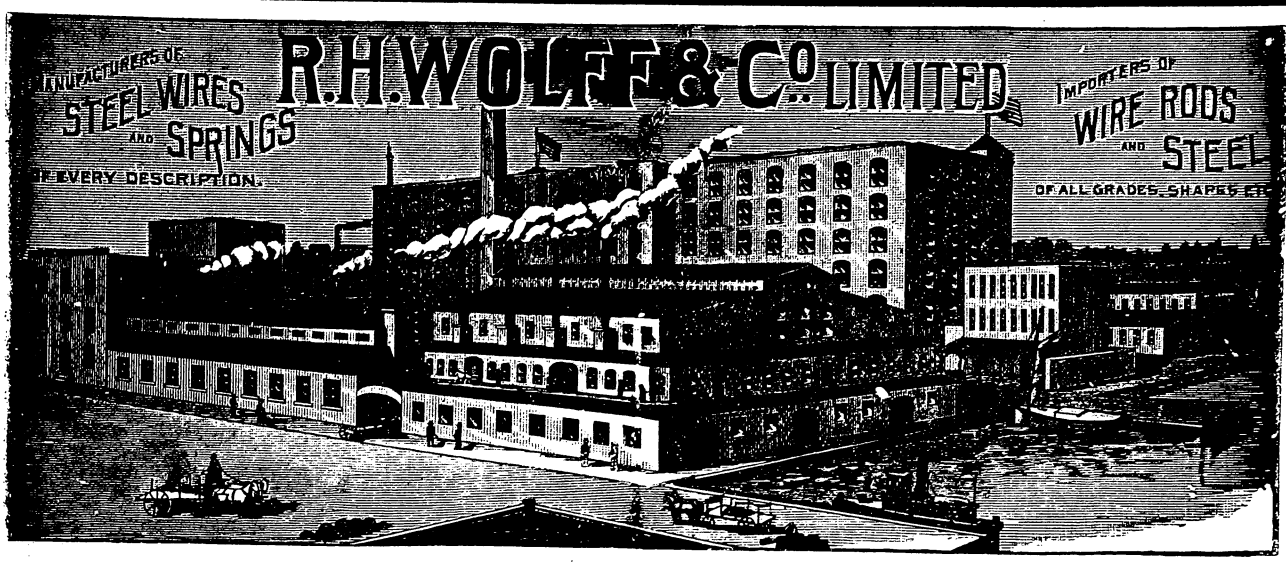
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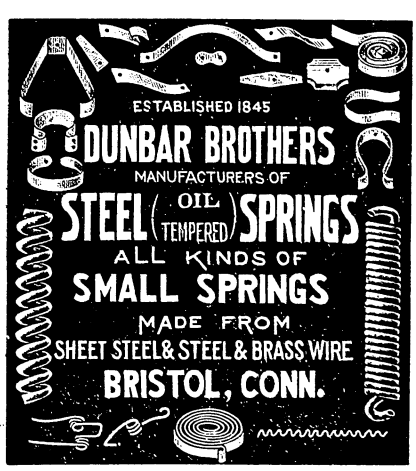
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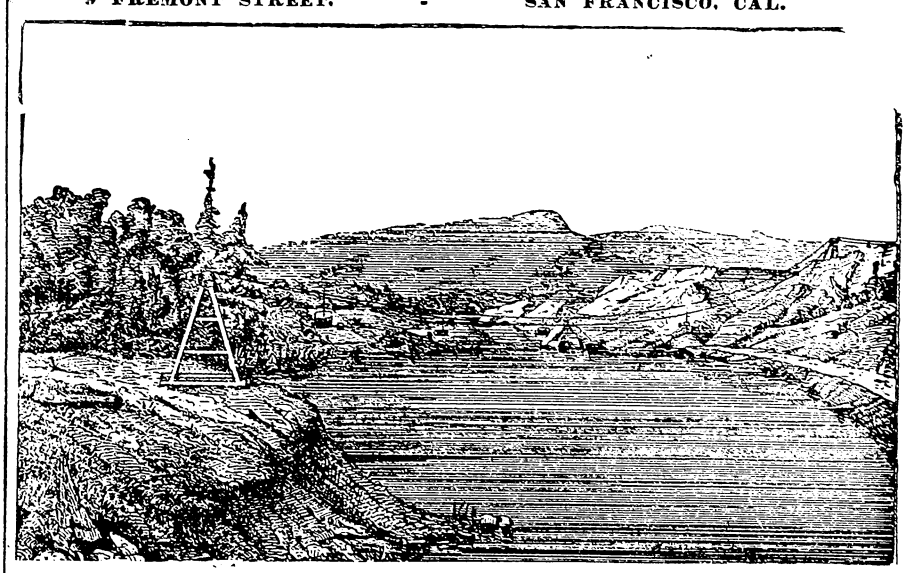


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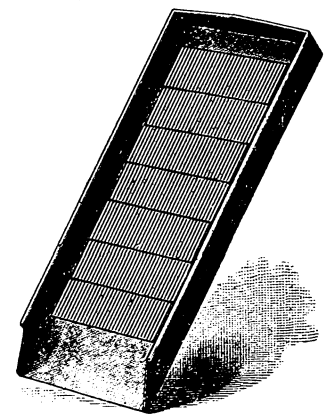
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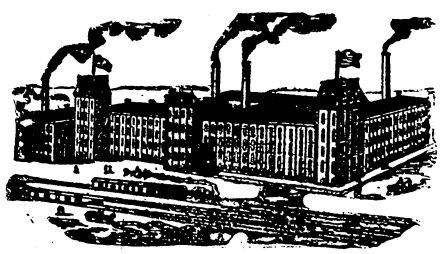
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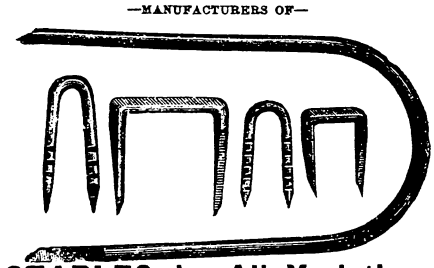
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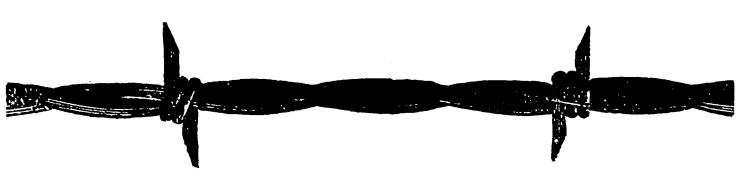
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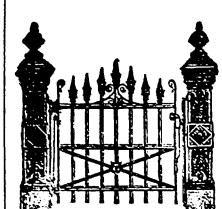


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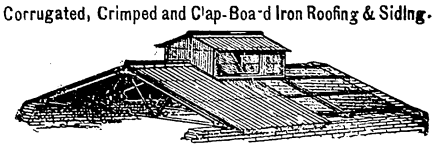
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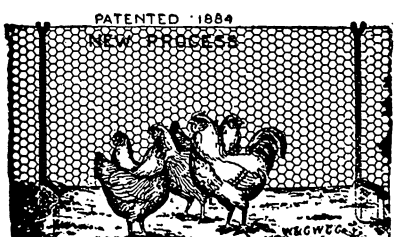
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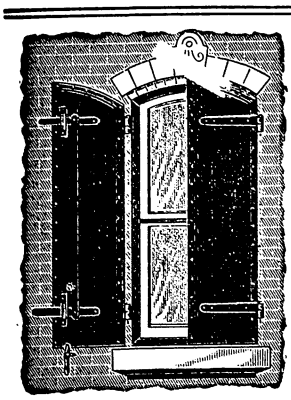
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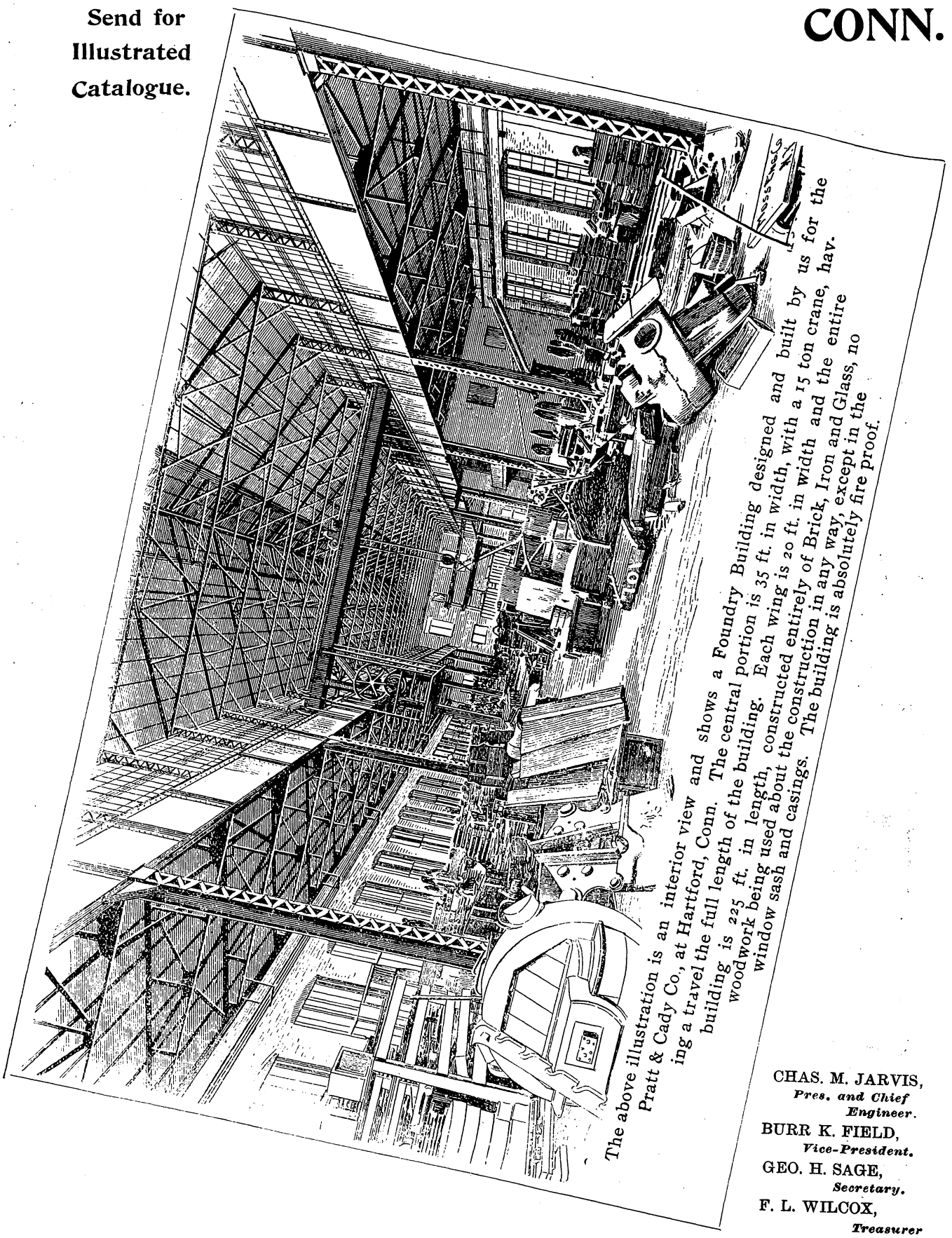
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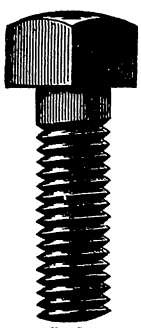
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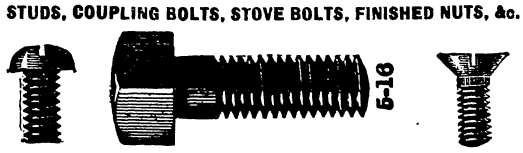
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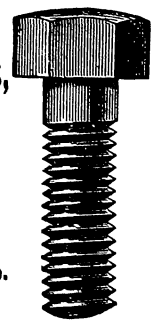
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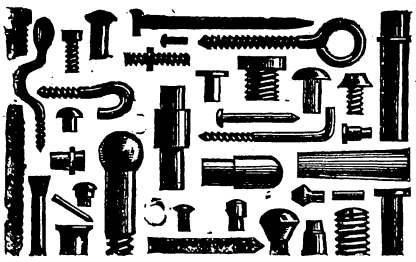
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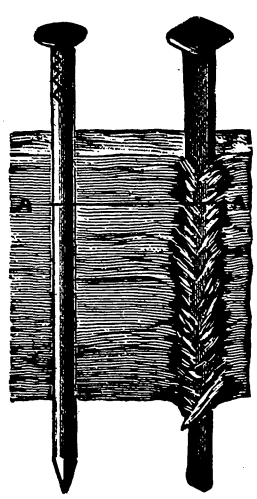
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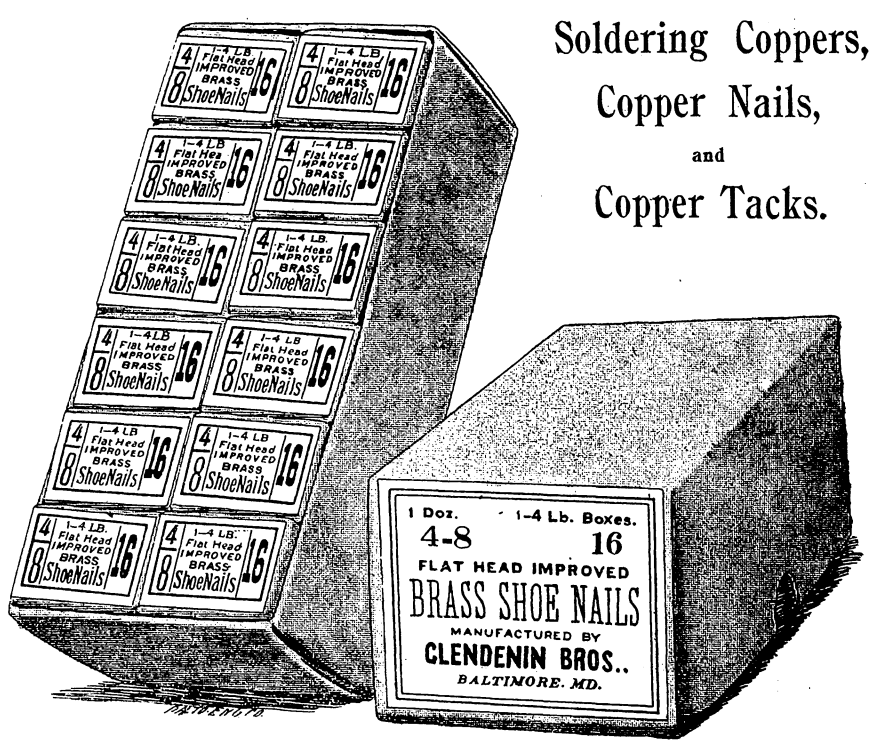
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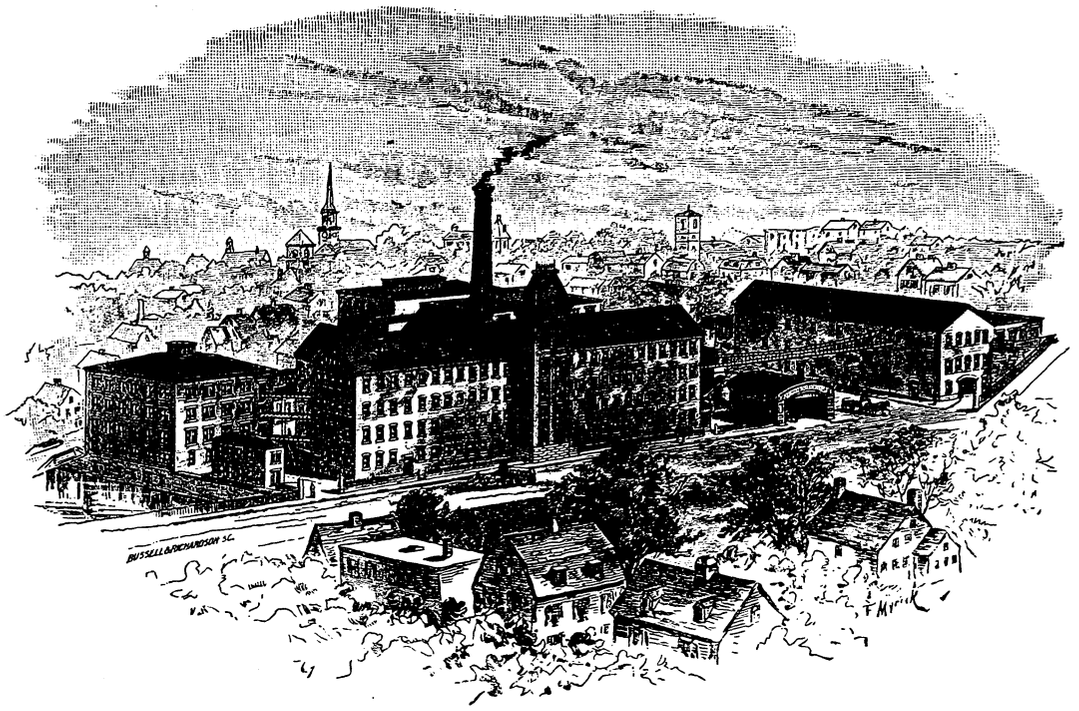
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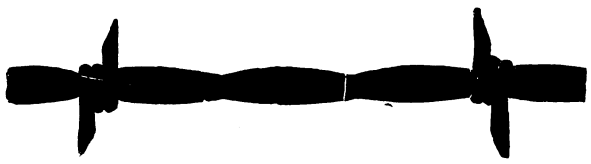
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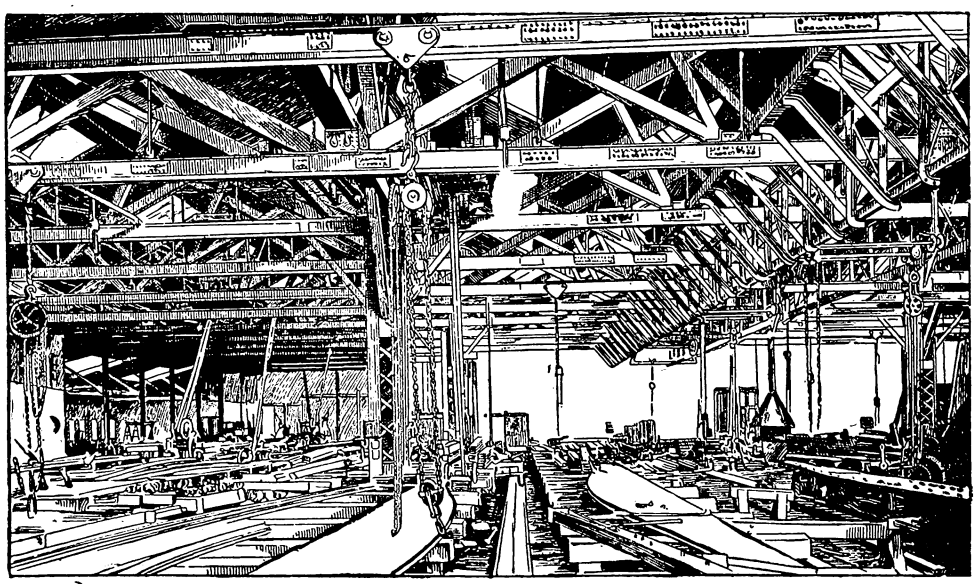
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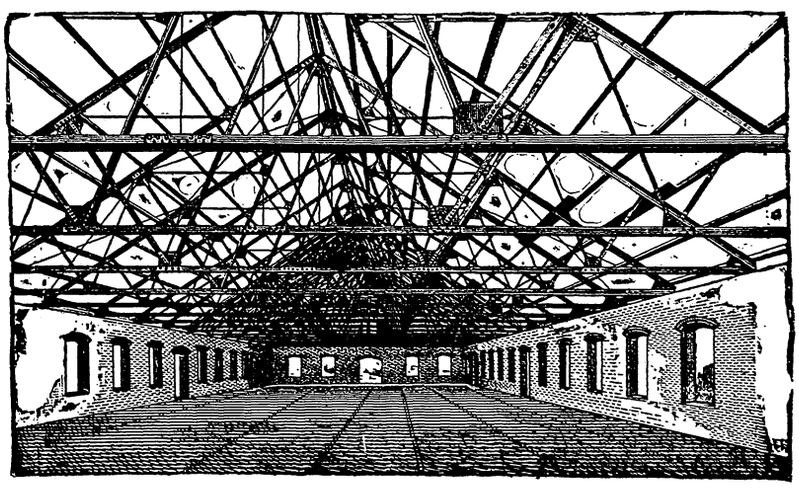
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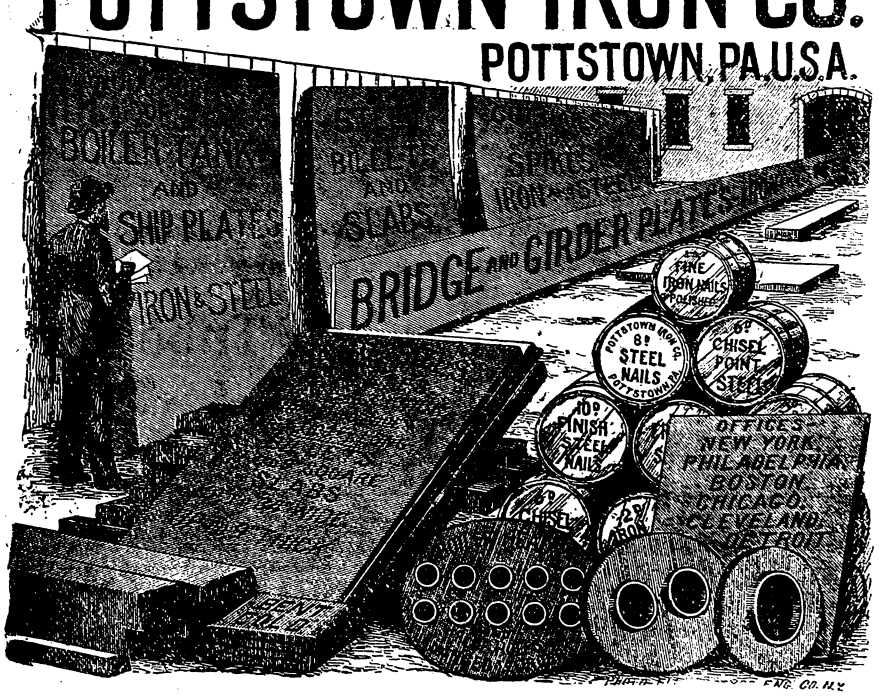
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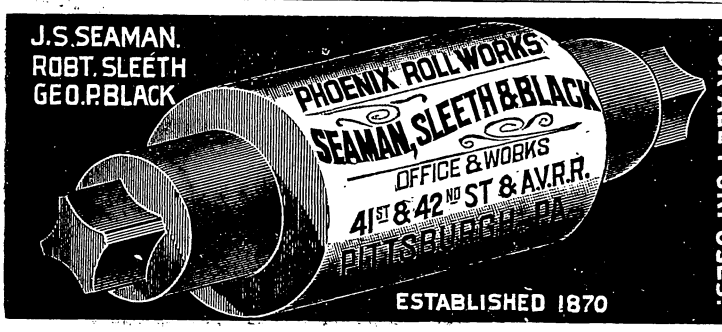
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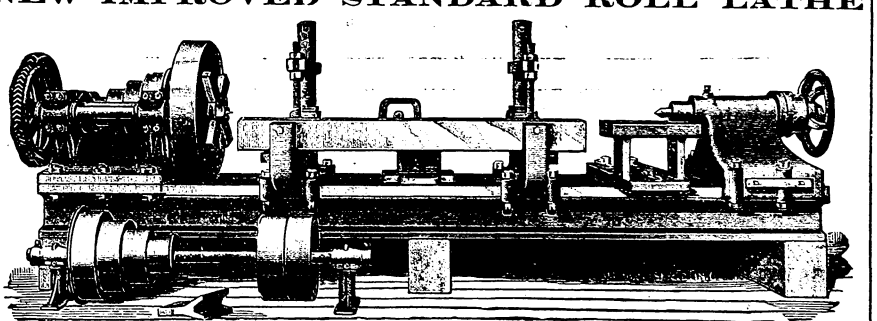
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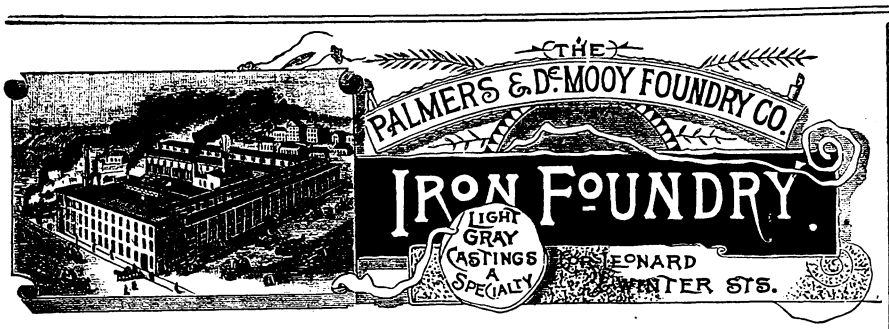
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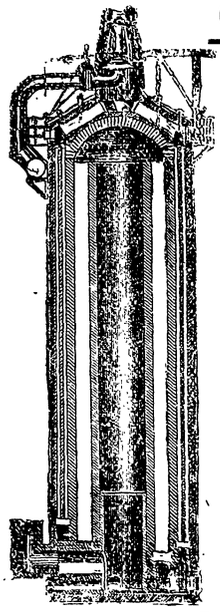
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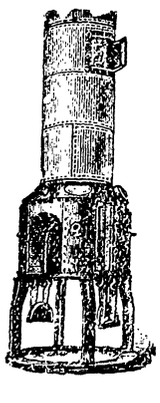
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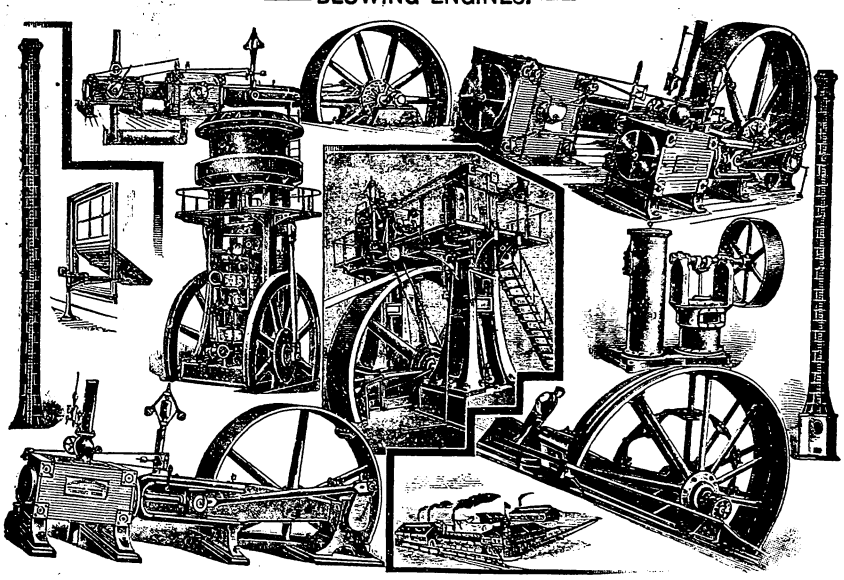
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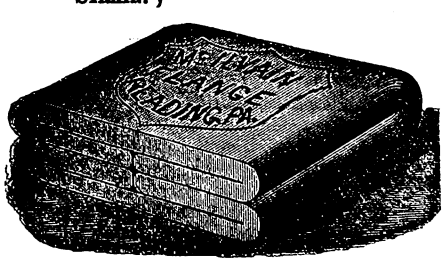


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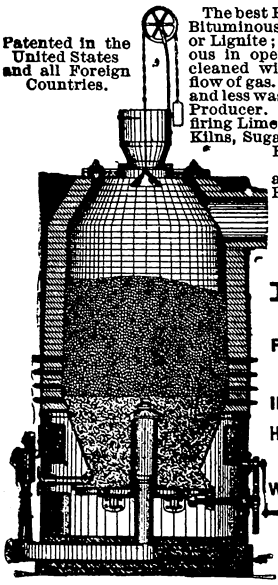
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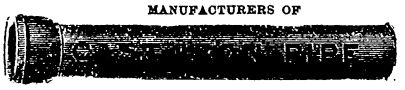
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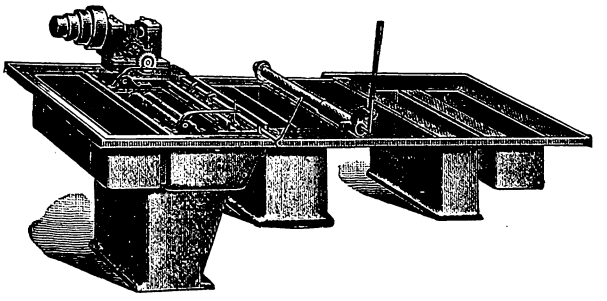
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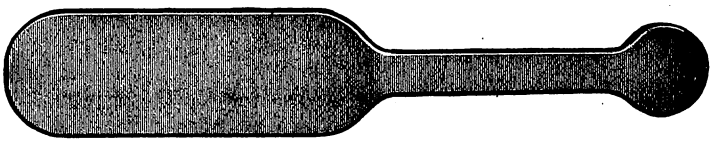
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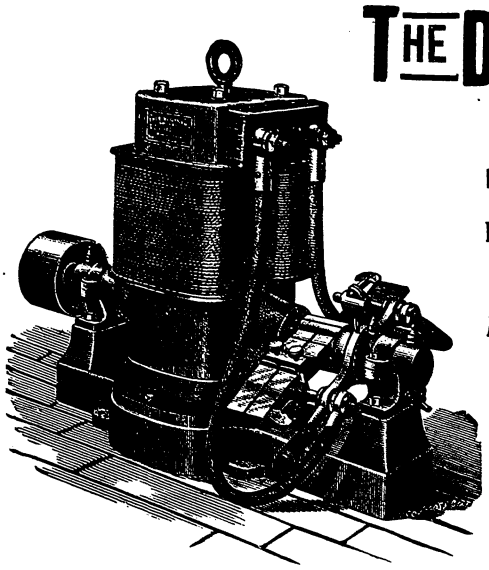
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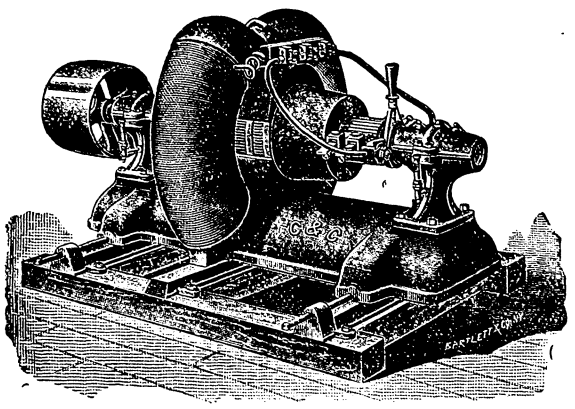
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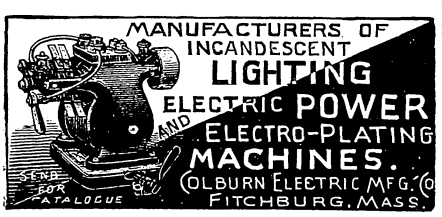
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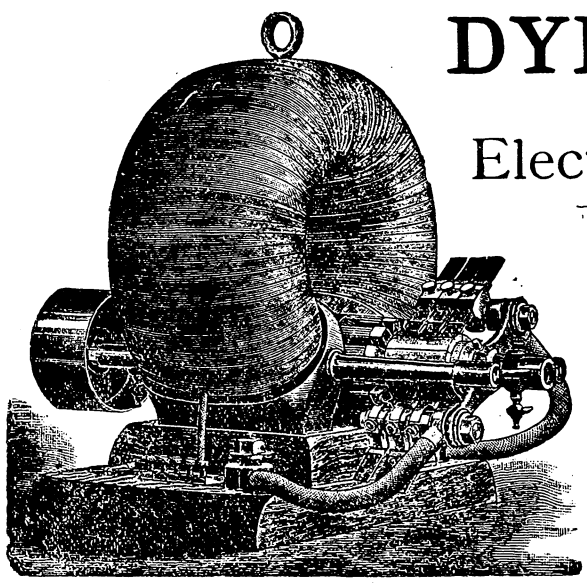
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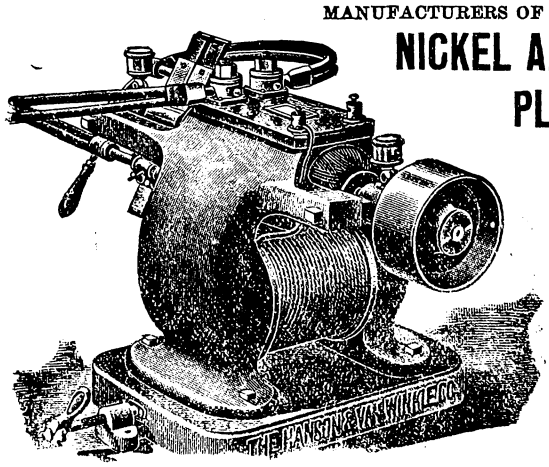
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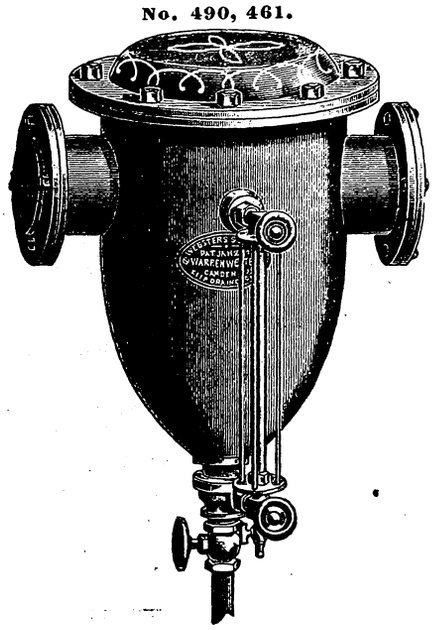
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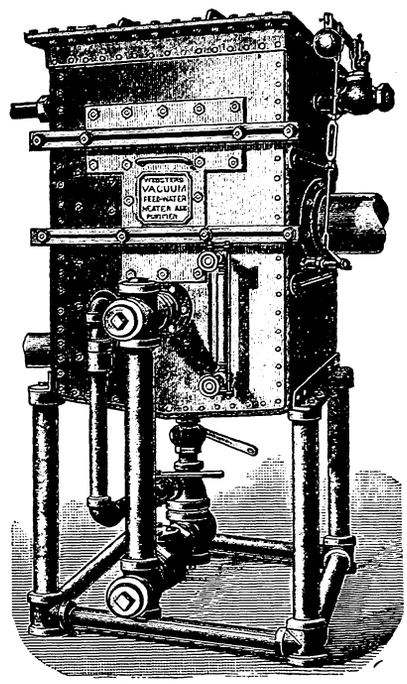
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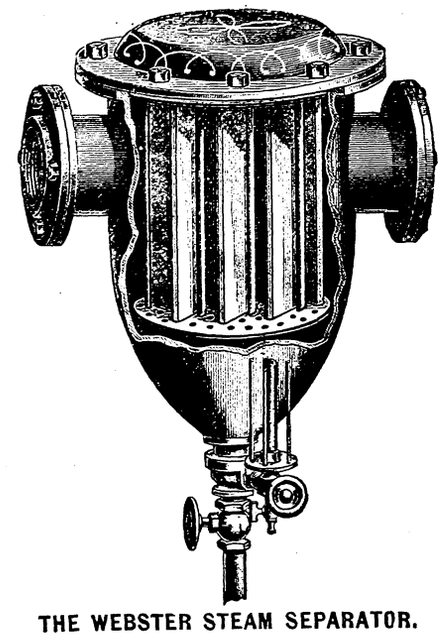
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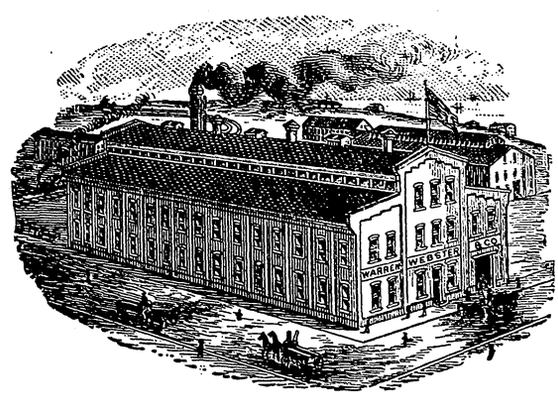
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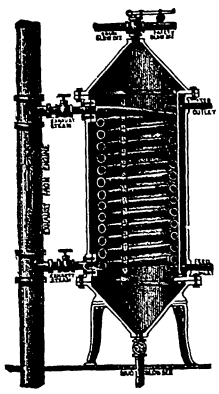
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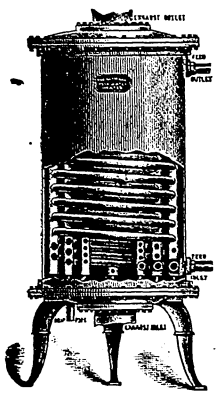
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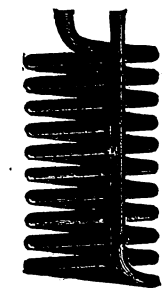




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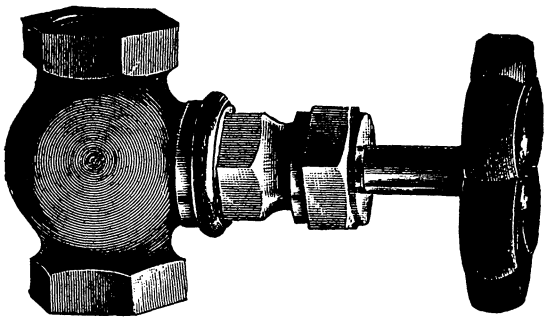
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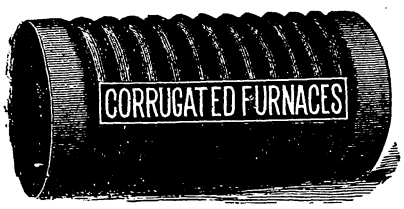
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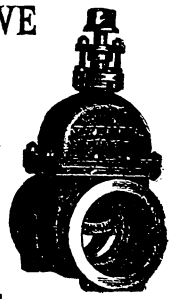
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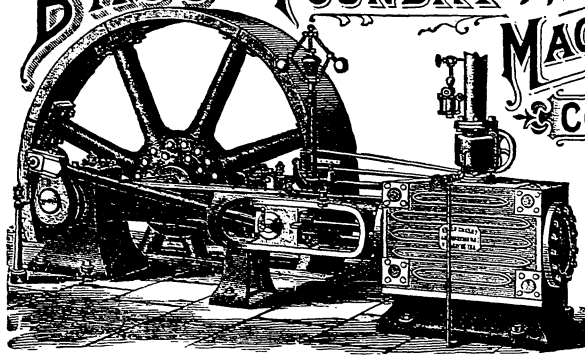
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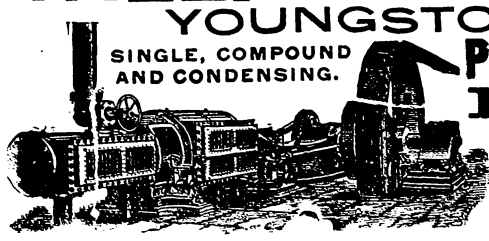
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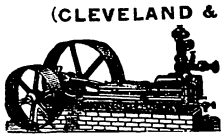
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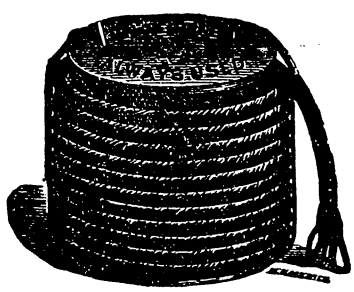
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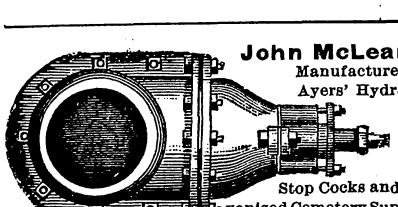


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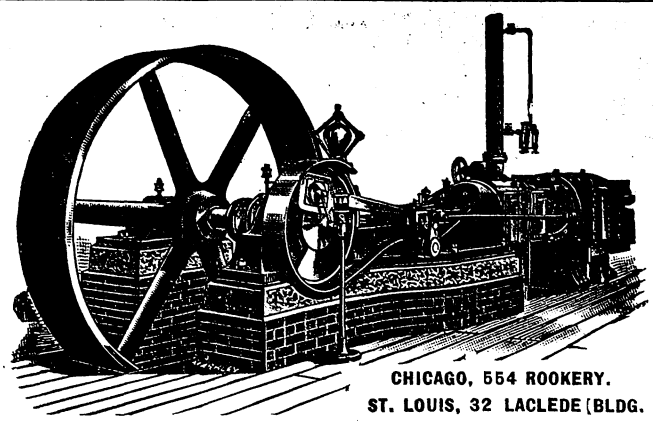
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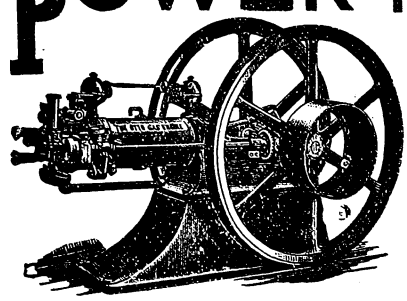
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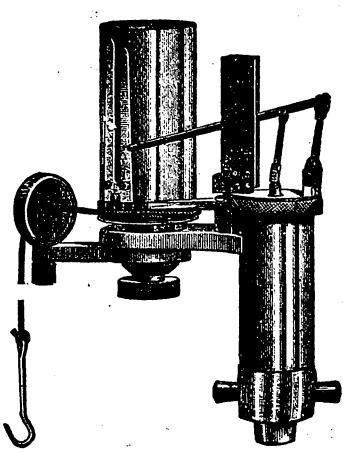
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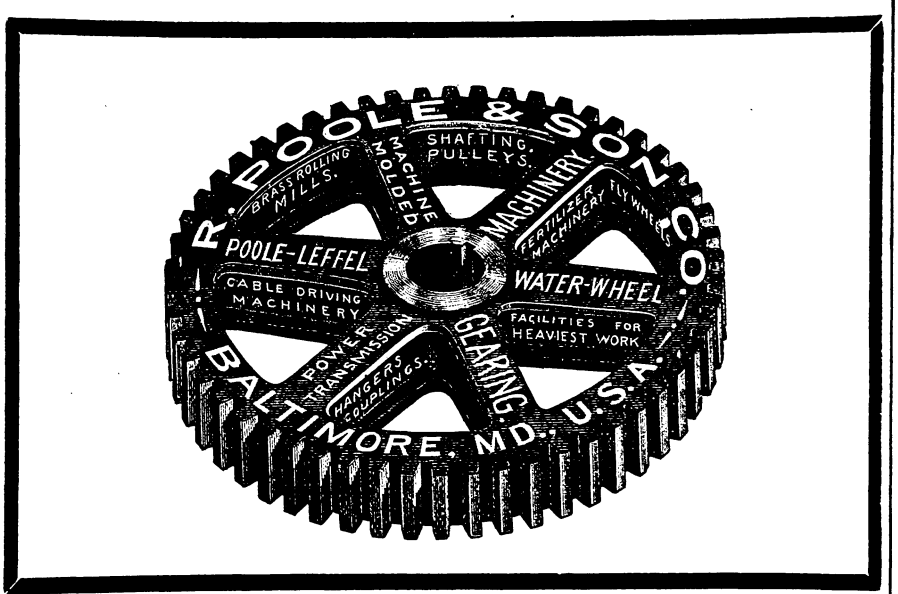
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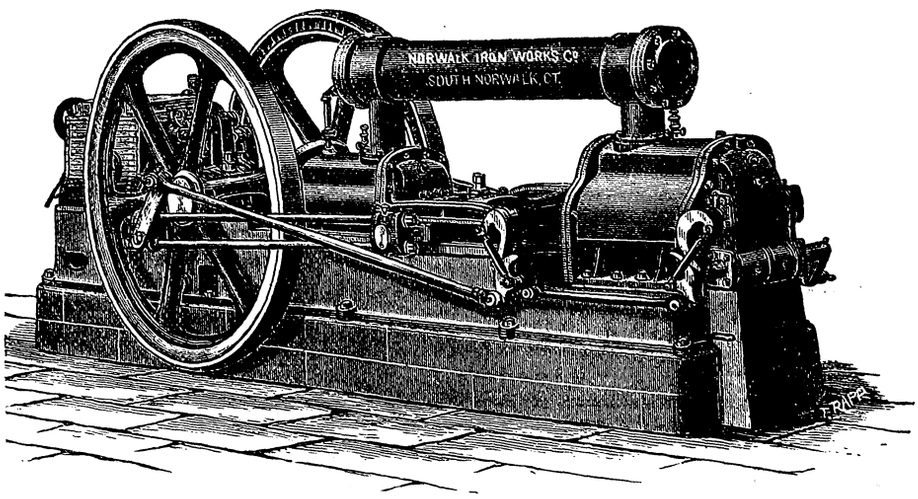
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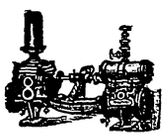
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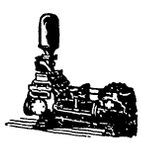
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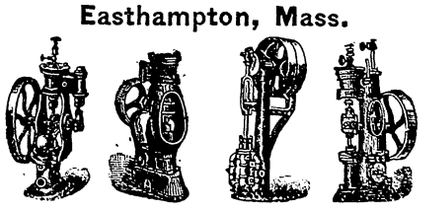


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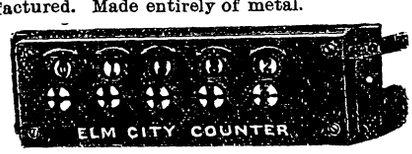
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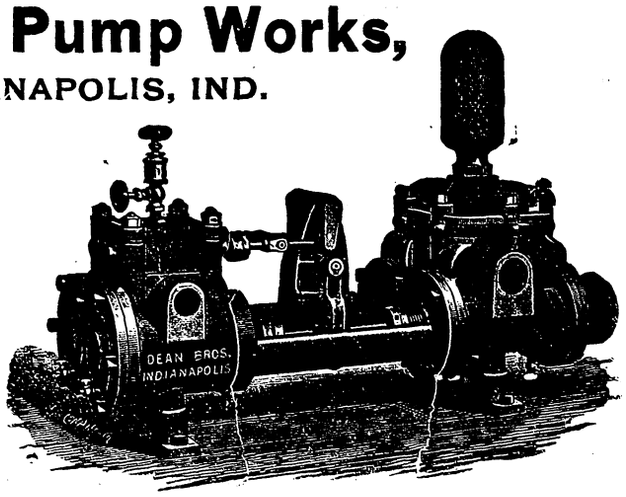
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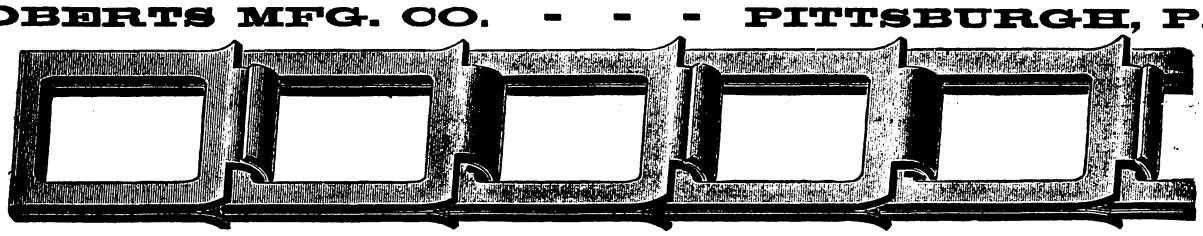
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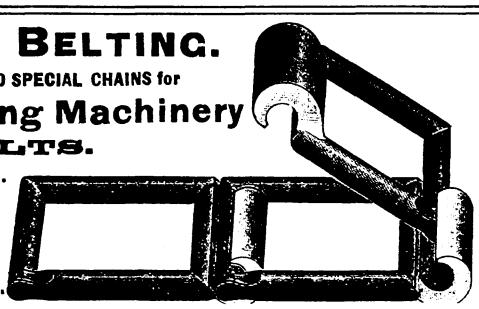
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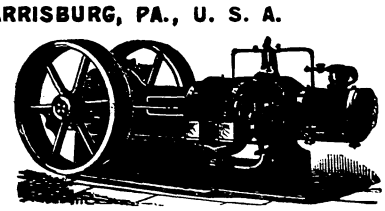
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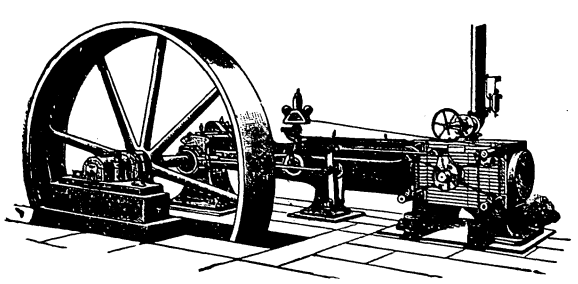


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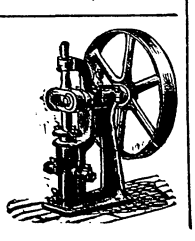
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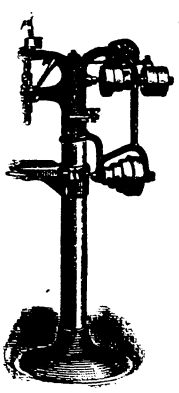
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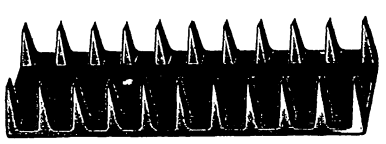
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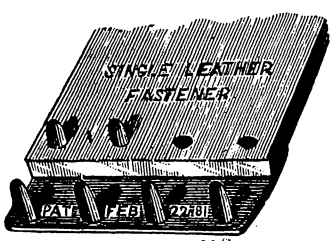
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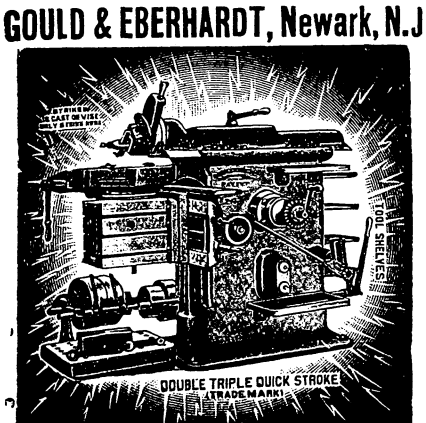
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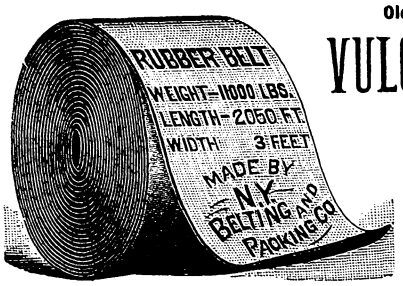
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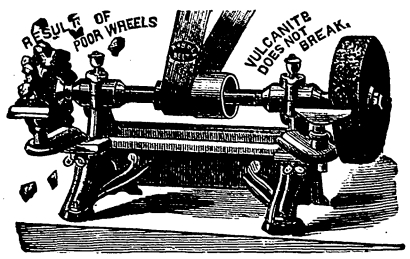
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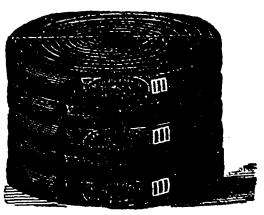
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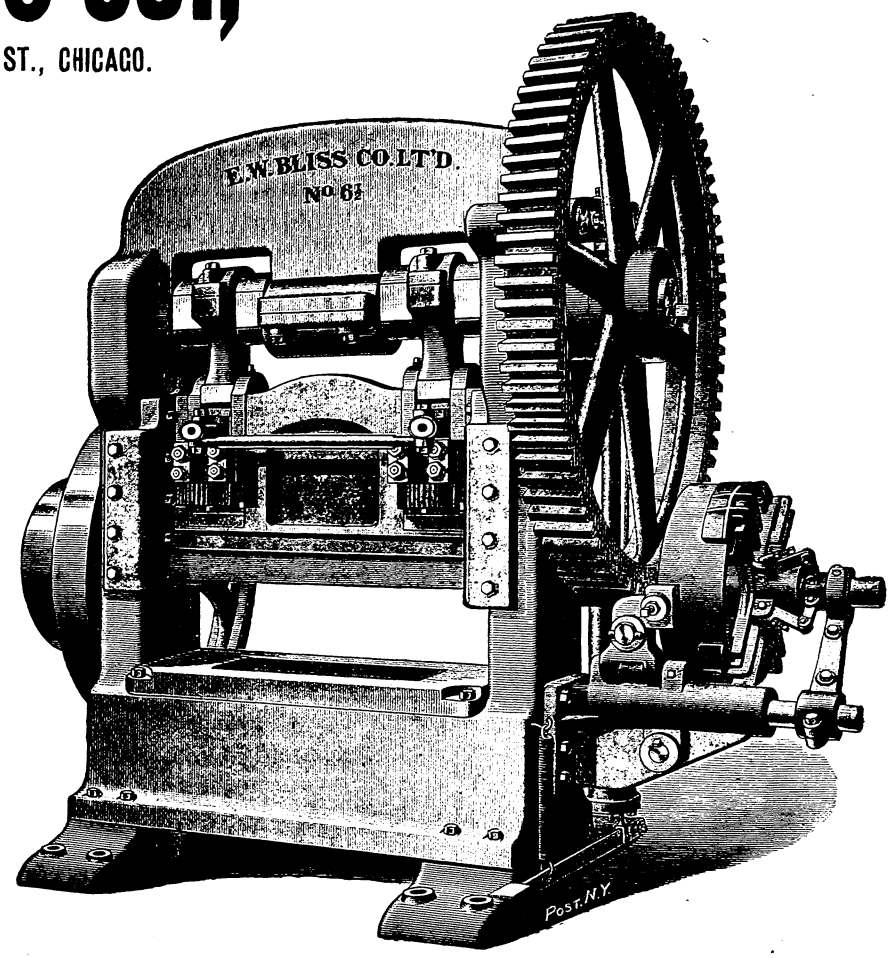
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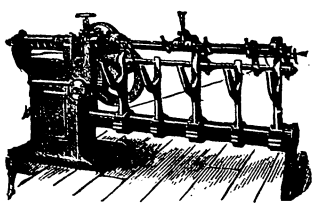
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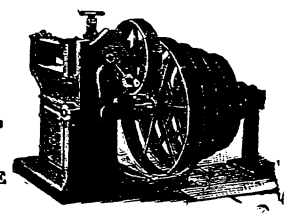
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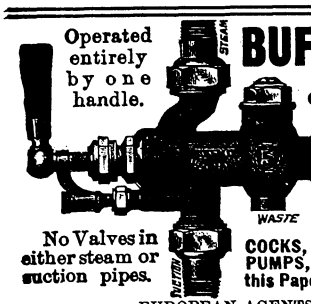
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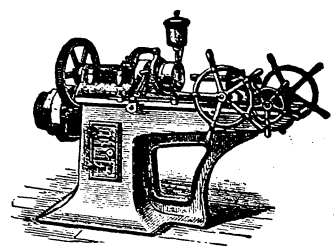
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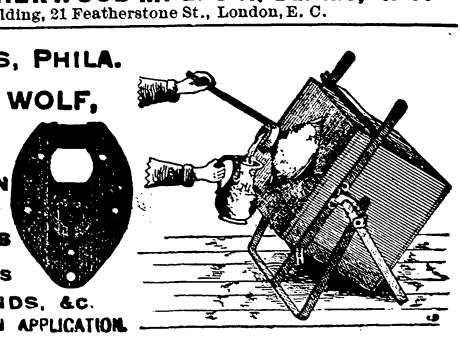
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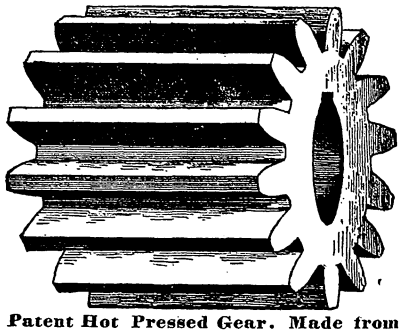
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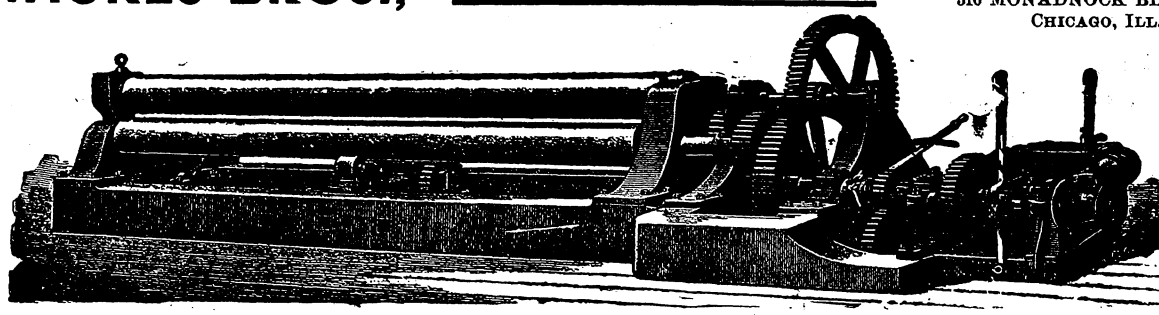
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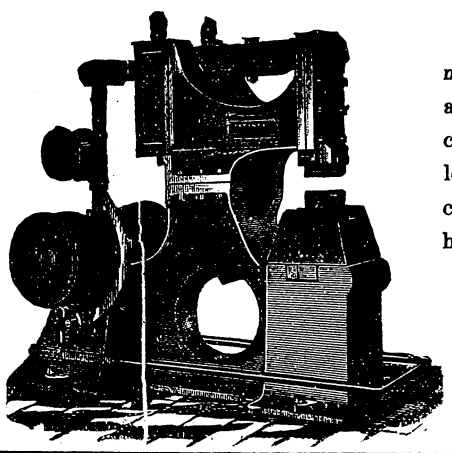
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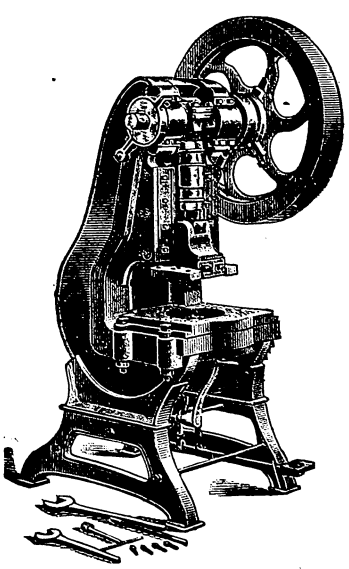
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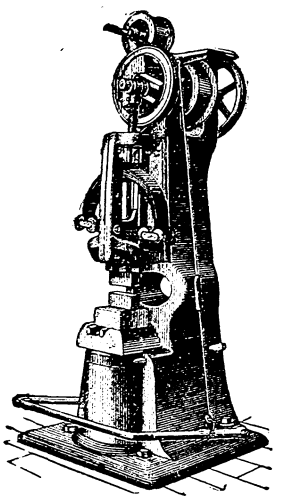


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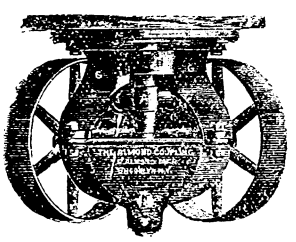
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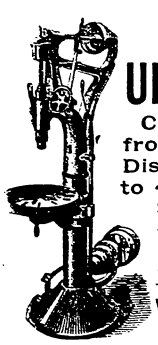
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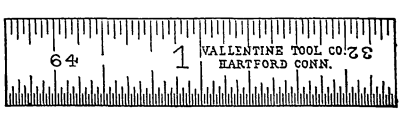
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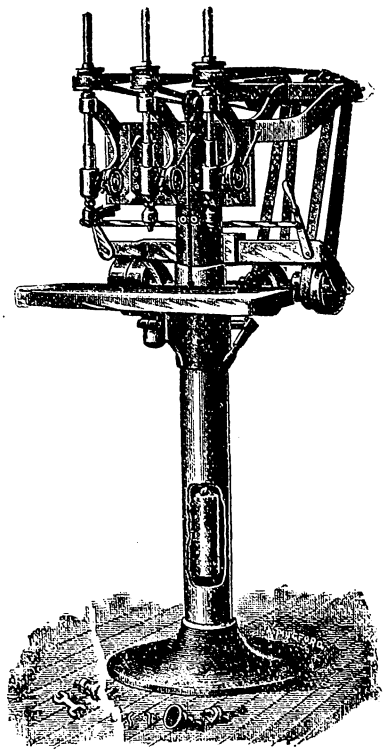


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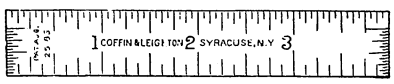
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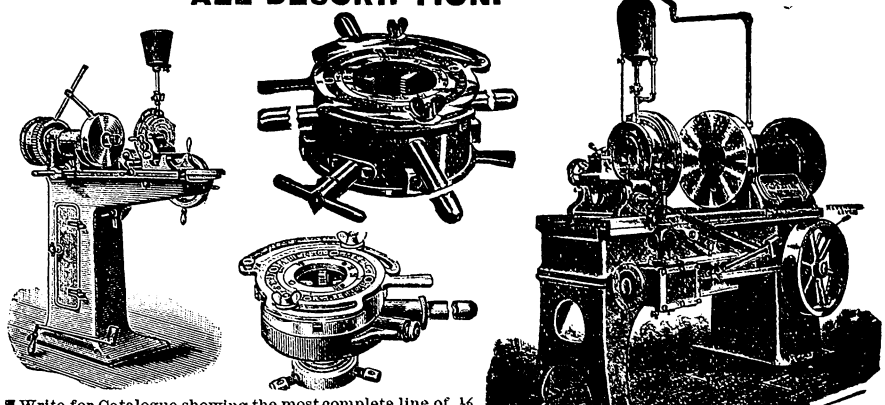
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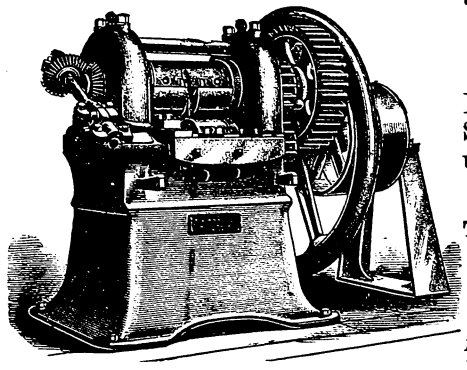
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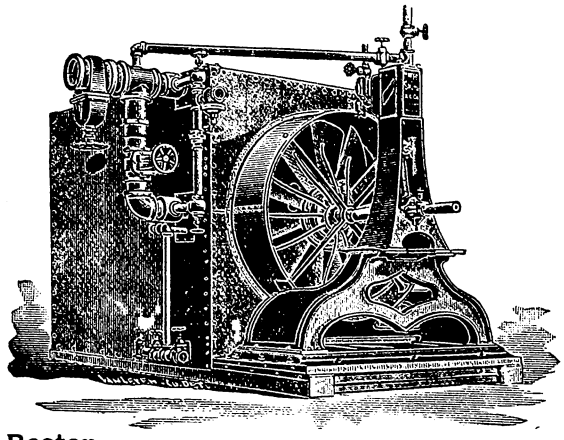
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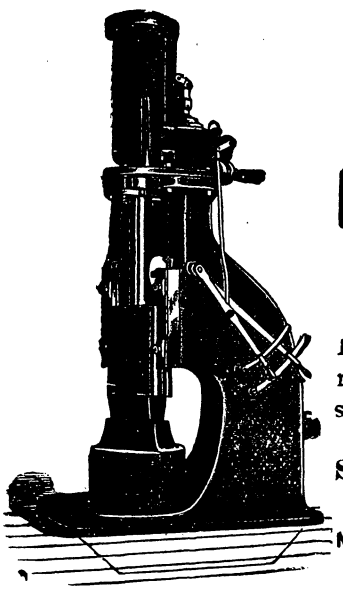
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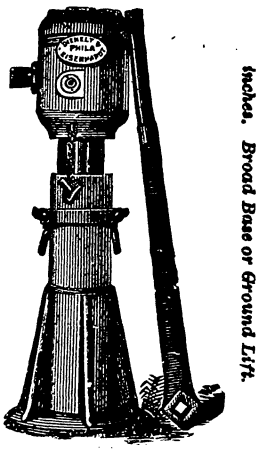
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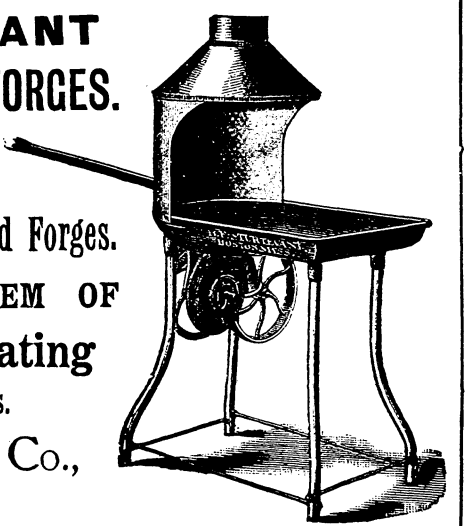
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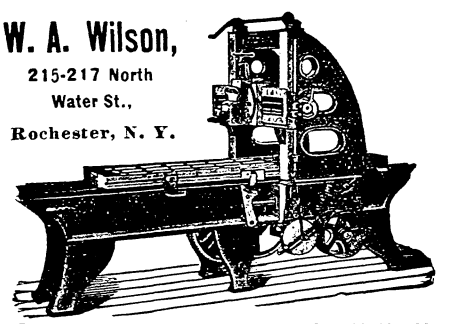
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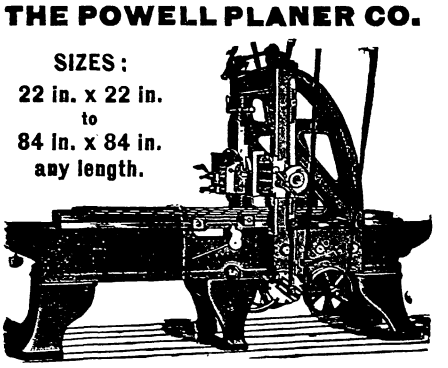
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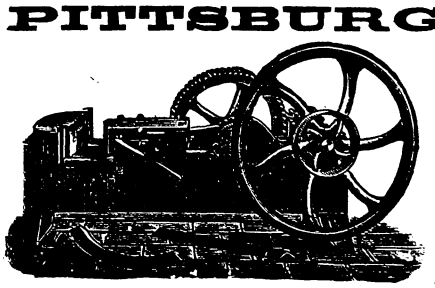
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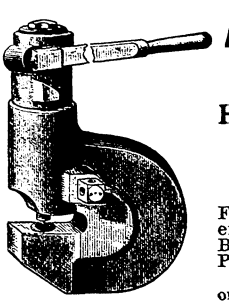
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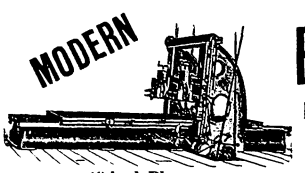
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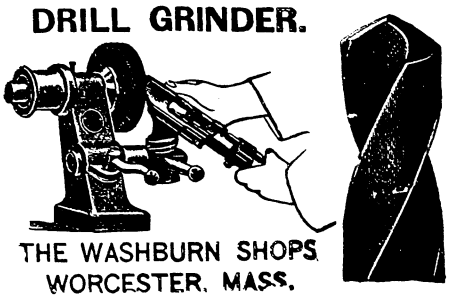
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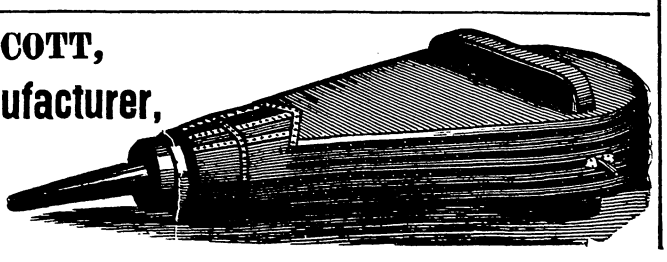


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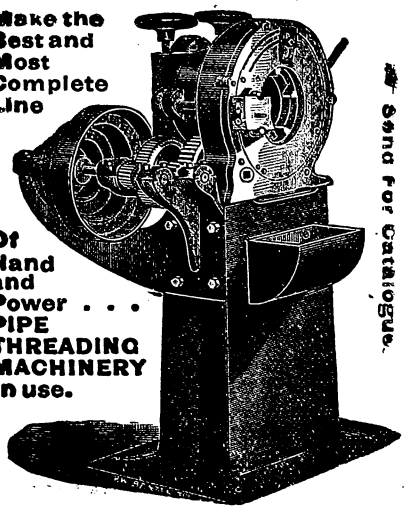


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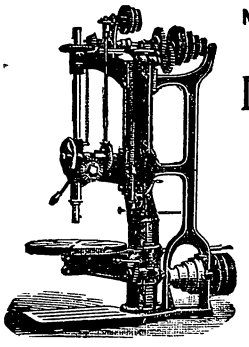
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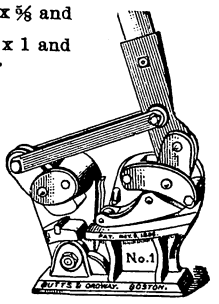
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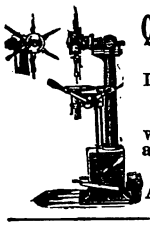
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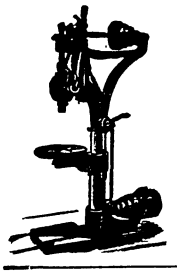
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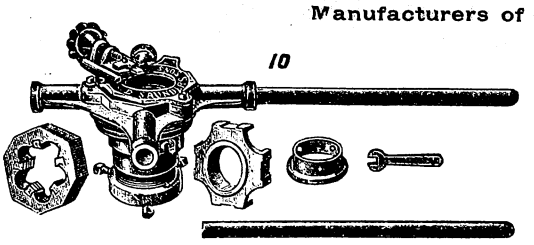
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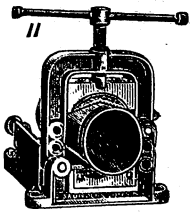
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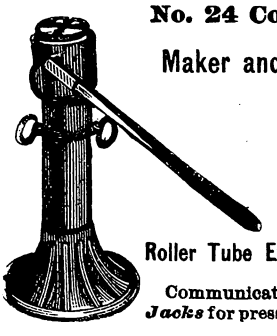
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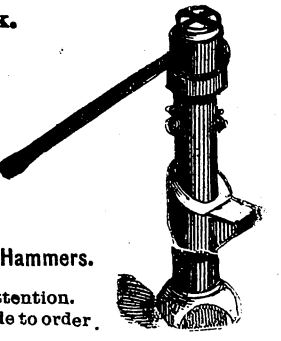
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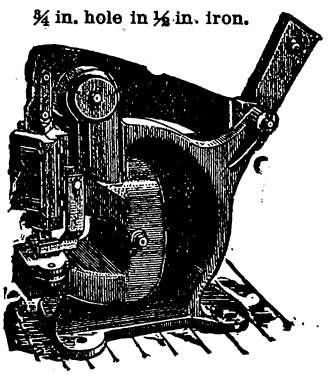
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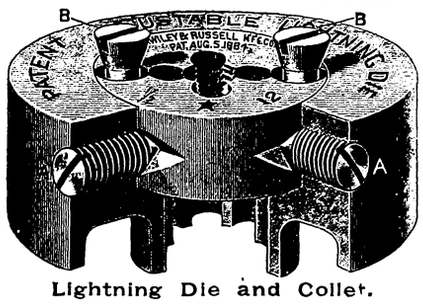
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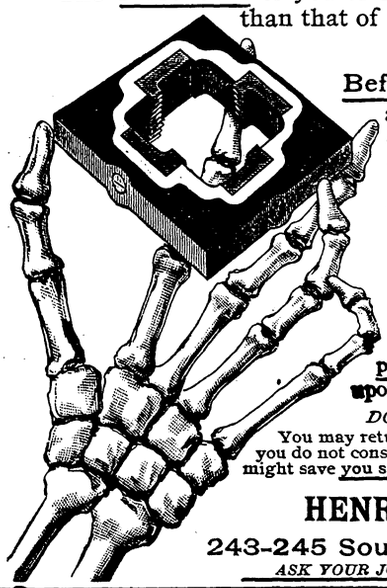
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Maule's "Skeleton" Pipe Die

Two "Points" about it—only 2 (There are plenty more, but we only mention these two here.)

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The First Cost to you of MAULE'S "SKELETON" PIPE DIE is less than that of any other Pipe-Threading Die—and



2

Before it becomes dull from use it will cut as many perfect threads as the best solid die extant, and when it is dull, you don't throw it away and buy a new one—Oh, no! You simply sharpen the cutters on a common grindstone, and so make it practically as good as it was at first, and this sharpening process may be repeated a number of times.

A sample One-inch "Skeleton" Pipe Die, either 2⅜ or 2½ x ¾ thick, by mail, postage prepaid, will cost you **62 cents,** and will be sent upon receipt of a Postal note for that amount.

DO NOT SEND US ANY POSTAGE STAMPS.

You may return such sample to us, at our expense, if, after seeing it, you do not consider it worth the price. Don't the above sound as if it might save you some money—if TRUE?

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ASK YOUR JOBBER WHAT HE KNOWS ABOUT THIS TOOL.

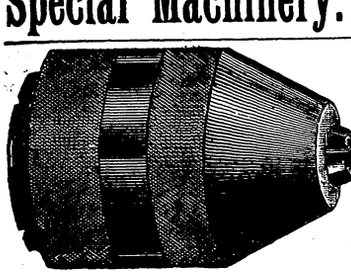
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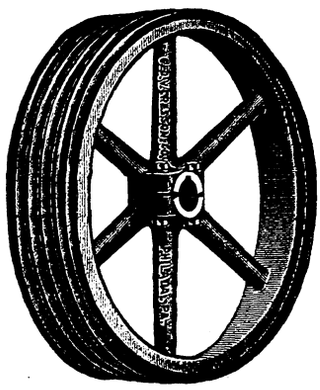
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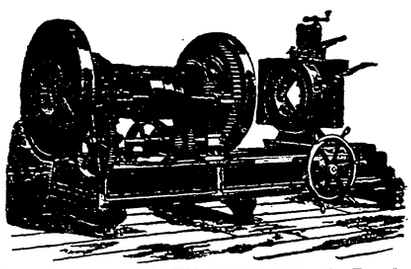


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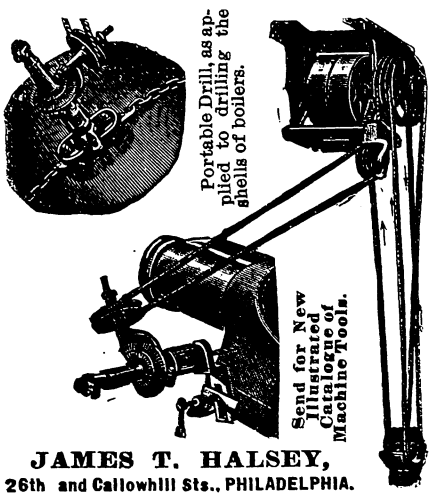
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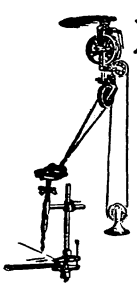
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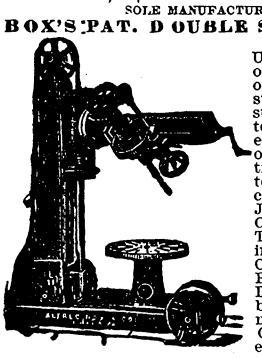
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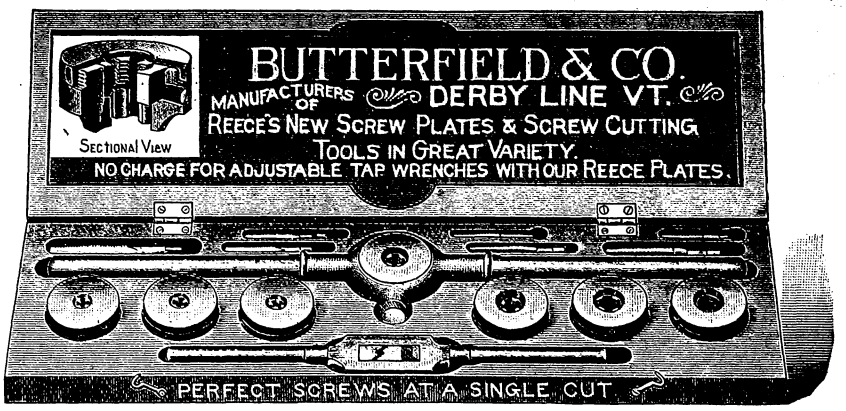
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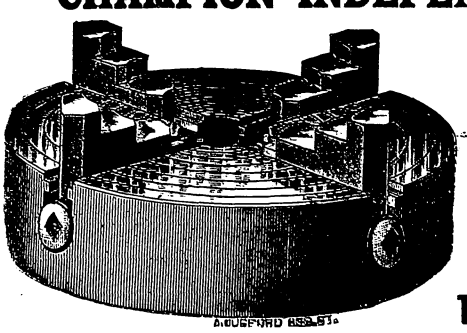
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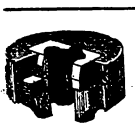
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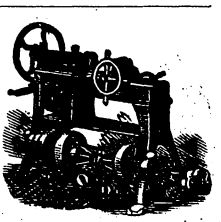
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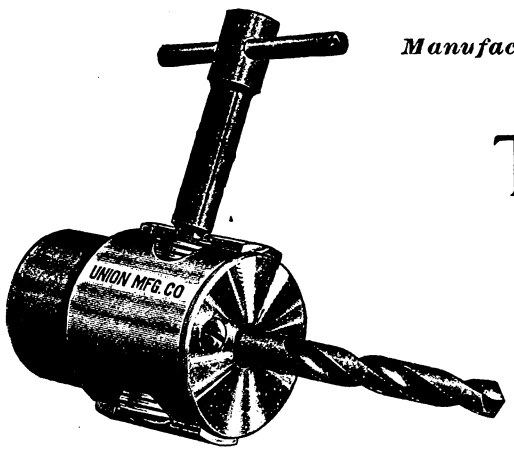


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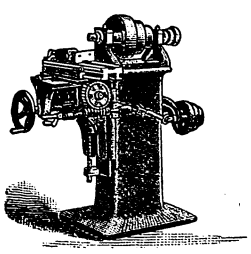
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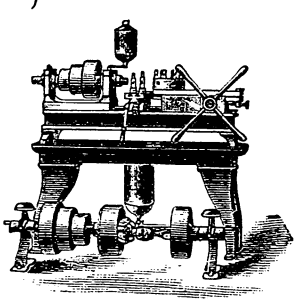
NUMBER.	DIAMETER	HOLDING.	LIST.
000	1¼ inches.	0 to ¼ inch.	$7.00
100	2¼ "	0 to ½ inch.	8.00
101	2¾ "	0 to ¾ inch.	9 00
102	3½ "	0 to 1 inch.	10 00

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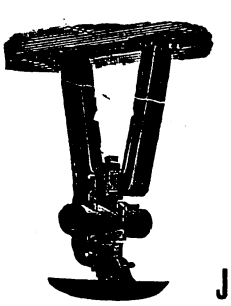
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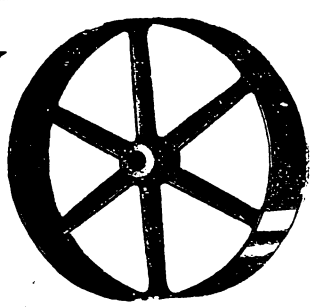
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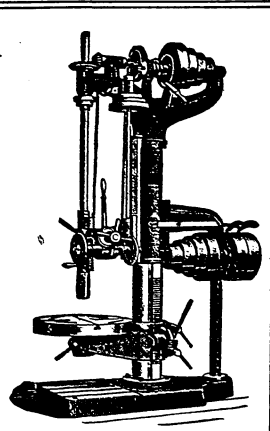
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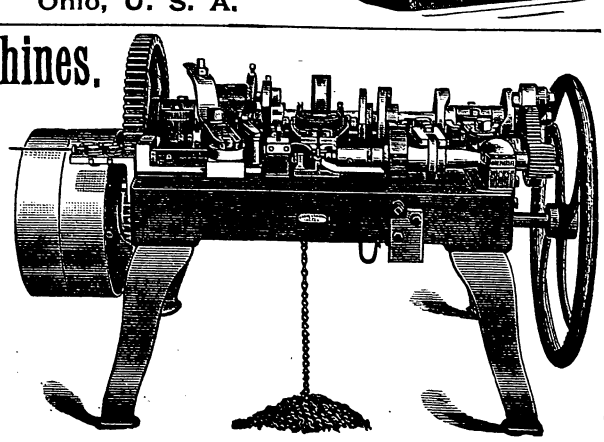
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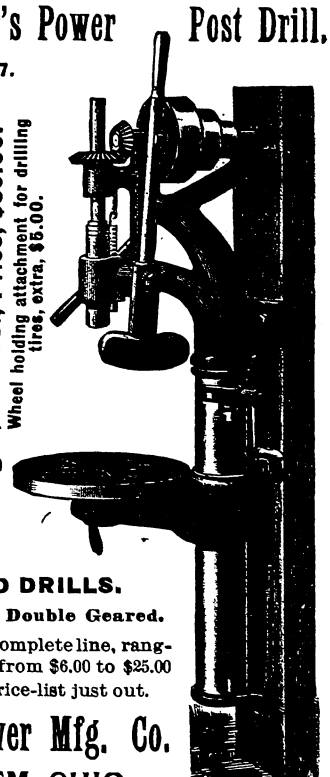
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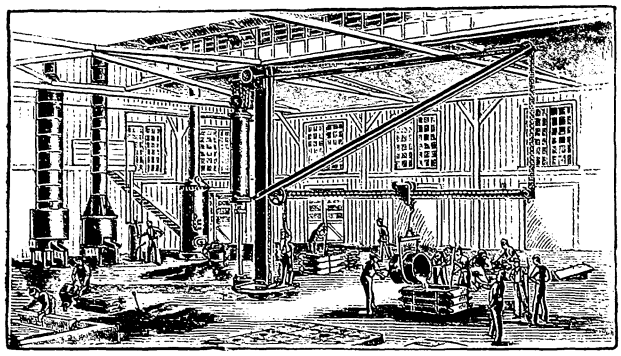
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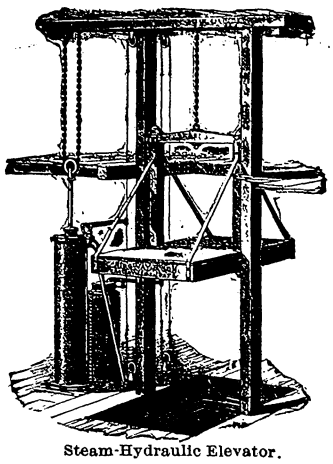
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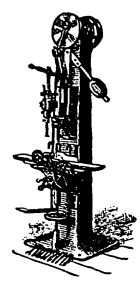
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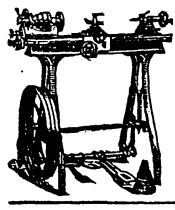
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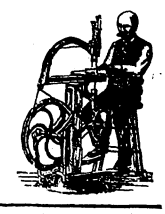
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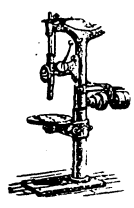


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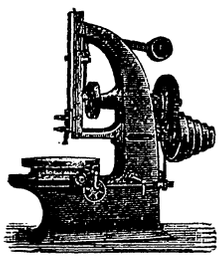
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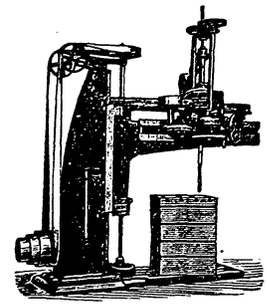
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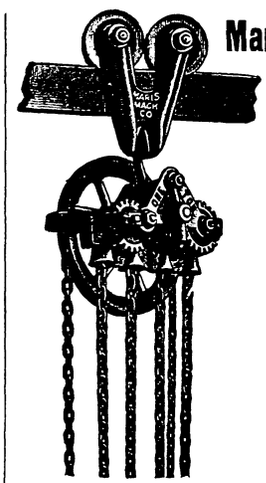
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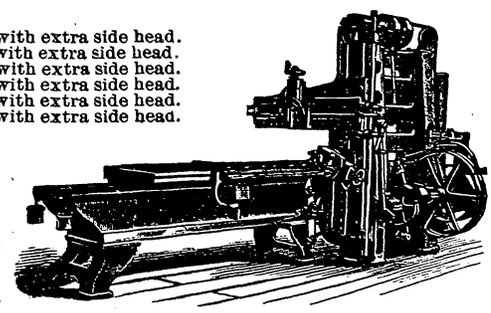
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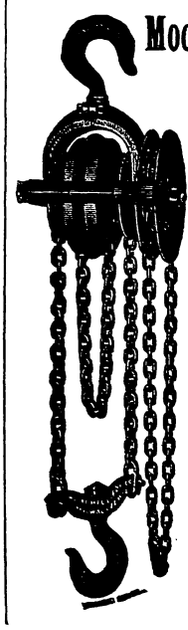
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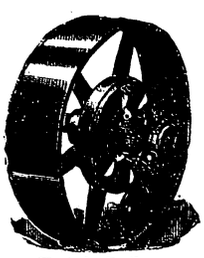
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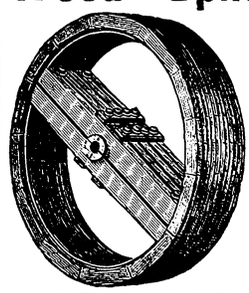


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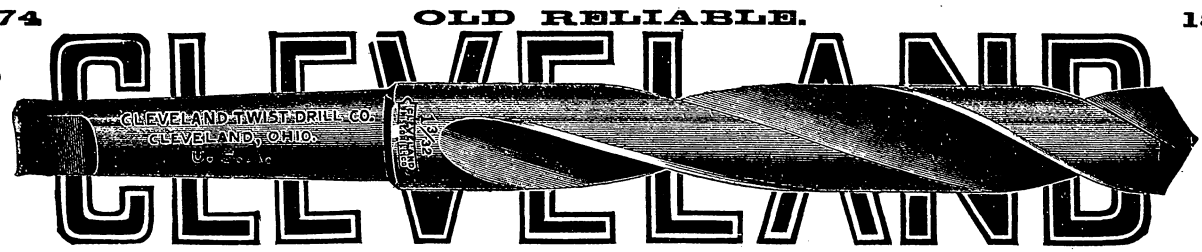


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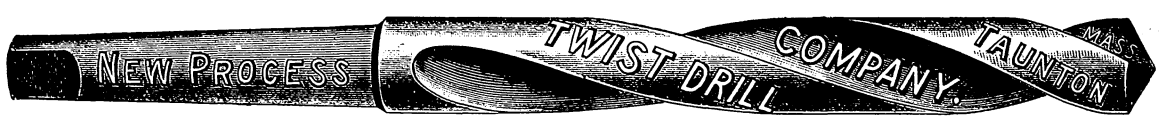
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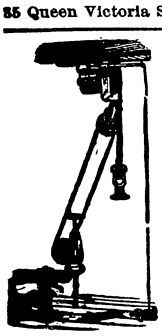
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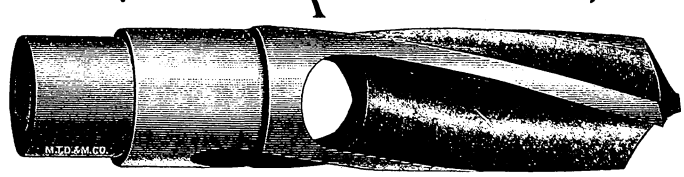
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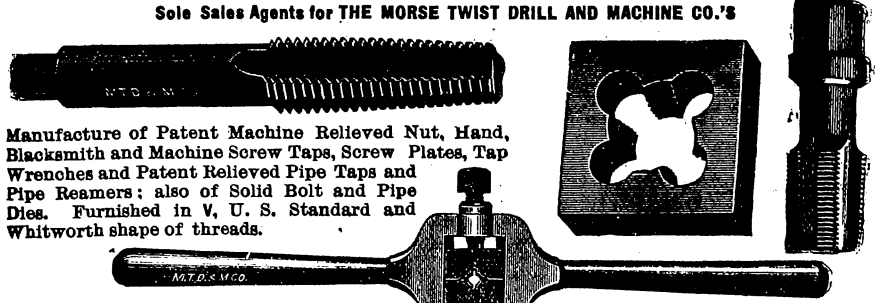
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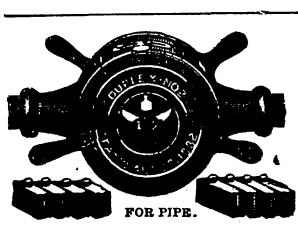
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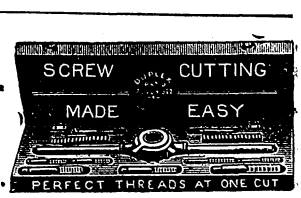
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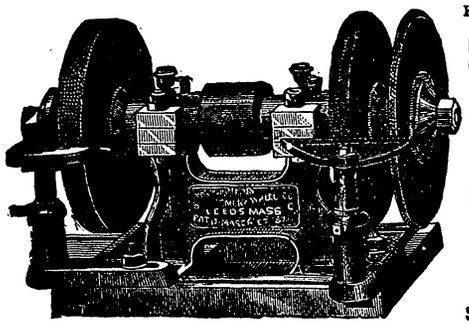
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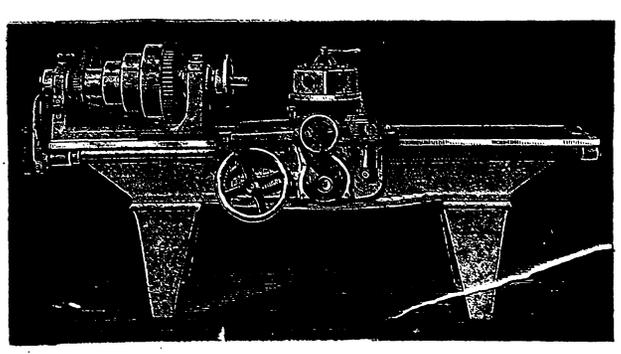
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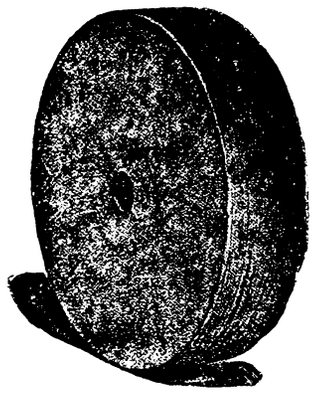
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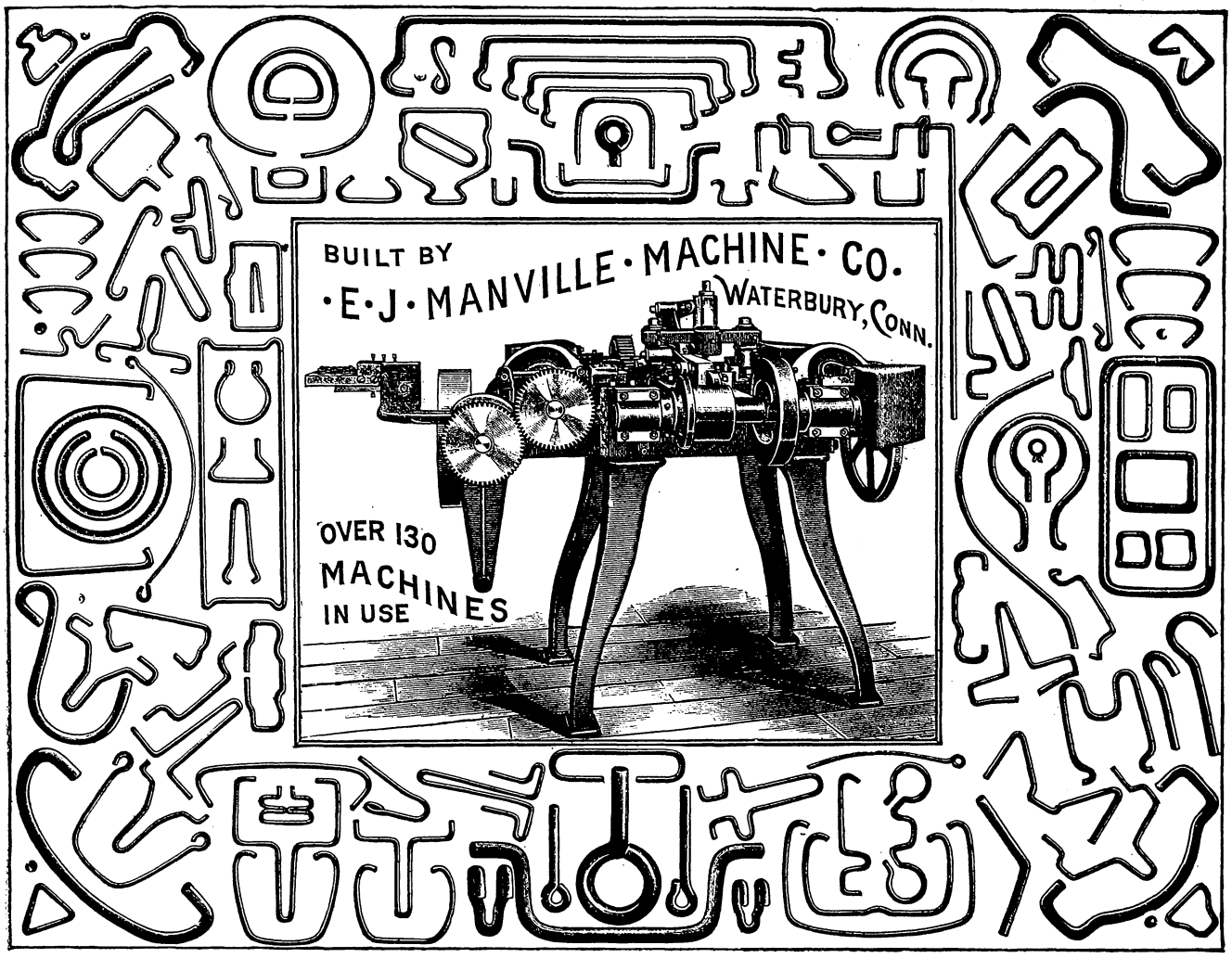
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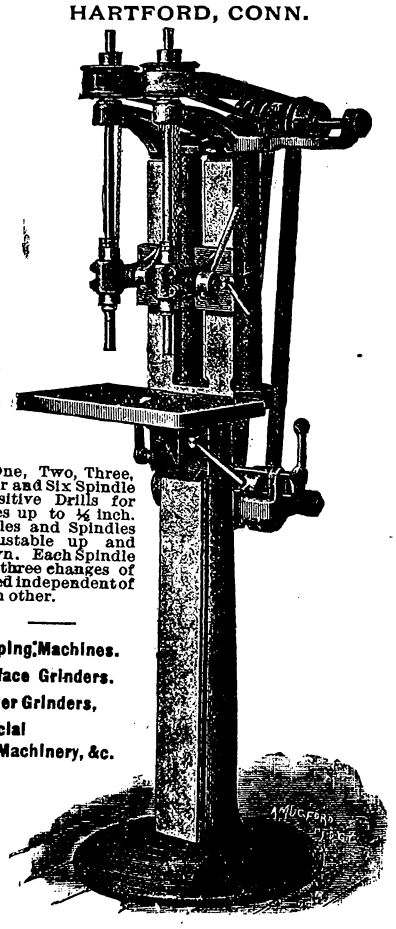
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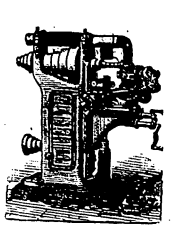
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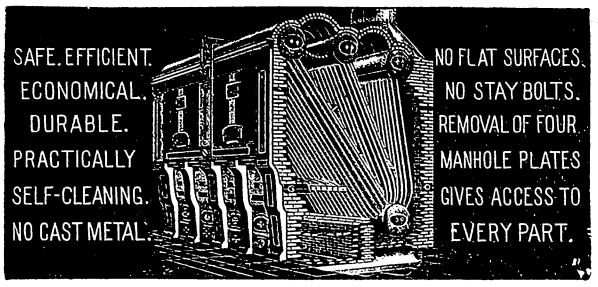
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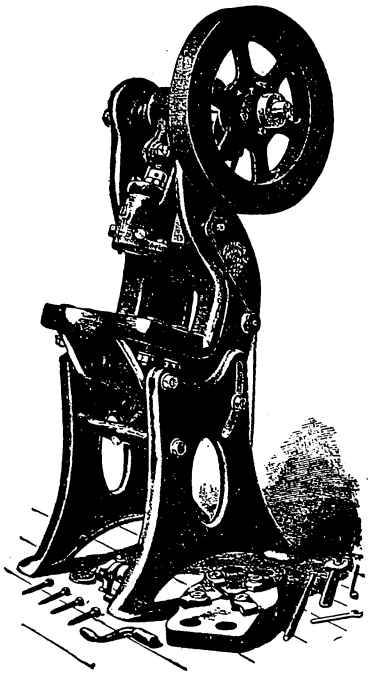
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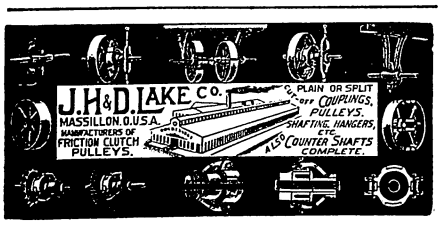
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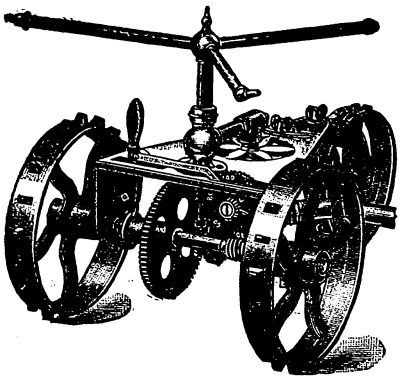
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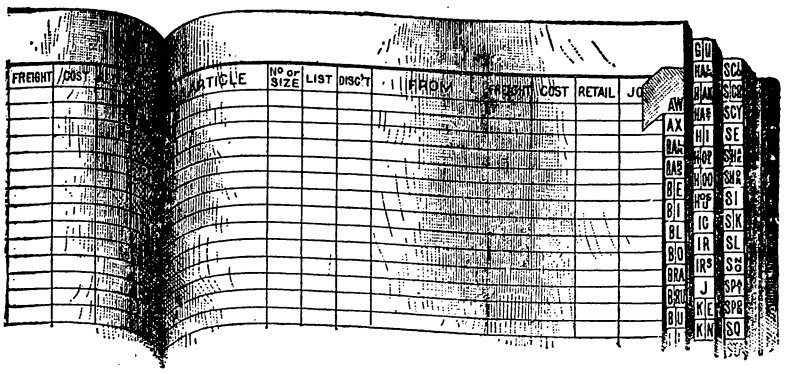
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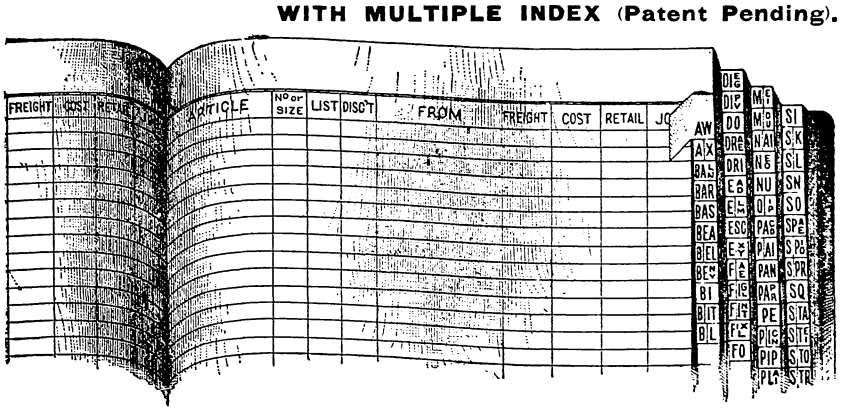
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WITH MULTIPLE INDEX (Patent Pending).



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AN	DI^{P}_{V}	M^{O}_{U}	SK
AU	DO	NAI	SL
AW	DR^{A}_{E}	N^{E}_{O}	SN
AX	DRI	NU	SO
BAL^{L}_{N}	E^{A}_{D}	O^{I}_{P}	SP^{E}_{A}
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" Saws,	"	SAW	" Cartridges,	"	CAR	" Shovels,	"	SH^{O}_{R}
" Pumps,		PU^{M}_{N}	" Rules,	"	RU^{B}_{L}	" Grindstones,	"	GRI
" Bits,	"	BIT	" Locks,	"	LO	" Stones,	"	STO

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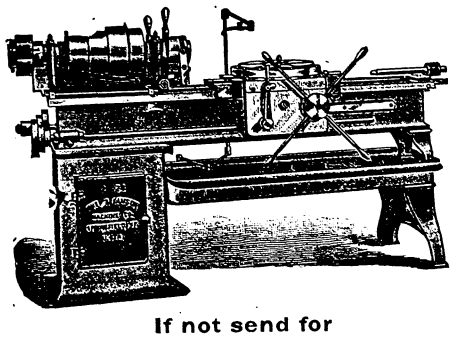
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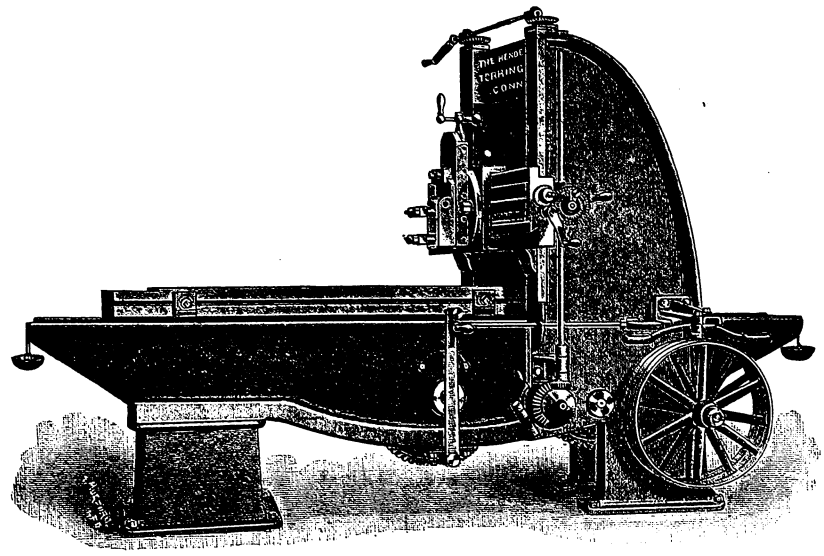
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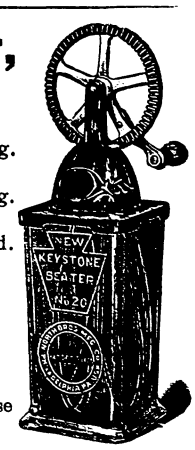
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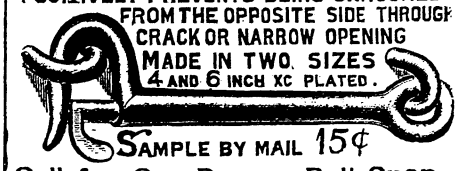
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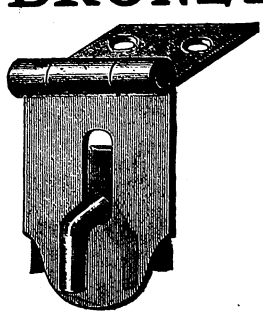
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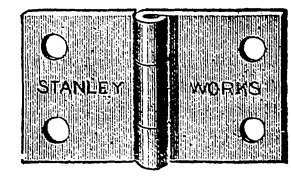
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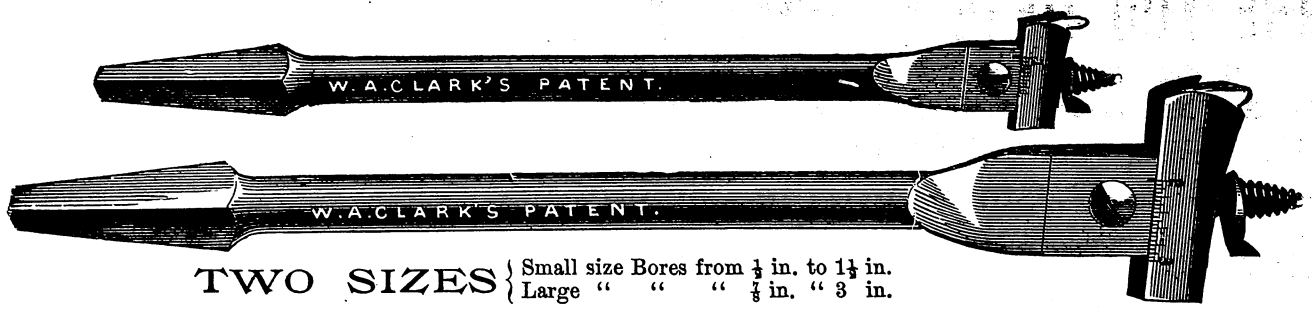


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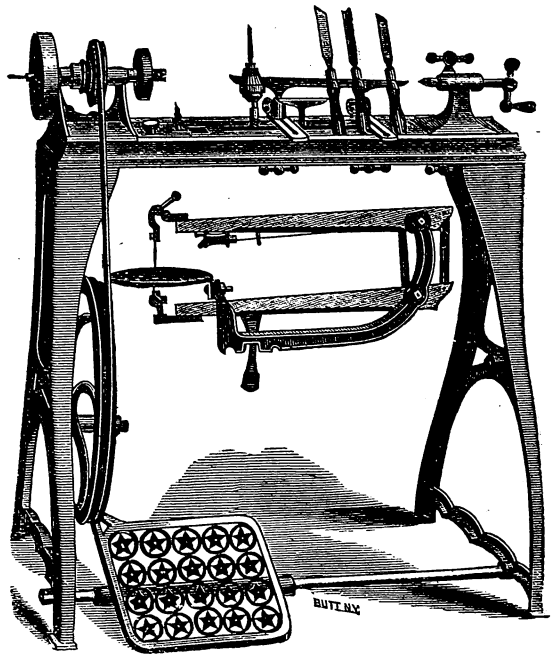


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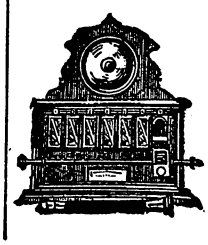
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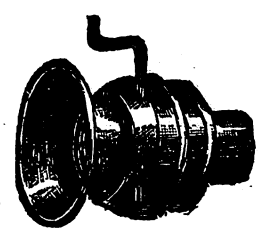
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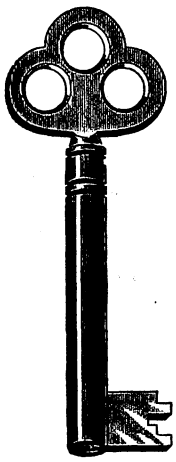
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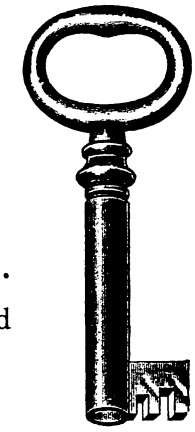
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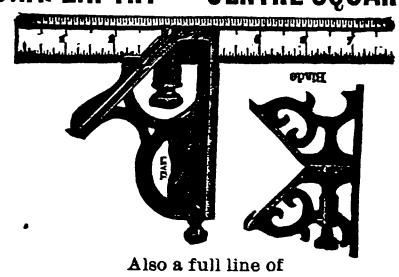
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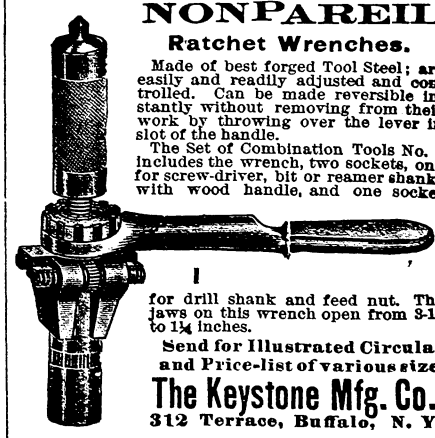
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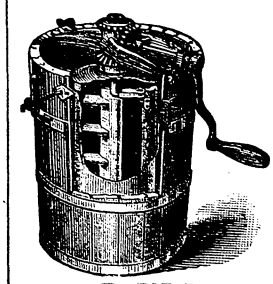


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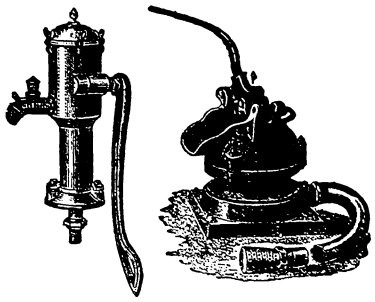
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Fig. 209. Fig. 381.



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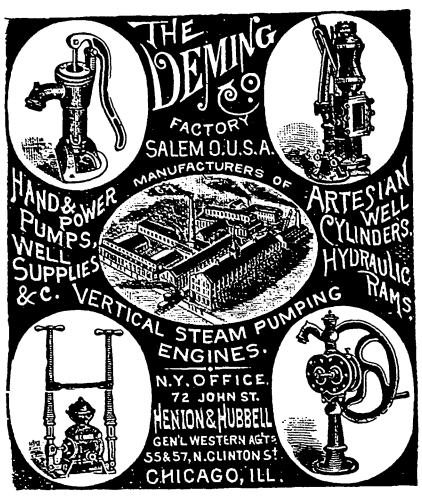
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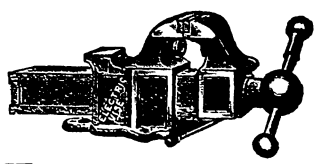
Fig. 145.



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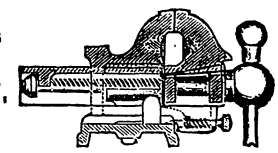
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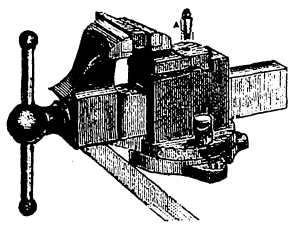
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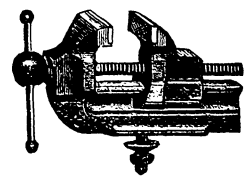
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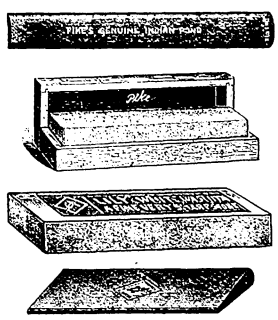


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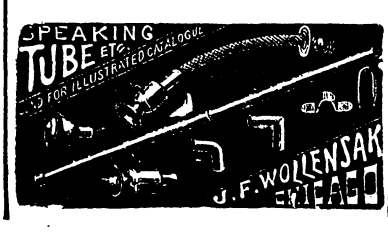
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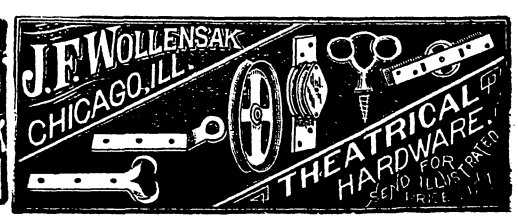
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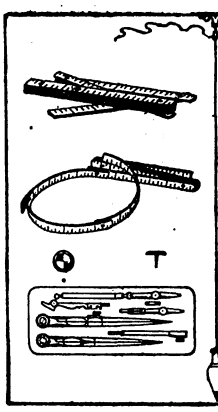
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Made specially to be sold by Hardware Stores. Thousands in use. Catalogues on application.

THE STORM MANUFACTURING CO.
NEWARK, NEW JERSEY.
Formerly of Poughkeepsie, New York.





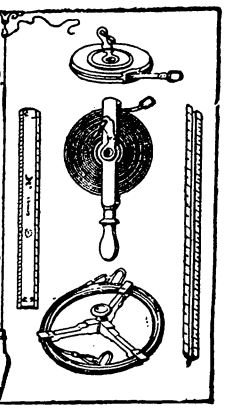
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FACTORIES: HOBOKEN, N.J.

MANUFACTURERS OF EXCELSIOR MEASURING TAPES.
SUPERIOR QUALITY, LATEST IMPROVED. GREATEST VARIETY.
STEEL · METALLIC · LINEN · POCKET TAPES.
EXCELSIOR BAND CHAINS FOR SURVEYORS; LAND CHAINS, &c.
K&E Co. FOLDING POCKET RULES.
NO WARPING, NO SHRINKING, NO ILLEGIBLE JOINTS, NO BULK.
2 3. 4. 5. 6. 8 FOOT, ALSO WITH PATENT SPRINGS.
FLAT & TRIANGULAR BOXWOOD SCALES, BEST MADE.
PLUMB BOBS, THUMB TACKS, DRAWING INSTRUMENTS.
PRICE LISTS & QUOTATIONS PROMPLY SENT.



HIGHEST GRADE PLATED WARE MADE.

THE MAJESTIC.

Design Patented August 29th, 1893.



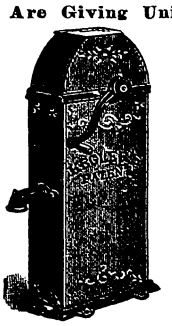
All our goods Sectional Plated on parts most exposed to wear.

Branch Offices:
19 Murray St., New York.
110 & 112 Wabash Ave., Chicago.
722 Chestnut St., Philadelphia.
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The Rogers and Hamilton Co.,

Factories and Main Office, WATERBURY, CONN.
FOR SALE BY ALL THE LEADING JOBBERS.

IRON INSTEAD OF WOOD.
GALVANIZED IRON
TUBING and CURB
— FOR —
CHAIN PUMPS,
(Kegler's Patent)
Are Giving Universal Satisfaction.



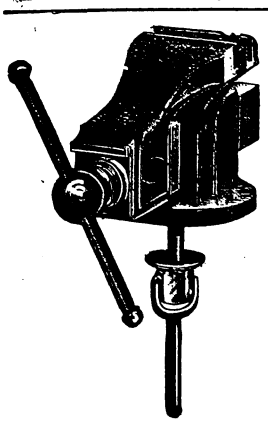
BECAUSE:

They do not rust and accumulate filth—always clean. Extreme lightness is combined with strength and durability. No freezing. No waste of water by reason of enlarged reservoir at top of tubing. No annoying wheel at bottom. Easy to handle.

Tubing weighs less than ½ lb. per ft., is connected by couplings and can be attached to any make of curb.

Send for Catalogue.

Bellevue Pump Co., Bellevue, Iowa.



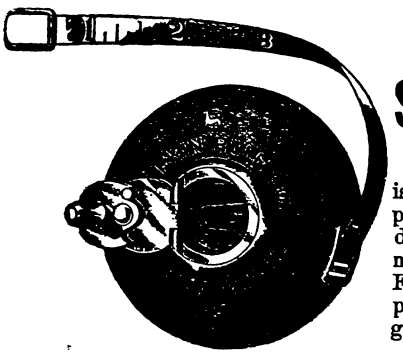
HOLLANDS' OFFSET JAW VISE.

Specially adapted for drill press work where chucks can not be used and equally good for special or regular bench work.

Hollands Mfg. Co.,
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Manufacturers all styles VISES.



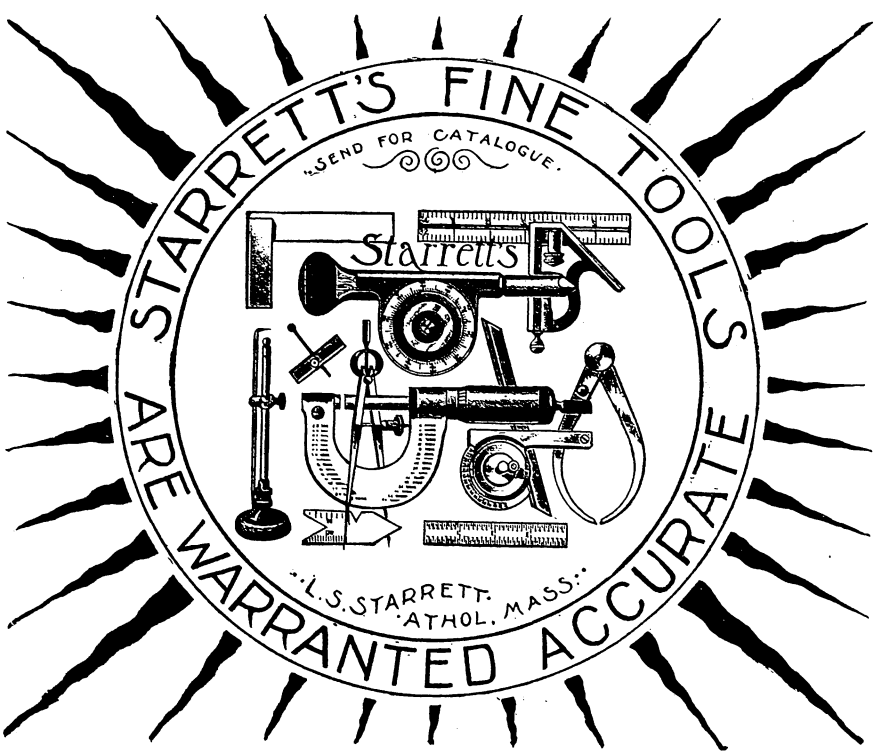
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Manufacturers of
TINNERS' HARDWARE.
Berger's Celebrated Pail Bars, Sauce Pan Handles, Eave Trough Hangers, Pipe Fasteners, Hooks, Straps and Barrel Trucks, &c., &c. Send for Prices and Catalogue.
237 ARCH ST.,
Philadelphia, Pa.



"RELIABLE"
Steel Measuring Tapes.

Entirely new. Handle or crank when closed is perfectly flush with leather case. Opens by pressing button on opposite side and folds out double, giving increased leverage. Best and most convenient steel tape on the market. Fully guaranteed. Will send samples on approval. We carry a complete stock of our goods at our New York Office, 20 Murray St.

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SAWS

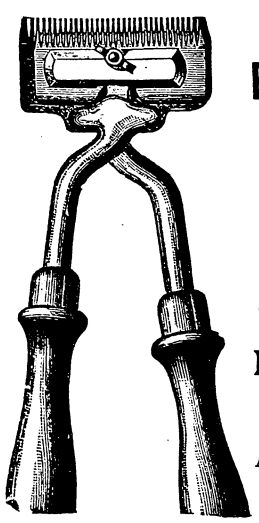
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Headquarters for

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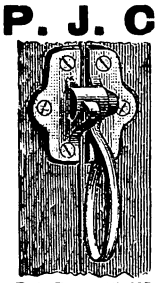
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At prices to suit the times.

P. J. Conroy & Co.,



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Refrigerator Door Fasteners

Have rapidly supplanted all others.

Refrigerator Trimmings.

American Stamping Co.,

Manufacturers of

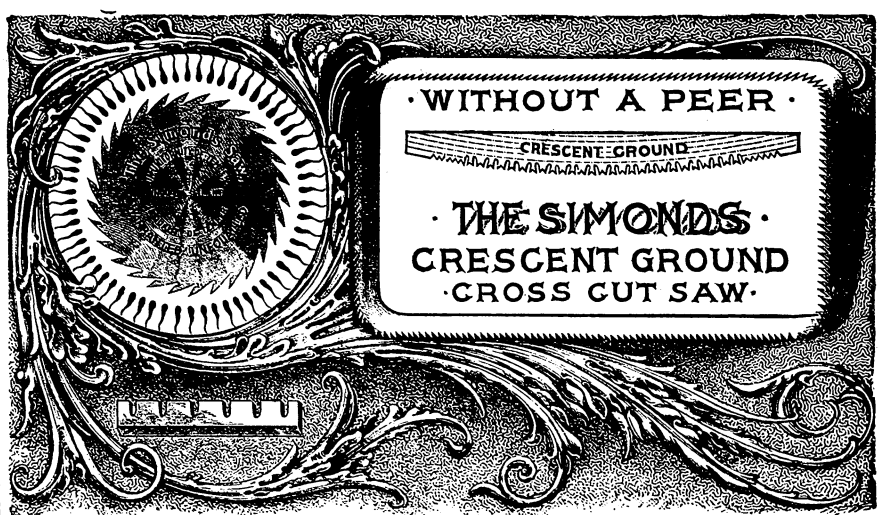
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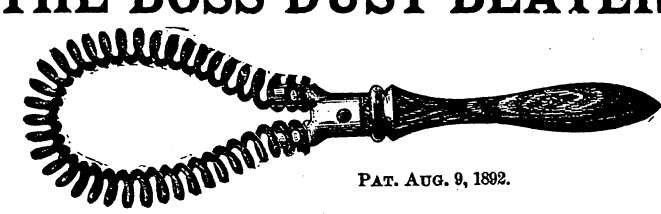
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Simonds Mfg. Co. Simonds Saw Co.

FITCHBURG, MASS. CHICAGO, ILL. SAN FRANCISCO CAL. PORTLAND, ORE.

THE BOSS DUST BEATER.



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NEAT, DURABLE, AND DOES THE BUSINESS.

For removing dust and filth from Clothing, Upholstered Furniture, Rugs and Carpets it is just the thing. Will raise the nap and so improve the appearance. Will not, like other Dust Beaters, leave marks, nor tear the fabric. The coil is of steel wire secured in a malleable iron socket and attached to an enameled wooden handle. Just what everybody wants.

Retail Price, 25 Cents. Sent by Mail, 35 Cents.

PEABODY & PARKS,

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The Taintor Positive Saw Set

Mechanics are now inquiring for this tool, and Hardware Dealers should have them in stock, or at least have a sample.

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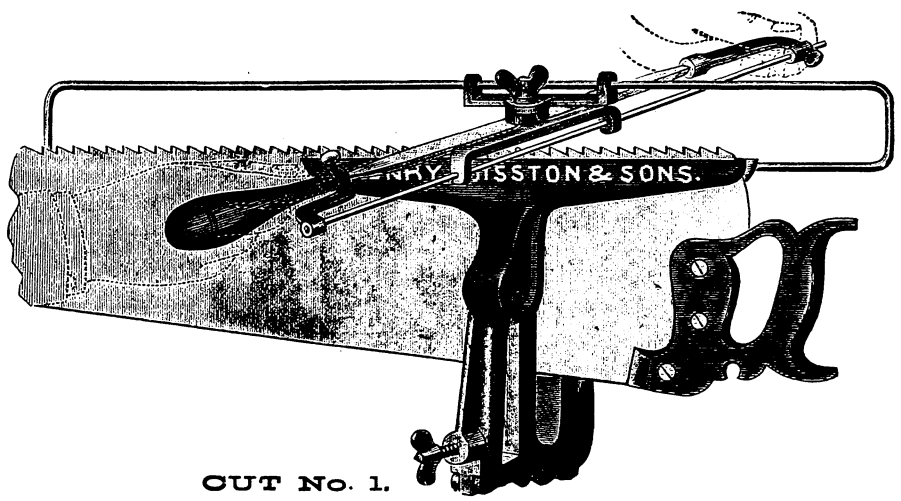
And other HARDWARE SPECIALTIES

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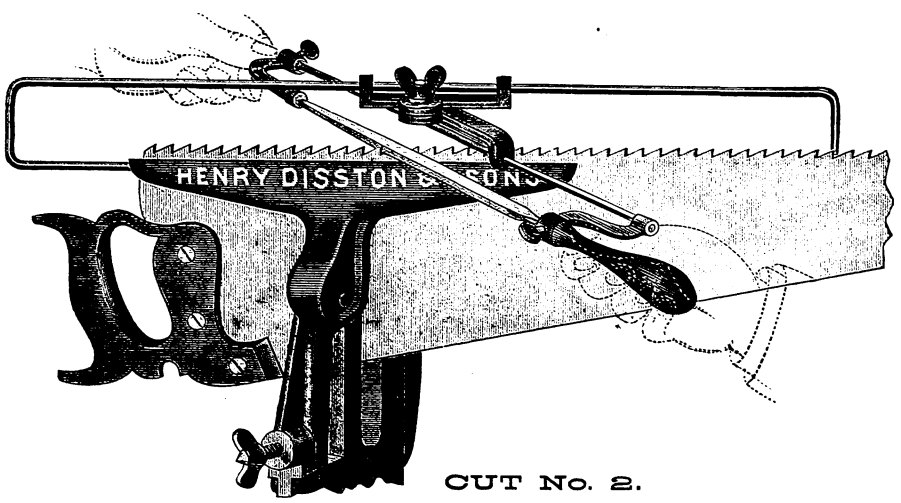
DISSTON'S Improved Saw Clamp
AND FILING GUIDE.

ESPECIALLY DESIGNED TO ASSIST THOSE NOT SKILLED IN THE ART OF SAW FILING TO FILE A SAW CORRECTLY.



CUT No. 1.

Cut No. 1 shows a saw and the attachment in proper position for filing the first side; and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



CUT No. 2.

To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth. Always keep the file as nearly horizontal as possible.

This filing guide is sold only attached to our No. 3 Improved Clamp or Vise, and not sold separately. We recommend this as the best saw clamp on the market, being quickly and easily adjusted, and not liable to get out of order.

Write for price including No. 3 Clamp, Filing Guide, File and Handle complete. Packed one in a wooden box.

Henry Disston & Sons, INCORPORATED, **Philadelphia, Penn.**

J

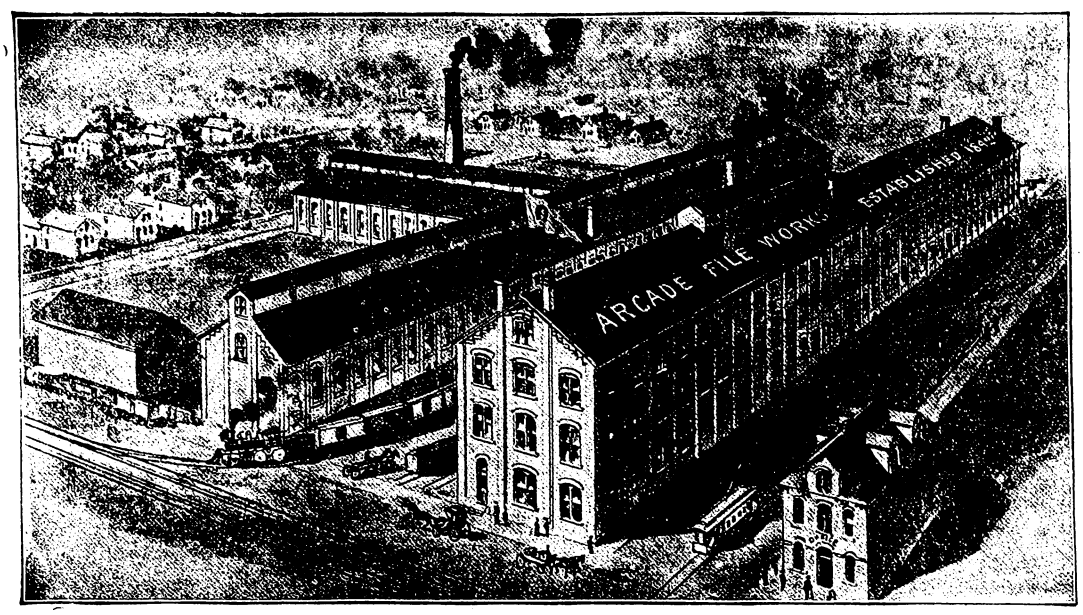
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Samuel W. Allerton, Pres. Courtlandt C. Clarke, Sec. and Treas. Alfred Weed, Vice-Pres. & Gen. Manager.

ARCADE FILE WORKS.

ESTABLISHED 1842.

Eastern Office and Warehouse, 83 READE STREET, NEW YORK CITY.



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Works: ANDERSON, IND.

THE FILES THAT LEAD THEM ALL.

THE BEST EQUIPPED FILE WORKS IN THE WORLD.

The fact that we alone use the improved File Machinery recently invented by Alfred Weed, and the even heat of natural gas, enables us to produce a file that will cut faster and wear longer than any on the market.

Cronk's Patent Wire Cutter AND Bender.



8 In., $15.00
10 In., 20.00
} Discount,—

This surpasses any Plier in the market for Cutting and Bending Wire, and can also be used in place of Hill's Hog Ringer. Is especially adapted to farmers' use in building Wire Fence, &c.

Our reasons for claiming that we have the best Pliers in the market are:

FIRST.—We use the best Tool Steel and they are nicely finished.

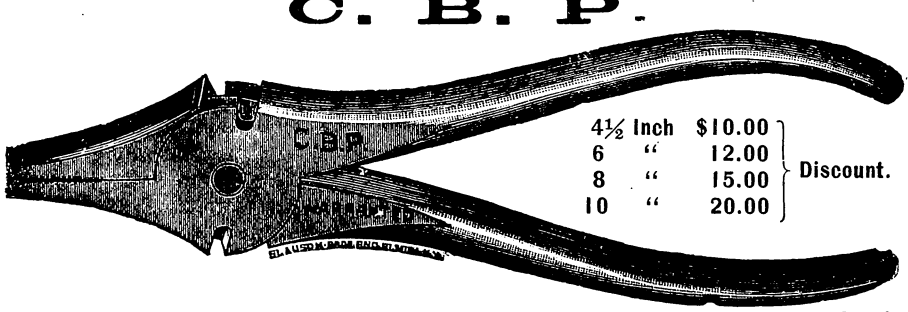
SECOND.—We combine both Flat and Round-Nosed Pliers in one; the concave and convex circles between the handles are used for bending wire in any desired shape.

THIRD.—The cupping in the Nose is used for pulling tacks, brads or nails, and can also be used in place of Hill's Hog Ringer.

FOURTH.—We can cut Barbed Wire, Barb Belt or any kind of Wire used for Fencing purposes. We also claim that we have the only Plier made that the Cutting Jaws cannot be broken.

By passing the Wire through the Pliers it makes a very handy cut and also holds the Wire after it is cut.

C. B. P.



4½ Inch	$10.00	
6 "	12.00	Discount.
8 "	15.00	
10 "	20.00	

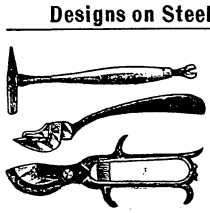
What we claim for this plier is that it is made from best quality tool steel and is made heavier and stronger than any plier of its kind in the market and the finish is first-class. Also they are made so the jaws are parallel when used on wire from 9 to 14 gauge and will hold the wire solid

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Pacific Coast Agents: CHAS. L. PIERCE & CO., San Francisco, Cal.

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HARDWARE AND GENERAL AGENT.
(FIRST-CLASS REFERENCES.)
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ENGRAVER AND DIE SINKER,
52 FULTON ST., - N. Y.
STEEL STAMPS,
BRASS DIES, BURNING BRANDS, &C.
Designs on Steel Finely Executed.



THE KNAPP & COWLES MFG. CO.,
Bridgeport, Conn.,
Makers of a large line of STANDARD Hardware Specialties.
SEND FOR K Catalogue.

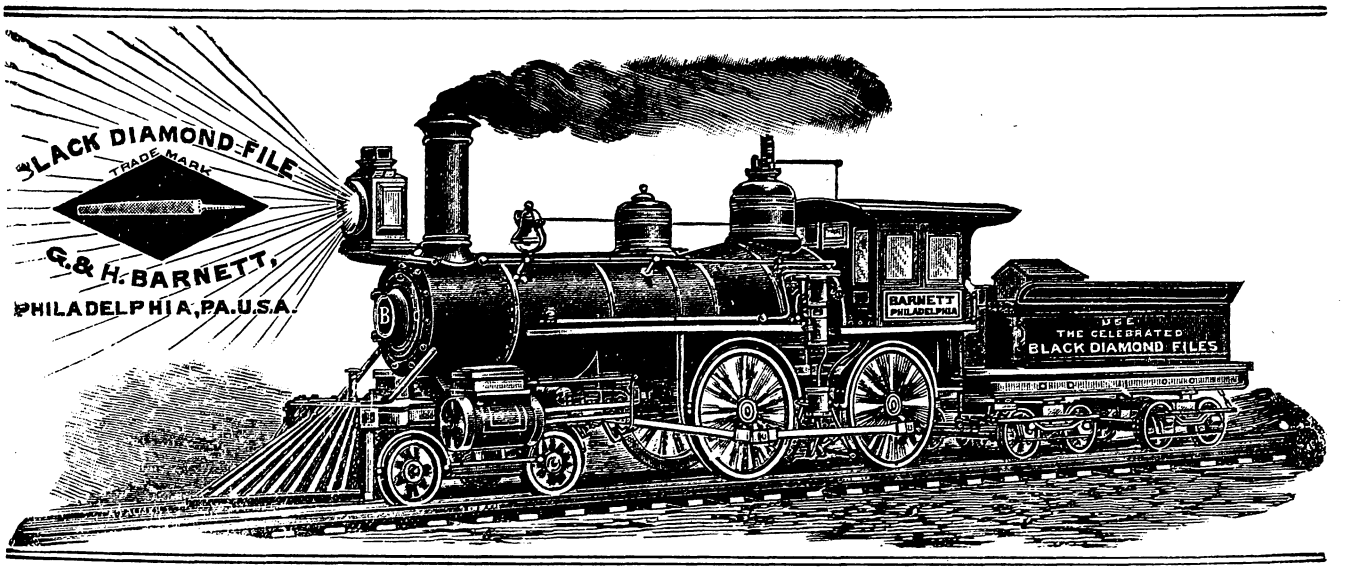
COMMON MOUSE TRAPS
BEST FOR USE!
Ripley Mfg. Co., Unionville, Conn.



Porcelain-Lined Lemon Squeezers, Steak Hammers, Boot Jacks, Magnetic Tack Hammers, Mallets, Bung-Starts, Hand Screws, Beacon Hill Pat, Mouse Traps, Sunny-Side 2 lb. Lap Board

— REMEMBER —
WE MAKE ONLY
The Very Highest Grade
OF
MECHANICS' TOOLS.
I. H. MAYHEW CO., Shelburne Falls, Mass

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THE LARGEST AND MOST COMPLETE FILE WORKS IN THE WORLD.

NICHOLSON FILE CO.

PROVIDENCE, R. I.

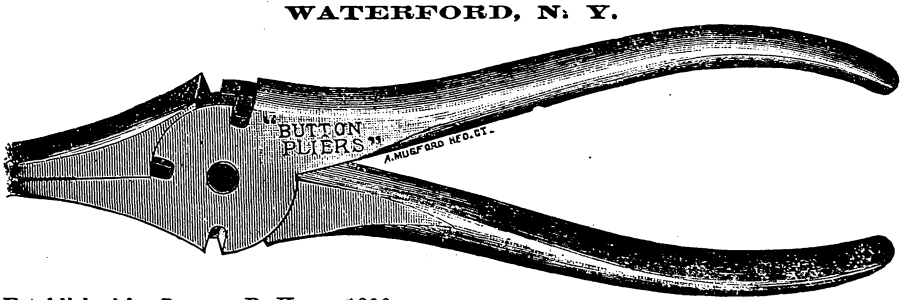
3000 VARIETIES FILES
[X.F.] AND INCREMENT CUT FILES

J. M. KING & CO.,

WATERFORD, N. Y.

Manufacturers of

BUTTON'S



Pat. Wire Cutter AND PLIER COMBINED.

Specially Adapted for Use on Wire Fence.

Also Manufacturers of BLACKSMITHS' and MACHINISTS' STOCKS and DIES, PLUG and TAPER TAPS, HAND, NUT and SCREW TAPS, PIPE TAPS and REAMERS.

Price-List on Application.

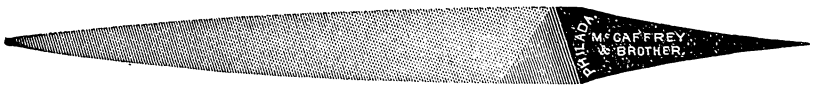
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Superiority acknowledged wherever used, sold or exhibited.

BEST CRUCIBLE STEEL. STRONGEST TOOTH.

"TROJAN" HORSE RASPS.



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Made in all Sizes.



SOLID STEEL ACME PLIER AND WIRE CUTTER. Made with cutters of best steel.

Jaws of Choicest Tool Steel, dovetailed into the head, making it as strong as solid steel.



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Are Reliable.

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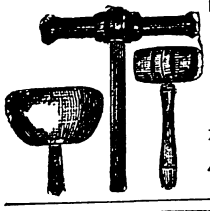
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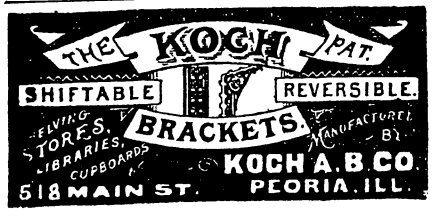
MANUFACTURERS OF

MALLETS.

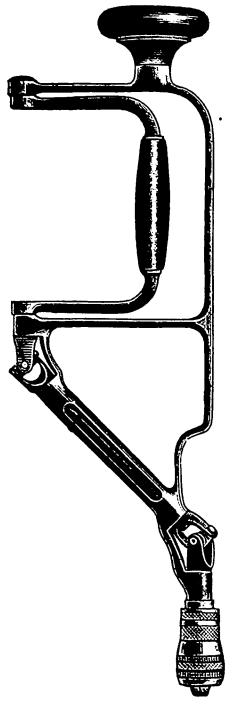
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Patented Feb. 13, 1877, a new combination of Hooks.

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Adapted to **general** use; also to the **special** use of boring and screw-driving in Angles, Corners, close to Washboards and Walls, and in all places difficult or impossible to reach with the ordinary Brace.

6, 7 and 8 inch SWEEPS.

Unequaled as a Corner Brace.

The crank-arm revolves at right angles to the bit.

The frame is readily and firmly held in any desired position with one hand.

The thrust of the tool is directly in the line of the bit.

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All parts are simple and durable

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THE BEST IN THE WORLD.

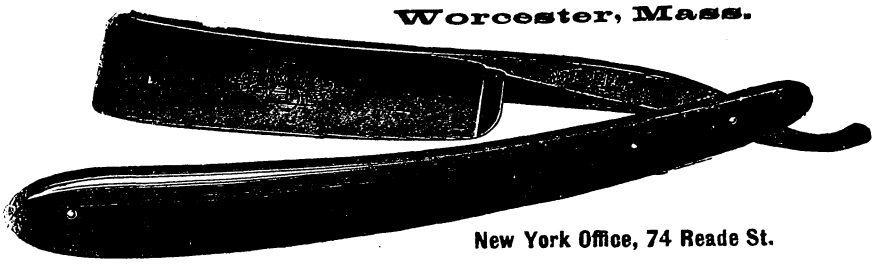
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R. HEINISCH'S SONS CO., NEWARK, N. J.

New York Office, No. 90 Chambers Street.



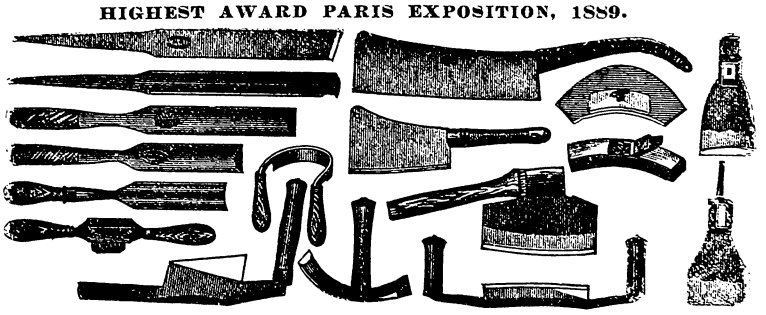
Tailors' Shears, Trimmers, Scissors, Tinners' Snips, &c

CATALOGUES AND PRICES ON APPLICATION.

We have no contract with Messrs. Hermann Boker & Co. as Agents for the sale of our goods.

HIGHEST AWARD PARIS EXPOSITION, 1889.

ESTABLISHED 1837. INCORPORATED 1892.



THE L. & I. J. WHITE CO.,

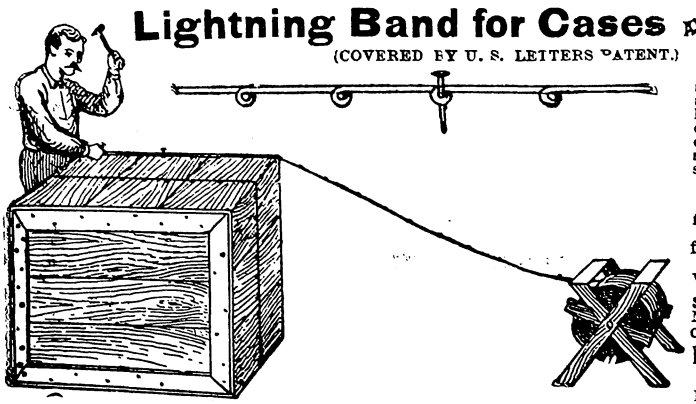
BUFFALO, N. Y.

MANUFACTURERS OF **EDGE TOOLS.**

Coopers', Carpenters' and Ship Tools, Plane Irons, Cleavers, &c. Full Line Chisels.

Lightning Band for Cases and Crates.

(COVERED BY U. S. LETTERS PATENT.)



Mounted on reels and always ready for use and convenient to handle. Easily and quickly binds shipping cases and crates in a neat, strong and substantial manner.

PRICES:

No. 1, per reel of 2000 ft., $4.50 net.
No. 2, per reel of 2000 ft., $4.75 net.
Pliers for cutting wire, 50 cents extra.
No. 1 for cases under 300 or 400 pounds, and No. 2 for all heavier cases.

Buffalo Specialty Mfg. Co.,
Sole Manufacturers,
Buffalo, N. Y., U. S. A.

Cast Shears.

ACME SHEAR CO.,

BRIDGEPORT, - CONN.

MARTEN DOSCHER,

Commission Hardware,

88 Chambers St., New York.

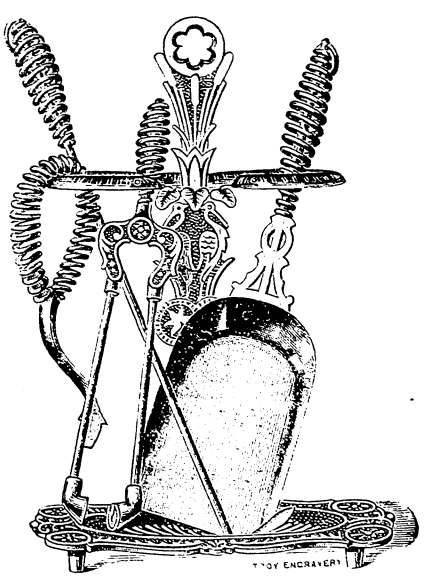
Agent—G. W. Bradley's Edge Tools, Axes, Coopers' Tools. Cleavers, Bush Hooks, Draw Knives, Ship-Carpenters' Tools, &c. Also a full stock of Planes, Brooks' Bright Wire Goods, Washita Stone, and Taunton Tack Co.'s Rivets, &c.

ALASKA.

ALWAYS COLD.

Stove Trimmings.

Pokers, Lifters, Shovels, Fire Sets.



For Sale by All

First-class Jobbers in Hardware.

Made under Gaitly Patents and only by

Troy Nickel Works,

TROY, N. Y.

FRANCIS FROST & CO., Toronto, Ont. Canadian Sales Agents.

WHEN IN WANT OF

WOSTENHOLM'S

I★XL



Knives OR Razors,

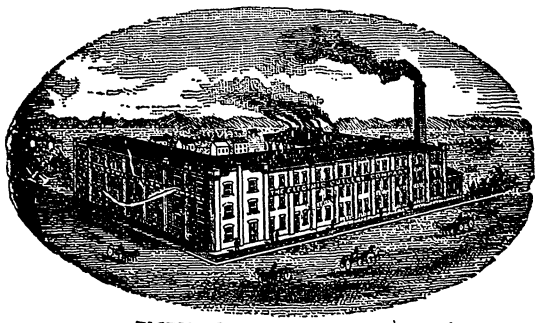
SEND TO

FRED. B. GURNEY.

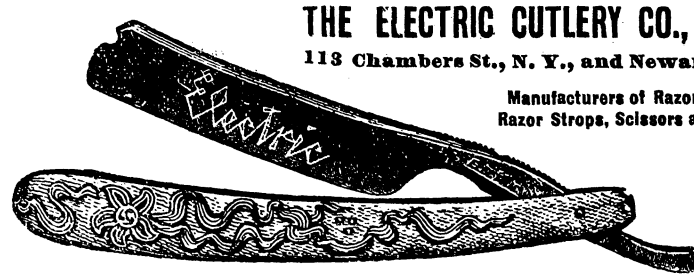
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The Best Equipped Cutlery Works in the World.



FACTORY: FOURTH & DICKERSON STS. NEWARK, N. J.



THE ELECTRIC CUTLERY CO.,
113 Chambers St., N. Y., and Newark, N. J
Manufacturers of Razors, Knives
Razor Strops, Scissors and Shears

(SEND FOR CATALOGUES.)

NORTHAMPTON CUTLERY COMPANY, NORTHAMPTON, MASS.

NEW YORK SALESROOM,



MANUFACTURERS OF

122 Chambers Street.

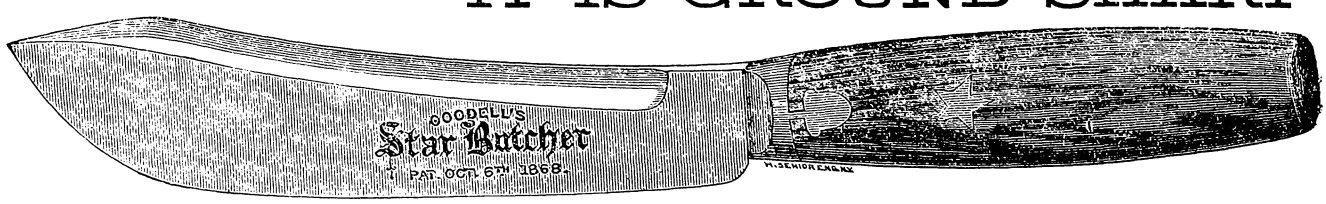
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Send for Revised Catalogue.

THERE IS NOTHING NEW

TO SAY ABOUT THIS KNIFE EXCEPT

IT IS GROUND SHARP



WE DON'T KNOW HOW TO IMPROVE IT.

Blade is made of steel especially prepared for the purpose, and it is made just right; finish excellent; shape unsurpassed; the handle just fits the hand.

GENERAL APPEARANCE IRREPROACHABLE.

Made in sizes from 5 inch to 8 inch; a strictly first-class butcher knife at a moderate price.

WE HAVE OTHER BUTCHER KNIVES,

4½ to 14 inch blade, that will cut as well, for less money. Also Table Knives and Forks, Carvers, Butcher Steels, Bread Knives, Cheese Knives, Butter Spades, Apple, Kitchen, Putty, Cigar, Shoe Knives, &c., &c., in great variety. We aim to make the best and sell at reasonable prices.

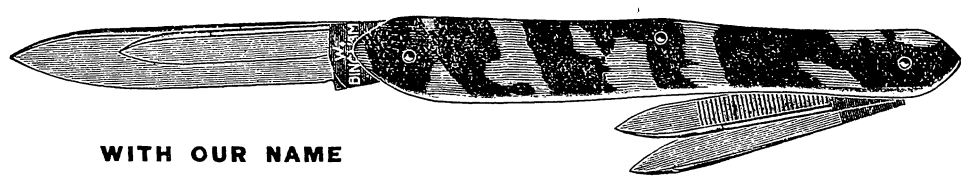
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AGENTS:

THE ALFORD & BERKELE CO., 77 Chambers St., N. Y. City.

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A



That money and 50 years' experience can buy.

Knife, Razor, Scissor, Shear.

WITH OUR NAME

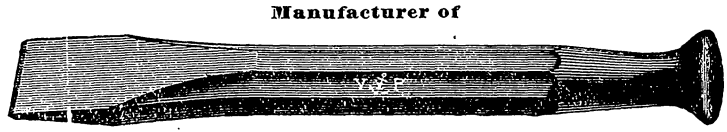
IS THE BEST

THE W. BINGHAM CO., Cleveland, O.

FAYETTE R. PLUMB,

Edge Tools Hammers AND **Sledges.**

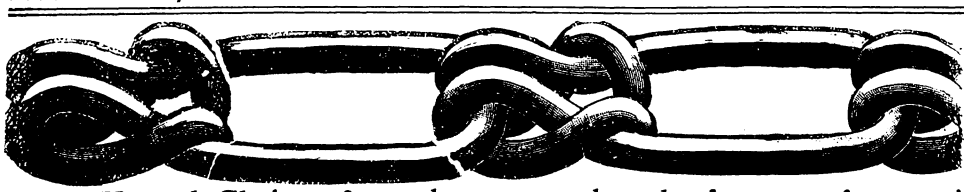
Manufacturer of



Main Office and Works

Railroad, Miners' AND **B. S. Tools.**

Penna. R. R., Tucker and James Sts. - - Philadelphia, Pa., U. S. A.



The Bridgeport Chain Co.'s Triumph Chain, made into Halters Traces, Cow Ties, Tie-outs, Kennel Chains, &c.; also cut to lengths for manufacturers' use.

The cut represents the exact size of 6/0.

Thirteen Sizes made, 6/0 being the Largest.

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Warranted Better than the Best

ENGLISH ANVIL

Face in one piece of BEST TOOL CAST STEEL, PERFECTLY WELDED, perfectly true, of hardest temper, and never to come off or "settle." Horn of tough *untempered steel*, never to break or bend. *Only Anvil made in the United States fully warranted as above.*

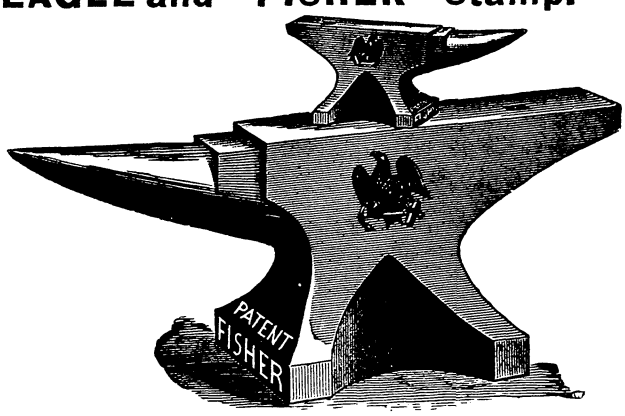
FISHER DOUBLE-SCREW VISE

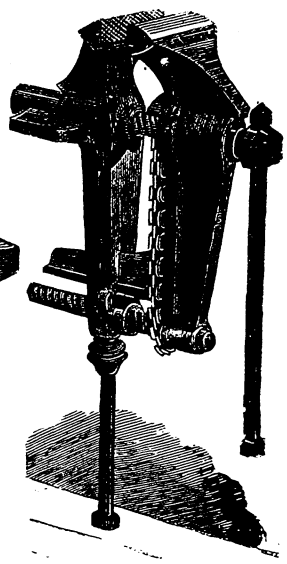
IS FULLY WARRANTED STRONGER THAN ANY OTHER LEG VISE, AND ALWAYS PARALLEL. Is the best Vise for Machine Shops and Blacksmiths, and for all heavy work. ACCURATE AND DURABLE. Send for Circular.

ESTABLISHED 1843.
MORE THAN 200 DIFFERENT PATTERNS.

None Genuine without our Trade-Mark.

EAGLE and "FISHER" Stamp.



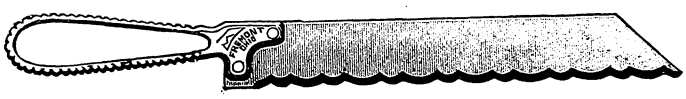


EAGLE ANVIL WORKS, - Trenton, N. J.

Sold in New York by our agents, J. C. McCarty & Co., 97 Chambers St., The Russell & Erwin Mfg. Co., 45 Chambers St.



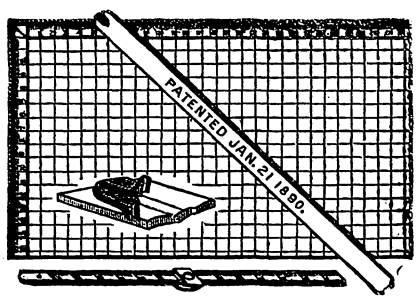
Won't it Pay You?





To handle specialties that will sell. We think so, as do other dealers, and request you to send for Catalogue and Prices, please.

THE CLAUSS SHEAR CO.,
FREMONT, O.



The Canton Glass Board.

Cuts any Fraction of an inch by Eighths.

Unequaled for accuracy and quick work in cutting square or at any angle. Saves breakages, &c.

—ALSO—

IMPROVED TRAMMEL RULE for Cutting Circles

From 3 inches up to 48 inches, Segments, Gothic Shapes, &c.

Send for Circular.

The Canton Saw Co., Canton, Ohio.

JOHN LOYD,



Machine Knives, Shear Blades, Presses and Dies.

Nos. 558 to 562 Water Street, New York.

LIGHTNING DRAIN CLEANER.

The Drain Cleaner is a hand machine used as a shovel. The dirt pan is made No. 18 Steel 3 inches deep and 12 inches long, with vertical end in rear. It has a decided advantage over other machines in dipping water and dirt. It is also used for letting down tiling in ditches, which is very convenient and saves extra labor of standing and working in muddy ditches. The iron adjusting rod can be used with great rapidity and ease and can be adjusted to pull or push with as quick a motion as may be desired. To use it in any particular shape tighten the set screw.



For Prices and Discounts, address

BUCKEYE MFG CO., Union City, Ind

Phillips Screens

FOR DOORS AND WINDOWS, ARE WELL MADE, FROM GOOD MATERIALS BY

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BUFFALO, N. Y.,

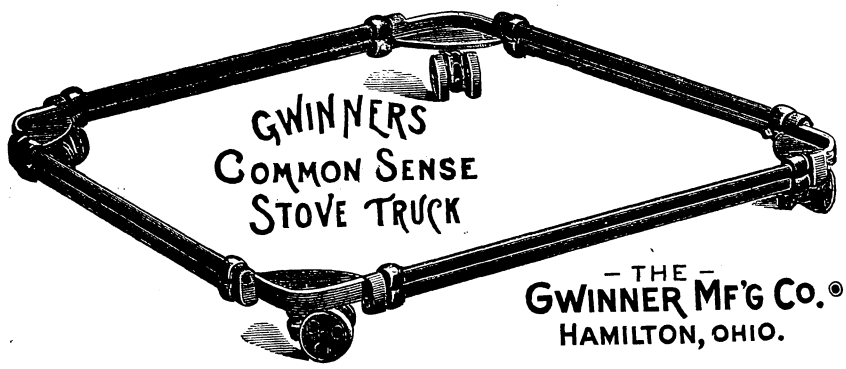
Manufacturers of

BOLT CUTTERS

AND NUT TAPPING MACHINES,

(Schlenker's Patent),

Send for Illustrated Catalogue



— THE —
GWINNER MF'G CO.®
HAMILTON, OHIO.

Electric Toy Making, Dynamo Building and Electric-Motor Construction. By T. O'CONOR SLOANE, A.M., E.M., Ph.D. This work treats of the making at home of electrical toys, electrical apparatus, motors, dynamos, and instruments in general and is designed to bring within the reach of young and old the manufacture of genuine and useful electrical appliances. The work is specially designed for amateurs and young folks. Very fully illustrated..... $1.00

For sale by David Williams, 96-102 Reade St., N. Y.

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THE LATEST.



THE VICTORIA.

We have a full line of above, which is the neatest pattern ever presented to the trade, and it is stamped

TRADE 1Rogers TRADE MARK

NONE GENUINE WITHOUT THIS TRADE-MARK.

WM. ROGERS MFG. CO., Offices, Hartford, Conn.

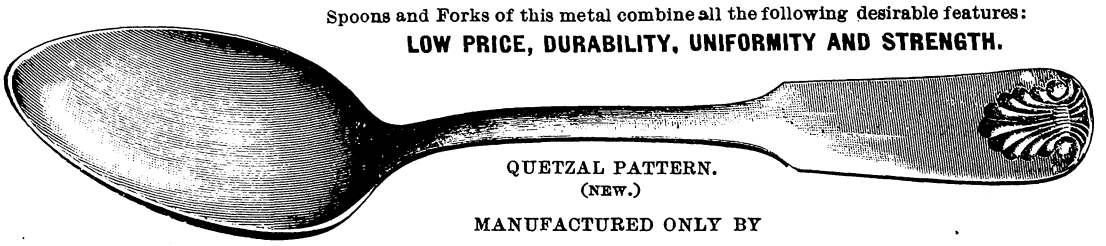
FACTORIES, HARTFORD, CONN., NORWICH, CONN., AND TAUNTON, MASS.

AZTEC COIN METAL

MADE INTO SPOONS AND FORKS.

Spoons and Forks of this metal combine all the following desirable features:

LOW PRICE, DURABILITY, UNIFORMITY AND STRENGTH.



QUETZAL PATTERN.
(NEW.)

MANUFACTURED ONLY BY

AZTEC COIN METAL has no plating to wear off. Made of solid metal. Easily kept clean.

THE HOLMES & EDWARDS SILVER CO., - Bridgeport, Conn.

Solid Columbian Silver Flat Ware, a Substitute for Solid Silver.

WARRANTED FOR 25 YEARS.



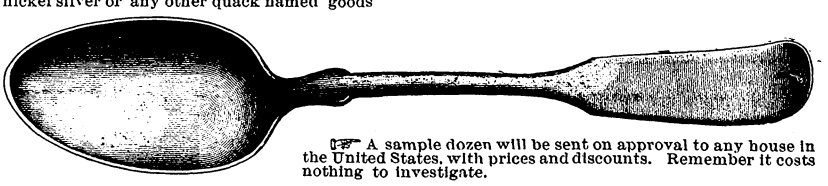
There is no plating to wear off and no rusty edges. The cost is no more than silver plated goods Hotels and restaurants appreciate this great change, which will, no doubt, in time revolutionize the steel knife trade. We ask the trade not to confound this metal with silver metals, nickel silver or any other quack named goods which are flooding the market at the present time.

—THE—

UPSON & HART CO.,

UNIONVILLE, CONN.

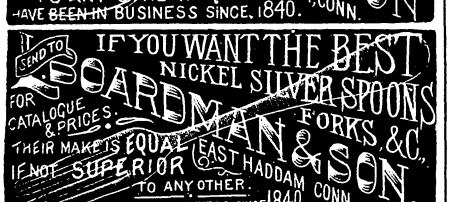
SELL AT SIGHT. KNIVES, FORKS & SPOONS.



Also manufacturers of Silver Plated Flat Ware in Knives, Forks, Spoons, Sugar Shells, &c.

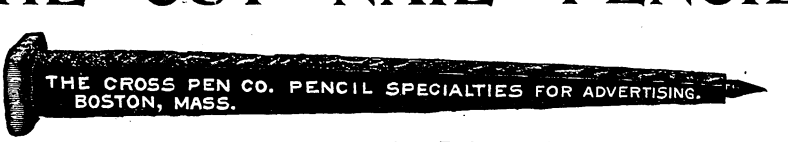
☞ A sample dozen will be sent on approval to any house in the United States, with prices and discounts. Remember it costs nothing to investigate.



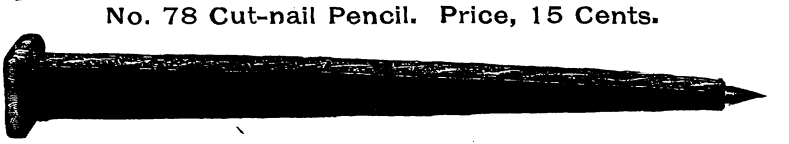




THE CUT-NAIL PENCIL.



No. 78 Cut-nail Pencil. Price, 15 Cents.



The above cuts represent a pencil in exact imitation of 10d cut-nail, which can be stamped on the side any name or business desired.

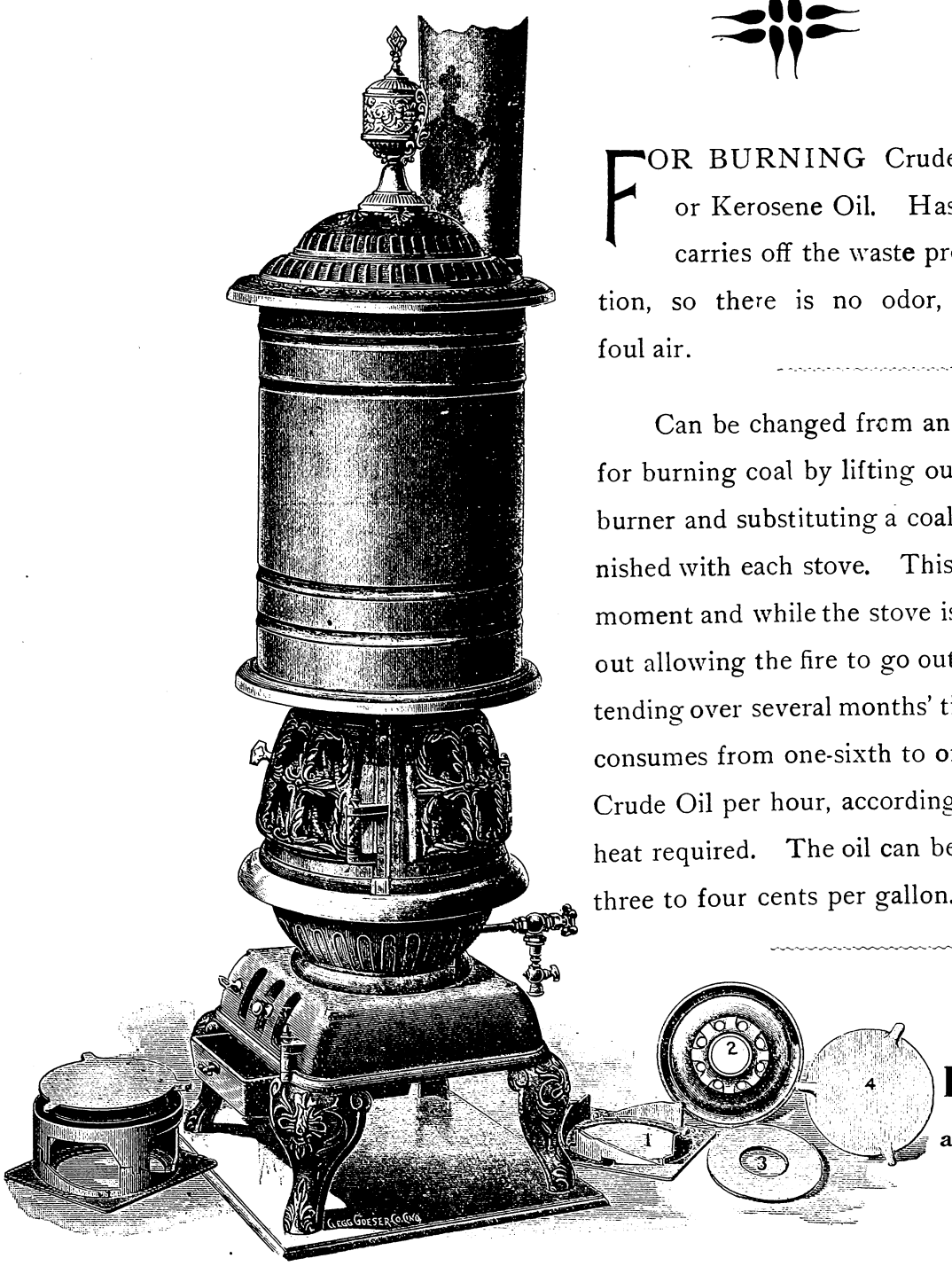
It is especially desirable for nail manufacturers and hardware merchants for advertising purposes.

Write for quotations to the manufacturers.

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Petroleum Oil Stove.

AN INTENSE HEAT,
A STEADY HEAT
AT ALL TIMES.



FOR BURNING Crude Petroleum, Torch or Kerosene Oil. Has a stove pipe which carries off the waste products of combustion, so there is no odor, no smoke and no foul air.

Can be changed from an oil stove to one for burning coal by lifting out the top plate of burner and substituting a coal grate which is furnished with each stove. This can be done in a moment and while the stove is red hot, and without allowing the fire to go out. Experiments extending over several months' time show the stove consumes from one-sixth to one-fourth gallon of Crude Oil per hour, according to the amount of heat required. The oil can be bought for from three to four cents per gallon.

FOR full particulars and prices, address - - -

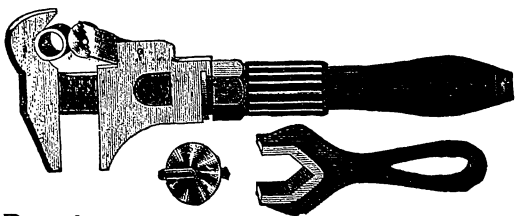
THE FOSTER STOVE CO., IRONTON, OHIO,

∴ ∴ **Manufacturers of Cook and Heating Stoves.** ∴ ∴

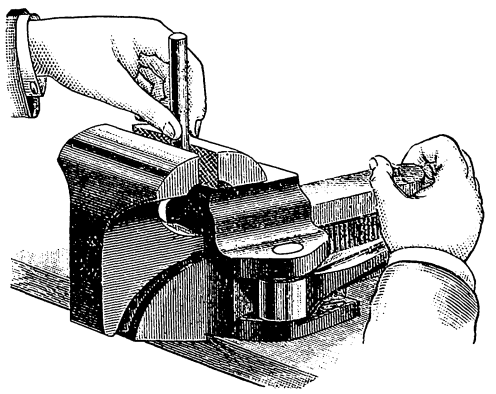
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HIGH QUALITY TOOLS



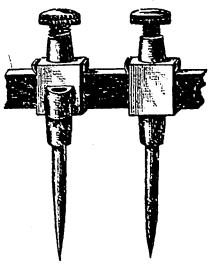


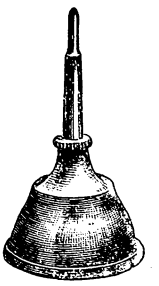
Donohue's Pat. Engineers' Wrenches, Short or Long Sleeve Nuts, and with Pipe Cutter.

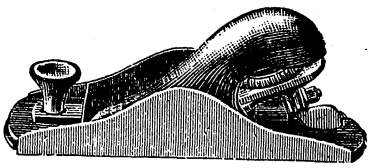


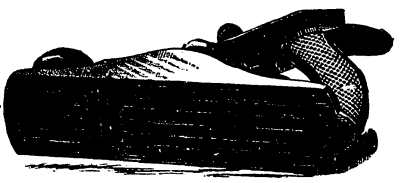
Stephens' Patent Vises, Quick Adjusting Cam and Toggle-Joint, Stationary or Swivel Base.



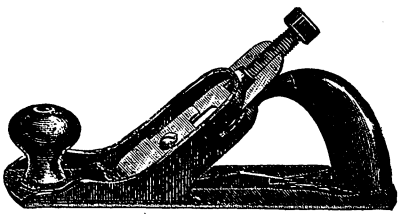








Chaplin's Patent Iron Planes, Corrugated Bottoms, Checkered Rubber Handles.



Challenge Iron Planes. Simplicity of Construction.

Boardman's Pat. Wrenches, Excelsior Expansion Bits, Whitney Drills, Baxter's Wrenches, Wood's Pat. Plumb and Levels, Devoe's Square Attachments, Gem Wrenches, Malleable Oilers and Lamps, Pencil Attachments.

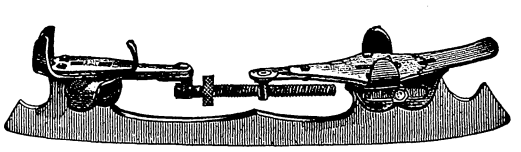
TOWER & LYON, Manufacturers, - - 95 Chambers St., New York.

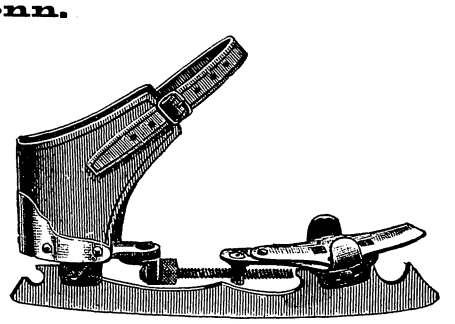
ICE SKATES

——MANUFACTURED BY——

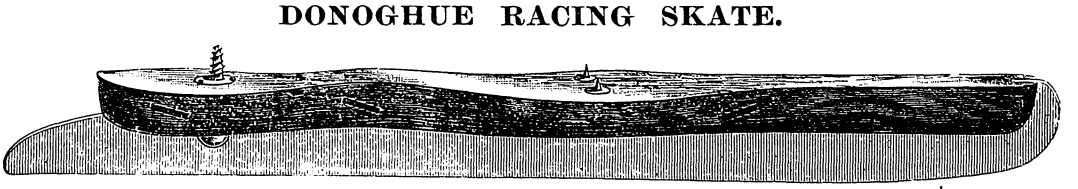
THE UNION HARDWARE CO.,

Torrington, Conn.





DONOGHUE RACING SKATE.



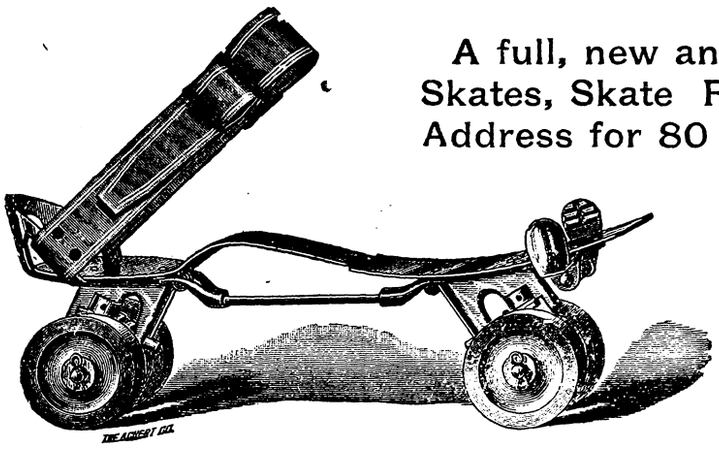
SUPERIOR QUALITY, STYLE AND FINISH.

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TOWER & LYON. - - - - - 95 Chambers Street.

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HENLEY'S CELEBRATED RINK AND CLUB ROLLER SKATES.

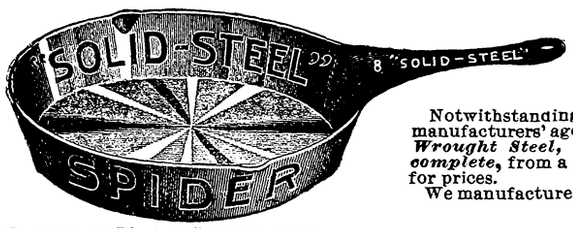


A full, new and complete stock of Roller Skates, Skate Repairs and Rink Supplies. Address for 80 page catalogue and prices.

M. C. Henley,

RICHMOND, IND.

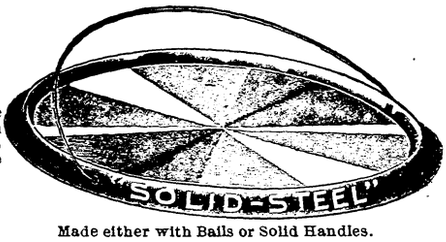
"SOLID-STEEL" SEAMLESS HOLLOW WARE.



No Seams, no Rivets in "Solid-Steel" Ware.

BRILLIANT FINISH.

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The Cleveland Stamping & Tool Co., Cleveland, O.

We do Light and Heavy Stamping and Blanking. Also build Dies and Stamping Machinery.

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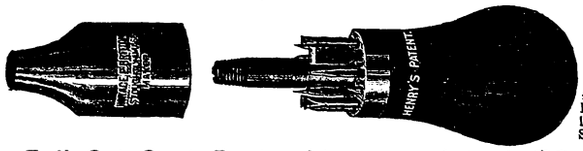
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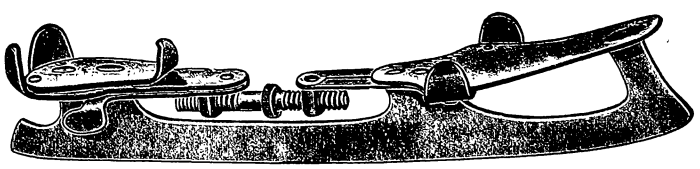
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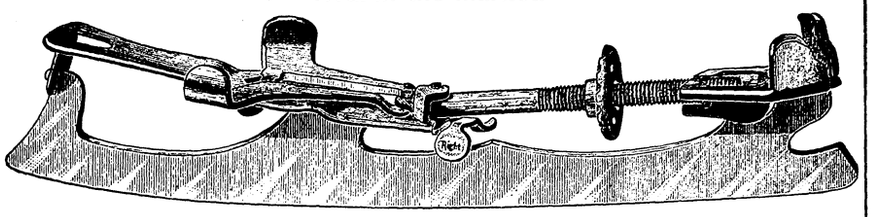
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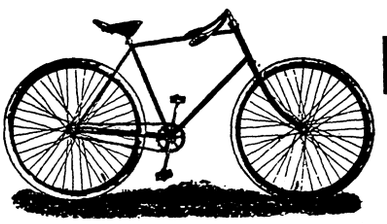
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apply a light coat of Paravaseline to your skates and it will keep them in good condition.

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H. & R. Imp. Ejecting Double Action,

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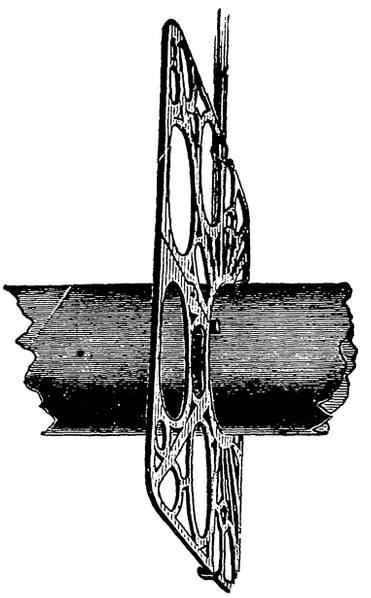
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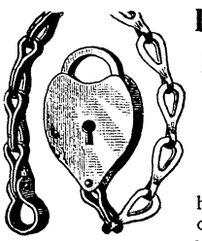
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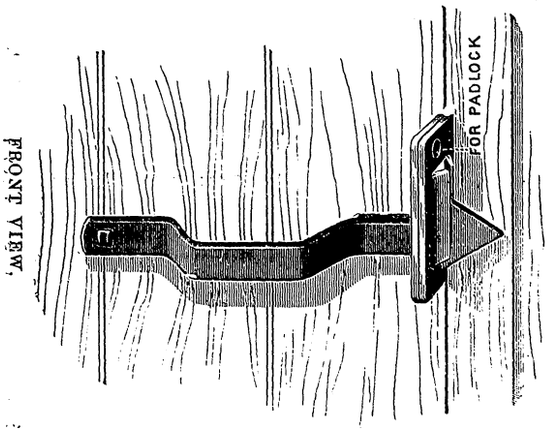
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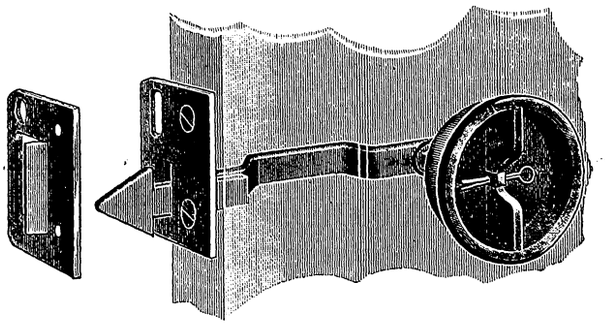
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MADE OF STEEL.



IT IS DESIGNED especially for sliding doors. It is strong, durable and practically unbreakable. It is adapted for either right or left edge of door. It may be applied to either the inside or outside of door. It is also adapted for use on double door. It has no exposed screws or bolts that can be tampered with from the outside.

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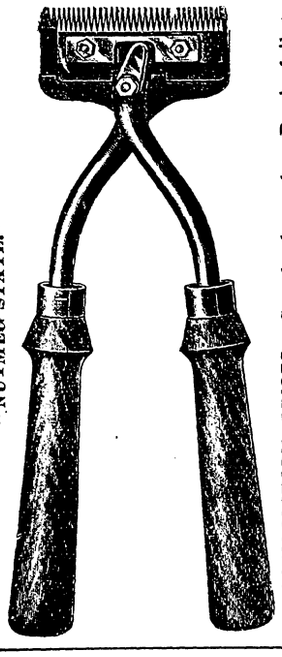
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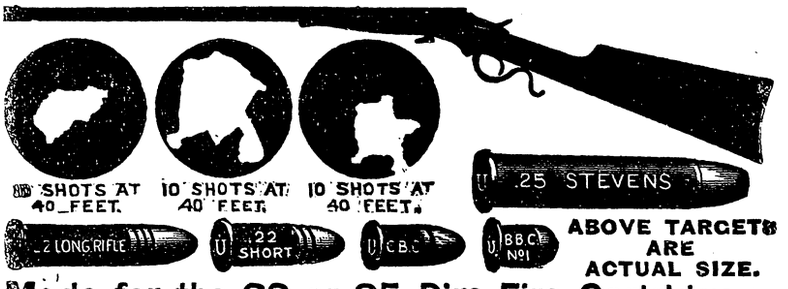
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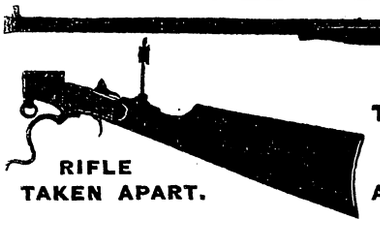
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ABOVE TARGETS ARE ACTUAL SIZE.

Made for the 22 or 25 Rim Fire Cartridge.



WEIGHT, 4½ POUNDS.
22-INCH BARREL.
LEVER ACTION LIKE SHARPS.
TAKEN APART IN TEN SECONDS.
IT IS SIMPLY IMPOSSIBLE TO MAKE MORE ACCURATE SHOOTING BARRELS THAN ARE ON THIS RIFLE.

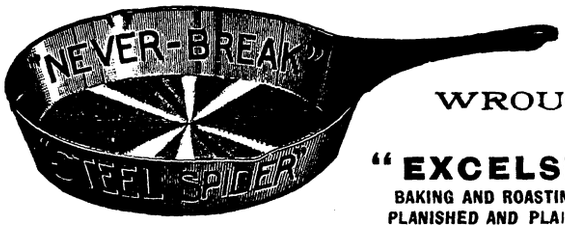
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WROUGHT STEEL COOKING UTENSILS.

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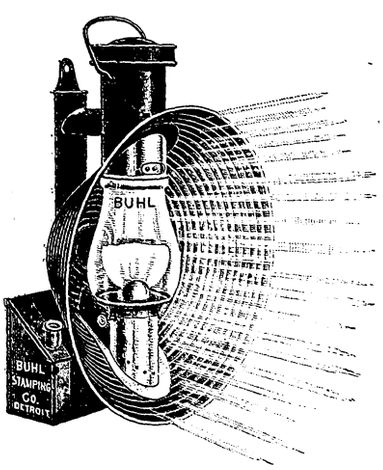
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IS THE Best Street Lamp Manufactured.
Equal to the best Gas Light.
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Will Burn Four Hours for One Cent.

MANUFACTURED BY
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Buhl Tubular Headlight.

IMPROVED FOR 1893-94.

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Straps, Washers, or Special Shapes in Leather, hand or machine sewed Leather Work of any description,

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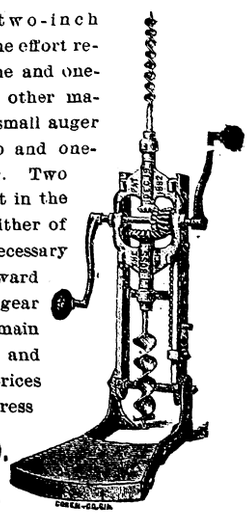
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The Boss 2-speed Boring Machine.

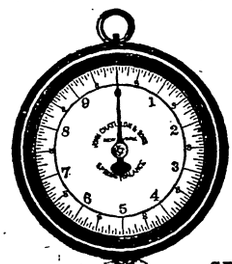
Will operate a two-inch auger with the same effort required in using one and one-half inch in any other machine, and for the small auger have a speed two and one-half times faster. Two augers may be kept in the machine, to use either of which it is only necessary to point it downward by first taking the gear frame out of main frame, inverting and replacing it. For prices and discounts address

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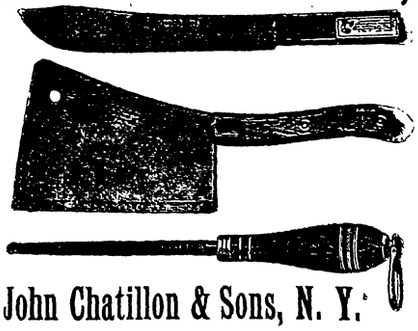


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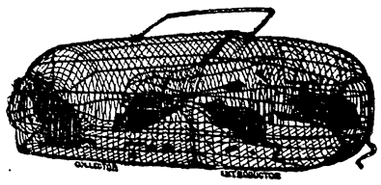
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GENUINE **MARTY** RAT AND MOUSE TRAPS
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THEY DO THE WORK.
Orders solicited. Prices on application.
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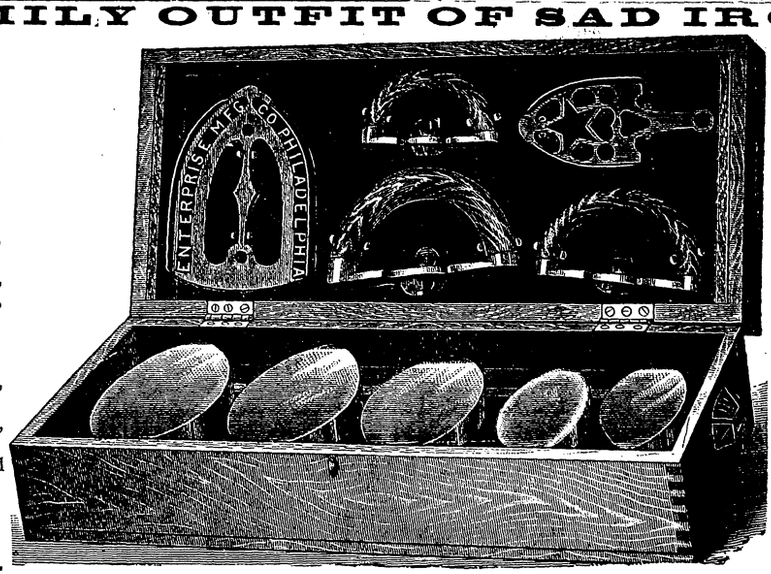
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Meat Choppers,
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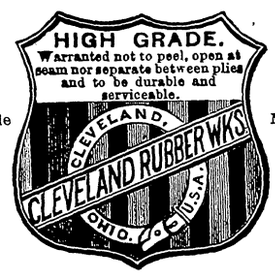
THE ENTERPRISE MFG. CO. OF PA., Third and Dauphin Streets, Philadelphia
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"SHUT DOWN!" What's the Matter?"

"BELT BROKE AGAIN!"

"See here, Mr. Foreman, if you don't have fewer stoppages I'll——"

"Stop, Mr. Proprietor, the fault is yours. Quit buying belts that crack, peel, open between plies, stretch and break, and I'll give you a smooth run. You think it economy to buy cheap belts from Worthless & Co. Why! the time lost and trouble and annoyance caused by shut-downs would pay the difference between good and bad belts ten times over. Why don't you buy Cleveland's 'Shield High Grade,' sold by Reliable & Co.? It has an established reputation, has been thoroughly tested, and is in use in all the large mills and elevators here. You take no chances on it. Besides, a strong warrantee is indelibly branded upon it, such as no manufacturer would dare put or a poor belt. You remember that threshing machine man, whose engine we repaired, said he had a Cleveland High Grade Belt in use over five years, and if it will stand such severe work, it certainly will ours."

Trade  Mark.

LABEL INDELIBLY STAMPED ON EVERY 30 FEET OF BELT.

We are the only manufacturers who indelibly stamp a warrantee on each and every belt (see copy of label) and it remains as long as the belt lasts; and who give a written guarantee (see fac-simile). Our threshing machine belts have made a wonderful record, and our endless belts have given splendid service, the splice being as strong as the solid part of the belt. Suction Hose for Portable Engines and all other purposes.

We Want Your Trade.
Send for 60-page Catalog.
Write for Prices and Samples.

GUARANTEE.

We Guarantee *our "Shield High Grade" Belt to be made of best long staple, 30 & 32-oz. cotton duck; To be the most durable, because it is made of best materials, by special machinery; To be the best selling belt, because it has the best reputation, a cleaner record of long service, and because its warrantee is stronger, bolder, broader than any other, and is irrevokable, protecting both dealer and consumer. We further guarantee that, should any belt, under fair and reasonable service, fail or give out from any defect in material or manufacture, to replace same free of charge, on return to us.*

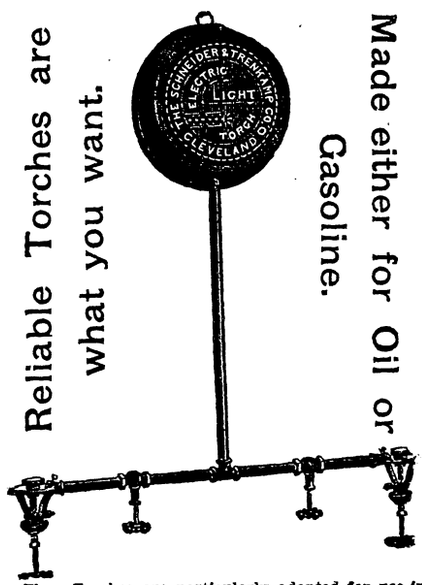
Witness *our hand and seal.*



Cleveland Rubber Works
Of the Mechanical Rubber Co.

CLEVELAND RUBBER WORKS
OF THE MECHANICAL RUBBER CO., CLEVELAND, OHIO.

Reliable Torches are what you want.



Made either for Oil or Gasoline.

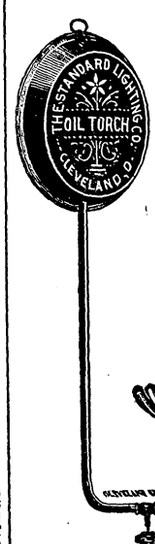
These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner.

Write us for prices. A liberal discount given to the trade. Manufactured by

THE SCHNEIDER & TRENKAMP CO.,
Nos. 479 to 497 Case Ave., Cleveland, Ohio.

LIGHT YOUR DARK SHOPS CHEAPLY.

Give your men plenty of Light and they will do double work.

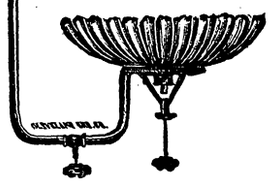


The Wall Torch has been used for several years as a means of illumination in **Mills, Foundries, Machine and Car Shops, Tunnels, Street Stands, Band Stands, Smith Shops,** etc.

While there are many cheap, inferior torches made which injure the sale of a good article, and condemn the **Torch** in general, our "Incandescent" Wall Torches are recognized as the best, and are now in use in the largest manufacturing establishments in the country giving **PERFECT SATISFACTION,** as is evidenced by the **DUPLICATE ORDERS** we receive from year to year.

They burn 150° Coal Oil, or 74° Naphtha, requiring a different burner for each.

In ordering be careful to state which is desired.

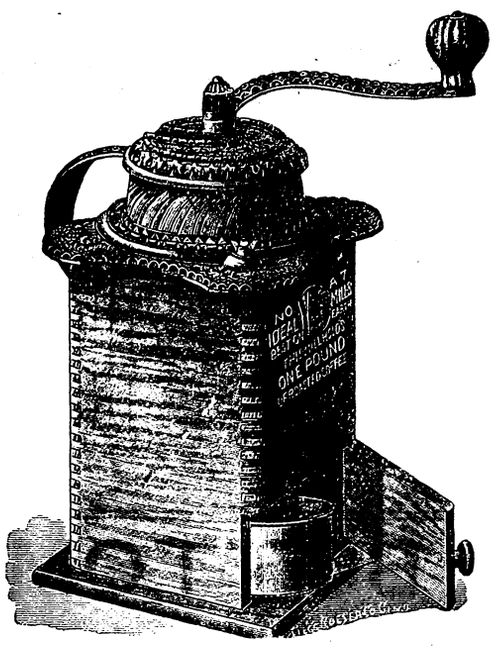


Price, for Single Torch, complete, $2 each.

SPECIAL PRICE QUOTED FOR QUANTITIES.

THE STANDARD LIGHTING CO.,
100 to 118 Perkins Ave., - - - - Cleveland, Ohio.

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"Ideal"

Coffee Mills are fast becoming the Popular Sellers.

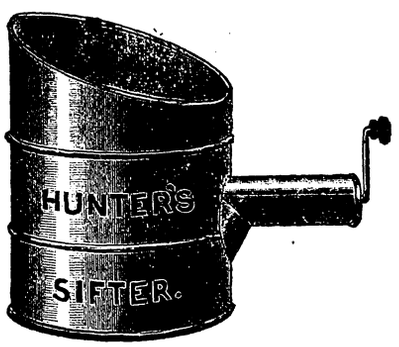
WHY ?

Because they Grind faster, are newer and have a better reputation. We can fit you in size and price.



WADDEL WOODEN WARE WORKS, Wholesale Manufacturers,
COFFEE MILLS, MONEY DRAWERS, ANIMAL TRAPS, &c.. GREENFIELD, OHIO.

TWO FEATURES,
" MERIT and QUALITY,"
THAT THE
WORLD FAMOUS



Hunter Sifters

excel in. They can be used for more purposes, last longer and sell quicker than any other make. Why ? Simply because the public appreciates a good article. There are others, but ***Hunter's Sifters are Best.***

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The FRED J. MEYERS MFG. CO.,
COVINGTON, KY. F. J. MATTISON, Eastern Agent NEW YORK.

The Sun Manufacturing Co.



Successors to the Jno. M. Waddel Mfg. Co.,
ARE SOLE OWNERS AND MANUFACTURERS OF

Waddel's Improved Coffee Mills,

Cathedral Gong Money Drawer and Surprise Rat Traps.
Beware of Infringements.—We will protect our Patents.

"THE 'SUN' ONLY, SHINES FOR ALL."

A New Name, A New Reputation,

A New Line of Coffee Mills

That under the SUN Brand shine as leaders.

RAPID GRINDERS that will STAND THE WEAR.

STEEL ALLOY BUHRS,

A metal of recent discovery for this purpose used solely and only by the SUN. Warranted to outwear, outgrind and outsell any Coffee Mill ever put on the market.

We Challenge a Competing Test for Rapid Grinding and Wearing Surface.

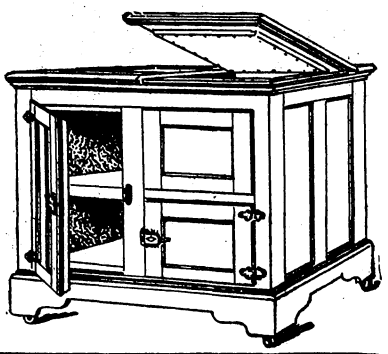
Our New Line bears the **Sun Trade Mark** and is labeled **Steel Alloy Buhrs.**
Write for Our Catalogue and New Prices
Order a Sample Mill.

THE SUN MANUFACTURING CO.,
Greenfield, - Ohio, U. S. A,
MANUFACTURERS OF
Cash Registers, Money Drawers, Coffee Mills and Wooden Ware Specialties.

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Stone Ware Lined Refrigerators

SEAMLESS vitrified and glazed earthenware Provision Compartments. Practically indestructible; won't sweat, because of Perfect Dry Air Circulation. Liberally filled with the best Mineral Wool, and first-class in every particular. Perfect cleanliness. No foul odors. Indurated Fiber Ice Racks that will not leak.



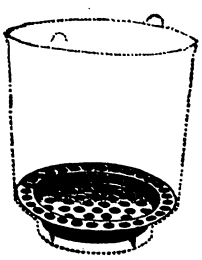
Quality Same, But Prices Lower.

WRITE FOR CATALOGUE AND DISCOUNTS.

Monroe Refrigerator Co., = = = Lockland, Ohio.

SAFETY KETTLE BOTTOM.

Made from STEEL. **Cannot be Broken.**



Prevents meats and vegetables from burning while cooking. Can be used for various purposes, either as Steamer, Broiler, Toaster, etc.

PATENT APPLIED FOR.

FOR PARTICULARS ADDRESS,

DIAMOND HARDWARE CO., 620 ATLANTIC AVE., BOSTON, MASS.

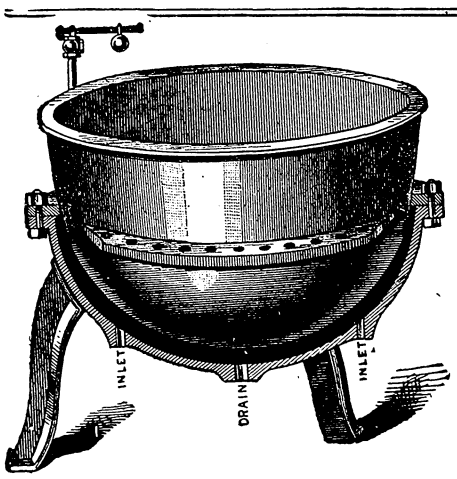
No. 4 ALL RATTAN BROOM.

Made for Switch, Snow, Yard, and all purposes to which an All Rattan Broom is especially adapted. It has been thoroughly tested, and our patent fastening is conceded to be the best, most convenient, and holds the rattan more firmly and in better shape than any other ever introduced. A trial will insure its continued use. We make a specialty of



BROOMS and BRUSHES
FOR
RAILROADS, SHOPS, WAREHOUSES, STREET, STABLE, BLOOM, CHILL, CASTING AND MOULDING PURPOSES. Write

JOSEPH LAY & CO.,
RIDGEVILLE, IND.



Jacketed Kettles.
Jacketed Kettles.
Jacketed Kettles.

Soup Digesters.
Soup Digesters.
Soup Digesters.

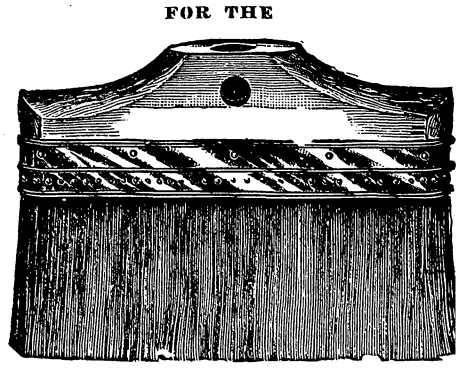
Reversible Griddles.
Reversible Griddles.
Reversible Griddles.

Hollow Ware.
Hollow Ware.
Hollow Ware.

THE STUART & PETERSON CO.,
BURLINGTON, N. J., U. S. A.

BRUSHES

FOR THE



Hardware Trade,
Whitewash, Horse, Paint, Window, Shoe,
And Every Variety of Brushes and
Wire Goods.

Close prices and prompt shipments. Get samples and catalogue for the asking.

Cincinnati Mfg. Co., Cincinnati, O.

Columbian Sash Lock.



Locks three ways with one motion. Simple, strong and durable. Absolutely anti-rattle and burglar proof. Sample by mail, 35c.

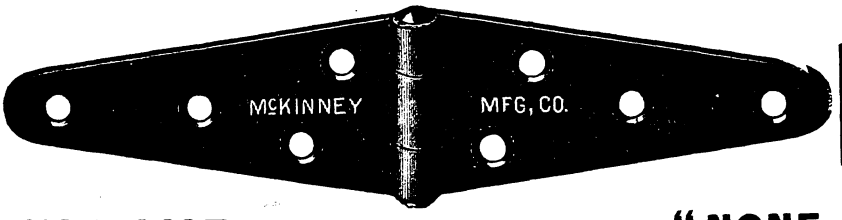
COLUMBIAN SASH & DOOR LOCK CO.,
WAUSEON, OHIO.

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WE CLAIM

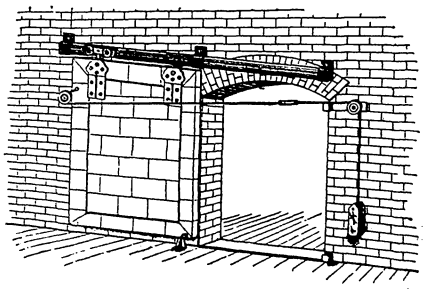
That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

McKINNEY MFG. CO., ALLEGHENY, PA.

Steel  Hinges.

SEND FOR LIST. "NONE BETTER."

BARN, MILL AND FIRE DOOR HANGERS.



Fire Door Hangers. Best in the World. Equipped with Automatic Fire Door Fittings.

HIGHEST AWARD

at WORLD'S FAIR, 1893,

—: ON :—

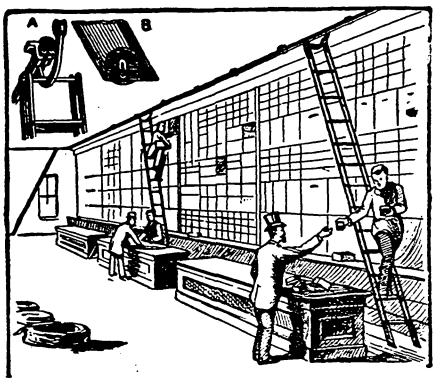
Parlor, Barn and Fire Door Hangers.

SEND FOR CATALOGUE.

COBURN TROLLEY TRACK MFG. CO.

HOLYOKE, MASS.

We make four styles of ROLLING LADDERS to reach shelving of any height.

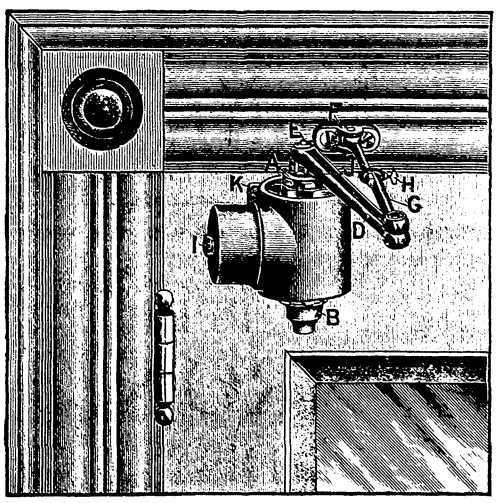


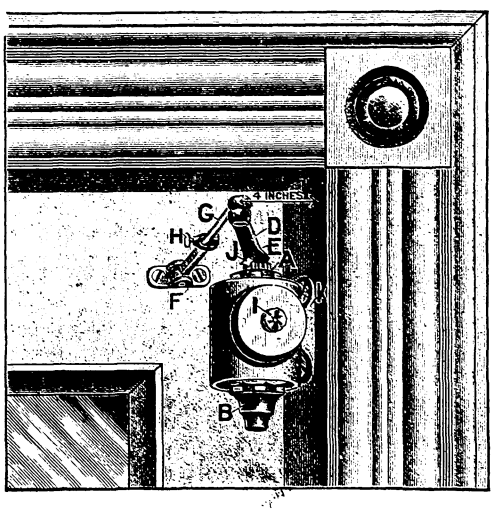
P. & F. CORBIN,

New Britain, Conn. New York. Philadelphia. Chicago.

—) MANUFACTURERS OF (—

Easily Adjusted and Adapted for all Requirements.





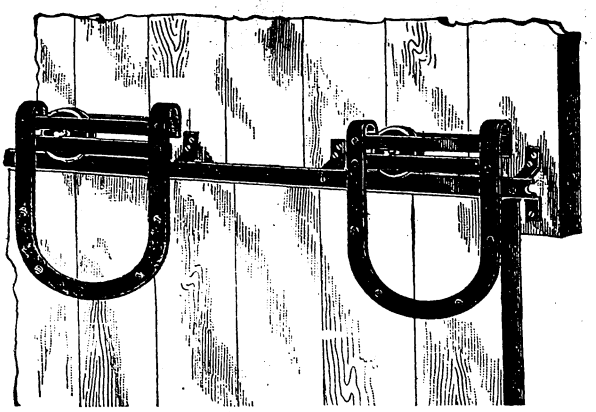
Looks Well, Acts Well, Wears Well.

LIQUID DOOR CHECKS AND SPRINGS,

Fine Builders' Hardware. Wood AND Machine Screws.

Catalogues and Prices Furnished on Application.

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Lane's Patent Steel Barn Door Hangers,

"O. N. T." Track for same.

The first Anti-friction Steel Door Hanger placed upon the market and to-day stands as the original and best. Sold in all the States of the Union, as well as abroad. Also Lane's Noiseless Steel Parlor Door Hanger, using Single Steel Track, a great success.

Lane's Pat. Self-measuring Faucet, measuring liquids as drawn.

Swift's Coffee Mills in great variety.

Manufactured by LANE BROS., Poughkeepsie, N. Y.

JOHN H. GRAHAM & CO., General Agents, 113 Chambers St., NEW YORK.

He had in his possession 55 skeleton keys which the police claim would open any door. —*Chicago Tribune.*

You are selling that kind of a lock every day and your customers think you are selling the best the market affords.

ARE YOU SELLING the best the market affords?

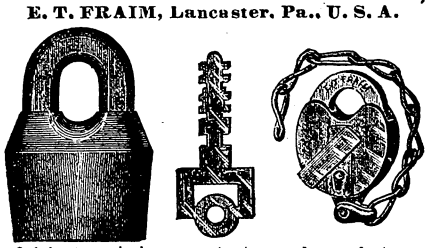
The Craig Locks are guaranteed Sneak Thief Proof.

Send for Catalogue. **KEYLESS LOCK CO., I. A. 197 So. Canal St., Chicago, Ill.**

ESTABLISHED 1879.

KEYSTONE LOCK WORKS,

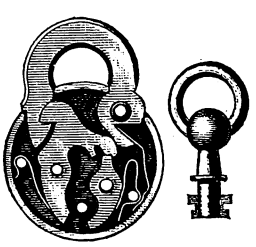
E. T. FRAIM, Lancaster, Pa., U. S. A.



Originators, designers, patentees and manufacturers of all the leading popular styles of **PADLOCKS**, Key-Locking Scandinavian with our patent Inter-Locking Tumblers; the only reliable lock of this style ever made. **SELF-LOCKING** Scandinavian of the highest type of perfection. Dust Proof Railroad, Freight Car and Switch Padlocks. Brass, Bronze, Steel and Malleable Iron Padlocks for all purposes and in all finishes. 131 different kinds. Write for our new 100-page catalogue.

SURPLESS, DUNN & ALDER, General Agents, 97 Chambers St., NEW YORK.

PATENT PERFECTION PADLOCK.



Eight Tumblers, Key Turning Both Ways.

Sizes, ¾ inch to 2½ inches, of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, ½ and ⅝ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.

Adopted by the United States Treasury for bonded warehouses.

AMES SWORD CO., Chicopee, Mass.

Send for Price-Lists and Circulars.

SIMPLEST IN CONSTRUCTION.
EASIEST FITTED.



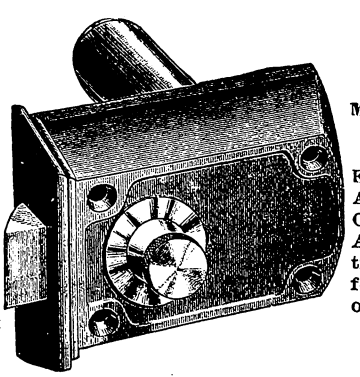
Cheapest and Best Balance Made.

WRITE FOR CATALOGUE.

The Vanderbilt Sash Balance Co.,

CANANDAIGUA, N. Y.

General Agents, Harmon & Dixon, 118 Chambers St New York.



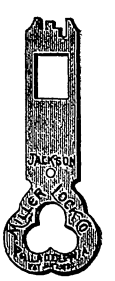
"JACKSON"

NON-PICKABLE

ALL BRONZE NIGHT LATCH.

Made also of JAPANNED IRON with BRONZE BOLT and ESCUTCHEON.

Reversible. Adjustable. 3 Plated Steel Keys. No springs, except the bolt spring. **Awarded Best Prize** at World's Fair, Chicago. Undoubtedly the best latch extant. All are fully guaranteed. We employ no travelers and no agents. Ask your **Jobber** for our goods. Let us know if our **Cat. No. 11** is not on your file.



MILLER LOCK CO.,

4515 Tacony Street, PHILADELPHIA, PA

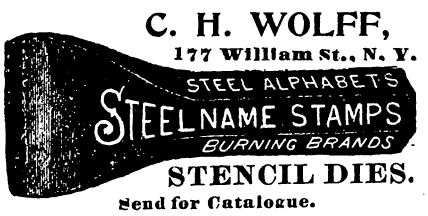
OUR NEW FINISH.

ANTIQUE COPPER PLATED ON IRON.

Columbian Design Goods.

READING HARDWARE COMPANY, READING, PA.

NEW YORK. PHILADELPHIA. CHICAGO.



C. H. WOLFF,

177 William St., N. Y.

STENCIL DIES.

Send for Catalogue.

CLOTHES WRINGERS.

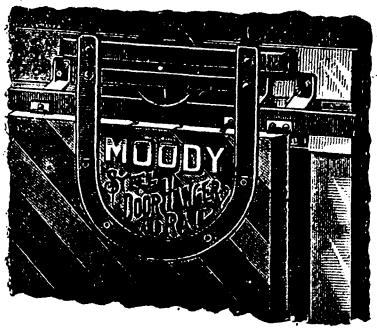
COLBY WRINCER CO.,

MONTPELIER, VT.

HAVE YOU Our Price-List?

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VICTOR MFG. CO., Newburyport, Mass.



Showing one-half set of hangers attached to door.

STEEL RAIL.

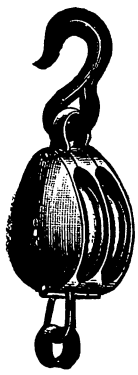


The Only Bracing Bracket Made.

PRICE-LIST.

HANGERS.	Per Doz. prs.
No. 5, to run 6 feet, 3½ in. wheel,	$10.00
No. 6, to run 10 feet, 4½ in. wheel,	15.00
No. 7, to run 15 feet, 5½ in. wheel,	22.00
RAIL, per foot	6½ cents

WHY USE WOODEN OR HEAVY STEEL BLOCKS



WHEN THE STEEL AND IRON

TACKLE BLOCKS

—MADE BY—

The Cleveland Block Co.

CLEVELAND, OHIO, U. S. A.,

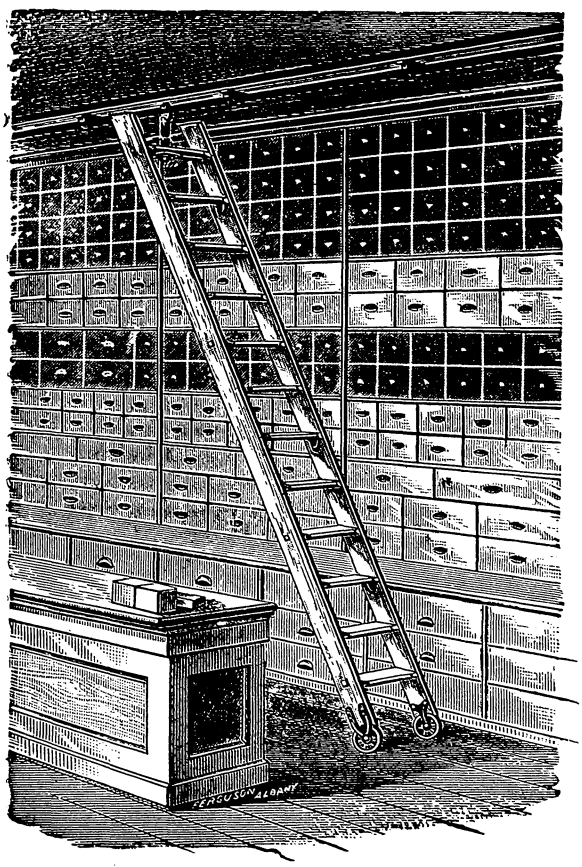
ARE BETTER IN EVERY WAY.



No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear but never break. Sheaves interchangeable

General Agents: Topping Brothers, 92 Chambers Street, New York
The H. Channon Co., 22 Market Street, Chicago.
New England Agents, - Dodge, Haley & Co., 212 High Street, Boston.

THE "NOISELESS" STORE LADDER.

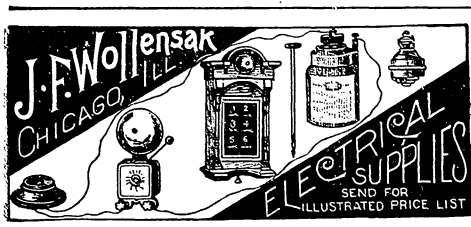


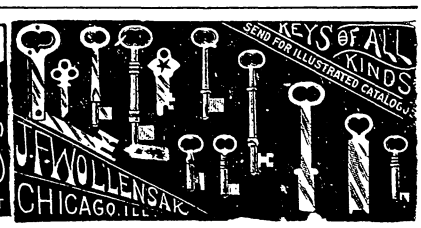
The latest and best. Perfectly noiseless. Neat in appearance.

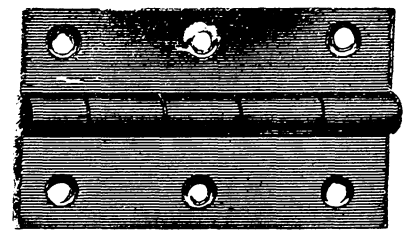
Manufactured by

M. CROISSANT,

ALBANY, N. Y.







Cast Brass Butt Hinges

IN STOCK AND FOR SALE BY

W. & J. TIEBOUT,

Nos. 16 & 18 Chambers Street, New York,

MANUFACTURERS OF

BRASS, GALVANIZED & SHIP CHANDLERY

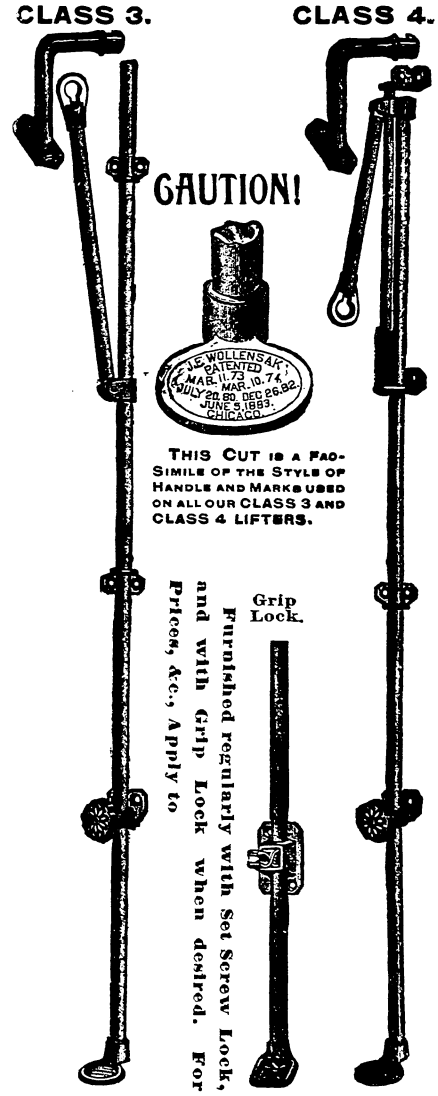
HARDWARE.

Transom...Lifters

OLD RELIABLE

J. F. WOLLENSAK'S PATENT.

CLASS 3. CLASS 4.



THIS CUT IS A FAC-SIMILE OF THE STYLE OF HANDLE AND MARK USED ON ALL OUR CLASS 3 AND CLASS 4 LIFTERS.

Furnished regularly with Set Screw Lock, and with Grip Lock when desired. For Prices, &c., Apply to

J. F. WOLLENSAK, - CHICAGO, ILL.



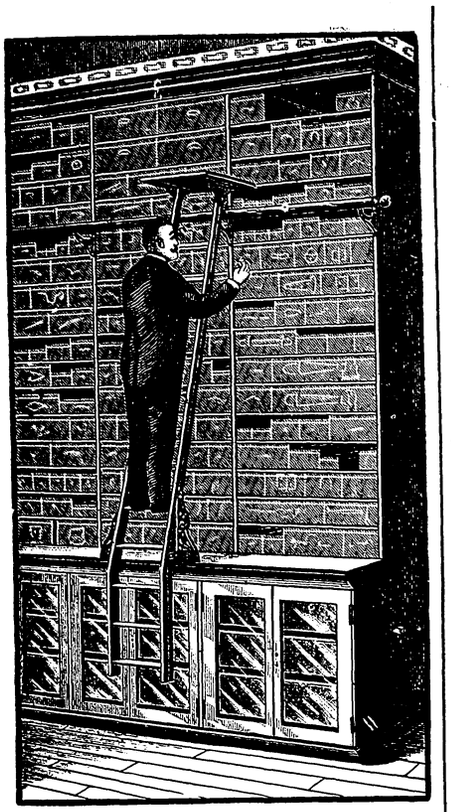
BUY BRADLEY RACKETS!!!

Your **Customers** will like them. They are made of steel and are **not brittle.** They are **light, strong** and **artistic.** They can be put up with nail and hammer. Write for prices.

ATLAS MFG. CO.,

New Haven, - - Conn.

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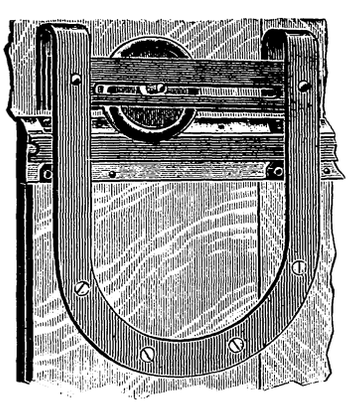


THE BICYCLE STEP LADDER.

The Newest, Neatest, Simplest, Easiest Operated and Safest Store Ladder made.
Ladders are not *Suspended*, but *Supported* from below on wheels. Move easier with operator on than others when empty. Highly finished, and very handsome. Made in different grades and prices to suit.
Send for illustrated catalogue and prices.
See this space next week for other styles.

The Bicycle Step Ladder Co., 50 State Street, Chicago. Ills.

THE QUEEN ANNE SCREEN CO.,
Burlington, Vt.,
MANUFACTURERS OF
Improved Adjustable Window Screens.
THE QUEEN ANNE. With box panels; the only screen made and finished alike on both sides.
THE EUREKA. The best cheap extension screen on the market
SCREEN DOORS. Finished all ready to hang Sticks, Corners, Improved Frames, &c.
Write for circular and Price-list.



HIGHEST AWARD
WORLD'S
COLUMBIAN EXPOSITION
—ON—
BARN DOOR HANGERS.
For catalogue and prices, address
Chicago Spring Butt Co.,
CHICAGO, ILL.,
or 97 CHAMBERS ST., N. Y.

THE SCIENTIFIC SWEEP MILL

FOR TWO HORSES.
Grinds EAR CORN and SMALL GRAINS.
Special Cob Breaking Device and peculiar dress of Grinders. Gives BETTER WORK, MORE OF IT, WITH LESS WORK TO TEAM than others. Send for catalogue of this and

POWER MILLS.

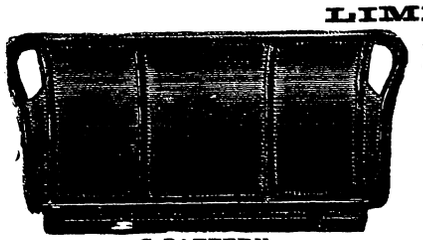
THE FOOS MANUF'G. CO. SPRINGFIELD, —OHIO.—



FULLY GUARANTEED.
SENT ON TRIAL.

McKINNON DASH & HDW. CO.,

LIMITED, Manufacturers of



C PATTERN.
SURREY DASH.

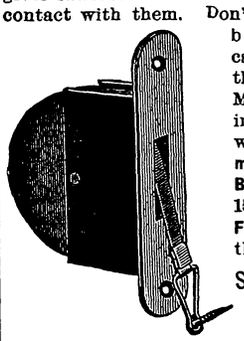
FINE QUALITY
DASHES
AND
FENDERS,
BUFFALO. - N. Y.

A Well Balanced Sash

IS LIKE

A Well Balanced Business Man,

gives satisfaction to those who are brought in contact with them. Don't be inveigled into buying anything called Sash Balances that have no record. Made from light cast iron. Ask your Hardware dealer for **Pullman Steel Frame Sash Balance.** Warranted 15 years. Only **Steel Frame** Sash Balance in the world.



SIMPLE, CHEAP
AND DURABLE.

PULLMAN SASH BALANCE CO., Rochester, N. Y.
New York Office, 142 Chambers St.
Chicago Office, 235 Lake St.

—: OUR :—
PURE ALUMINUM COOKING UTENSILS

Meeting with such universal appreciation, we think it to our interest to appoint **ONE** responsible firm of Hardware Merchants in **EACH** town and city as our sole agents.

ILLINOIS PURE ALUMINUM CO.,
LEMONT, ILLINOIS.
Manufacturers of Sheets, Medals, Utensils.

Phillips Screens

FOR DOORS AND WINDOWS, ARE WELL MADE, FROM GOOD MATERIALS BY

A. J. Phillips & Co., Fenton, Mich.

HARDWARE DEALERS
CAN RECOMMEND THE
CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

MANUFACTURED ONLY BY
"THOMAS MORTON,"
65 Elizabeth Street,
Write for Prices. NEW YORK.

HAY KNIVES

SEASON OF 1892-93.
"LIGHTNING"
(Reg. Trade-Mark No. 9583.)
"BLIZZARD"
Reg. Trade-Mark No. 19,390.

It pays to handle FIRST CLASS goods.



Write us early for prices and terms.

Sole Manufacturers,
The HIRAM HOLT COMPANY
EAST WILTON, MAINE.

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Highest Award

FOR

Supreme Excellence

TO

The PUTNAM Hot-Forged and Hammer-Pointed Horse NAILS,



At the *World's Columbian Exposition* at Chicago. A medal and diploma worded:

"Supreme excellence in material, method in manufacture, and quality of finished product; elasticity and smoothness combined with holding power in clinch.
It allows the use of very small nails."

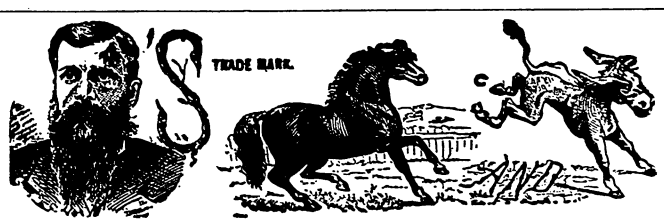
There is nothing beyond "supreme excellence," nor is there anything comprised in a horse nail, except the "material from which it is made," "the method of manufacture," and "quality of finished product."

Putnam nails, by their "elasticity," give slightly to the expansion and contraction of the hoof while the horse is in motion; by their "smoothness," do not enlarge the nail holes in the hoof, while their "supreme excellence," in "holding power in the clinch," enables them to hold the shoe in the hardest service until worn out.

By the "use of small nails," large holes are avoided and money saved to the smith.

Thus it will be seen that the officials of the *World's Columbian Exposition* recognize what qualities go to make up a good horse nail and that only the "Putnam" contains them all.

PUTNAM NAIL CO.,
Neponset, Boston, Mass.



All Tags and Labels on Covert Goods bear the above Trade-Mark, and are sold by all Leading Jobbers in General and Saddlery Hardware at Manufacturers' Prices.



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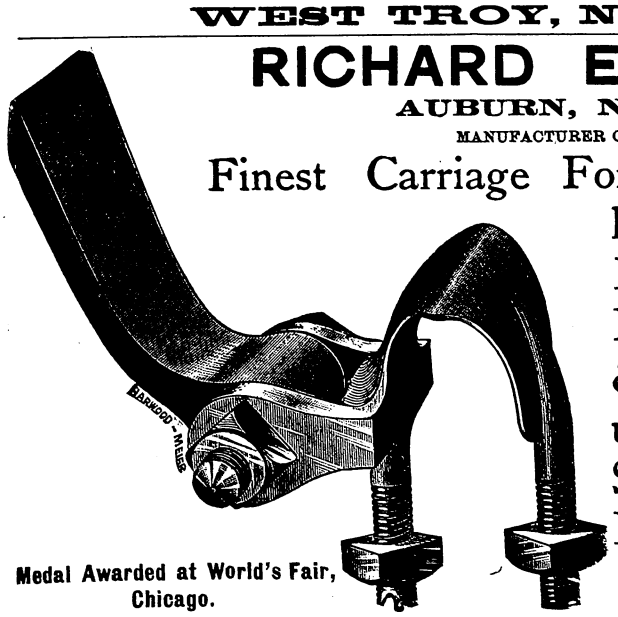
WEST TROY, N. Y.

RICHARD ECCLES,

AUBURN, N. Y.,

MANUFACTURER OF

Finest Carriage Forgings, Couplings, Clips, King Bolts, Fifth Wheels, &c. Manufacture a full line Special Drop Forgings.



Medal Awarded at World's Fair, Chicago.

Send for New Catalogue for Season 1893-94



FROST'S ANTI-RATTLER

Pat. Jan. 20, 1880.

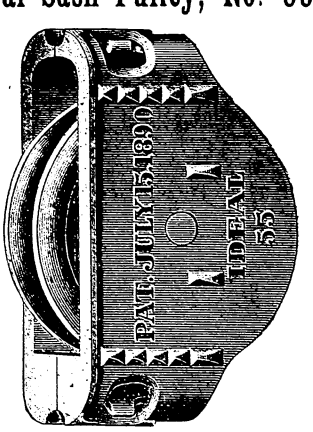
Cut One-half Size.

Sample pair sent to any hardware or saddlery firm by addressing

The Frost Thill Spring Co.,

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Ideal Sash Pulley, No. 55.



Adapted for auger socket or machine made mortise. Applied without chisel or screws, quickly and a perfect fit in every case. The only all round Sash Pulley made. Sample free. Price on application.

STOVER MFG. CO.,

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McKean and Meadow Sts.,

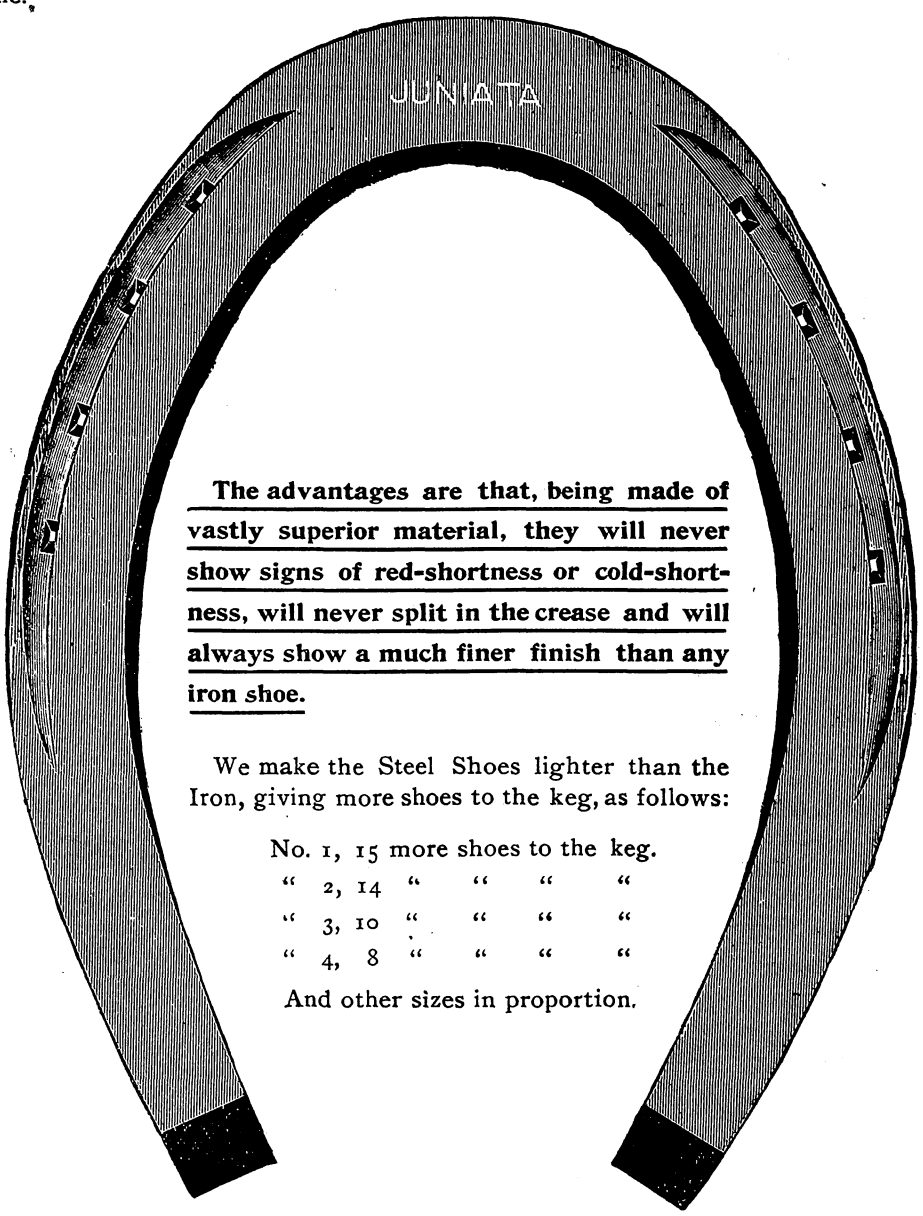
PHILADELPHIA, PA.

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STEEL HORSE SHOES.

SHOENBERGER & CO., PITTSBURGH, PA.,

After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged, and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



The advantages are that, being made of vastly superior material, they will never show signs of red-shortness or cold-shortness, will never split in the crease and will always show a much finer finish than any iron shoe.

We make the Steel Shoes lighter than the Iron, giving more shoes to the keg, as follows:

No. 1, 15 more shoes to the keg.
" 2, 14 " " " "
" 3, 10 " " " "
" 4, 8 " " " "

And other sizes in proportion.

No. 2 EXTRA SWAGED HIND.

We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

We would also call your attention to our Improved Steel Toe Calk, equal to any in the market. To secure the best wearing qualities use sand or borax in welding on a calk and cool off at a dark red, or still better, cool off without plunging in water. We make sizes numbers 1, 2, 3, 4, 5 and 6, packed in 25-pound boxes.

Write to us for information and prices, or apply to jobbers and dealers, who sell them everywhere.

SHOENBERGER & CO.,

JUNIATA IRON AND STEEL WORKS, - - - PITTSBURGH, PA.

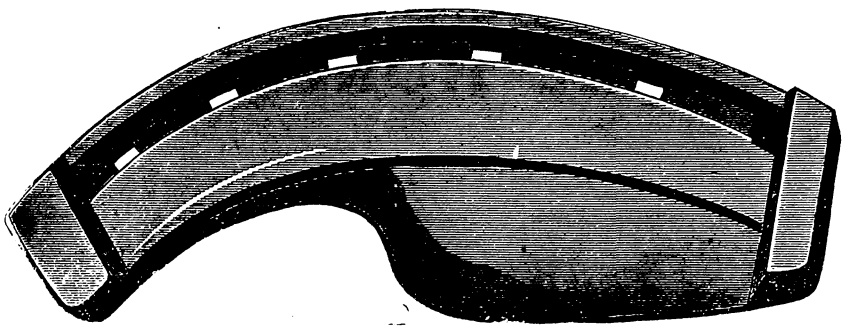
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CARRIAGE HARDWARE AND SPECIAL DROP FORGINGS.

FORGED OX SHOES.



Made under Deeble's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

IT IS JUST RIGHT.



HORSE AND MULE SHOES.

Superior Quality, Shape and Finish.

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MANUFACTURERS OF

Horse and Mule Shoes of the Perkins Pattern.

SPECIALTIES:—X L Steel Shoes, Toe Weight Shoes and Goodenough Shoes.

Works at Valley Falls, R. I. Office, 31 Exchange Place, Providence, R. I.

F. W. CARPENTER, Pres., C. H. PERKINS, Gen. Manager, R. W. COMSTOCK, Sec'y, CHARLES R. STARK, Treas.

J. C. McCARTY & CO., Agents - 97 Chambers Street, New York.

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JUST TRY THEM and **YOU** will say they excel all others.

MANUFACTURED BY

DIAMOND STATE IRON CO.

WILMINGTON, DELAWARE.

Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Bi[illegible] Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

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LE COUNT'S HEAVY STEEL DOG,

With Steel Screws. U. S. Standard and the points hardened.



1	3/8	$0 40		13	2¼	$1 35	
2	½	50		14	2⅜	1 45	
3	5/8	60		15	3	1 60	
4	¾	60		16	3⅛	1 80	
5	⅞	70		17	4	2 10	
6	1	70		18	4⅛	2 75	
7	1⅛	80		19	5	3 25	
8	1¼	80		Full set of 19,		$23.60.	
9	1⅜	95		20 (extra)	5½	4 00	
10	1½	95		21	" 6	5 00	
11	1¾	1 10		22	" 7	6 00	
12	2	1 20		23	" 8	7 00	

One small set of 8, by ¼ in. to 2 in.... 6 25

One set of 12, by ¼ in. to 2 in., continued by ⅛ in. to 4 in.... 13 20

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"Burden Best" Iron Boiler Rivets.

The Burden Iron Co.

TROY, N. Y.

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PHOENIX HORSE SHOE CO.,

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NEW YORK OFFICE, No. 66 Reade St.

Standard Horse Shoe Co.,

Manufacturers of

HORSE AND MULE SHOES.

LEEDS, ROBINSON & CO., General Agents,

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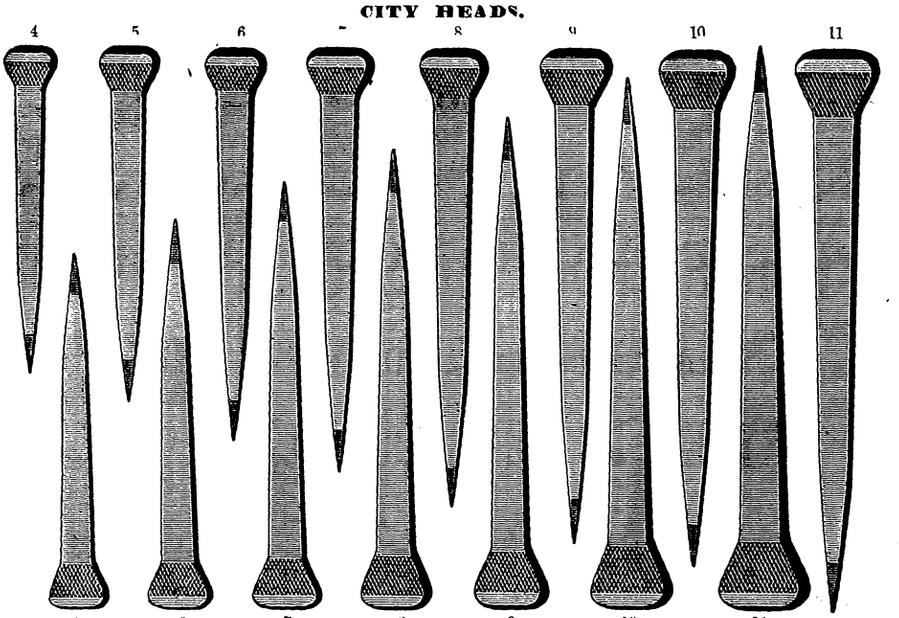
AT

WORLD'S COLUMBIAN EXHIBITION.

CAPEWELL HORSE NAILS.

"Tensile strength one-half greater than that of any other nail made."

CITY HEADS.



REGULAR HEADS.

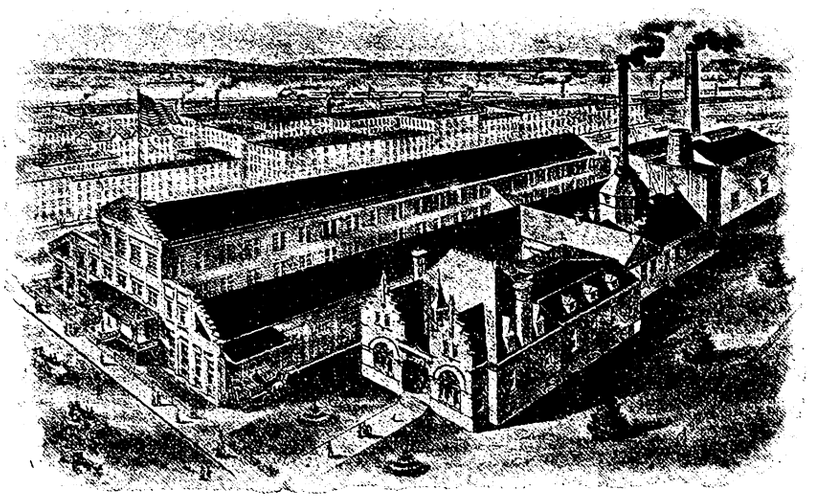
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Needs no Clinching.



Made in All Sizes.

"The Coming Nail to be Used."—JOHN KIERNAN,
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MANUFACTURERS OF THE BEST QUALITY

CARRIAGE MAKERS' HARDWARE,

MANUFACTURE THE LARGEST VARIETY OF

FORGED CARRIAGE IRONS

Of Best Material and Workmanship.

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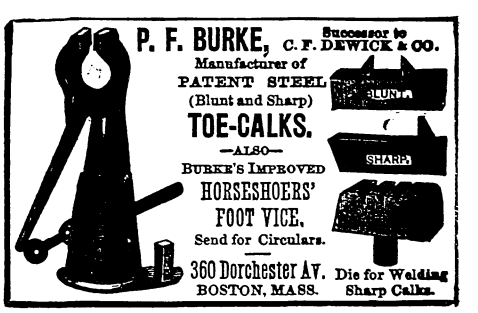
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All Sizes. All Patterns. All Warranted. Sold Everywhere.

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ARTHUR B. CLARKE, President.

Chicago Office, 45 La Salle St. Richmond, Va., U. S. A

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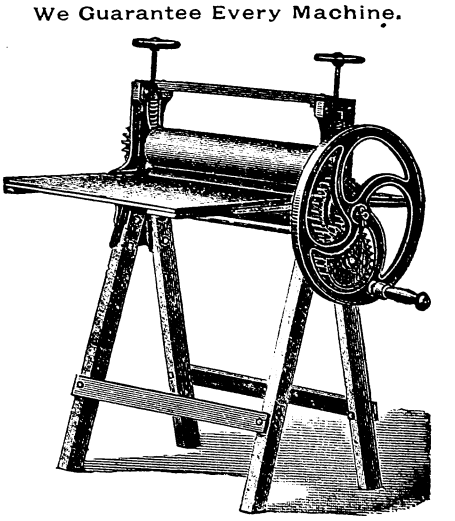
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SAVES all the fuel, two-thirds the work.

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We Guarantee Every Machine.



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is a fine quality of Axle Grease put up in square tin boxes containing one pound; beautifully decorated in assorted colors; designed especially for the Hardware Trade. Showy and attractive shelf goods.

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BAR IRON.

CRESCENT HORSE SHOE AND IRON CO.

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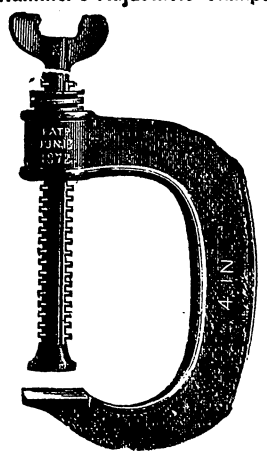
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SCALES OF ALL KINDS.

PATENTED ARTICLES
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MALLEABLE IRON
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Strongest in the market.

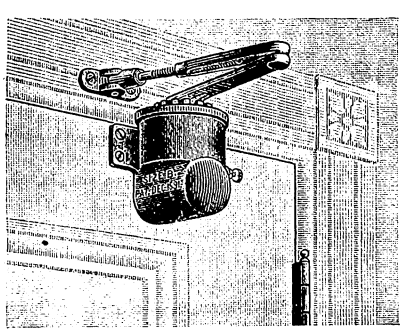
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MANUFACTURERS OF
A Full Line of Carriage Hardware
ALSO SPECIAL FORGINGS.

Estimates cheerfully given. Send for Catalogue



Bardsley's Liquid Door Check and Spring

Perfect in action, durable, neat in appearance, low in price and fully warranted. Responsible Agents wanted in the principal cities.

J. BARDSLEY, 149 & 151 Baxter St., New York.





This Wrench can be Furnished with Long Nut or Sleeve.

COMBINATION WRENCH.
Case-Hardened Throughout. Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the requisite combinations of a regular Nut Wrench, thus making a combination which has no equal.
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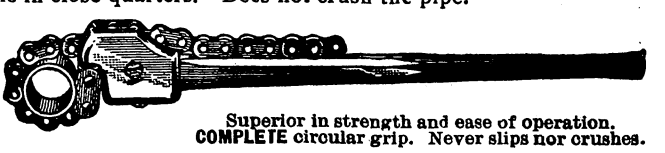
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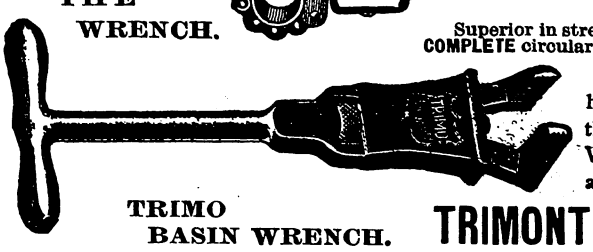
TRIMO PIPE WRENCH,
Forged Steel
All parts interchangeable.

Grips firmly without loss of motion. Releases readily. Never locks. Causes no trouble in close quarters. Does not crush the pipe.

TRIMO CHAIN PIPE WRENCH.



Superior in strength and ease of operation. COMPLETE circular grip. Never slips nor crushes.



Can be used with one hand and in closer quarters than any other Basin Wrench. Parts Interchangeable.

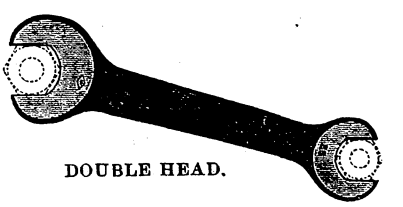
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SINGLE HEAD.



DOUBLE HEAD.

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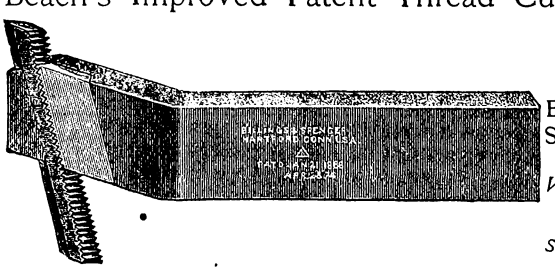
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Manufacturers of

Beach's Improved Patent Thread Cutting and Diamond Point Lathe Tool.



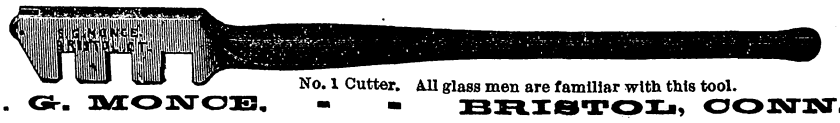
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We furnish Cutters for U. S. S. Threads to fit these tools.

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Drop Forgings of Bronze, Copper, Iron and Steel of all Descriptions.

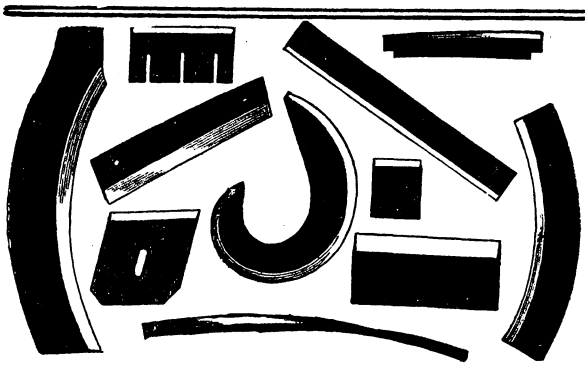
MONCE'S NOVELTY GLASS CUTTERS.——INTERCHANGEABLE LOCK STENCILS.



No. 1 Cutter. All glass men are familiar with this tool.

S. G. MONCE. - - BRISTOL, CONN.

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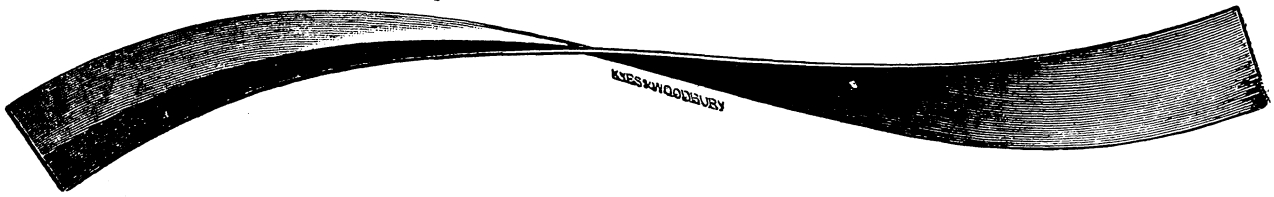
WORCESTER, MASS.

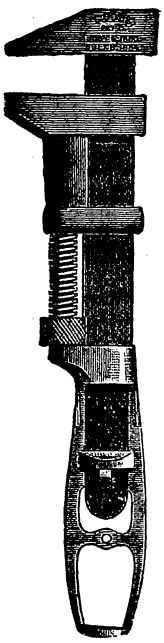
Manufacturers of **MACHINE KNIVES.**

Shear Blades and Strips, Moulding Cutter Plate, Die Stock for Leather, Cloth and Paper Cutting Dies. Lawn Mower and Hay Cutter Knives of every description.



End view of Plated Stock for Dies, Lawn Mower Knives, Blades Etc., showing how the Steel is laid.





L. COES'

Genuine Improved

KNIFE HANDLE

PATENT

Screw Wrenches

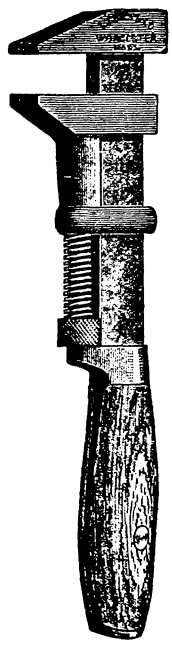
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WORCESTER, MASS.

Established in 1839. Patented July 6, 1880.

Registered March 31, 1874. Patented July 8, 1884.



Sectional View Illustrates our New Knife Handle, showing Malleable Iron Frame and Shank of Bar keyed into position.

☞ Straight Bar, Extra Long Nut for Screw in Jaw. ☜

The BEST MADE and STRONGEST WRENCH in the MARKET.

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IRON BENCH LEVEL

WITH DOUBLE PLUMB.

No. 5. 6 in.



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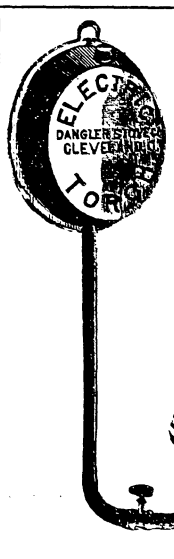
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Screws and Screw Making With a Chapter on the Milling Machine; a complete treatise on Screw Making in all its branches, embracing most recent methods and containing the reports which originated modern standard screw threads. With 95 illustrations. 12mo, cloth.....$1.25

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GASOLINE

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14 JETS OF LIGHT

3 to 6 INCHES LONG.

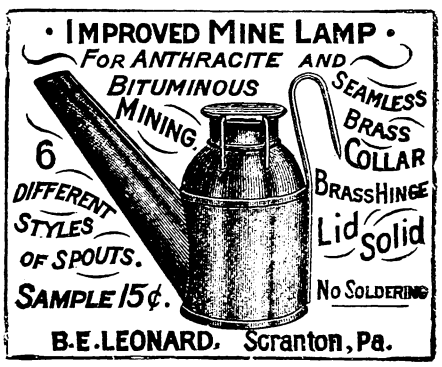
FOR lighting manufacturing establishments, such as Rolling Mills, Foundries, Machine Shops, Engine Rooms, &c., &c., with a convenient, portable, brilliant, steady light, and by cheaper means than by Coal Gas

SOLE MANUFACTURERS,

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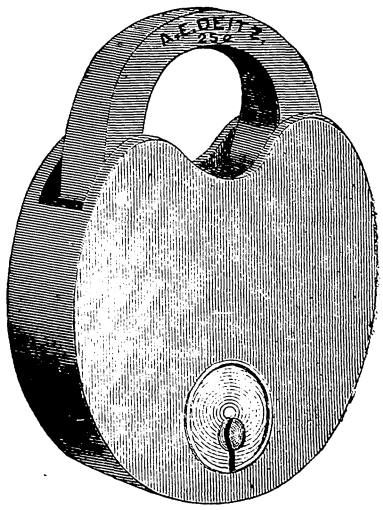
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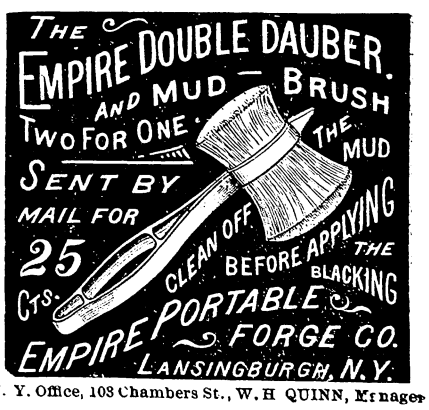
A. E. DEITZ



J. C. McCARTY & CO., Agents,

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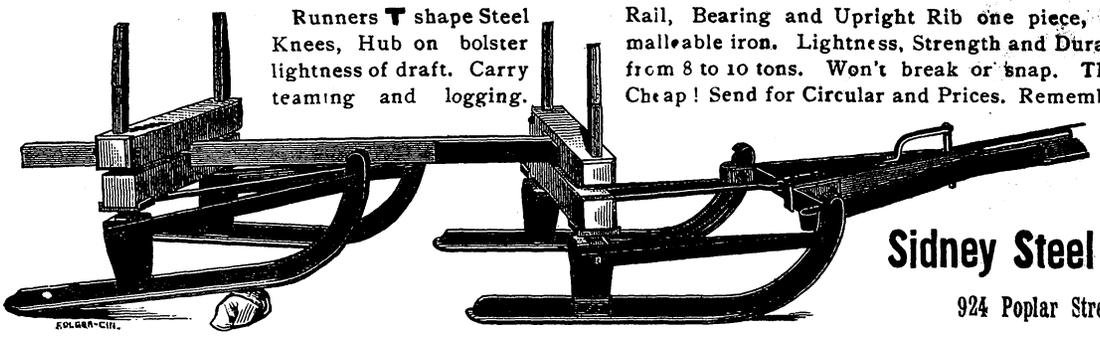
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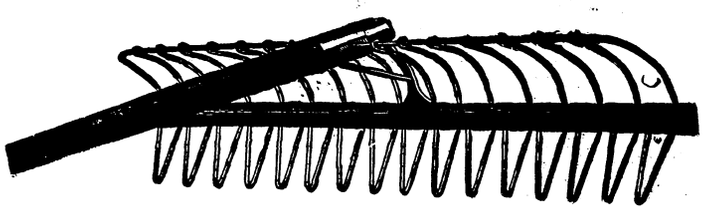
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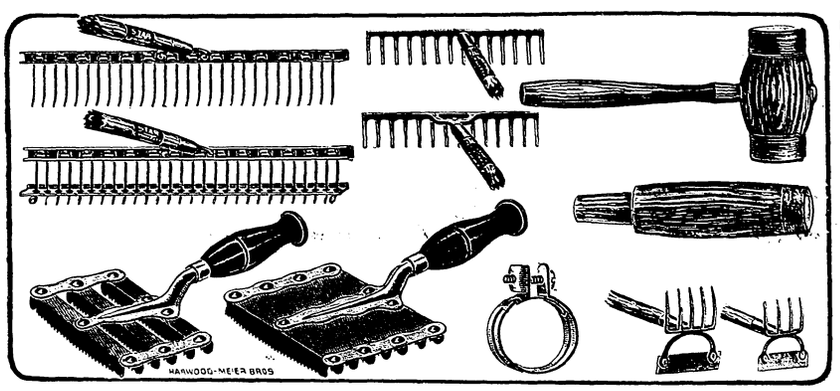
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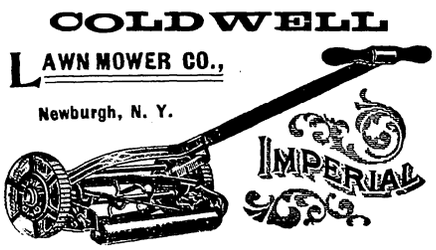
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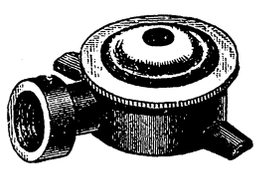




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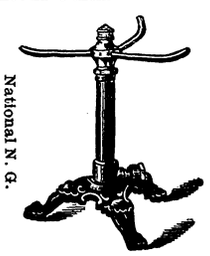
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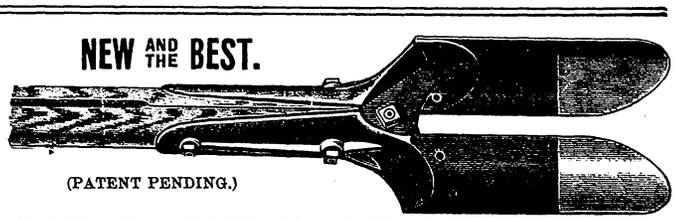
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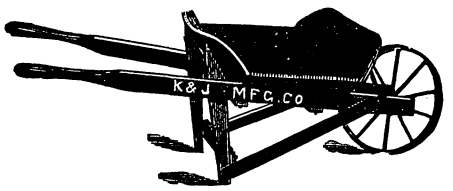
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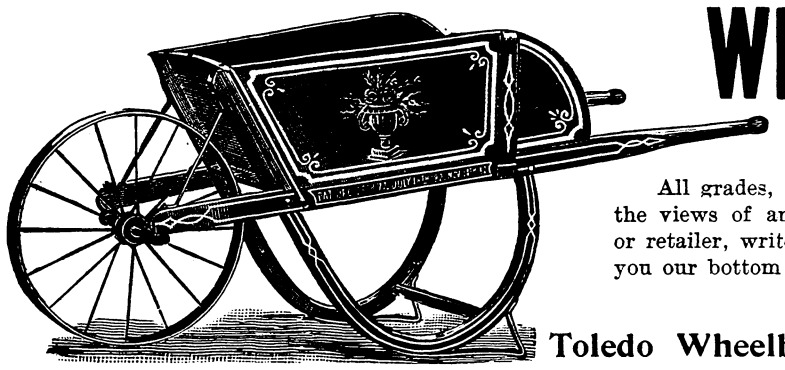
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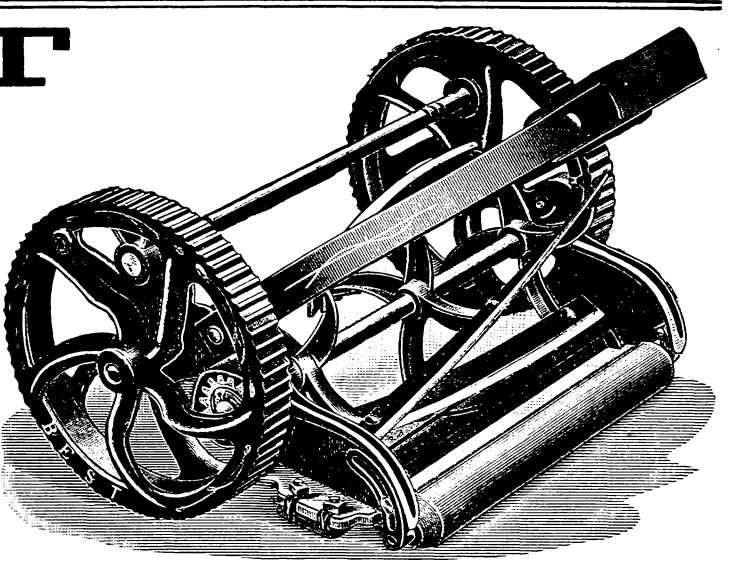


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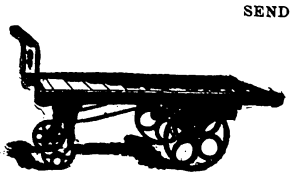
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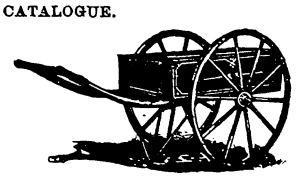
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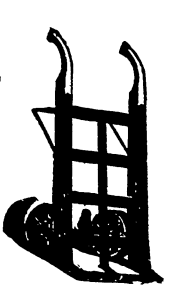
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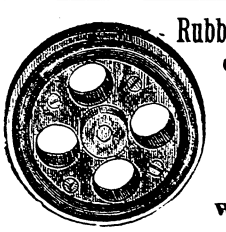
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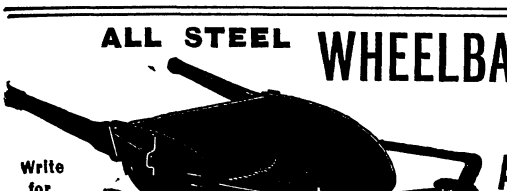
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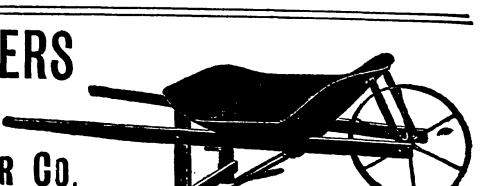


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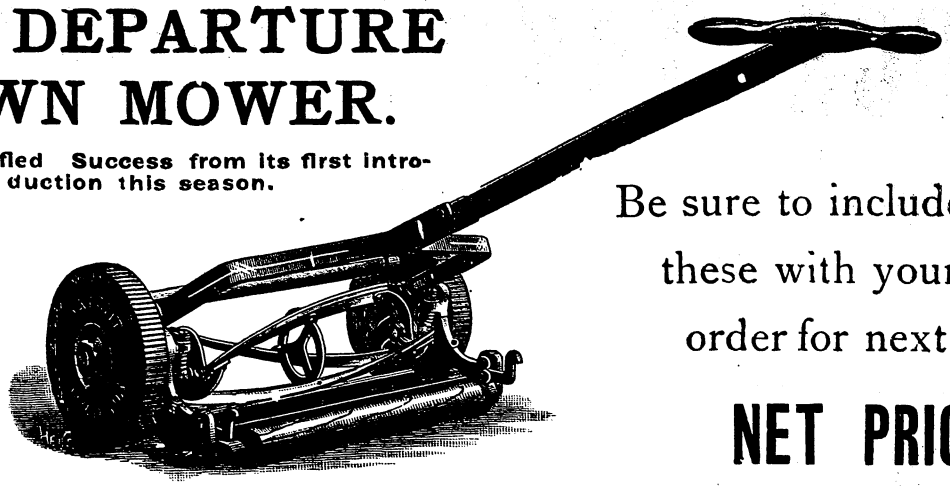
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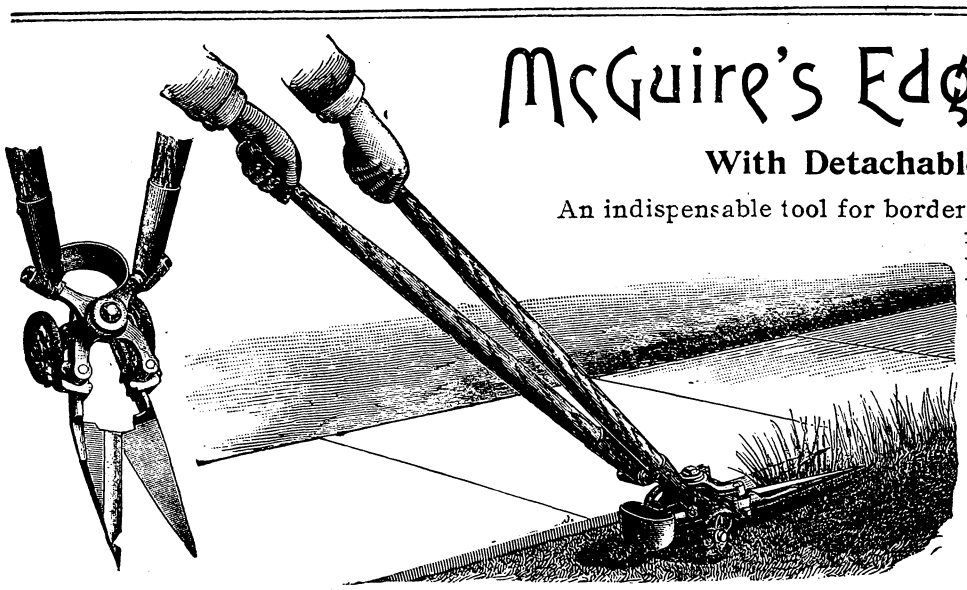


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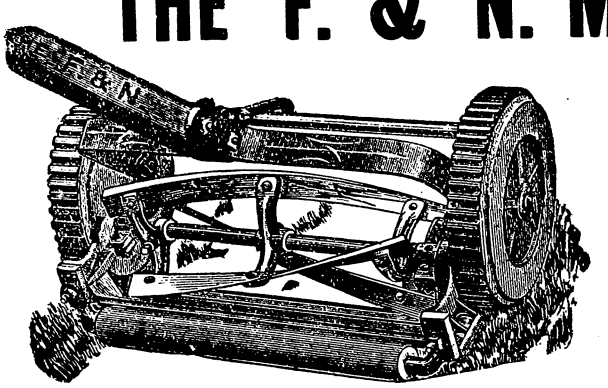
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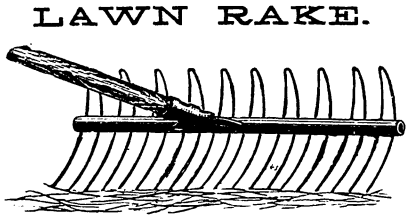
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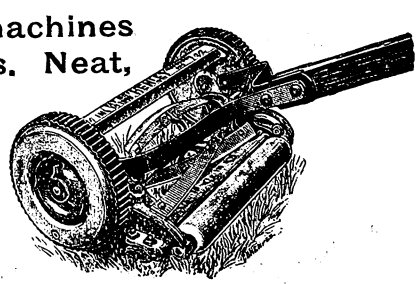
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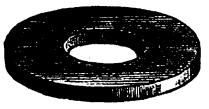
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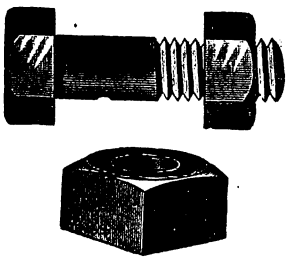
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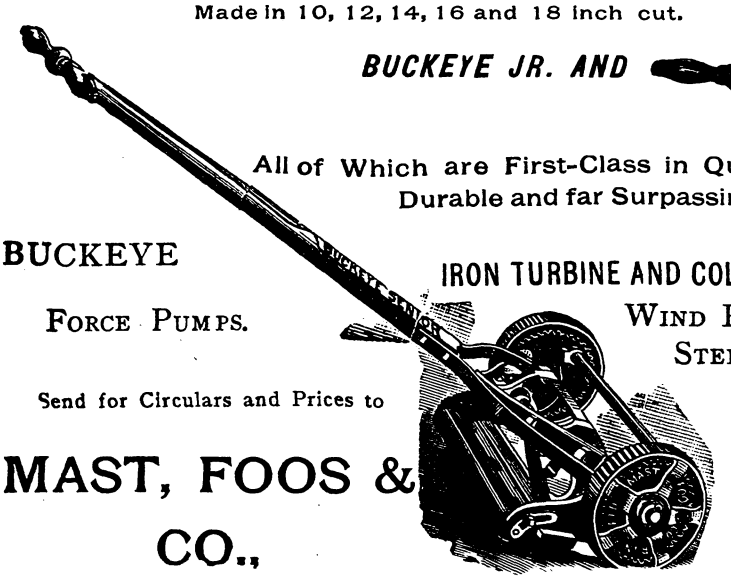
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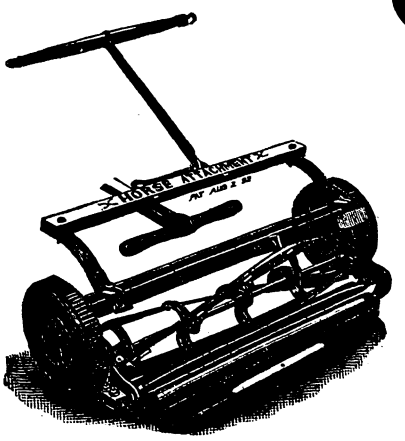
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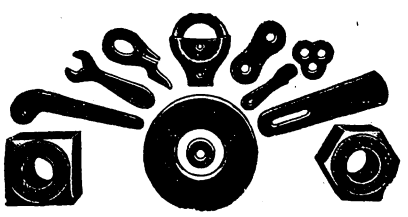
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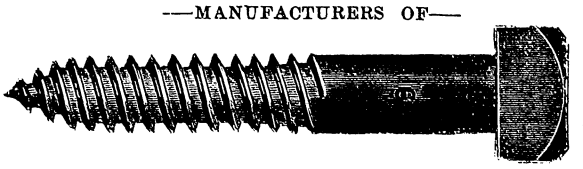
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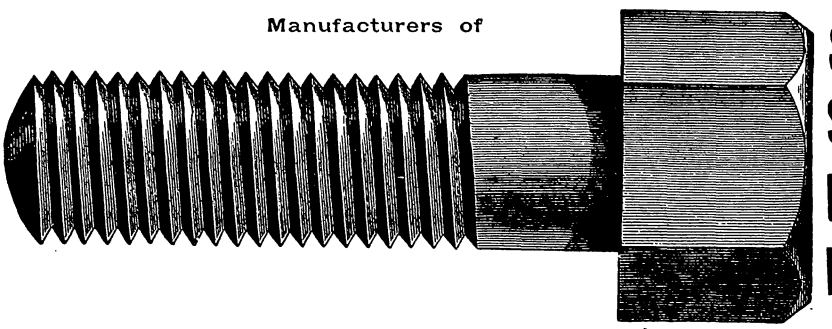
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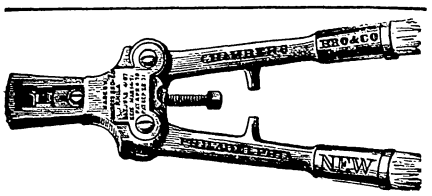


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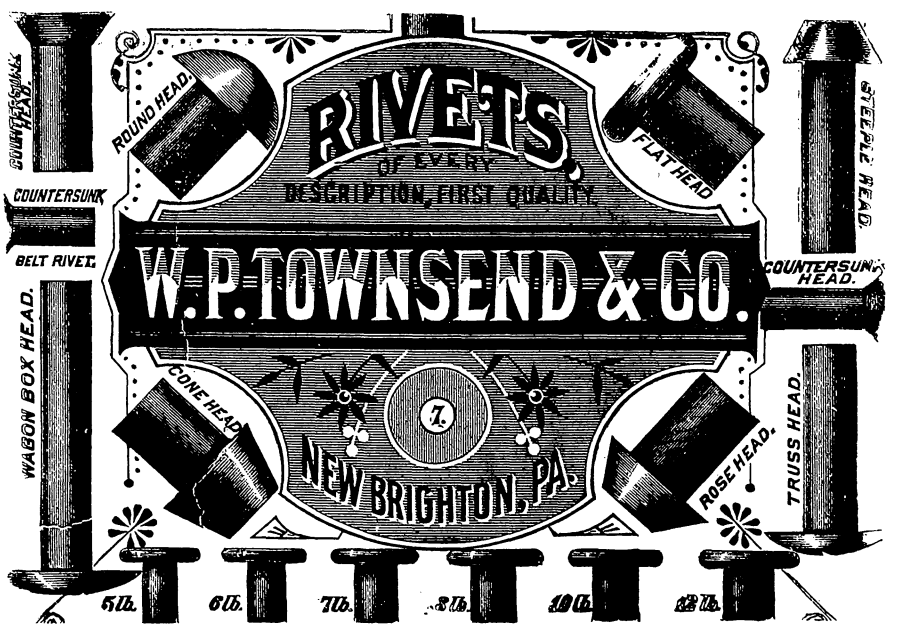
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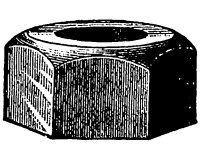
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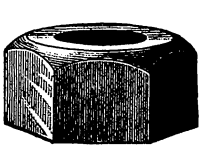
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Anvil and Vise (Combination).
Fulton Iron & Engine Works, Detroit, Mich.

Anvils
Eagle Anvil Works, Trenton, N. J.

Apple Parers.
Goodell Co., Antrim, N. H.

Arms and Ammunition.
Forehand Arms Co., Worcester, Mass.
Harrington & Richardson Arms Co. Worcester, Mass.
Hartley & Graham, 313 & 315 Broadway, New York
Ideal Mfg. Co., New Haven, Conn.
Stevens, J., Arms and Tool Co. Chicopee Falls, Mass.
Union Metallic Cartridge Co., 313 & 315 Broadway, N. Y.

Auctioneers.
Bissell, E. Son & Co., N. Y.

Axes.
Peck, A. G. & Co., Cohoes, N. Y.

Axle Grease.
Lovell, Tracy & Co., Hartford, Conn.

Axles, Springs, &c., *Manufrs of.*
Gautier Steel Dept. of Cambria Iron Co., Johnstown, Pa.
Wurster, F. W., & Co., Brooklyn, N. Y.

Babbitt Metal.
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Crown Smelting Co., Chester, Pa.
Hierts, T. & Son, St. Louis, Mo.
Keys, W. W. & R. M. Co., Bridgeport, Conn.
Reeves, Paul S., Philadelphia, Pa.

Bakers and Roasters.
Bronson Supply Co., Cleveland, Ohio.

Bale Ties.
Kilmer Mfg. Co., Newburg, N. Y.

Band Saw Machines.
Cross & Speirs Machine Co., Waterbury, Conn.

Barb Wire and Fence.
Consolidated Steel & Wire Co. St. Louis, Mo.
Gautier Steel Dept. of Cambria Iron Co., Johnstown Pa.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Washburn & Moen Mfg. Co., Worcester.

Bar Iron. *Manufacturers of*
Aetna-Standard Iron & Steel Co., Bridgeport, O
Allentown Rolling Mill, Allentown, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Montour Iron & Steel Co., Danville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Sternbergh, J. H. & Son, Reading, Pa.

Bellows, *Manufacturers of.*
Bullock Bellows Co., Cleveland, O.
Scott, Geo. M., Chicago, Ill.

Bells.
Bevin Bros. Mfg. Co., East Hampton.

Belt Dressing.
Jos. Dixon Crucible Co., Jersey City, N.J.

Belt Fasteners.
Bristols' Mfg. Co., Waterbury, Conn.
Clafien Mfg. Co., Cleveland, Ohio.
Talcott, W. O., Providence, R. I.

Belting, *Makers of.*
Alexander Bros., 412 N. 3d., Phila.
Jeffrey Mfg. Co., Columbus, O.
Link-Belt Engineering Co., Phila., Pa.
Main Belting Co., Philadelphia, Pa.
N. Y. Belting & Packing Co., Ltd., N. Y.
Roberts Mfg. Co., Pittsburgh, Pa.
Shults Belting Co., St. Louis, Mo.

Bending Rolls.
Wickes Bros., Saginaw, Mich.

Bicycles.
Eagle Bicycle Mfg. Co., Torrington, Ct.
Lovell, Jno. P. Arms Co. Boston, Mass
Pope Mfg. Co., Boston, Mass.
Read, Wm. & Sons, Boston, Mass.
Western Wheel Works, Chicago, Ill.

Bits and Braces.
National Mfg. Co., Wilkes-Barre, Pa.

Blocks, Tackle, *Makers of.*
Cleveland Block Co., Cleveland, O.
Fulton Iron & Engine Works, Detroit Mich.

Blowers.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Huyett & Smith Mfg. Co., Detroit, Mich.
Sturtevant, B. F., & Co., Boston, Mass.

Boiler Plates.
Carbon Steel Co., Pittsburgh, Pa.
McIlvain, Wm. & Sons, Reading, Pa.
Lukens Iron & Steel Co., Coatsville, O.
Pottstown Iron Co., Pottstown, Pa.

Boilers, Copper.
Randolph & Clowes, Waterbury, Conn

Boilers, Steam.
Babcock & Wilcox Co., 30 Cortlandt, Edge Moor Iron Co., Wilmington.
Fulton Steam Boiler Works and Fdry. Richmond, Ind
Harrison Safety Boiler Wks., Phila., Pa
Phoenix Iron Works Co., Meadville, Pa.
Pollock, W. B. & Co., Youngstown, O.
Southwark Fdy. & Mch. Co., Phila., Pa
Sterling Co., Chicago, Ill.
Wetherill, Robt. & Co., Chester, Pa.

Bolt Cutters.
Chambers Bros. Co., Philadelphia.
Howard Iron Works, Buffalo N. Y.
Porter, H. K., Boston, Mass.
Reece, Edw. F., Greenfield, Mass.
Wells Bros. Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Books.
Marine Review, Cleveland, Ohio.
Williams, David, 96-102 Reade, N. Y.
Wolcott & West, Syracuse, N. Y.

Boring Machines.
Buckeye Mfg. Co., Union City, Ind.

Boxes, Hdw. Shelf, &c.
Green, A. H., 22 Park Place, N. Y.

Box Straps and Corners.
Buffalo Specialty Mfg. Co., Buffalo, N. Y.

Brackets.
Atlas Mfg. Co., New Haven, Conn.

Brass, *Manufacturers of.*
Ansonia Brass & Copper Co., N. Y.
Davol, John & Sons, 100 John, N. Y.
Plume & Atwood Mfg. Co., N. Y.
Randolph & Clowes, Waterbury, Conn,
Scovill Mfg. Co., Waterbury, Conn.
Waterbury Brass Co., 296 B'way, N. Y.

Brass Butt Hinges.
Tiebout, W. & J., 16 & 18 Chambers,

Brass Founders.
Best, Fox & Co., Pittsburgh, Pa.
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Cramp, Wm. & Sons, S & E. B. Co., Philadelphia, Pa.
Emory, P. P. Mfg. Co., Springfield, Mass.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Fraim, E. T., Lancaster, Pa.
Haight & Clark, Albany, N. Y.
Keys, W. W. & R. M. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Phila., Pa.
Reeves, Paul S., Philadelphia.

Brass Goods.
Brass Goods Mfg. Co., 88 Chambers,

Bread and Cake Knives.
Clauss Shear Co., Fremont, O.

Bridge Builders.
Berlin Iron Bridge Co., East Berlin, Ct
Boston Bridge Works, Boston, Mass.
Wrought Iron Bridge Co., Canton, O.

Bronze (Tobin).
Ansonia Brass & Copper Co., 19-26 Cliff Street, N. Y.

Brooms and Brushes.
Cincinnati Mfg. Co., Cincinnati, O.
Lay, Jos. & Co., Ridgeville, Ind

Builders' Hardware.
Corbin, P. & F., New Britain, Conn.
Deits, A. E., 97 Chambers St., N. Y.
Reading Hdw. Co., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Butchers' Steels.
Chatillon, John & Sons, 85-89 Cliff St., N. Y.
Hoffman, C. & A., Philadelphia, Pa.

Butcher and Shoe Knives, *Manufacturers of.*
Chatillon, John & Sons, 85-89 Cliff St., N. Y.
Goodell Co., Antrim, N. H.
Wilson, John, Sheffield, England.

Butts and Hinges.
McKinney Mfg. Co., Alleghany, Pa.
Sabin Machine Co., Montpelier, Vt.
Stanley Works, New Britain, Conn.
Tiebout, W. & J., 16 Chambers, N. Y.

Calipers and Dividers.
J. Stevens Arms and Tool Co., Chicopee Falls, Mass.
Starrett, L. S., Athol, Mass.

Car Axles.
Roberts, A. & P. & Co. Phila.

Carboy Stands.
Hillebrand & Wolf, Philadelphia, Pa.

Car Wheels.
Whitney, A. & Sons, Phila.

Carriage Hardware, *Makers of.*
Covert's Saddlery Works, Farmer, N.Y.
Eccles, Richard, Auburn, N. Y.
McKinnon Dash & Hdw. Co., Ltd., Buffalo, N. Y.
Scranton Forging Co., Scranton, Pa.
Smith, H. D. & Co., Plantsville, Conn.
Wilcox & Howe Co., Birmingham, Conn.

Cartridge Reloading Tools.
Ideal Mfg. Co., New Haven, Conn.

Casters, Wheel, &c.
Clark, G. P., Windsor Locks, Conn.

Castings, Iron and Steel.
Ames Sword Co., Chicopee, Mass.
Arcade Malleable Iron Co., Worcester Mass.
Booth, The Lloyd, Co., Youngstown, O.
Burgess & Loxley, Buffalo, N. Y.
The Burr & Houston Co., Brooklyn, N.Y.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Cheney, S. & Son, Manlius, N. Y.
Chester Steel Casting Co., Phila.
Chrome Steel Works, Brooklyn, N. Y
Dayton Malleable Iron Co., Dayton, O.
Etts & Henger Mfg. Co., St. Louis, Mo.
Eureka Cast Steel Co., Chester, Pa.
Flagg, Stanley G. & Co., Phila.
Gartland Foundry Co., Cleveland, O.
Haight & Clark, Albany, N. Y.
Hammer & Co., Branford, Conn.
Herrick, J. A., 284 Pearl St., N. Y.
Johnson, I. G. & Co., Spuyten Duyvil.
Mahoning F'dry & Mch. Co., Danville, Pa.
Palmers & De Mooy, Cleveland, O.
Sessions Foundry Co., Bristol, Conn.
Shilling Fdy. Co., Columbus, O.
Spencer's, I. S., Sons, Guilford, Conn.
Standard Fdy. & Mfg. Co., Cleveland, O
Standard Steel Casting Co., Thurlow, Pa.
Taylor Iron & Steel Co. High Bridge, N.J.
Totten & Hogg Iron & Steel Fdry Co., Pittsburgh, Pa.
Union Mfg. Co., 103 Chambers St., N.Y.
Wetherill, Robt. & Co., Chester, Pa.
Woodruff, W. W. & Sons, Mt. Carmel, Conn.

Chains.
Bradlee & Co., Philadelphia.
Bridgeport Chain Co., Bridgeport, Conn
Link-Belt Engineering Co., Phila. Pa.
McKay, Jas. & Co., Pittsburgh, Pa,

Chimneys.
Phila. Engineering Works., Phila., Pa

Chisels, *Manufacturers of.*
Buck Bros., Millbury, Mass.
White, L. & I. J. Co., Buffalo, N. Y.

Chucks.
Cushman Chuck Co., Hartford, Conn.
Smith & Egge Mfg. Co., Bridgeport.
Union Mfg. Co., 103 Chambers, N. Y.
Whiton, D. E. Mach. Co., New London, Conn.

Clamps.
Hammer & Co., Branford, Conn.
Le Count, C. W., So. Norwalk, Conn.

Clipping Machines.
Hotchkiss, E. S., Bridgeport, Conn.
McCoy, Jos. F. & Co., 26 Warren St.

Coal.
Barns, C. K. & Co., Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Coffee and Spice Mills.
Sun Mfg. Co., Greenfield, O.
Waddel Wooden Ware Works, Greenfield, O.

Coke.
Barns, C. K. & Co., Philadelphia, Pa.
Houston, C. E. & Co., Philadelphia, Pa.
Rainey, W. J., Cleveland, O.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, Francis, Philadelphia, Pa.

Collections.
Hardware Board of Trade (Limited) 4 and 6 Warren, N. Y.

Condensers.
Worthington, Henry R., 86 & 88 Liberty Street, N. Y.

Conveying Machinery.
Brown Hoisting & Conveying Machine, Co., Cleveland, Ohio.
Jeffrey Mfg. Co., Columbus, O.
Link Belt Engineering Co., Phila., Pa.

Copper.
Ames Sword Co., Chicopee, Mass.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Hendricks Bros., 49 Cliff, N. Y.
New Haven Copper Co., 294 Pearl, N.Y.
Randolph & Clowes, Waterbury, Conn.
Wister, Francis, Philadelphia, Pa.

Coppersmith.
Emory, P. P. Mfg. Co., Springfield, Mass.

Cordage.
Samson Cordage Works, Boston, Mass.

Cork Screws.
Williamson, C. T. Wire Novelty Co Newark, N. J.

Corrugated Furnaces.
Continental Iron Wks, Brooklyn, N.Y

Corrugated Iron.
Cambridge Roofing Co., Cambridge, O
Cincinnati Corrugating Co., Piqua, O.
Moseley Iron Bridge & Roof Co., 6 Dey N. Y.

Counting Machines.
Durant, W. N., Milwaukee, Wis.
Osborn, G. Edw. & Co., New Haven, Ct

Coupling.
Almond, T. R., Brooklyn, N. Y.

Coverings, Boiler and Pipe.
Johns, H. W. Mfg. Co., 87 Maiden Lane.

Cranes.
Detroit Foundry Equipment Co., Detroit, Mich.
Halsey, W. S. & Co., Birdsboro, Pa.
Harrington, E. Son & Co., Phila., Pa.
Maris & Beekley Philadelphia, Pa.
Ridgway, Craig & Sons, Coatesville, P
Sellers, Wm. & Co., Inc., Phila., Pa.
Yale & Towne Mfg. Co., Stamford Conn.

Cupolas, Hot-Blast.
Byram & Co., Detroit, Mich.
Colliau, Victor, Detroit, Mich.
Detroit Fdry. Equipment Co., Detroit Mich.

Cutlery Cases.
Torrey, J. R. & Co., Worcester, Mass.

Cutlery, *Importers of.*
Field, Alfred & Co., 93 Chambers St., New York.
Gurney, Fred B., 116 Chambers St., N. Y.
Sickles, Sweet & Lyon, 35 Barclay, N.Y.

Cutlery, *Manufacturers of.*
Bingham, W. Co., Cleveland, Ohio.
Clauss Shear Co., Fremont, O.
Dame, Stoddard & Kendall, Boston Mass.
Electric Cutlery Co., 113 Chambers, N Y
Goodell Co., Antrim, N. H.
Northampton Cutlery Co., Northampton, Mass.
Wilson, John, Sheffield, England.

Dies.
Wilson, J. Fred, Worcester, Mass.

Die Forgings and Castings.
Bliss, E. W. Co, Brooklyn, N. Y.

Dog Collars.
Chapman Mfg. Co., Meriden, Conn.
Union Hardware Co., Torrington, Ct.

Door Checks and Springs.
Bardsley, J., 149 & 151 Baxter St., N. Y
Corbin, P. & F., New Britain, Conn.

Door Latches.
Graham, Jno. H. & Co., 113 Chambers St., N. Y.

Drain Cleaners.
Buckeye Mfg. Co., Union City, Ind.

Drawing Instruments.
Keuffel & Esser Co., 127 Fulton St., N.Y

Drilling Machines.
Bickford Drill & Tool Co., Cinn., Ohio
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower and Forge Co., Lancaster, Pa.
Colburn, A. M., New Haven, Conn.
Dallett, Thos. H. & Co., Philadelphia.
Dwight Slate Machine Co., Hartford Conn.
Halsey, Jas. T., Philadelphia, Pa.
Hamilton Mch. Tool Co., Hamilton, O.
Herrick & Cowell, New Haven, Conn.
Norton & Jones Machine Tool Wors Plainville, Conn.
Penna. Diamond Drill & Mfg. Co. Birdsboro, Pa.
Quint, A. D., Hartford, Conn
Sellers, Wm. & Co., Inc., Phila., Pa
Sibley & Ware, So. Bend, Ind.
Sigourney Tool Co., Hartford, Conn
Silver Mfg. Co., Salem, O.
Woodward & Rogers, Hartford, Conn.

Drop Forgings.
Belden Mach. Co., New Haven, Conn.
Billings & Spencer Co., Hartford, Conn
Boone, W. Mfg. Co., Boonton, N. J
Eccles, Richard, Auburn, N. Y.
Merrill Bros., Brooklyn, N.
Miner & Peck Mfg. Co., New Haven, Ct
Phila. Drop Forge Co., Philadelphia, Pa.
Scranton Forging Co., Scranton, Pa.
Spiers, J. C. & Co., Worcester, Mass.
Williams, J. H. & Co., Brooklyn, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.
Wyman & Gordon, Worcester, Mass

Drop Presses.
Bliss, E. W. Co., Brooklyn, N.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J

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Miner & Peck Mfg. Co., New Haven, Conn.
Stiles & Parker Press Co., Brooklyn, N. Y.
Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Dumb Waiters.
Storm Mfg. Co., Newark, N. J.

Dust Beaters.
Peabody & Parks, Troy, N. Y.

Dynamite.
New York Powder Co., 62 Liberty St N Y.

Dynamos.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Detroit Dynamo Co., Detroit, Mich.
Lovell Mfg. Co., Ltd., Erie, Pa.
Zucker & Levett Chemical Co., 10 & 14 Grand St., N. Y.

Edge Tools. *Makers of.*
Buck Bros., Millbury, Mass.
Buffalo Edge Tool Wks., Ridgway, Pa.
Plumb, Fayette R., Philadelphia, Pa.
White, L. & I. J. Co., Buffalo, N. Y.

Edging Shears.
Dille & McGuire Mfg. Co., Richmond, Ind.

Egg Beaters.
North Bros. Mfg. Co., Philadelphia.

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St., New York
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines.
Colburn Electric Mfg. Co., Fitchburg, Mass.
Eddy Electric Mfg. Co., Windsor Conn
Hanson & Van Winkle Co., Newark, N. J

Elevators. *Makers of.*
Link-Belt Engineering Co., Phila., Pa
Morse, Williams & Co., Phila., Pa.
Salem F'dry & Mch. Co., Salem, Mass.

Emery and Emery Wheels.
Bell, Geo. E., 36 John St. N. Y.
Grant Corundum Wheel Mfg. Co. Worcester, Mass.
N Y. Belting & Packing Co., Ltd., N. Y.
Northampton Emery Wheel Co. Leeds, Mass.
Norton Emery Wheel Co., Worcester Mass.

Enamels.
Nubian Iron Enamel Co., Cragin, Ill

Engineers and Contractors.
Aiken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y.
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amsler & Co., Pittsburgh, Pa
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa
Witherow, Jas. P. Co., Pittsburgh; Pa.

Engines, Gas.
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg. N. Y.

Engines, Steam. *Makers of.*
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Erie Engine Works, Erie, Pa.
Harrisburg Fdy. & Machine Works Harrisburg, Pa.
Lane & Bodley Co., Cincinnati, O.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Phoenix Iron Wks. Co. Meadville, Pa.
Southwark Foundry and Machine Co. Phila., Pa.
Ted, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.
Sweester, W. A., Brockton, Mass

Expansion Bolts.
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O.
Steward & Romaine Mfg. Co., Phila. Pa.

Faucets, Self-Measuring.
Lane Bros., Poughkeepsie, N. Y

Faucets, Wooden. *Makers of.*
John Sommer's Son, Newark, N. J.

Feed-Water Heaters.
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N. Y
Harrison Safety Boiler Wks. Phila, Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire & Iron Wks., Milwaukee

Files, *importers of*
Moss, F. W., 80 John, N. Y.

Files and Rasps, *Manufacturers of*
Arcade File Works, Anderson, Ind.
Sanker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.

Fire Brick. *Makers of.*
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer B & Sons, foot E. Houston, St
McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro., Woodbridge.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Fishing Tackle.
Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flour Sifters.
Meyers, F. J. Mfg. Co. Covington, Ky.

Flue Cleaners.
Mackey, Jas. T., St. Louis, Mo.

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Foreign Periodicals.
Stechert, G. E., 810 Broadway, N. Y.

Forges, Portable, &c.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Foos Mfg. Co., Springfield, Ohio.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Frankford Steel Co., Phila. Pa.
Scranton Forging Co., Scranton, Pa
U. S. Projectile Co., Brooklyn, N. Y.

Foundry Facings.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.

Foundry Riddles.
Estey, W. S. 65 Fulton, N. Y.

Foundry Supplies.
Colliau, Victor, Detroit, Mich.
Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O

Friction Clutches.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.
Evans Friction Cone Co., Boston, Mass

Fruit Presses.
Enterprise Mfg. Co. Philadelphia, Pa.

Furnaces, Foundry.
Byram & Co., Detroit, Mich.

Gas Producers.
Wood, R. D. & Co. Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast, Henry B. & Co., Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
D. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston, Mass.
Poole, Robt. & Son Co., Baltimore, Md.
U. S. Projectile Co., Brooklyn, N. Y.

Glass Boards.
Canton Saw Co., Canton, O.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glass Tubes.
Ashcroft Mfg. Co., 111 Liberty St., N. Y.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.
Supplee Hardware Co., Phila., Pa.

Grinding and Polishing Machines.
Herrick & Cowell, New Haven, Conn.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grinding Mills.
Foos Mfg. Co., Springfield, O.

Grindstone Dressing Machinery
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gun Implements.
Union Hdw. Co., Torrington, Conn.

Gunpowder, *Makers of.*
Laflin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich.

Handles.
New York Mallet and Handle Wks. 456 E. Houston St., N. Y.

Haugers, Door.
Chicago Spring Butt Co., Chicago, Ill.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Cronk Hanger Co., Elmira, N. Y.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Hotchkiss, E. S. Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Clarke Thomas, St. John, New Brunswick.
Graham, John H. & Co., 113 Chambers,
McCoy, Jos F. Co., 26 Warren St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N. Y.

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co. New Haven, Conn.
Clark Mfg. Co., Buffalo, N. Y.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Gwinner Mfg. Co., Hamilton, O.
Haines & Zimmerman, Phila. Pa.
Hart, H. C Mfg. Co., Detroit, Mich.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Philadelphia, Pa
Peabody & Parks, Troy, N. Y.
Welland, Chas., 149 Chambers St., N. Y
Wilson, J. Fred, Worcester, Mass.

Hardware, Yacht and Ship.
Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.
Box, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co. Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Stuart & Peterson Co., Phila., Pa.

Hollow Ware, Aluminum.
Illinois Pure Aluminum Co. Lemont, Ill

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, *Makers of.*
Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt,
Putnam Nail Co., Neponset, Boston, Mass.

Horse and Mule Shoes. *Makers of.*
Bryden Horse Shoe Co., Catasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie N. Y.
Rhode Island Perkins Horse Shoe Co., Providence
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.

Hose.
Cleveland Rubber Works, Cleveland, O.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N. Y.

Hydraulic Forging.
U. S. Projectile Co., Brooklyn, N. Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
Clement & Dunbar, Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Injectors.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York
Sherwood Mfg. Co., Buffalo, N. Y.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. Hartford Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y

Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Barclay W.) & Co., Phila.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron, *Merchants.*
Barnes, C. K. & Co., Philadelphia, Pa
Borden & Lovell, 70 West, N. Y.
Bussenius & Cuniffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia
Cotton, Barclay W. & Co., Phila.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co. 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St. N. Y
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, *Importers.*
Abbott Wheelock & Co. N. Y, and Boston
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet. *Manufacturers of.*
Cambridge Iron & Steel Co., Cambridge Ohio
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Kettle Bottoms.
Diamond Hdw. Co., Boston, Mass.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladders, Rolling.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.

Ladles.
Detroit Fdy. Equipment Co., Detroit, Mich.

Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.

Lamps.
Standard Lighting Co., Cleveland, O.

Lanterns.
Buhl Stamping Co., Detroit, Mich.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls N. Y.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Laundry Machines.
Johnson, S. C., Racine, Wis.

Lawn Mowers.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Champion Mfg. Co., Richmond, Ind.
Coldwell Lawn Mower Co., Newburg, N. Y.
Dille & Anderson, Richmond, Ind.
Dille & McGuire Mfg. Co., Richmond, Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Mast, Foos & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila. Pa.

Lawn Rakes.
Gibbs Mfg. Co., Canton, Ohio.
Konler, F. E. & Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse N. Y.

Lawn Sprinklers.
Ette & Henger Mfg. Co., St. Louis,
Gibbs Mfg. Co., Canton, Ohio.
McGowan, John H. Co. Cincinnati
Portland Lawn Sprinkler Co., Portland, Me.

Leather Parts.
Greene, J. Frank & Co., 27d Water St. New York.

Lemon Squeezers.
Ripley Mfg. Co., Unionville, Conn.

Letters and Figures, Metallic
White, A. A. & Co., Providence, R. I.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol. Mass.

Locks & Knobs, *Manufacturers of*
Deits, A. E., 97 Chambers, N. Y
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa
Smith & Egge Mfg Co. Bridgeport, Conn
Yale & Towne Mfg. Co., Stamford, Conn

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Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N.Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati, Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N.Y.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila. Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Howard & Morse, 45 Fulton St., N. Y.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield Vt
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co. Rochester, N.Y
Manville, E. J. Mch. Co, Waterbury, Conn
National Machinery Co., Tiffin, Ohio
Newark Mch. Tool Works, Newark, N.J
New Haven Mfg. Co., New Haven, Conn
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Prentiss Tool & Supply Co., N. Y
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ld., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wickes Bros., Saginaw, Mich.
Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.
Adt, Jno. & Son, New Haven, Conn.

Machine Knives.
Goring Coes & Co., Worcester, Mass.
Loyd, John, 558-562 Water St., N. Y.

Machine Tools.—*See Machinery,*

Machine Work.
Papping, J., 58th St., & 11th Ave., N.Y. City.

Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y.
Starrett, L. S., Athol, Mass
Vallentine Tool Co., Hartford, Conn.

Machinists' Tools and Supplies.
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.

Mallets.
N. Y. Mallet & Handle Works, N. Y.

Mangles.
Johnson, S. C., Racine, Wis.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St., N.Y.
Lufkin Rule Co., Saginaw, Mich.

Meat Cutters and Stuffers.
Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Instruction.
Correspondence School of Mechanics Scranton, Pa.

Metals.
Fearing, Wm. S., 100 Chambers, N. Y
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
American Metal Co., N. Y.

Metallurgists.
Britton J. Blodgett, Phila.

Milling Machines.
Cin. Milling Mch. Co., Cincinnati, Ohio.

Mincing Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
Darby, Edw. & Sons Phila. Pa.
Leonard, B. E., Scranton, Pa.

Mining Screens.
Harrington & King Perforating Co Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y

Models. *Makers of*
Franklin, H. H. Mfg. Co., Syracuse, N. Y.

Molding Sand.
Obermayer, S. Co., Cincinnati, O.

Money Drawers.
Sun Mfg. Co., Greenfield, O.
Waddel Wooden Ware Works, Greenfield, O.

Motors, Water and Electric.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington,
Pottstown Iron Co., Pottstown, Pa
Riverside Iron Wks, Wheeling, W. Va.

Nickel Platers' Supplies.
Colburn Electric Mfg. Co., Fitchburg, Mass.
Eddy Electric Mfg. Co., Windsor, Conn
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett Chemical Company. 10 to 14 Grand St., N. Y

Nerway Shapes, *Rollers of.*
Bowland, William & Harvey, Frankford, Philadelphia

Novelty Manufacturers.
Franklin, H. H. Mfg., Syracuse, N. Y.

Nut Machines.
Dunham Nut Mch. Co., Unionville, Ct

Nuts, Bolts, &c., *Makers of.*
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R. I
Blake & Johnson, Waterbury, Conn.
Haskell, Wm. H. Co., Pawtucket, R. I.
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Port Chester Bolt and Nut Co., Port Chester, N. Y.
Russell, Burdsall & Ward, Port Chester
Sternbergn, J. R. & Son, Reading, Pa
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R. I.

Oil Cups and Lubricators.
Sherwood Mfg. Co., Buffalo, N. Y.

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
Foster Stove Co., Ironton, O.
Glazier Stove Co., Chelsea, Mich.

Ores.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Morrison, Robt., St. Louis, Mo.
N. Y. Belting & Packing Co. Ltd., N.Y.

Padlocks.
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Miller Lock Co., Philadelphia, Pa.

Paint.
Dixon, Jos. Crucible Co., Jersey City, N.J
Garry Iron & Steel Roofing Co., Cleveland, O.

Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O

Paint Cans.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

Patent Solicitors.
Howson & Howson, Phila. & Wash'gton.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co. Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Crosby Steam Gage & Valve Co., Boston, Mass.
Haik & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

Pile Drivers.
Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast Henry B. & Co., Philadelphia.
Saunder's Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c., *Makers of.*
McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas, *Makers of.*
Cumberland Nail & Iron Co., Phila, Pa
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W Va.
Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.

Planes, *Manufacturers of.*
Stanley Rule & Level Co., N. Y.

Plated Ware.
Boardman, L. & Son, New Haddam Ct
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, Wm. Mfg. Co., Hartford, Ct.
Rogers & Hamilton, Waterbury, Ct.
Upson & Hart Co., Unionville, Ct.

Plate, Iron and Steel, *Mfrs of*
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa
Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.

Polishing Machines.
Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
La Massena, C. E. & Co., Newark, N.J.

Post Hole Diggers.
Buckeye Mfg. Co., Union City, Ind.
Gibbs Mfg. Co., Canton, Ohio.
Wister, L. & R. & Co., Philadelphia, Pa.

Poultry Nettings.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Wks. Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
Laflin & Rand Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y

Power Hack Saws.
Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Jenkins & Lingle, Bellefonte, Pa.

Presses, Dies, &c.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn

Presses, Power, *Makers of.*
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct,
Merriman, A. H., Meriden.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
Keystone Clutch Mch. Wks., Phila., Pa.
Lake, J. H. & D. Co., Massillon, Ohio,
Reeves Pulley Co., Columbus, Ind.

Pulley Fixings.
Foley, J. W. & Co., Cincinnati, O.

Pumping Machinery.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Hooker-Colville Steam Pump Co., Chicago, Ill.
Lucas, C. O. & Co., Greenville, Ohio.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa
Valley Pump W'ks, Easthampton, Mass
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, *Makers of.*
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Mast, Foos & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Ferracute Mch. Co., Bridgeton, N. J.
Henderer, A. L., Wilmington, Del.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
Perry, W. H. & Co., Providence, R. I.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Estey, W. S. 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.
Sun Mfg. Co., Greenfield, O.
Wadde Wooden Ware Works, Greenfield, O.

Razors.
Electric Cutlery Co., 113 Chambers, N. Y
J. R. Torrey Razor Co., Worcester, Mass

Reels.
Hendryx, A. B. Co., New Haven, Conn

Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.

Refrigerators.
Monroe Refrigerator Co., Lockland, O.

Rivets.
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Troy, N. Y.
Cobb & Drew, Plymouth, Mass.
New England Screw Co., Boston, Mass.
Sternbergh, J. R. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Rock Drills.
Sand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd, Co., Youngstown, O.
Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning F'dry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd, Co., Youngstown, O.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh Pa.

Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Cincinnati Corrugating Co., Piqua, O.
Johns, H. W Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N.Y

Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa

Rubber Goods.
Canfield, H. O., Bridgeport, Conn.

Rules, *Manufacturers of.*
Keuffel & Esser Co., 127 Fulton St., N.Y
Lufkin Rule Co., Saginaw, Mich.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers.

Rust Preventive.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.

Sad Irons.
Enterprise Mfg. Co., Philadelphia, Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Pullman Sash Balance Co., Rochester, N. Y.
Vanderbilt Sash Balance Co., Canandaigua, N. Y.

Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.

Sash Locks.
Columbian Sash & Door Lock Co., Wauseon, Ohio.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Portable Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.

Saw Filing Machines.
Disston, Henry & Sons, Philadelphia, Pa.

Saws, *Makers of.*
Disston, Henry & Sons, Phila., Pa.
National Saw Co., 96 Reade St., N. Y.
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Taintor Mfg. Co., 84-86 Chambers, N. Y.

Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N.Y

Scrapers, Road.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.

Screens, Coal and Ore.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Screens, Door and Window.
Phillips, A. J. & Co., Fenton, Mich.
Queen Anne Screen Co., Burlington, Vt.

Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.

Screws, *Makers of.*
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
National Screw & Tack Co., Cleveland, Ohio.
New England Screw Co., Boston Mass.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls N.Y

Scythe Stones and Whetstones.
Pike Mfg. Co., Pike Stat'n, N. H.
Cleveland Stone Co., Cleveland, O.

Shafting, *Makers of.*
Cresson, Geo. V., Co., Philadelphia, Pa.
Fairmount Mch. Co., Philadelphia, Pa.
Fitzsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc. Phila., Pa.
Stow Co. Mfg, Binghamton, N. Y.

Shaped Iron and Steel,—*Manufacturers of.*
Ætna-Standard Iron & Steel Co. Bridgeport, O.

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Allentown Rolling Mill, Allentown, Pa
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phœnix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn
Heinischs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, *Manufacturers of.*
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh,
Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ld., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch. A. B. & Co., Peoria, Ill.

Sinks.
Douglas, W. & B., Middletown, Conn.

Skates, Ice.
Barney & Berry, Springfield, Mass.
Dame, Stoddard & Kendall, Boston, Mass.
Lovell, Jno. P. Arms Co., Boston, Mass.
Sickels, Sweet & Lyon, 35 Barclay St., N. Y.
Winslow, Saml, Skate Mfg. Co. Worcester, Mass.

Skates, Roller.
Barney & Berry, Springfield, Mass.
Henley, M. C., Richmond, Ind.
Union Hardware Co., Torrington, Conn
Winslow, Saml., Skate Mfg. Co., Worcester, Mass

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.
Clendenin Bros., Baltimore, Md.
Covert Mfg Co., West Troy, N. Y.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.

Spelter.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
Rogers & Hamilton Co., Waterbury, Conn.
Upson & Hart Co., Unionville, Ct.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y

Springs.
Cary, Alanson, 240-242 W. 29th St., N.Y
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y
Morgan Spring Co., Worcester, Mass
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Chicago Spring Butt Co. Chicago, Ill.
Pullman Sash Balance Co., Rochester N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St. New York.

Stamping Works.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co. Binghamton N.Y

Steam Gauges.
Ashcroft Mfg. Co., 111 Liberty St., N.Y
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., *Makers of.*
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Camden, N.J.

Steam Separators.
Gouvert Mfg. Co., 32 Cortland St N. Y.
Harrison Safety Boiler Wks. Phila. Pa

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.

Steel Figures and Alphabets.
Hoefig, C. W., 52 Fulton St., N. Y.
Krogarud, W., 61 Fulton, N. Y.
Wolff, C. H., 177 William St., N. Y.

Steel Importers.
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 9? John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Ætna-Standard Iron & Steel Co., Bridgeport, O
Bethlehem Iron Co., S. Bethlehem, Pa
Boker, Hermnan & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Eiken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 9? John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburg Pa
Moss, F. W., 83 John N. Y
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co. High Bridge, N.J
Wardlaw, S. & C., Sheffield, Eng
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn

Steel, *Manufacturers' Agents.*
Barnes, C. K. & Co., Philadelphia, Pa
Corning, Edw, & Co., 29 B'way, N. Y
Frasse Co., 19 Warren St., New York.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, *Manufacturers of.*
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville Pa
Riverside Iron Wks., Wheeling, W. Va

Steel, Tool.
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill,
Croissant, M., Albany, N. Y.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunder's Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y

Stove Pipe Thimbles.
Cheney, S. & Son Manlius, N. Y

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.
Gwinner Mfg. Co., Hamilton, O.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse N. Y.

Strops.
Electric Cutlery Co. 113 Chambers, N.Y
J. R. Torrey & Co., Worcester, Mass.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co. La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation, Boston, Mass
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland O.
Phillips, E. & Sons, South Hanover.

Taps and Dies.
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila.

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tin Plate Machinery.
Lloyd Booth Co., Youngstown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St.,

Tire Upsetters.
Butts & Ordway, Boston, Mass,

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N.Y.

Tools.
Britton, Horace E., Stoughton, Mass.
Brown, R. H. & Co., New Haven, Conn.
Frasse Co., 19 Warren St., New York.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.
Tower & Lyon, 95 Chambers St., N. Y.

Tools, Blacksmith and Wheelwrights.
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R. Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasolene.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
Standard Lighting Co., Cleveland, O.

Transom Lifters.
Wollensak, J. F. Chicago, Ill.

Trucks, *Manufacturers of.*
Berger Bros., Philadelphia, Pa.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co. Lansing Mich.

Tubes, Seamless Drawn Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.

Tubes, Steel.
Ellwood Shafting & Tube Co., Ellwood City, Pa.
Leng's John S. Son & Co., 4 Fletcher St., New York.
Shelby Steel Tube Co., Shelby, O.
U. S. Projectile Co., Brooklyn, N.Y.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills. *Makers of.*
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 56 John N. Y.
Mason Regulator Co., Boston, Mass.

Ventilating Fans.
Huyett & Smith Mfg. Co., Detroit, Mich

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vises.
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Tower & Lyon, 95 Chambers St., N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Wheelbarrows.
Amer. Steel Scraper Co., Sidney, Ohio.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Toledo Wheelbarrow Works, Toledo, Ohio.

Window Cord, *Makers of.*
Samson Cordage Works, Boston, Mass

Wire, *Manufacturers of.*
Consolidated Steel & Wire Co., St. Louis, Mo.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co. Worcester, Mass

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Wks. Milwaukee Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.
Higganum Hdw. Co., Higganum, Conn
Cronk Hanger Co., Elmira, N. Y.
King, J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods, *Manufacturers of.*
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros, Cortland, N. Y.
Williamson, C. T. Wire Novelty Co. Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester Mass.
Waterbury Mch. Co., Waterbury, Conn

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn.

Wire Nails.
Consolidated Steel & Wire Co., St. Louis, Mo.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle Pa.
Phillips, E. & Sons, South Hanover Mass
Phillips, Townsend & Co., Phil., Pa.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City

Wire Rods, Steel.
Consolidated Steel & Wire Co., St. Louis, Mo.
New Castle Wire Nail Co., New Castle Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y

Wire Rope, Iron and Steel *Makers.*
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Wood-Working Machinery
Fay, J. A. & Egan Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N.Y.

Wrenches, *Manufacturers of.*
Bemis & Call Hardware & Tool Co Springfield, Mass.
Billings, Spencer & Co., Hartford. Conn
Coes Wrench Co., Worcester, Mass.
Keystone Mfg. Co., Buffalo, N. Y.
Tower & Lyon, 95 Chambers St., N. Y
Trimont Mfg. Co., Roxbury, Mass
Williams, J. H., Brooklyn, N. Y.

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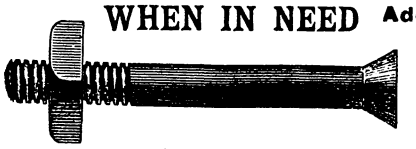
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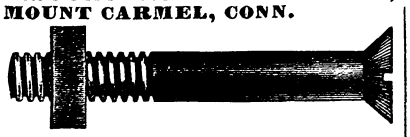
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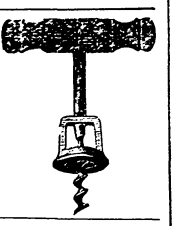




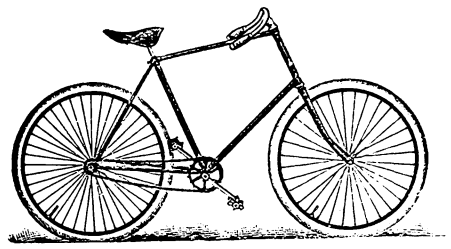
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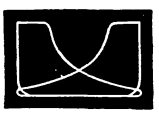


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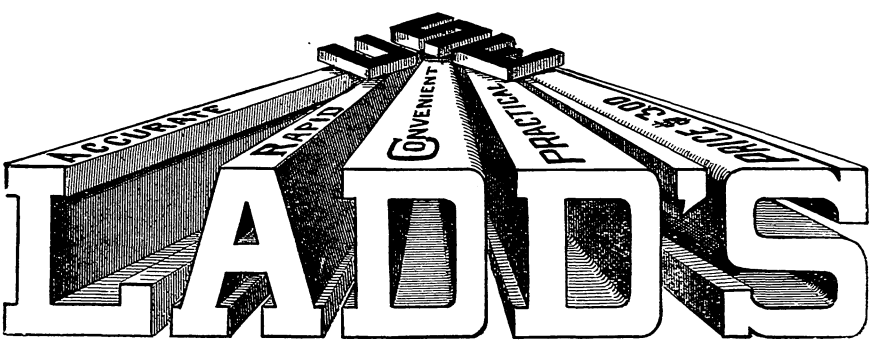


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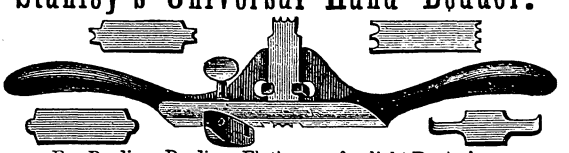
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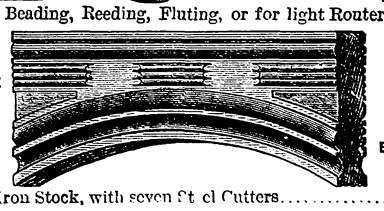
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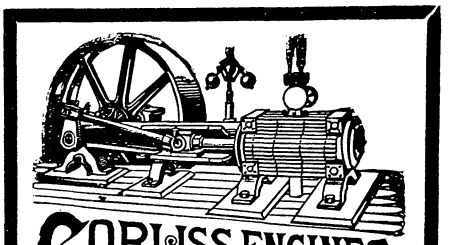
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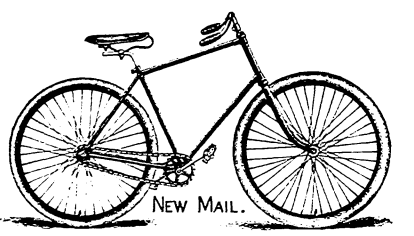


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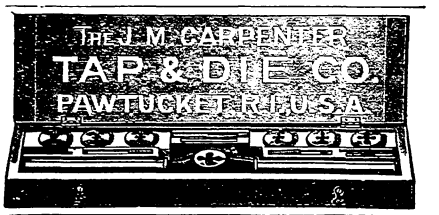
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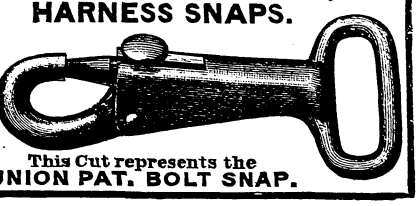
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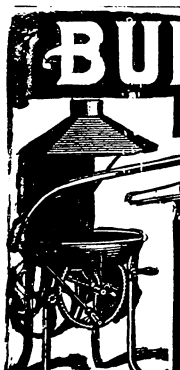
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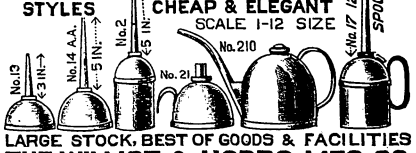



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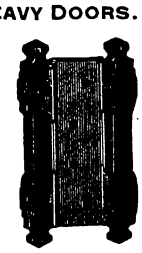
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Alphabetical Index to Advertisers " 95
Advertising and Subscription Rates " 1203

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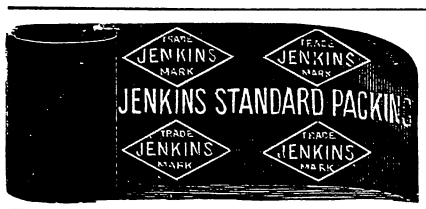
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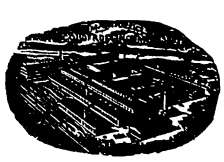
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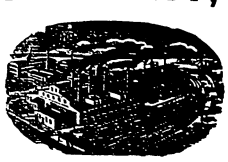
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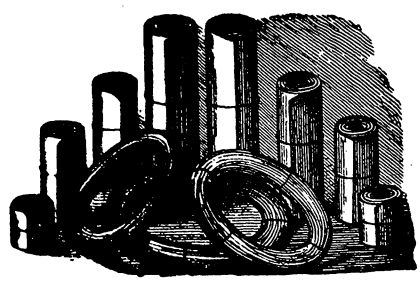
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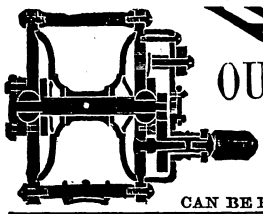
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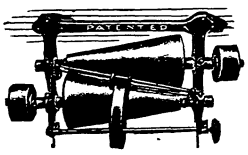
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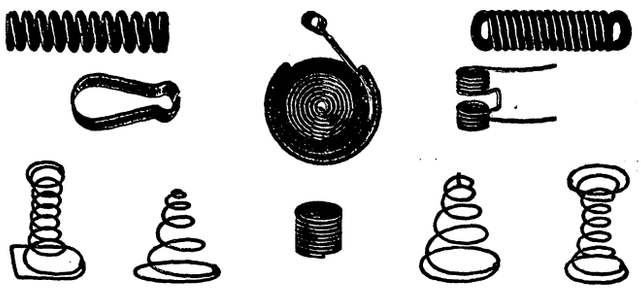
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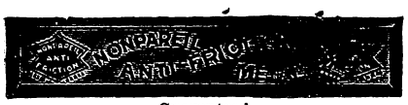
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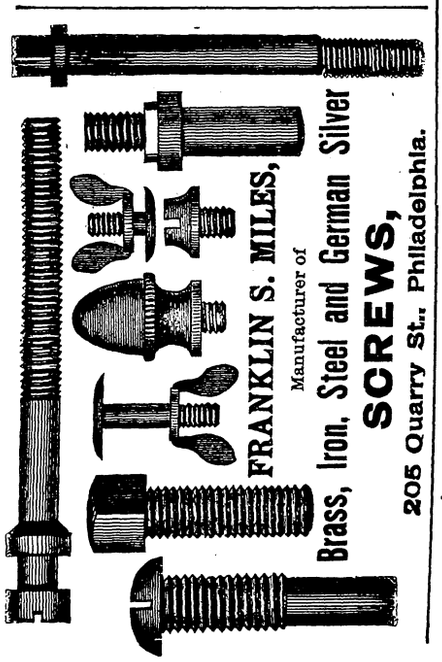


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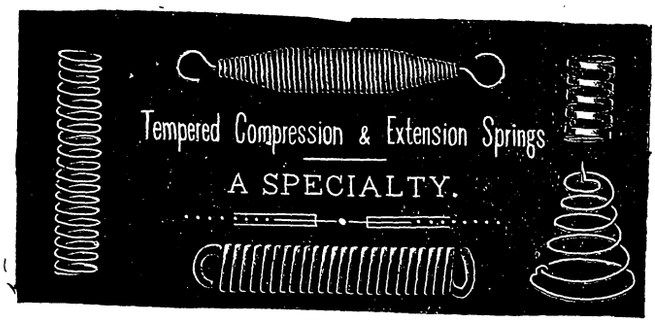
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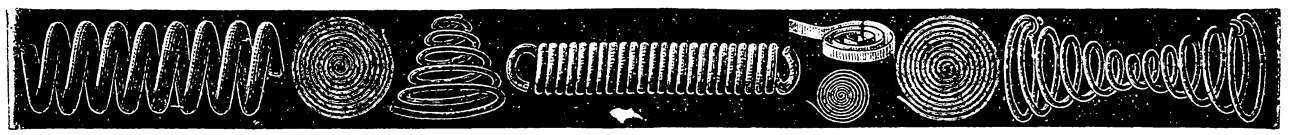
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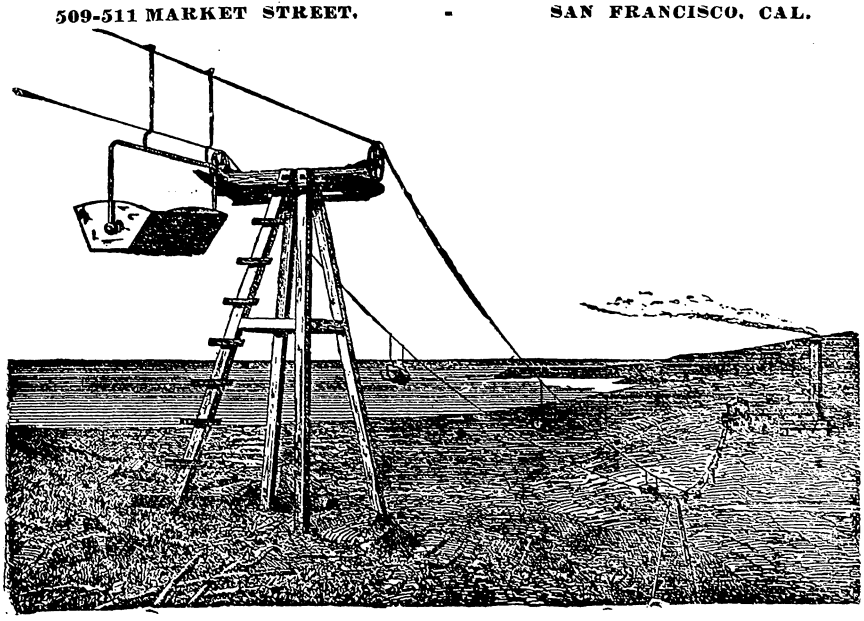
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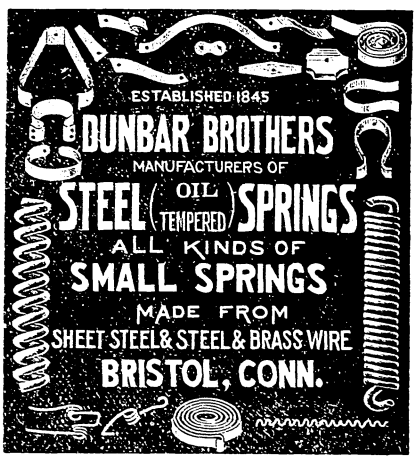
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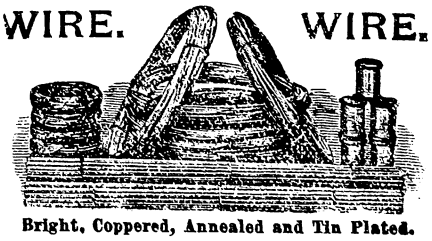


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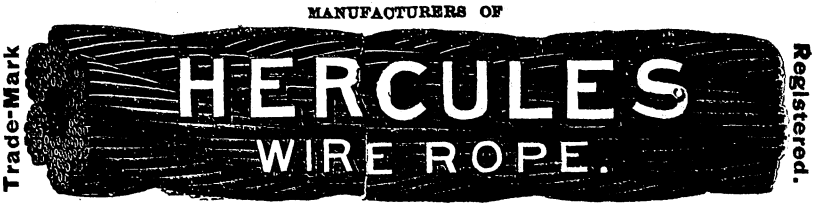
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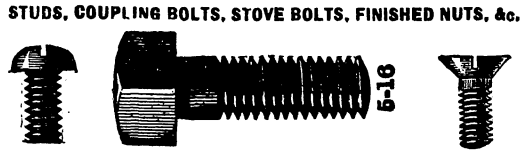
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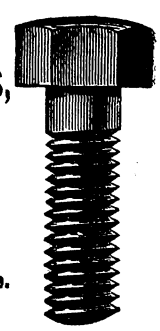
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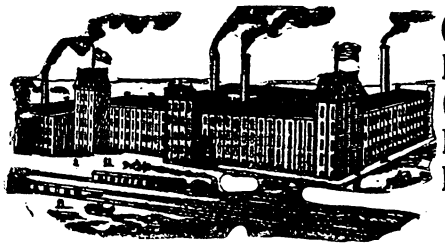
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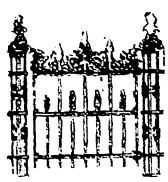
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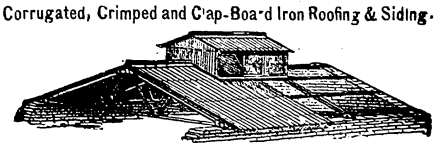


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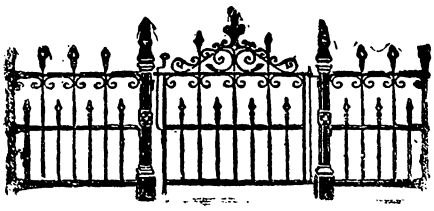
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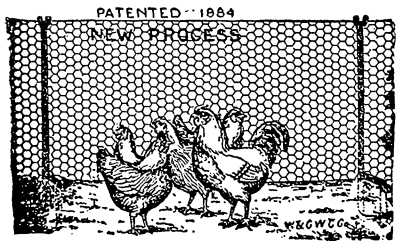
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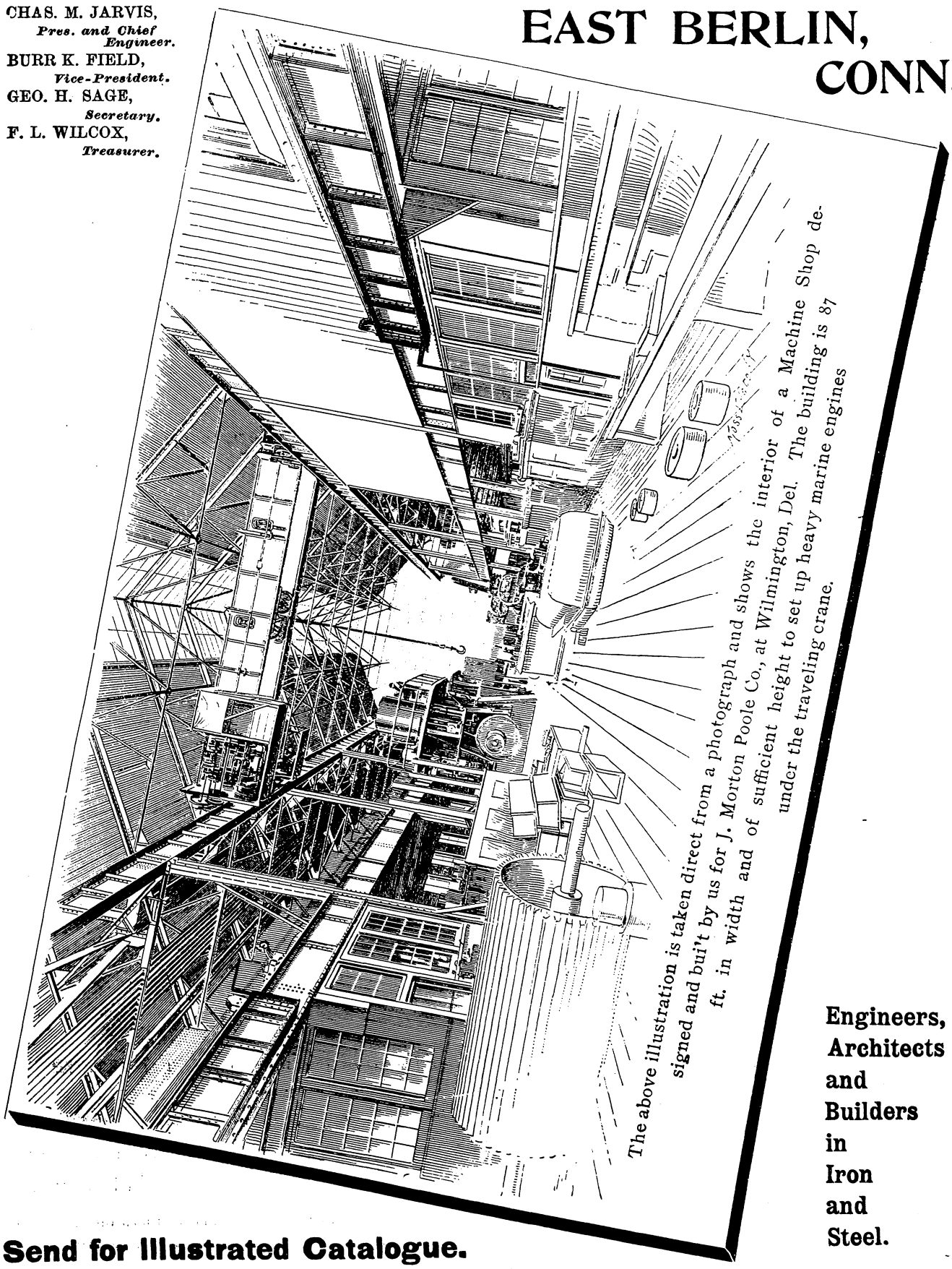
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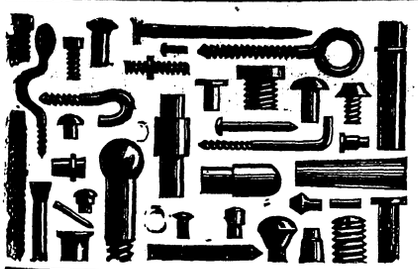
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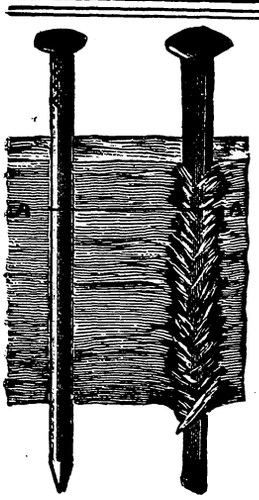
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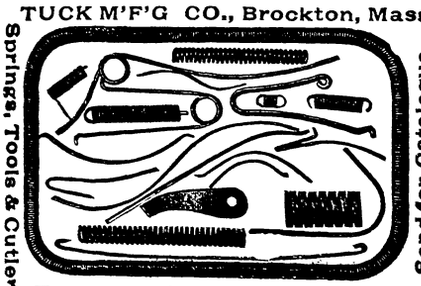
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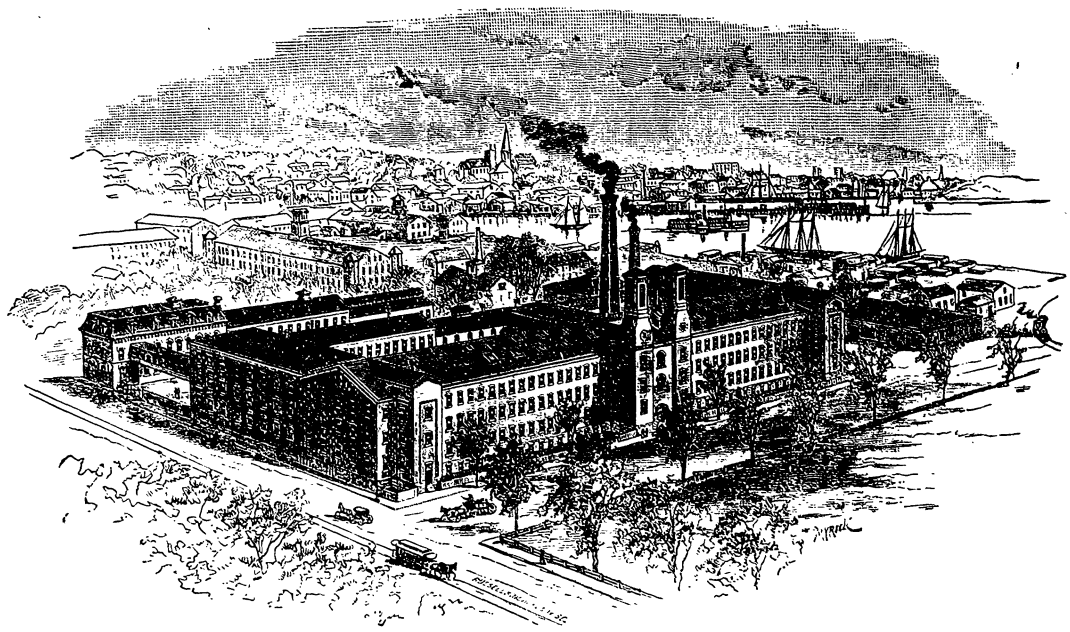
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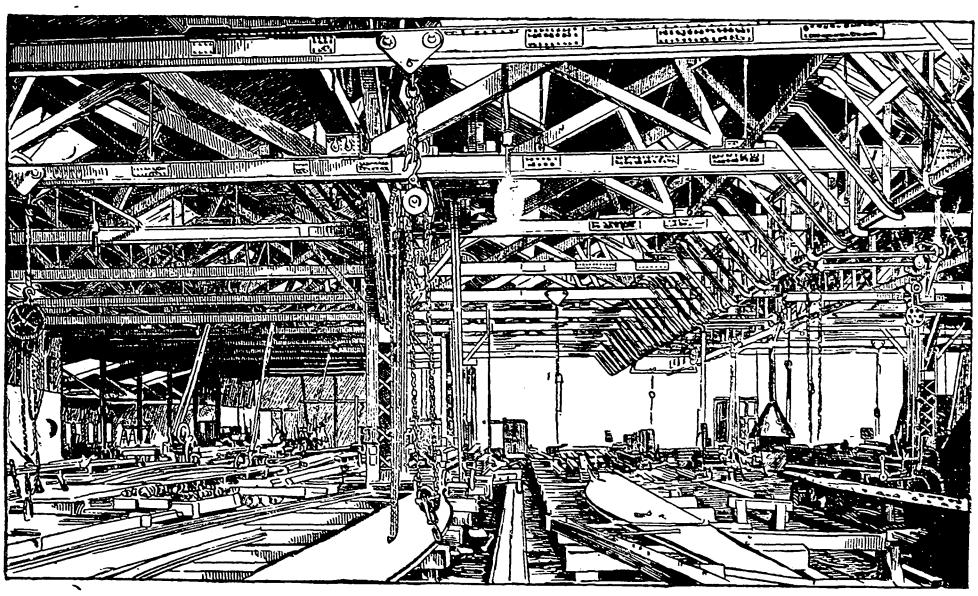
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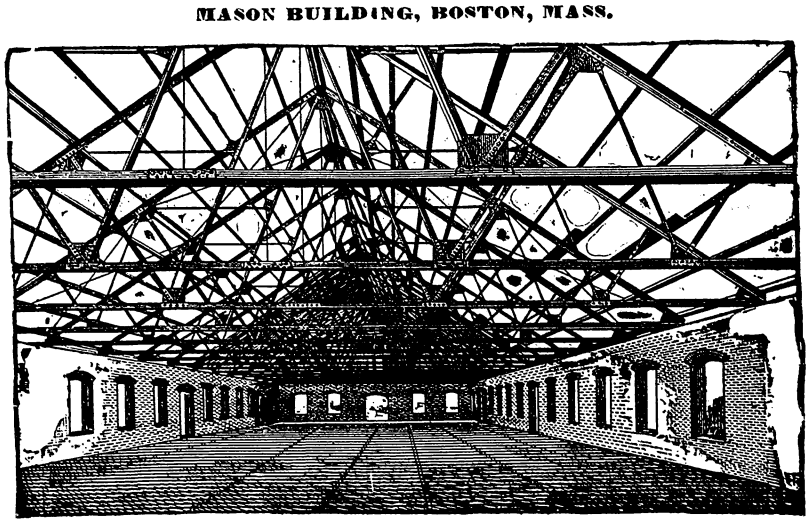
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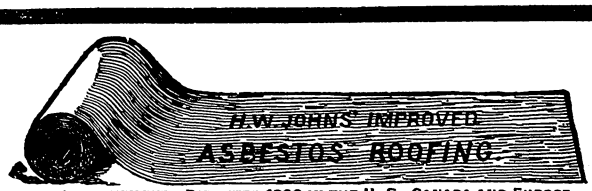
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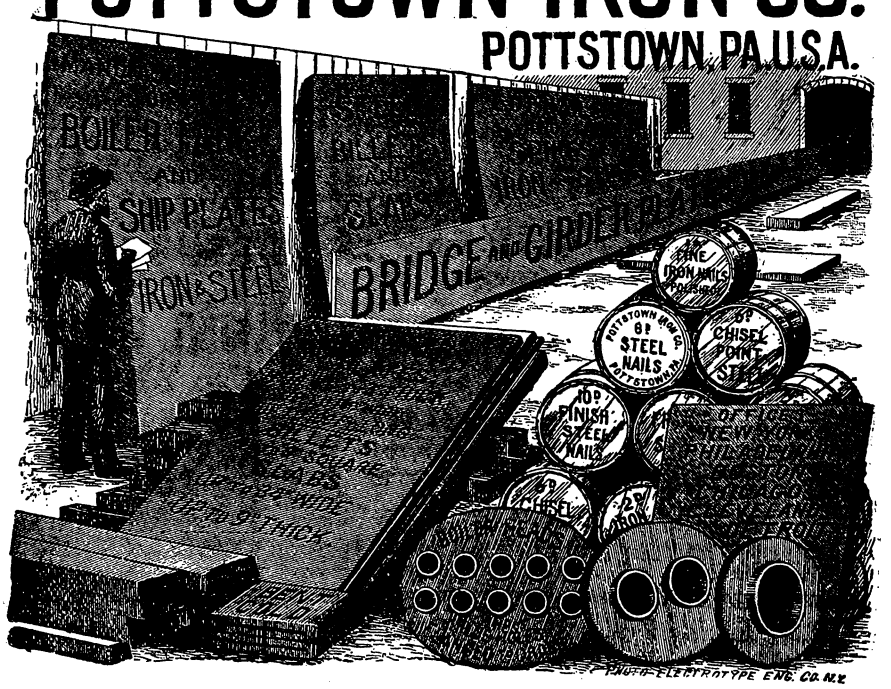
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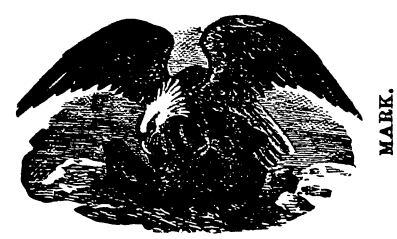
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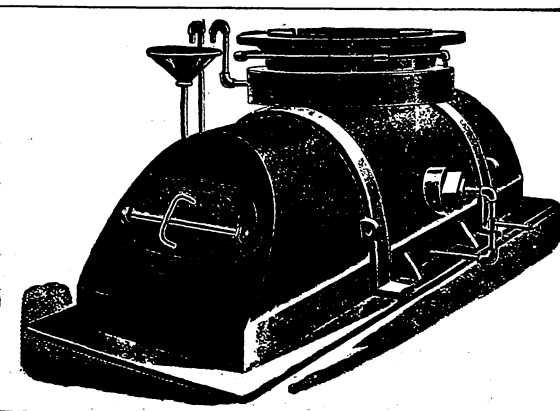
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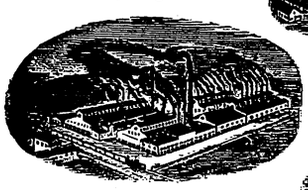
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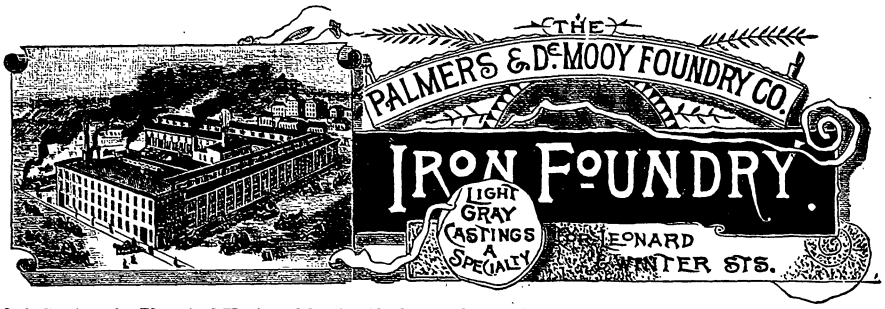
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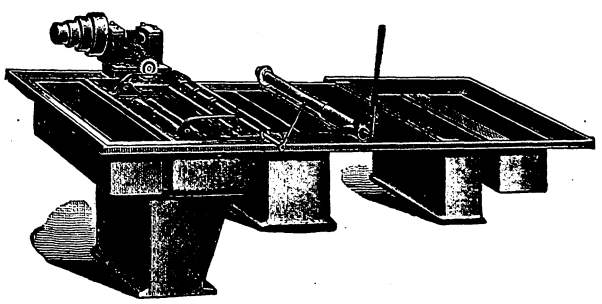
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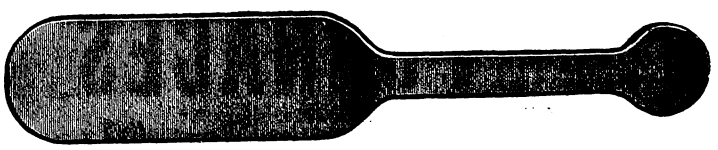
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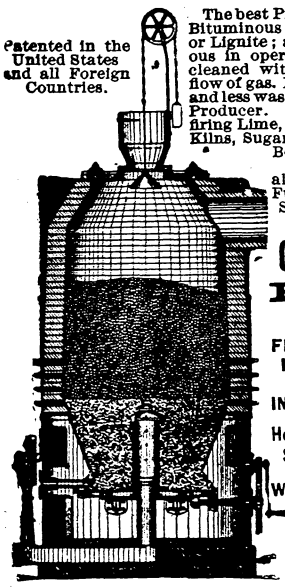
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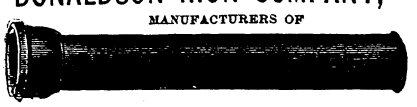
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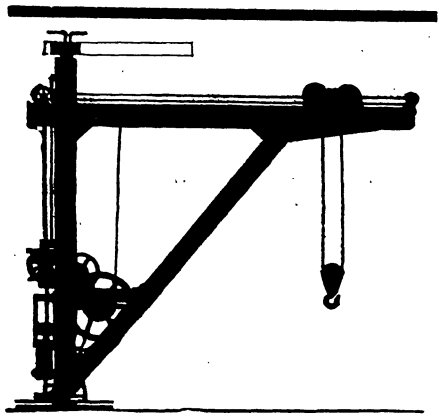
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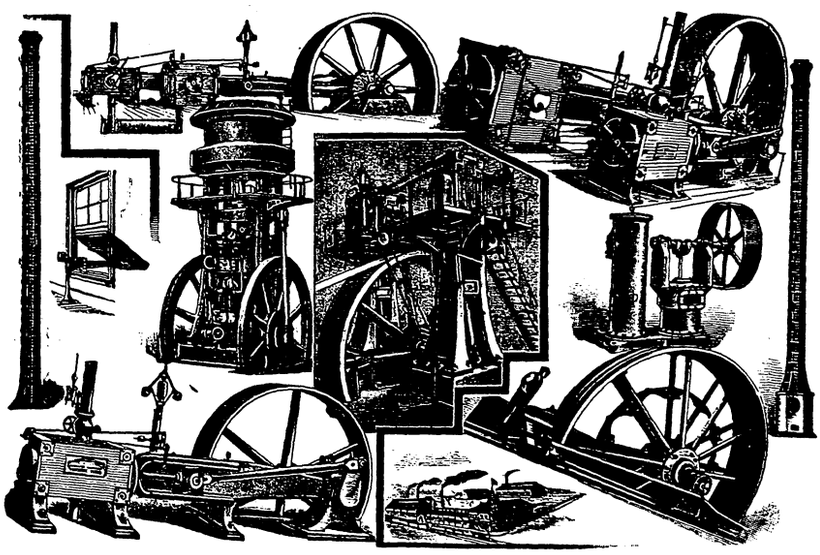
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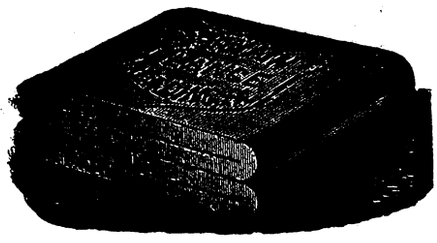


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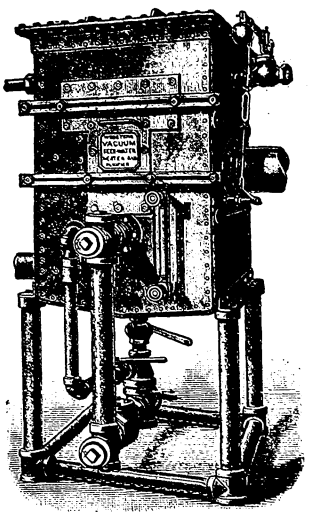
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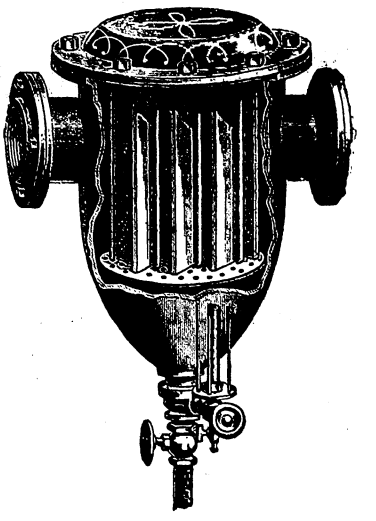
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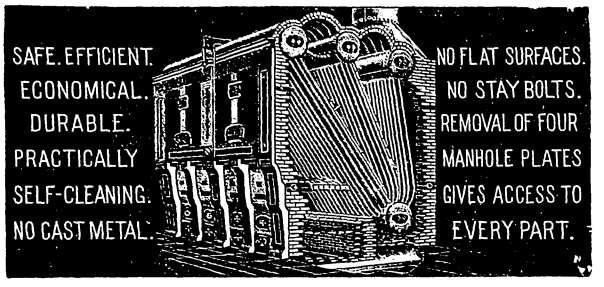
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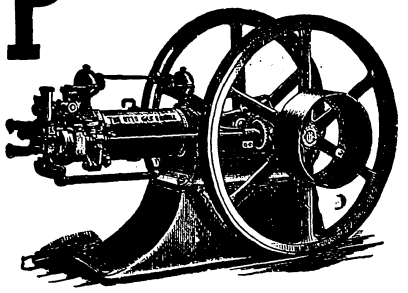


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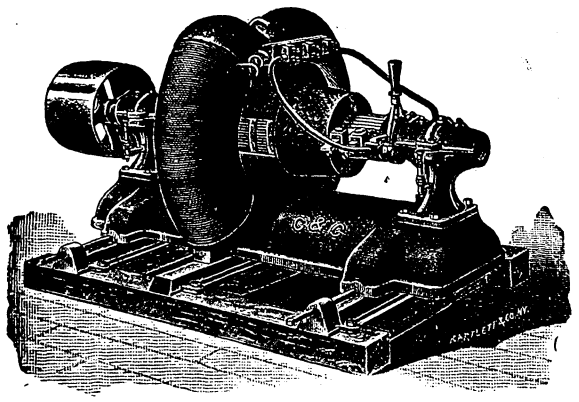
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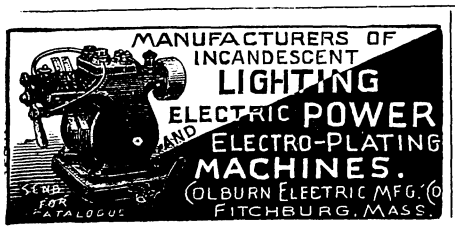
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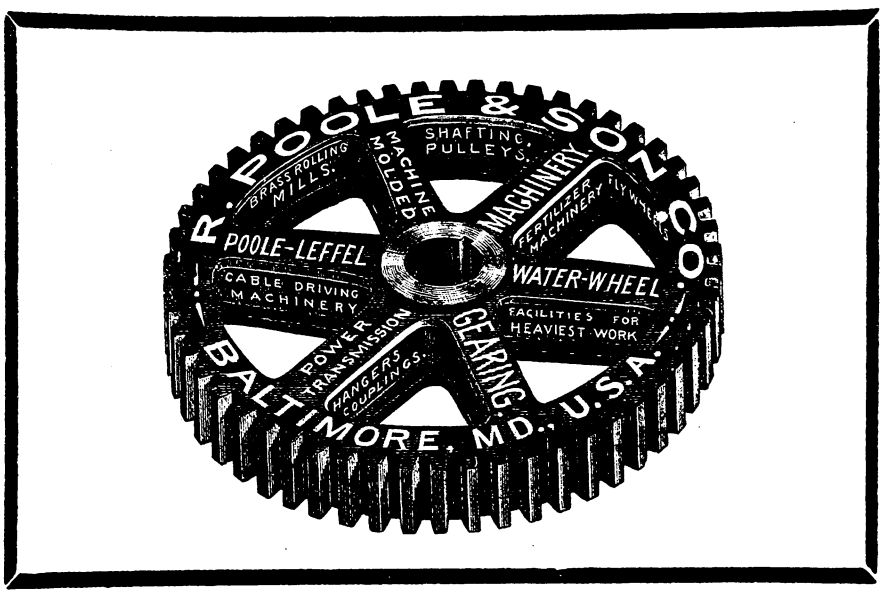
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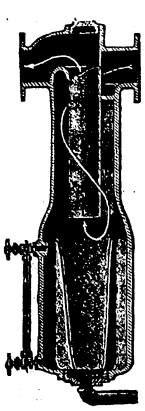
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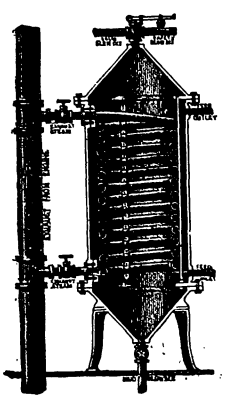
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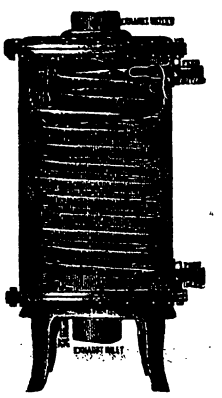
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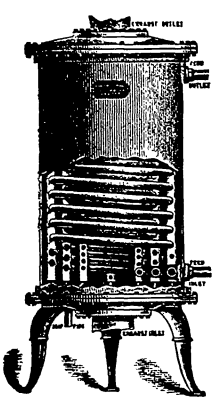
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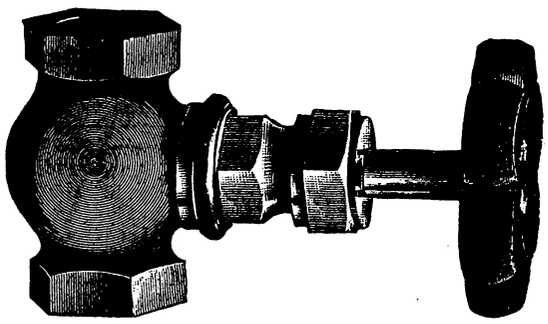
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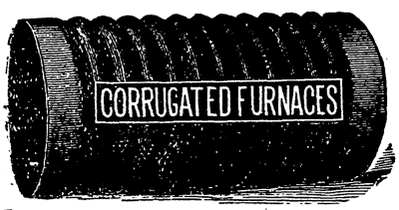
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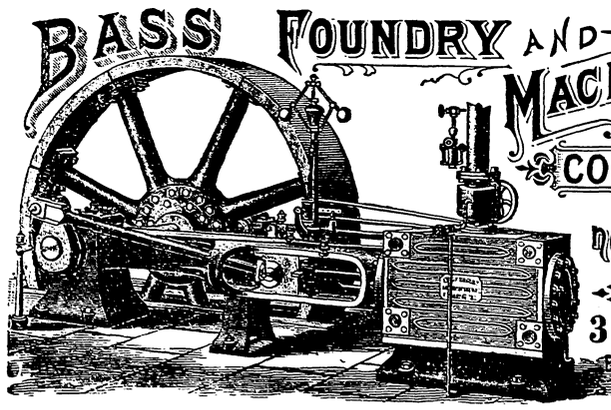
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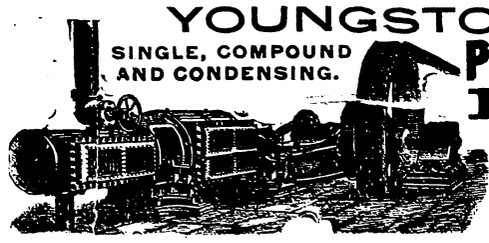
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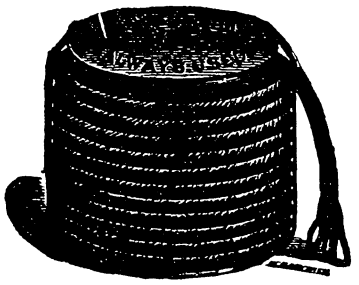
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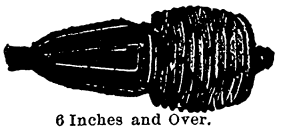
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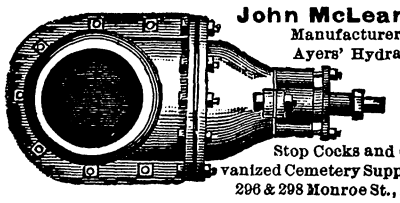
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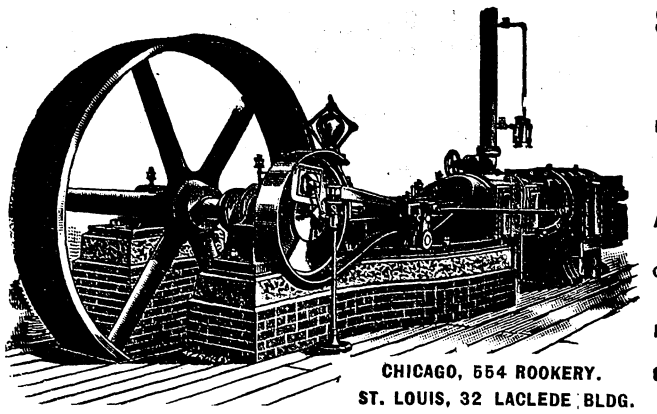
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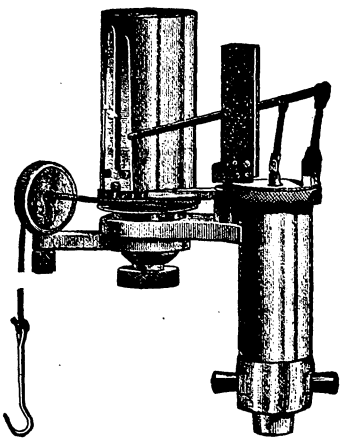
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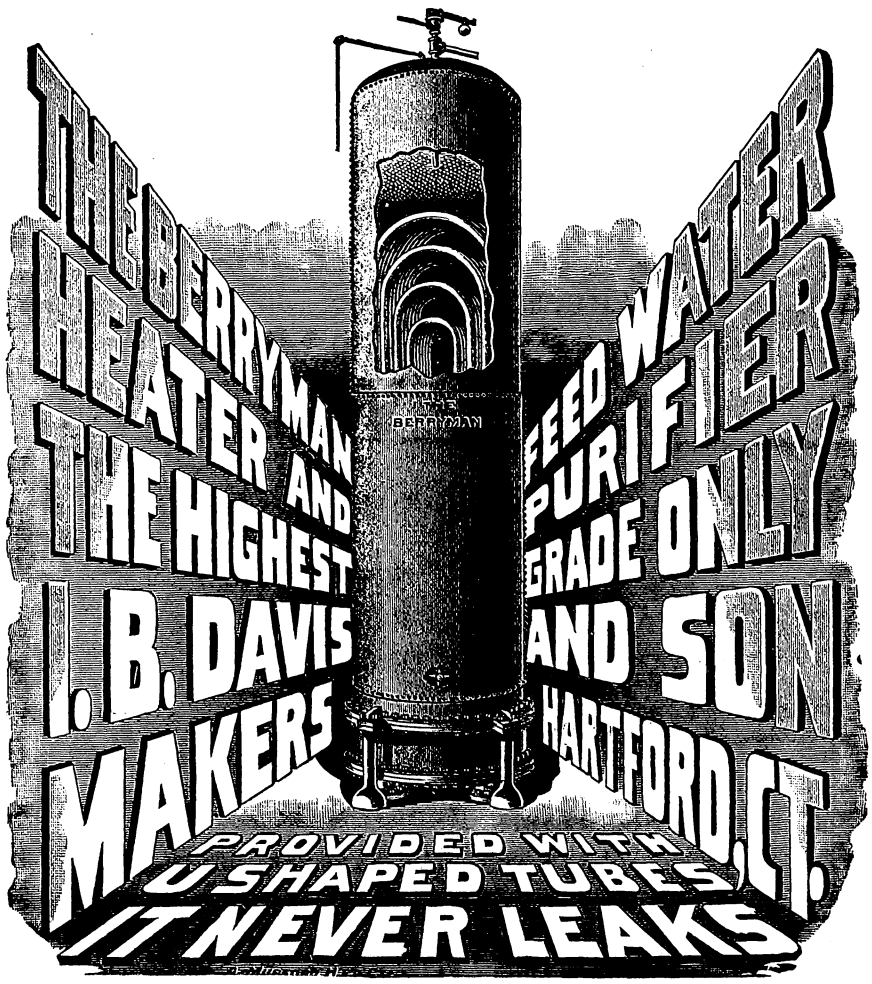
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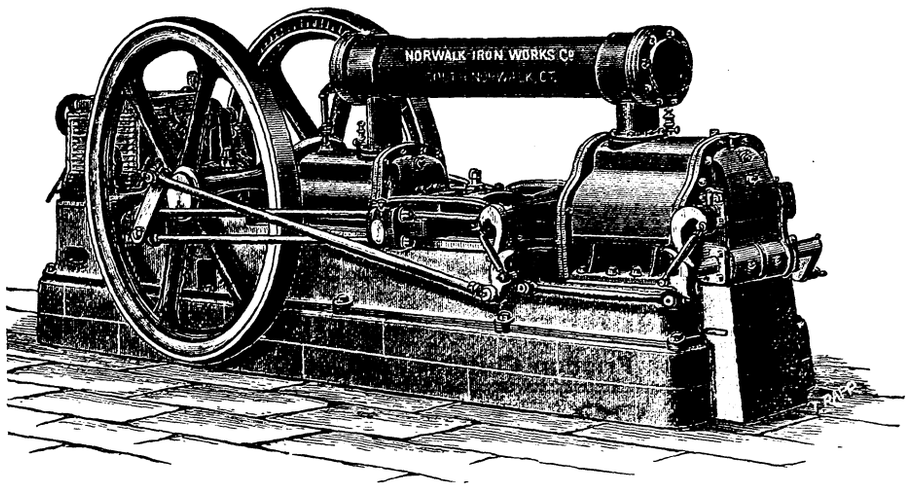
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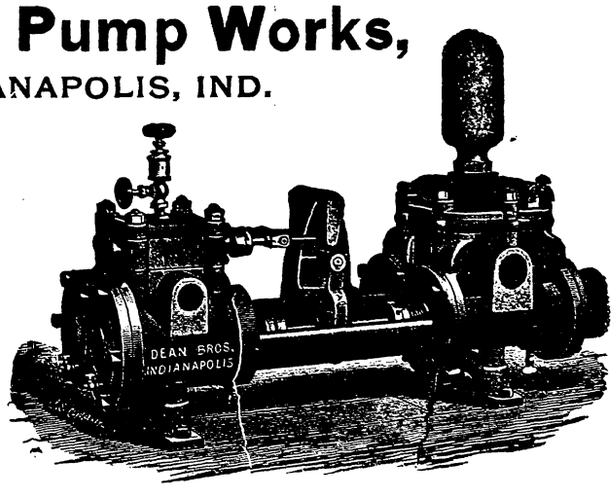
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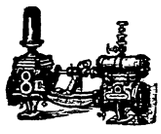
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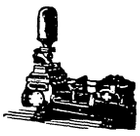
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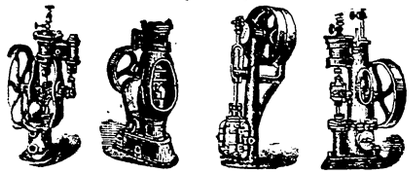


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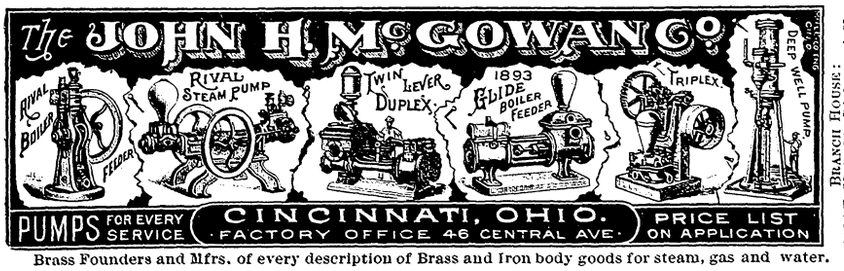




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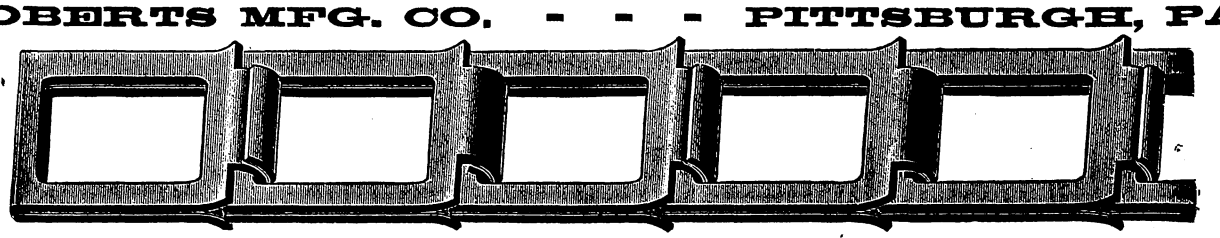
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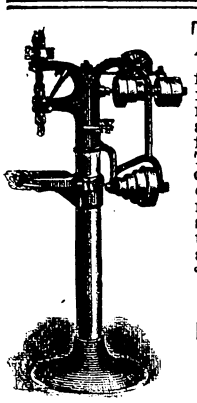
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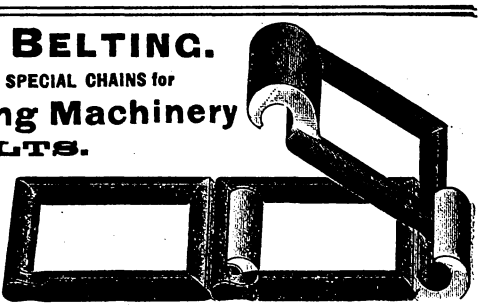
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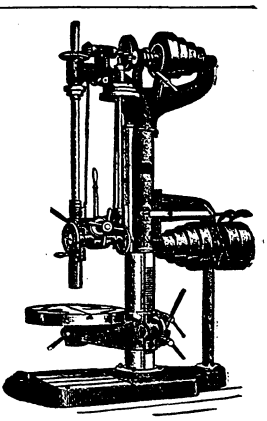
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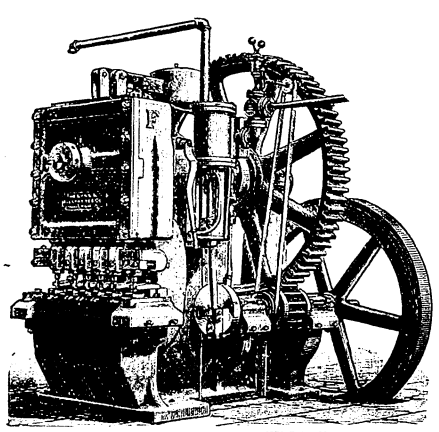
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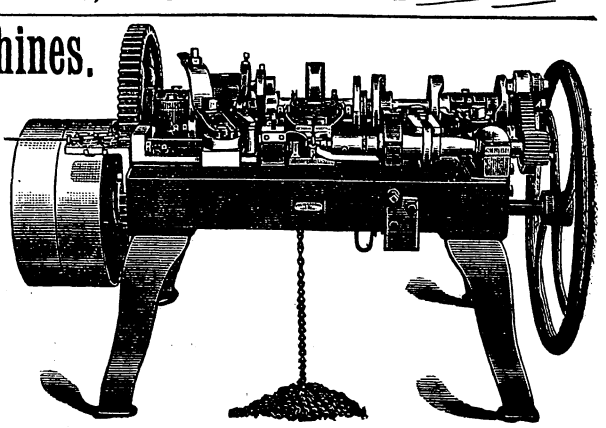
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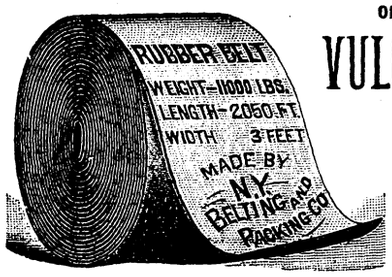
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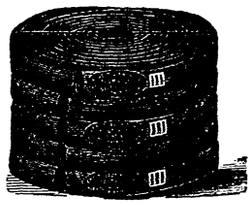
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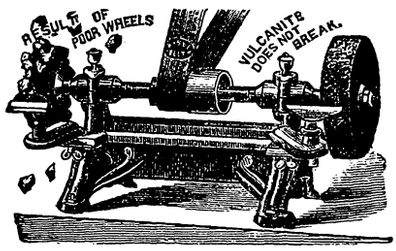


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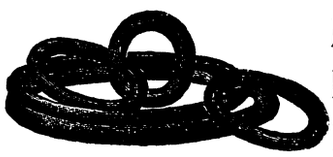
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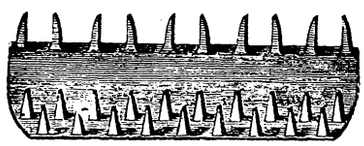
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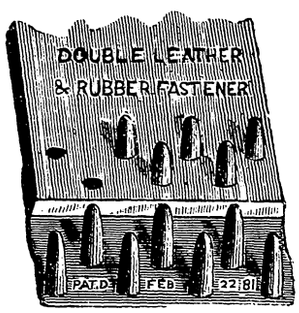
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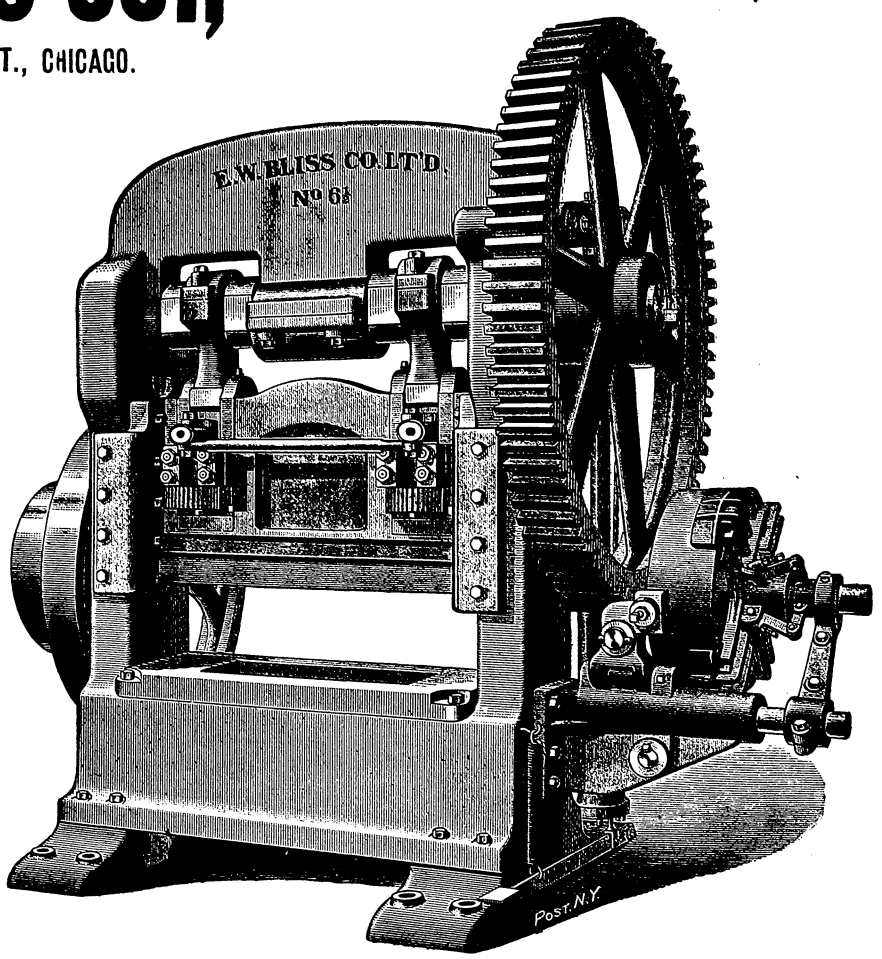
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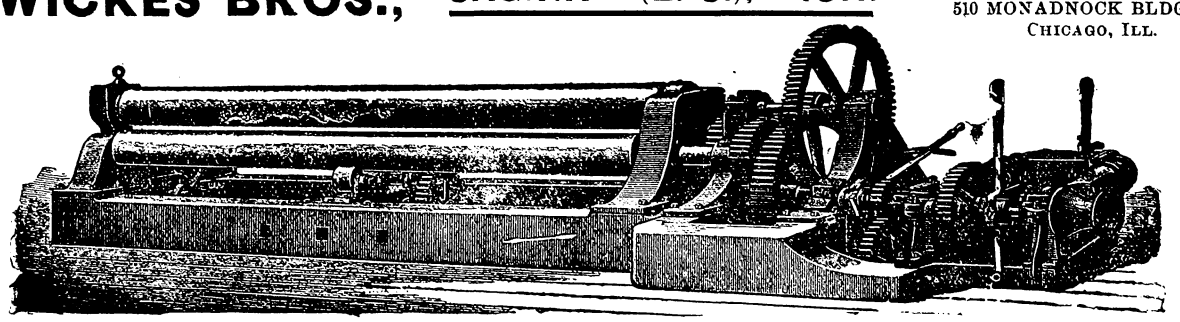
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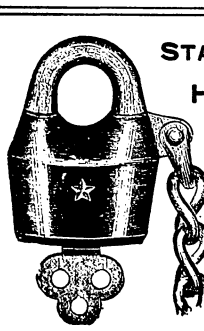
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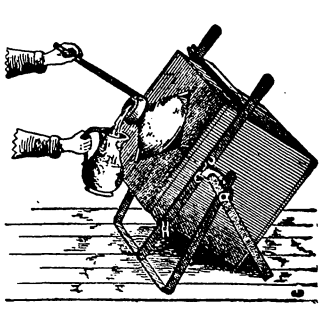
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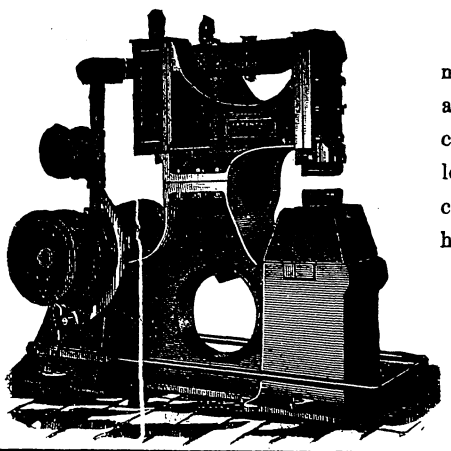
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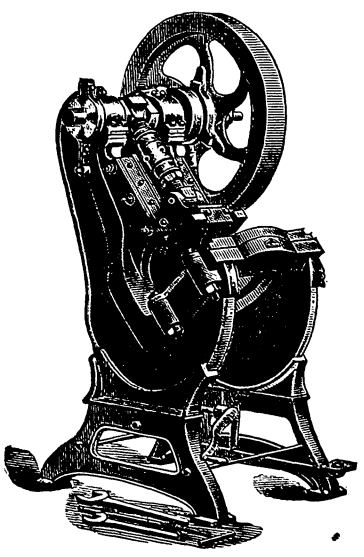
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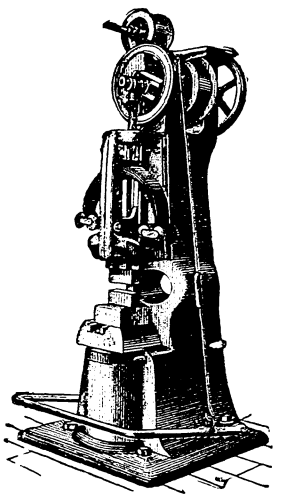


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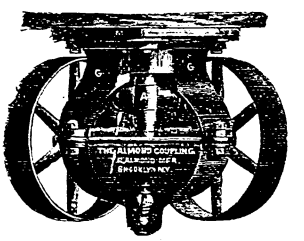
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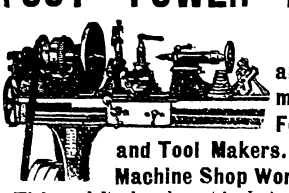
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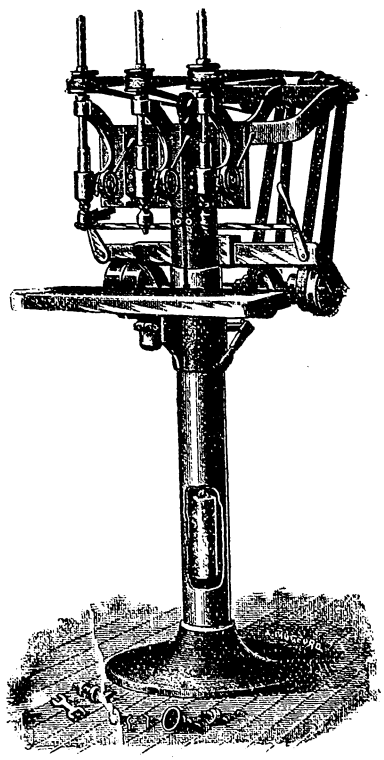


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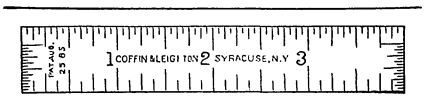
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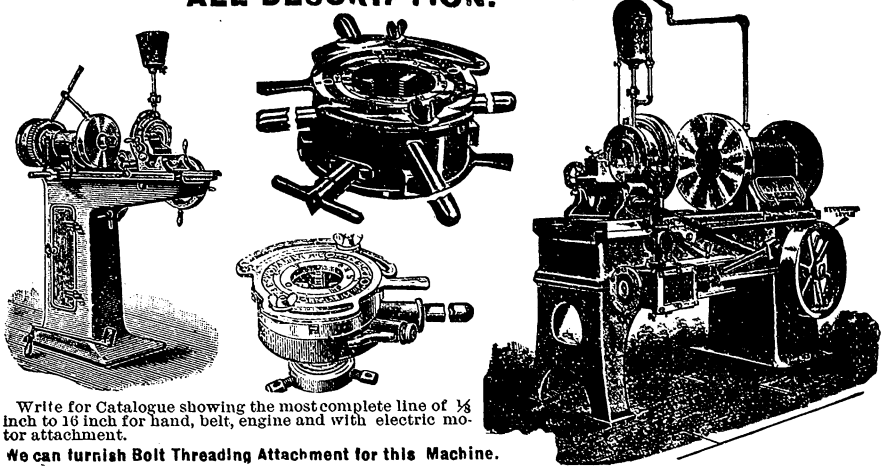
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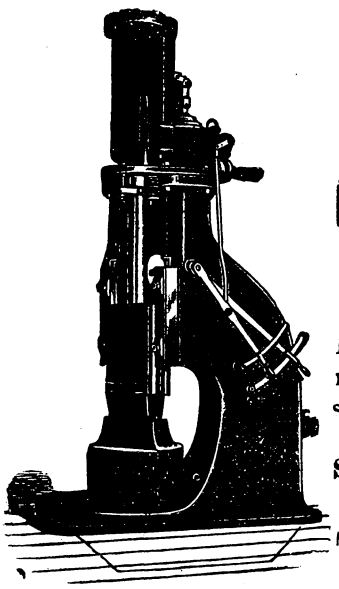
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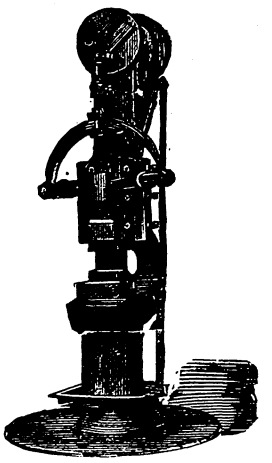
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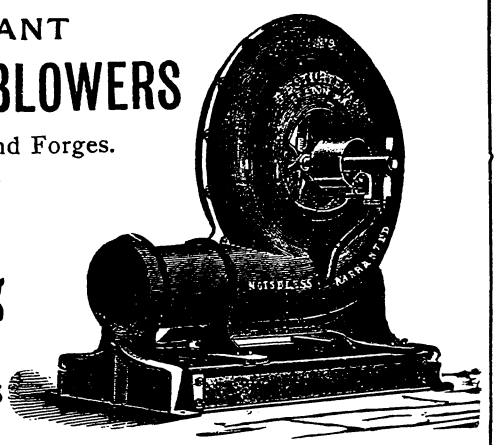
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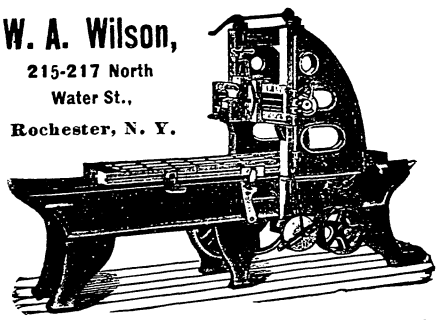
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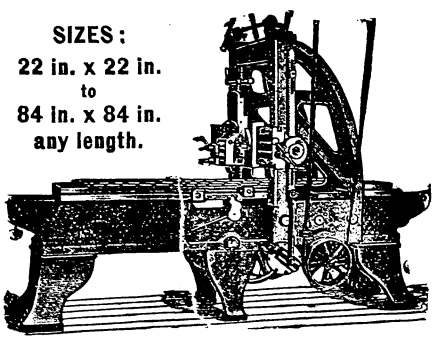
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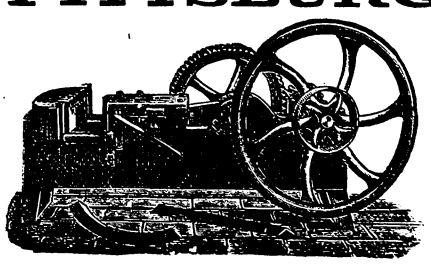
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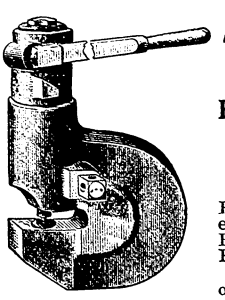
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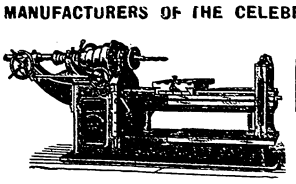
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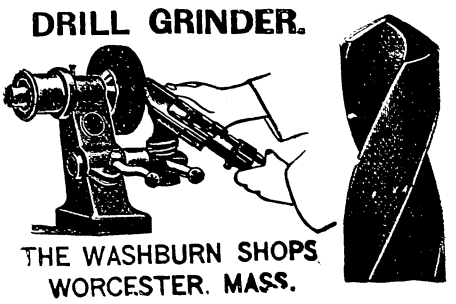


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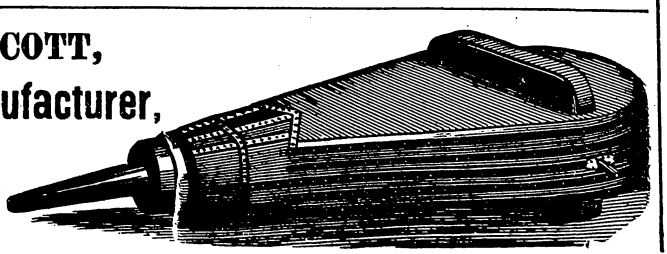


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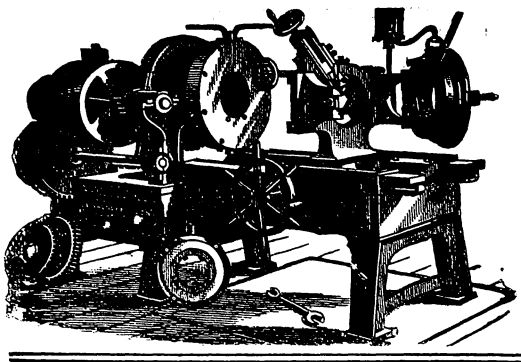
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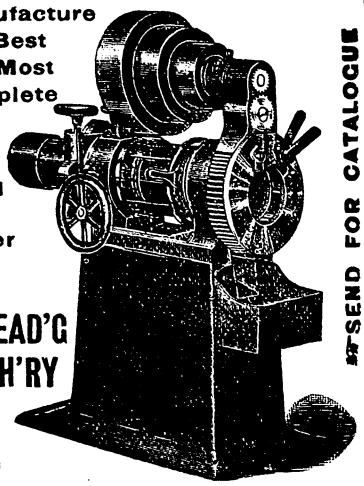
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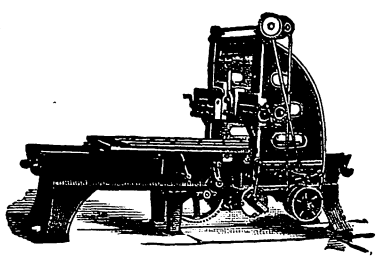
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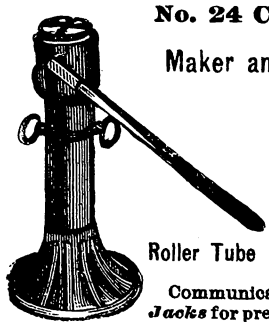
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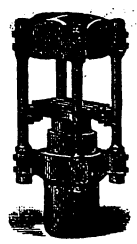
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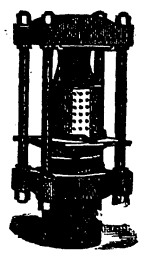
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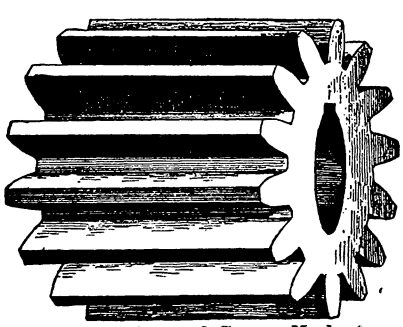
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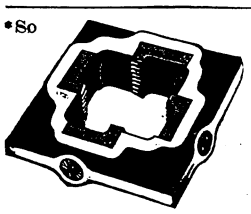
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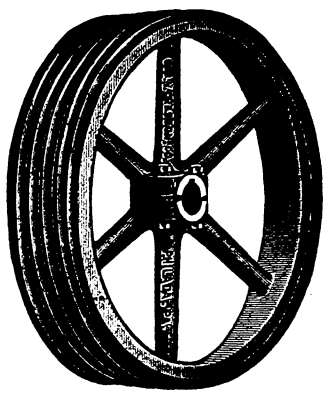
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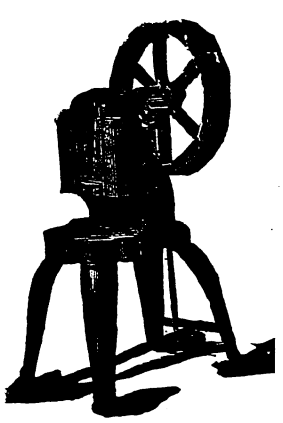
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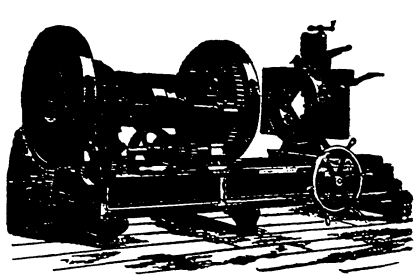


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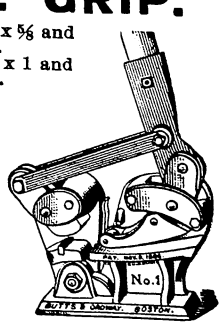
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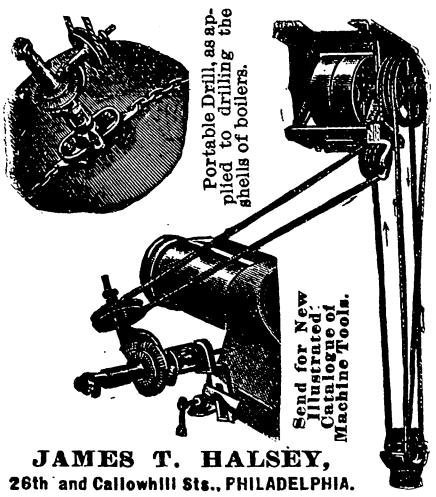
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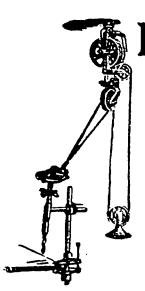
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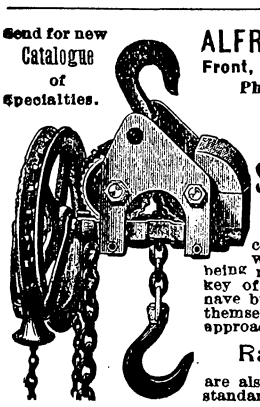
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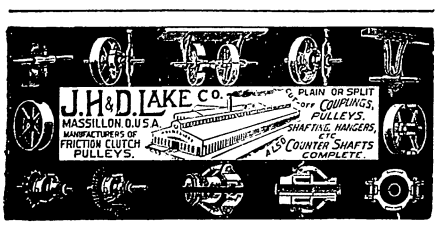


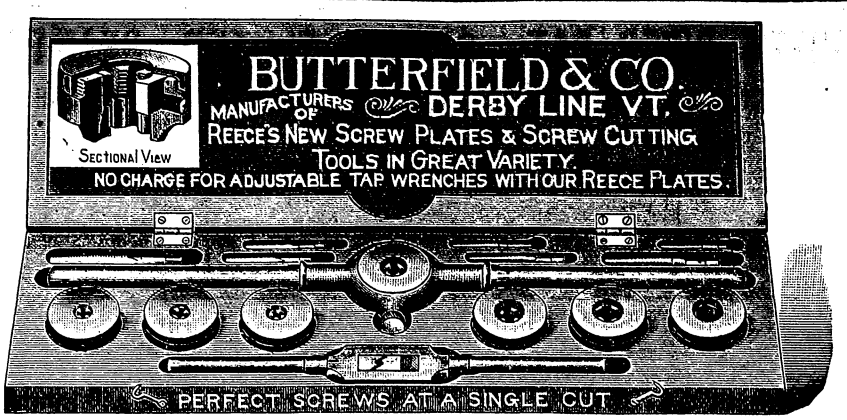
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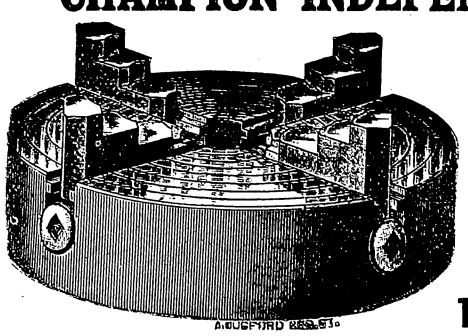
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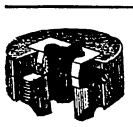
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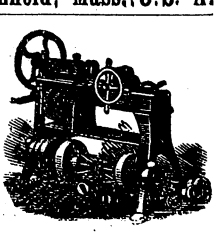
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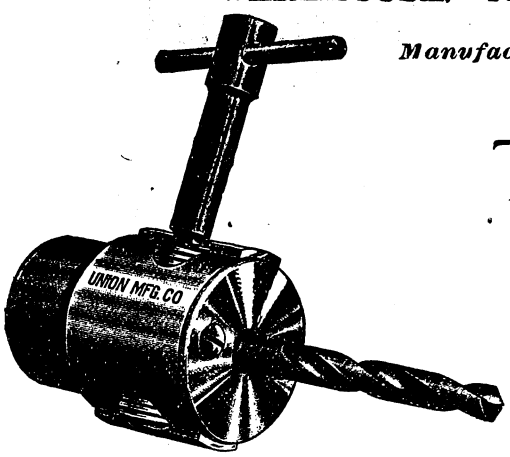


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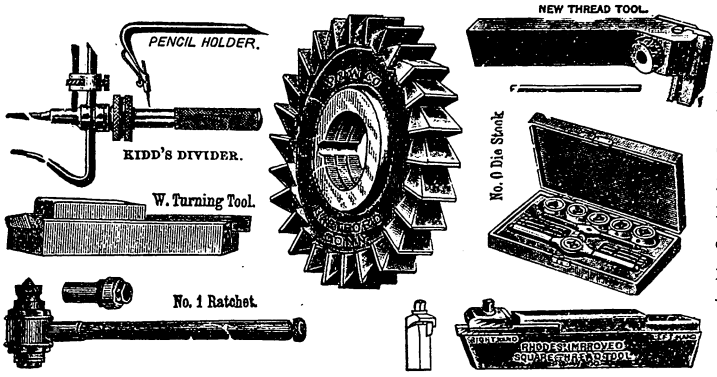
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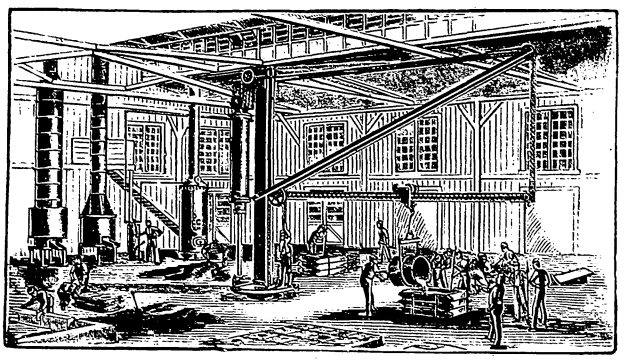
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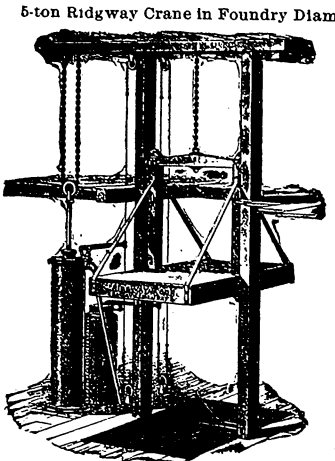
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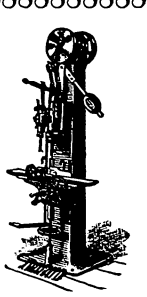
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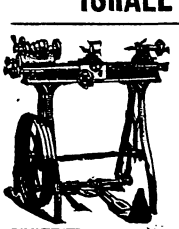


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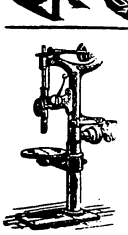
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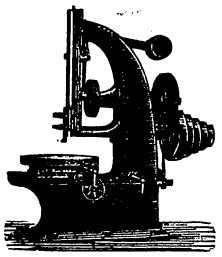
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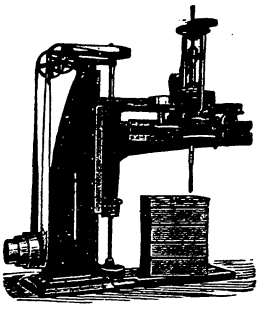
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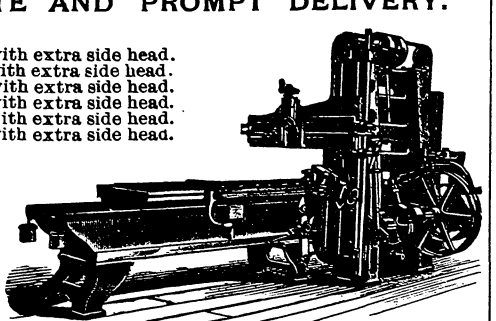
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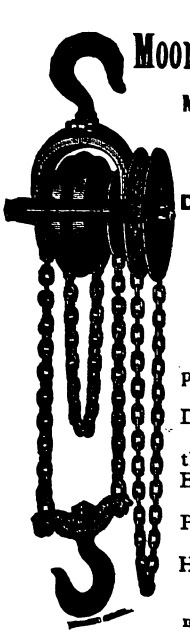
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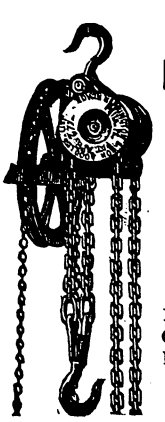
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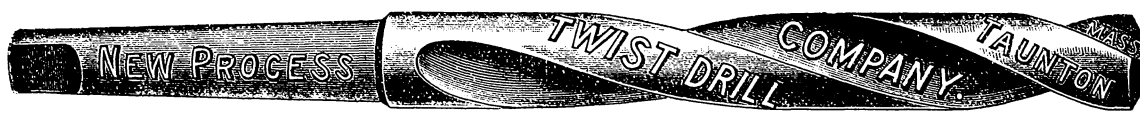
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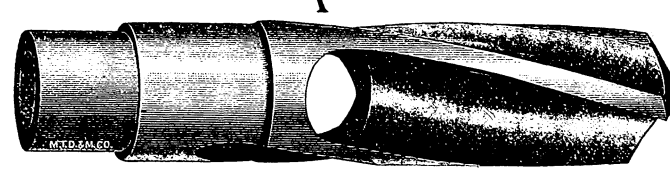
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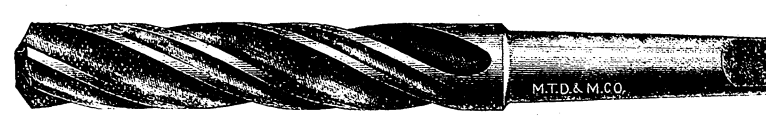
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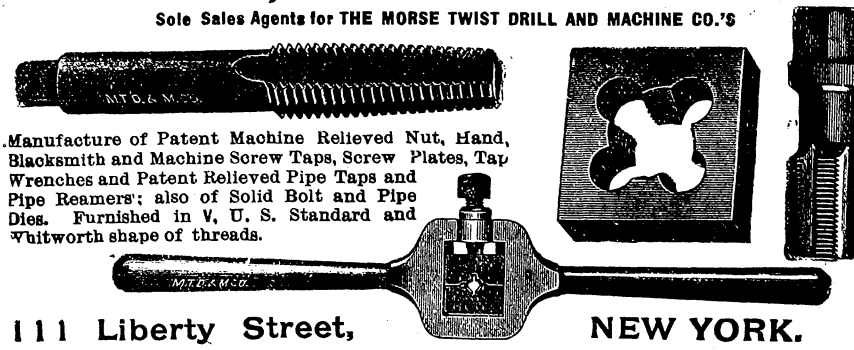
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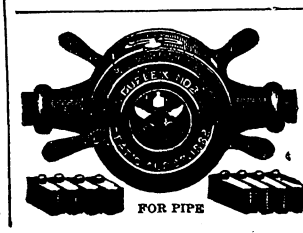
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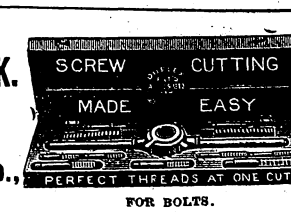
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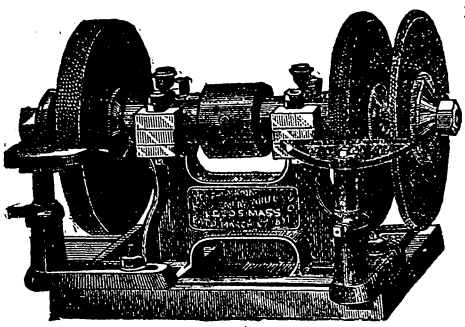
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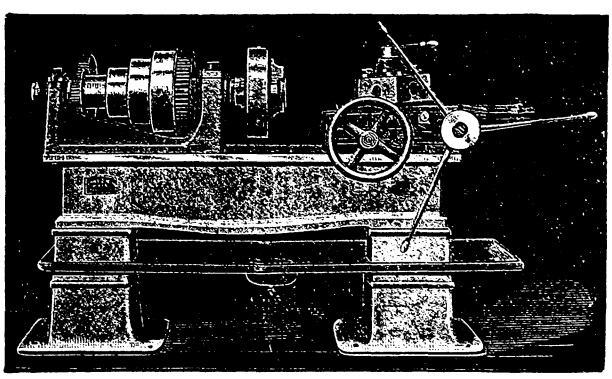
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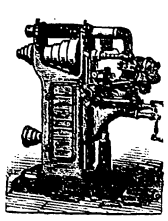
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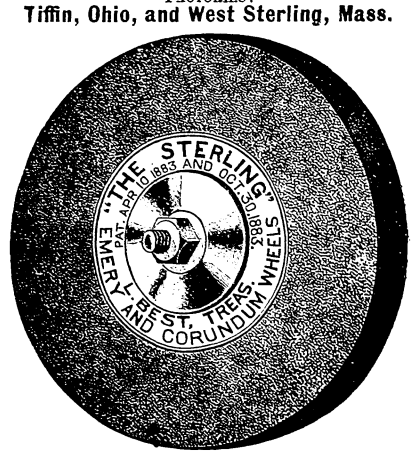
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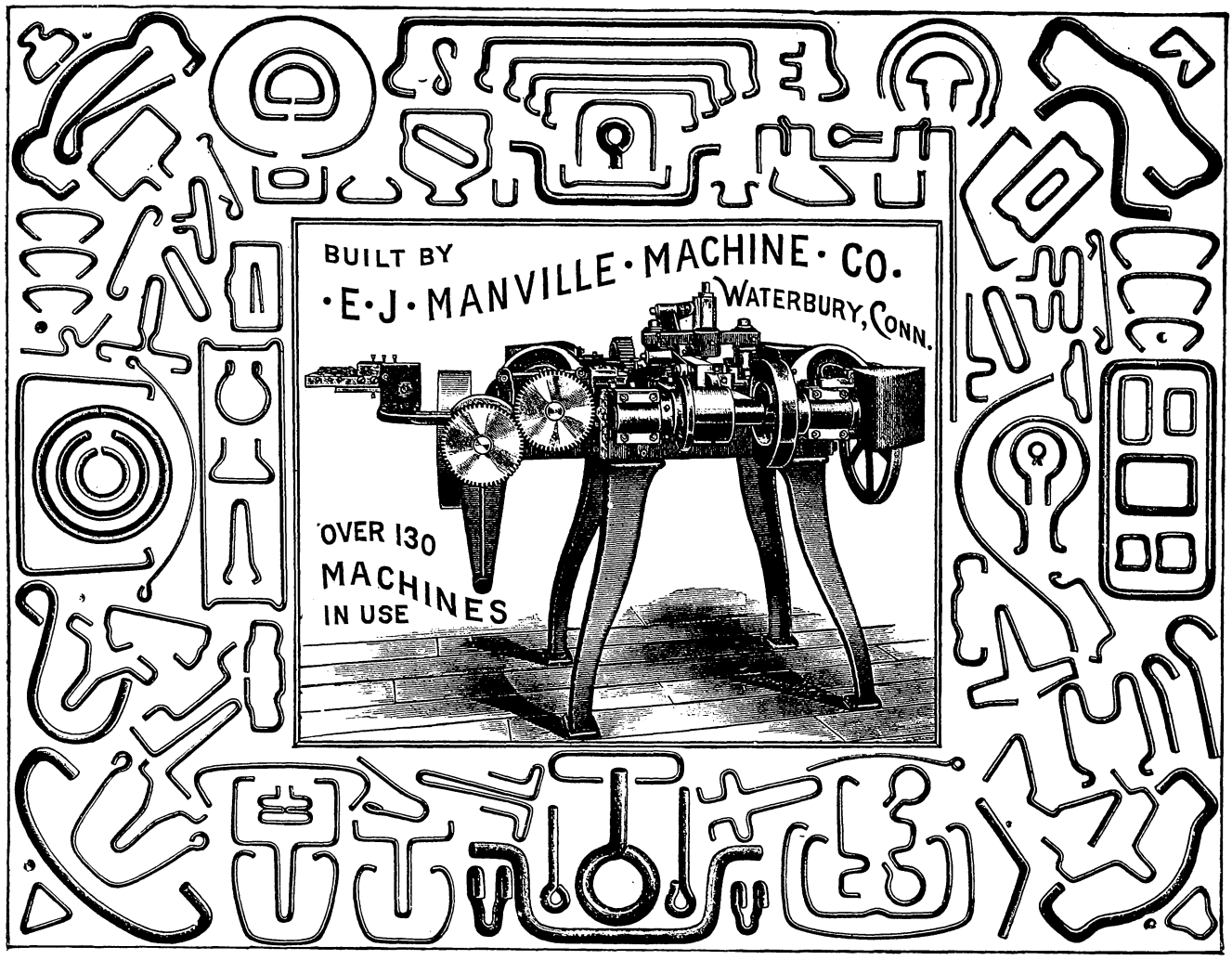
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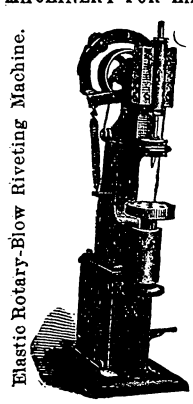


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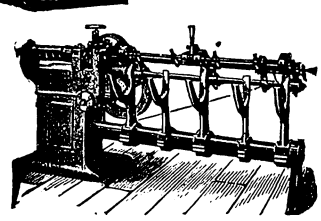
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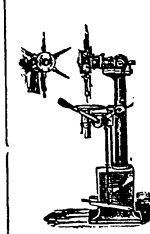


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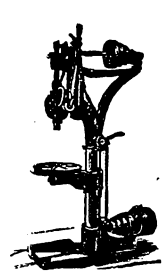
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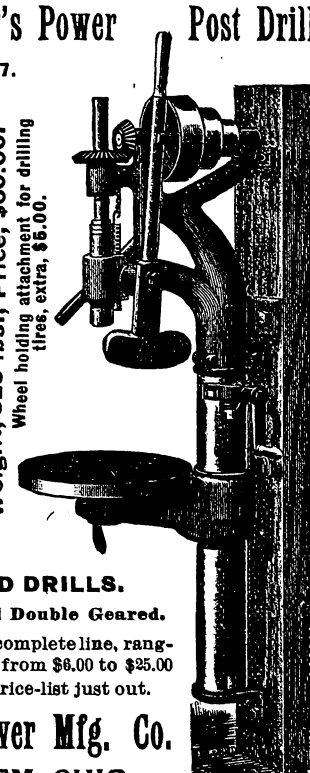
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SALESMEN to sell on commission to the hardware, plumbing and rubber trade the best and cheapest line of lawn sprinklers made; see advertisement in this paper. Address ETTE & HENGER MANUFACTURING Co., St. Louis, Mo.

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BOOKKEEPER —A young man, 38 years of age, with 20 years' experience as manager and bookkeeper, desires a position where ability is necessary; is well versed in the iron business; am able financier and a thorough accountant and will furnish the best of references; willing to go to city or country. Address "BOOKKEEPER," office of *The Iron Age*, 220 So. 4th St., Philadelphia, Pa.

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BY CHEMIST experienced in iron and steel analysis and accustomed to general work outside laboratory, conducting tests, etc.; highest references. Address "EXPERT," Box, 1228, office of *The Iron Age*, 96-102 Reade St., New York.

MANUFACTURERS of leading goods who desire first-class representation to the wholesale and jobbing trade of the West and Northwest are respectfully invited to correspond with "SELLING AGENT," office of *The Iron Age*, 96-102 Reade St., New York.

MR HENRY MOORE of Woolley, Baynon & Moore Co. will withdraw from that firm January 1, '94, and solicits correspondence from manufacturers of heavy and shelf hardware with a view to represent them in New York City; has a good connection and will travel occasionally. Aodress "HEAVY AND SHELF," Box 1228, office of *The Iron Age*, 96-102 Reade St., New York.

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BY A CUTLERY SALESMAN who has traveled many years representing some first-class houses in pocket and table cutlery, imported hardware, chains, etc; well known to the jobbing trade throughout the United States; will be open for an engagement after January 1st; references unexceptionable. Address "W. H. G.," No. 1221, office of *The Iron Age*, 96-102 Reade St., New York.

BY A BOOKKEEPER of over 20 years' experience, a position as bookkeeper and cashier with a first-class wholesale house; best of references. Address "E. B.," Box 5006, N. Y. P. O.

WHERE MY BUSINESS experience of several years in steel and iron and railroad supplies can be utilized to mutual advantage. Address "MAN," office of *The Iron Age*, 220 S. 4th St., Philadelphia, Pa.

AS GALVANIZING FOREMAN, by young man; ten years' experience with large English and American houses; open to lay down and work modern plant for light and heavy sheet iron for working up and corrugating. Address "GALVANIZING," No. 1221, 96-102 Reade St., New York.

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SUPERINTENDENT OR CHIEF ENGINEER, by a mechanical engineer of 15 years' experience in general engineering, hydraulics, cranes, sheet, plate and structural iron work, etc.; any one who wants an energetic man to look after his interests will answer this ad. "HUSTLER," office of *The Iron Age*, 96-102 Reade St., New York.

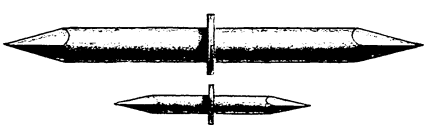
A GENTLEMAN who has had over 25 years experience in hardware and kindred lines, and who also has had a thorough business training in accounts, finance, etc., desires to secure a position as representative in New York City of a manufacturer of hardware, metals, iron, etc., or to serve in any capacity where he may be useful; unqualified references furnished. Address Box No. 1214 A., office of *The Iron Age*, 96-102 Reade St., New York.

WOULD LIKE to secure position with manufacturer of hardware or commission hardware house as representative on road or house position; having been a number of years in the business, with a road experience of six years, feel confident I can make myself valuable to any company; can furnish excellent references. Address "ENERGY," P. O. Box No. 182, Baltimore, Md.

A MEMBER OF AMERICAN SOCIETY of Mechanical Engineers, who has had 20 years' practical experience as follows: machinist, head draughtsman, erector of steam plants engineering, estimating, contracting and office work and superintendent of large engine works, is available for responsible position. Address "A. B. C.," office of *The Iron Age*, 59 Dearborn St., Chicago.

BY AN EXPERIENCED HARDWAREMAN, ten years' experience, three years' on the road; good salesman and stock keeper; West or Southwest preferred; best of references. Address L. W. VIVION, Benton City, Mo.

THE BOND NAIL.



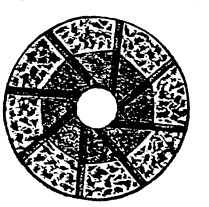
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THE BOND NAIL CO.,

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Patent **ROCK EMERY MILL STONES.**

Next to Diamonds in Hardness and Durability.



Made to Fit Any Mill Frame without change.

Cuts every substance with unexampled rapidity; always sharp; emery face Never Dressed. As much more Durable than other stones as they are Harder. Never Glaze; grind everything. Most Rapid Grinder known.

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MANUFACTURERS OF

Solid Iron Shoulder Rabbet Planes, etc., etc. and Hofstatter's Patent Hair Picking machine.

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Controlling the Adams-Blair Process and other Steel and Iron Patents.

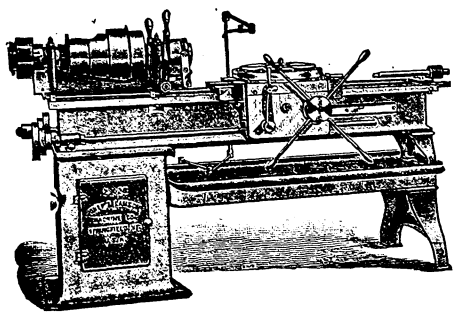
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If not send or

RAPID LATHE WORK

JONES & LAMSON MACHINE CO.,

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W. S. Tyler WIRE WORKS CO.

MANUFACTURERS OF

Improved Revolving Mining Screens,

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Also Tipple Screens and Yard Screens. Extra Heavy Double Crimped Mining Cloths, of every description.

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DR. GIDEON E. MOORE

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Assays of Ores, Metals and Metallurgical Products of every description. Analysis of Water, Ores, Minerals, Metals, Fuel, and Natural and Industrial Products generally.

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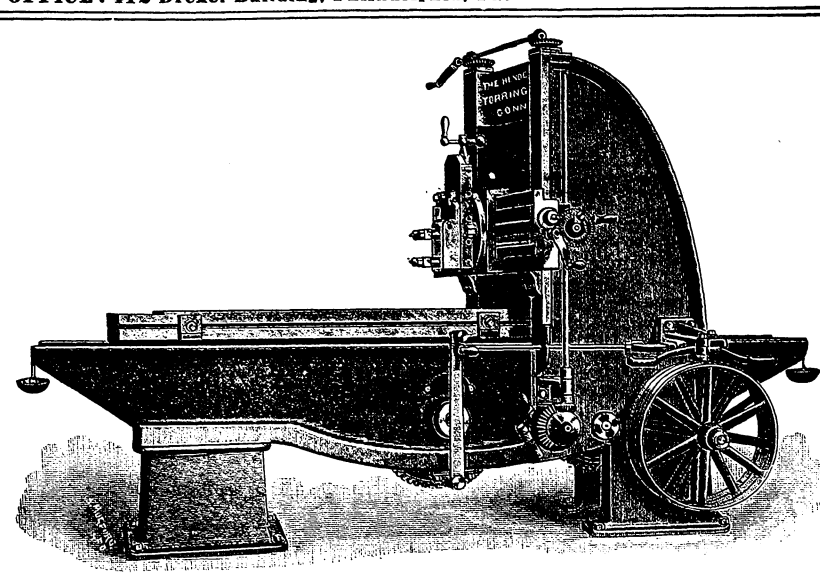
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The Pittsburgh Reduction Co.,

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Offer Aluminum guaranteed equal in purity to the best in the market, at lowest rates obtainable.

ALUMINUM SHEET, WIRE, AND CASTINGS.



Iron Planers at Reduced Prices.

We have on hand a few new planers of this pattern, and in order to dispose of them quickly, we would make a good reduction in price of same. The sizes are 16 inch, 22 inch, 24 inch and 27 inch. If you are in need of a good planer write us for prices on these.

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DO YOU BORE CYLINDERS?

THE HORIZONTAL BORING MACHINE

IS A SPECIAL TOOL FOR THIS PURPOSE.

SEND FOR PARTICULARS TO

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STEARNS STEARNS

All that a perfectly constructed Bicycle should be the STEARNS will be in 1894, as it was in 1893. The latest improvements and modifications have had the severest of practical tests. As delivered to the rider it is guaranteed for a year.

E. C. Stearns & Co., Syracuse, N. Y.

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ARE YOU HERE TO MAKE MONEY?

IF SO, THE PRICES WE ARE MAKING ON

OIL HEATERS AND GAS STOVES

WILL INTEREST YOU.

B. & B. Stoves are the Leaders.

B. & B. Combination Oil Heaters and Cook Stoves are a great success, as proven by the many testimonials received from all parts of the country.

Every Stove is mounted on rollers, and can easily be moved from room to room. *They can be used in place of a range in the kitchen or in place of a base-burner in the parlor.* They are thoroughly well adapted to fill all requirements, *combining as they do all the qualities of a first-class Oil Heater and an elegant Parlor Cook Stove.*

If you happen to have one of them upstairs, *the tank can easily be removed and taken down to the kitchen to be filled,* and again replaced in the Stove.

Those who have used the old style Stove with tanks fastened in them as tight as if cast in the iron will appreciate this feature. They can be fitted with our 2-hole, 3-hole or 4-hole Extension Tops for regular 8-inch ware. We want your trade, and if you will give us a chance to quote you prices we will have it.

THE GLAZIER STOVE COMPANY. TRADE MARK. B&B OIL & GAS STOVES BRIGHTEST AND BEST. CHELSEA MICH.

ASK FOR OUR NEW 80-PAGE CATALOGUE.

W. W. MONTAGUE & CO., San Francisco, General Agents for the Pacific Coast.

The Glazier Stove Co., Mfrs., CHELSEA, MICH.



The standard by which the merits of a Freezer are gauged is, how near it comes to being as perfect as the

WHITE MOUNTAIN ICE CREAM FREEZER.

It always has been, and is still, the best. Try them.

Manufactured by **The White Mountain Freezer Co., Nashua, N. H.**



THE OLD RELIABLE STANDARD FREEZER

has the reputation of being the **BEST ICE CREAM FREEZER** ever introduced. **STRENGTH, DURABILITY, NEATNESS AND EFFICIENCY** are prominent points in the manufacture. Full Size Can, CEDAR TUB, Detachable Hinged Crossbar, Self-adjusting Vibratory Scraper, etc.

Write for Illustrated Circular, Price-List and Discounts of **STANDARD, GOOD LUCK, MODEL and MACHINE Freezers.**

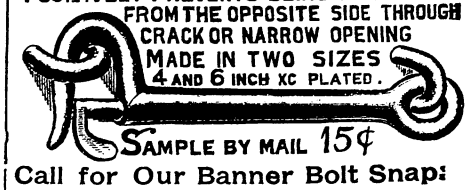
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20 North Fourth Street, - Philadelphia.

COVERT'S SELF-LOCKING, GATE AND DOOR HOOK.

POSITIVELY PREVENTS BEING UNHOOKED FROM THE OPPOSITE SIDE THROUGH CRACK OR NARROW OPENING

MADE IN TWO SIZES 4 AND 6 INCH XC PLATED.



SAMPLE BY MAIL 15¢

Call for Our Banner Bolt Snap:

This snap has many important advantages over other makes of Bolt Snaps, viz.: It is lighter, the spring is entirely covered and protected from foreign substance and freezing, and is lower in price.

Made in all sizes; Round, Loop and Open Eye. **We are headquarters** and the most extensive manufacturers in Saddlery, Coach and General Hardware Specialties.

Covert's Saddlery Works,

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Hardware Dealers Can Profitably Sell Bicycles.

There is a large trade in Bicycles in all parts of the country and much of that trade naturally belongs to dealers in hardware. Good bicycles meet with a ready sale and pay a fair percentage of profit.

COLUMBIAS

Are the representative high grade machines in America. A Columbia is the easiest machine to sell to the best trade because it is unquestionably the standard wheel of the world.

We want enterprising agents of good standing and solicit correspondence.

Pope Mfg. Co.,
221 Columbus Ave.,
Boston, Mass.

ICE CREAM FREEZERS with ELECTRIC WELDED WIRE HOOP PAILS.



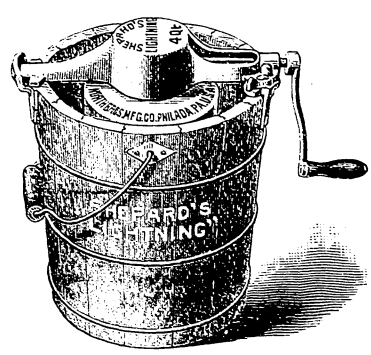
This season we maintain our established reputation as leaders of all improvements in Ice Cream Freezers, and of making the **best** goods in the market. In adopting, for our entire line, the **ELECTRIC WELDED WIRE HOOP PAILS,** the hoops of which are twice as strong as the old flat hoops, and are **guaranteed not to fall off,** we have taken a step in advance of all others. All our pails are made of the **Best Virginia White Cedar.** All inside parts of Freezers are thoroughly coated with **Pure Block Tin.** Materials and workmanship are of the very best.

With the acquirement of the Freezer business of the Shepard Hardware Co., we have now the largest, best and most popular line of Freezers in the market. **Prices Right.**

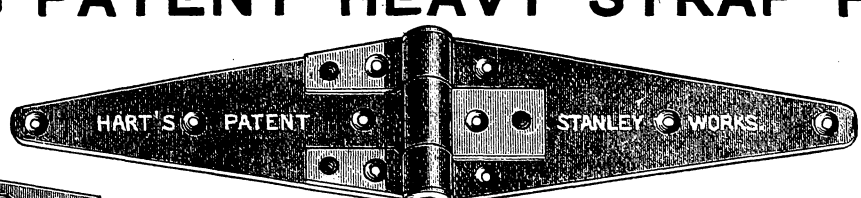
DISCOUNTS QUOTED ON APPLICATION.

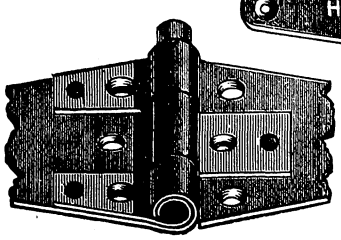
Manufactured by

NORTH BROS. MFG. CO., PHILADELPHIA, PA.



HART'S PATENT HEAVY STRAP HINGES.





It will be noticed that two thicknesses of iron surround the pin throughout its length and extend back upon the straps of the hinge, thus giving double thickness of iron at the points where most needed, and more than double the strength of an ordinary strap hinge. The short or *inside leaves are galvanized,* thus insuring easy working joints, and preventing *breakage on account of rust.*

—MADE BY—

THE STANLEY WORKS, NEW BRITAIN, CONN. 79 CHAMBERS ST., N. Y.

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CLARK'S BEST QUALITY SCREW DRIVERS.



Four Drivers and one Handle; all interchangeable; are hardened and tempered all over; made of best stock, and finished first-class.

FOR SALE BY ALL HARDWARE DEALERS.

MANUFACTURED BY

R. H. BROWN & CO.

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You take no risk on the Quality
We have only the best.

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MANUFACTURERS OF
GLUE
SAND PAPER, EMERY PAPER,
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FLINT PAPER
FOUNDED 1828.
NEW YORK, CHICAGO,
BOSTON PHILADELPHIA

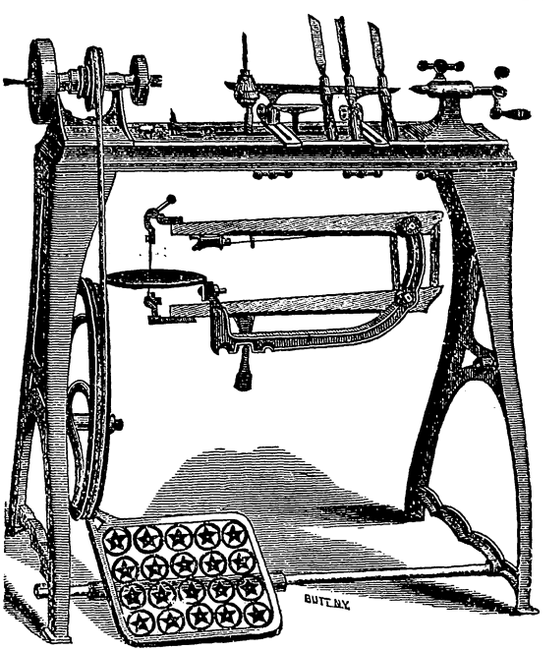
Sand Papers IN Reams and Rolls	Flint Paper
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HAIR FELTING for covering Boilers, Steam and Water Pipe, and lining Refrigerators.

BAEDER, ADAMSON & Co.

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97 BEEKMAN STREET, NEW YORK.
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HOLIDAY GOODS.



Many kinds of Scroll Saws have been put on the market by ourselves and other manufacturers during the past twelve years. Of these only a few have proved good enough to remain in demand. The call now is for a well-made, practical machine, and all second-class ones are of slow sale.

Those who want a good Lathe with Scroll-Sawing Attachment and all Tools and Improvements to the very latest moment will buy the Goodell Lathe.

Those who want only a Scroll Saw with Drilling Attachment and Rubber Blower will prefer the Rogers Saw.

These two machines are taking the place of all others, and are now the most in demand throughout the world.

No dealer can make a mistake by laying in a stock of them. About Christmas time they are wanted in every town, and will make business lively at this otherwise dull season.

We also keep a full stock of Designs, Wood, and all other Scroll Sawing goods.

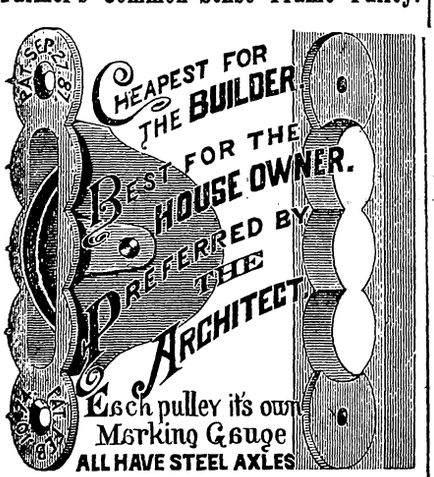
Price of Goodell Lathe, complete, $12.00.

Price of Rogers Saw, complete, $3.50.

MILLERS FALLS CO.,

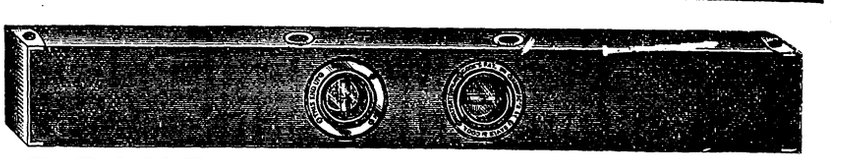
No. 93 Reade Street, New York.

Palmer's Common Sense Frame Pulley.



MANUFACTURED BY

PALMER HARDWARE MFG. CO., Troy, N. Y.



COOK'S PATENT LEVEL.

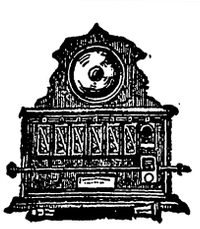
Made in Wood and Iron. Every Level Fully Guaranteed.

Inquire at your nearest hardware store for them. If not in stock, send to

TAKE NO OTHER.

DAVIS & COOK,

WATERTOWN, N. Y.



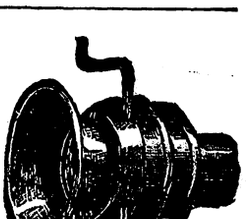
W. R. OSTRANDER & CO.,

204 FULTON STREET, NEW YORK,

Manufacturers of

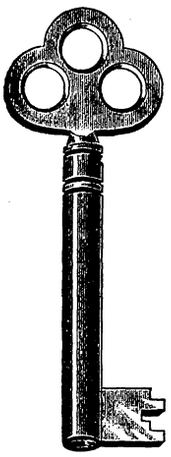
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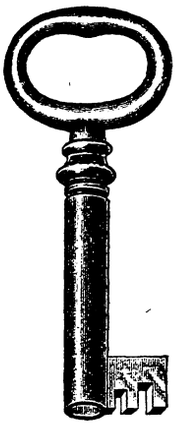
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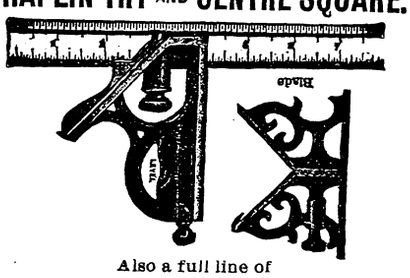
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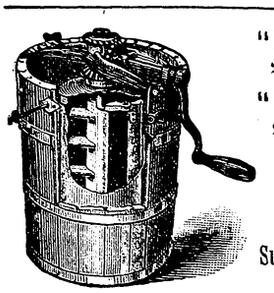
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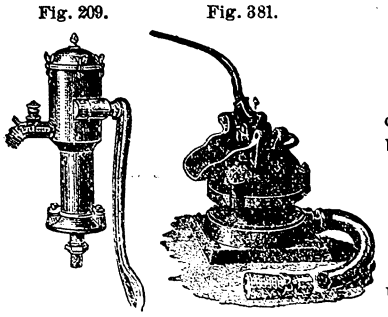
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Fig. 209. Fig. 381.



or wherever it is desired to raise a large quantity of water by

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from 3,000 to 4 500 gallons per hour.

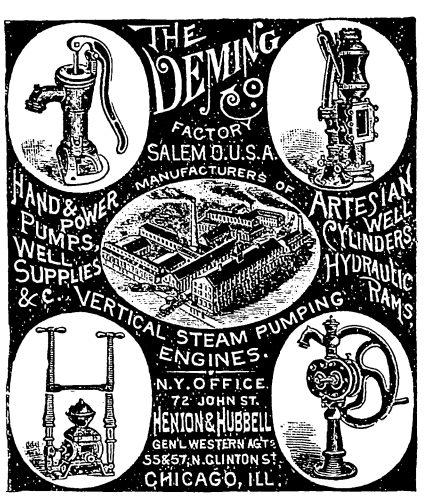
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Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.

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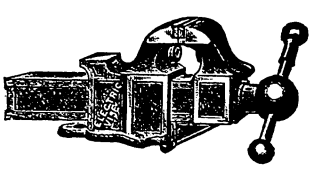
Fig. 145.



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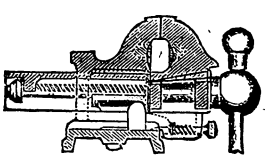
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IT HAS QUALITIES THAT ARE UNDISPUTED.

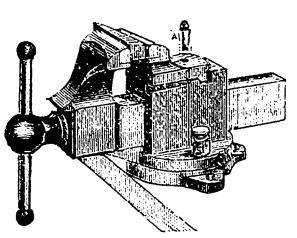
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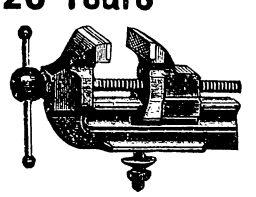
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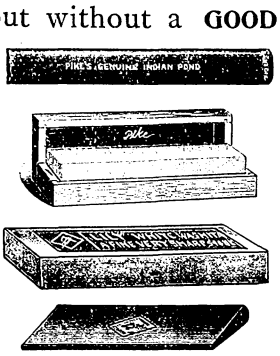
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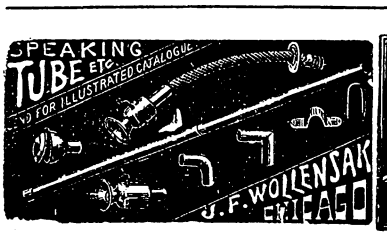
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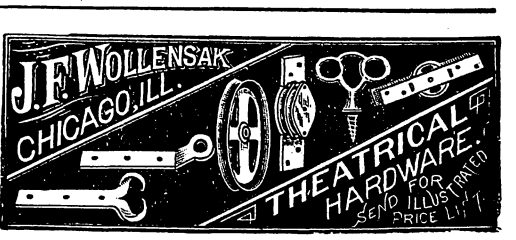
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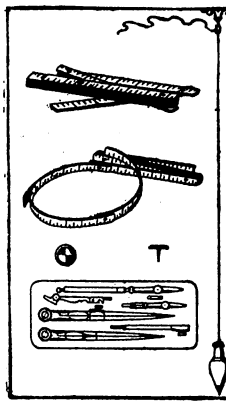
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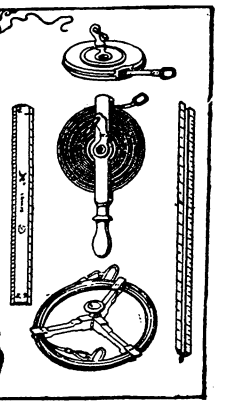
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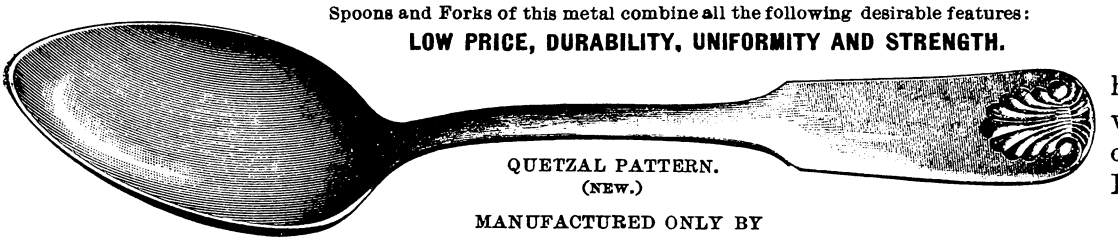
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Spoons and Forks of this metal combine all the following desirable features:
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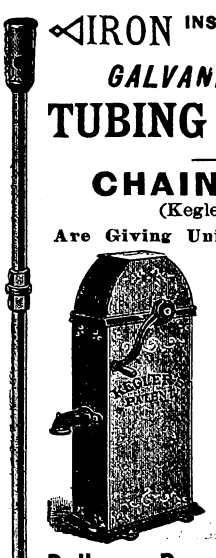
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CHAIN PUMPS,
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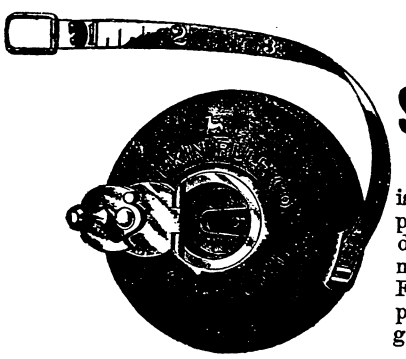
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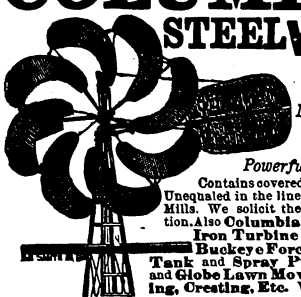


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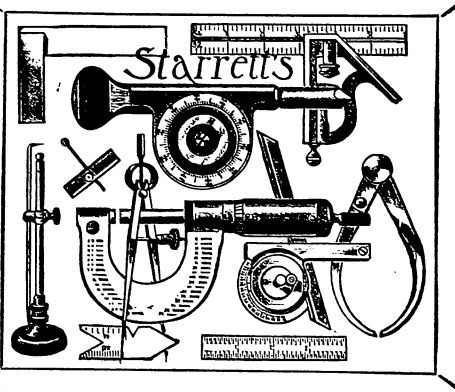


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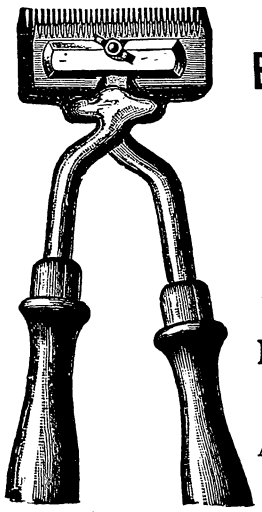
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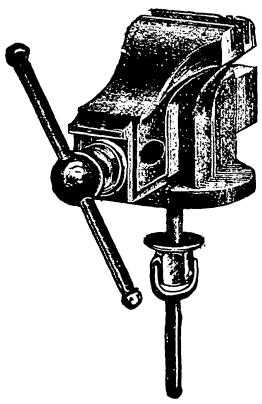
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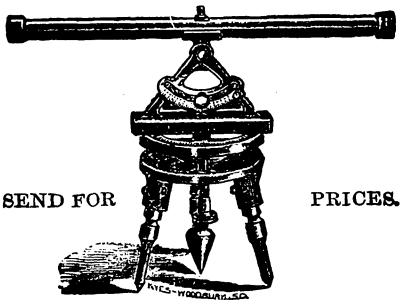


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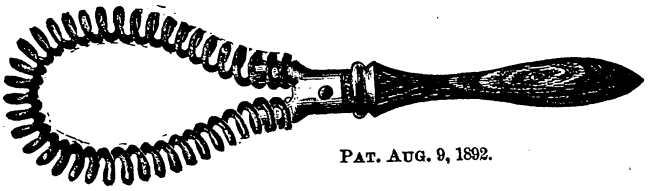
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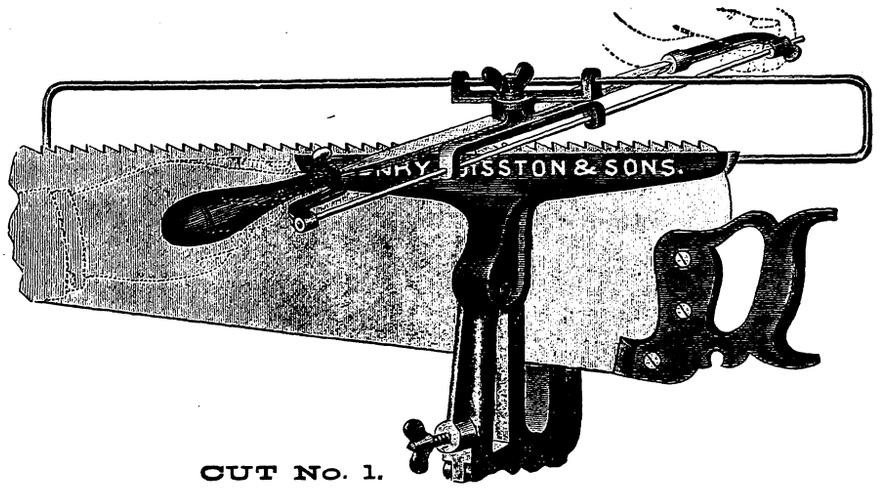
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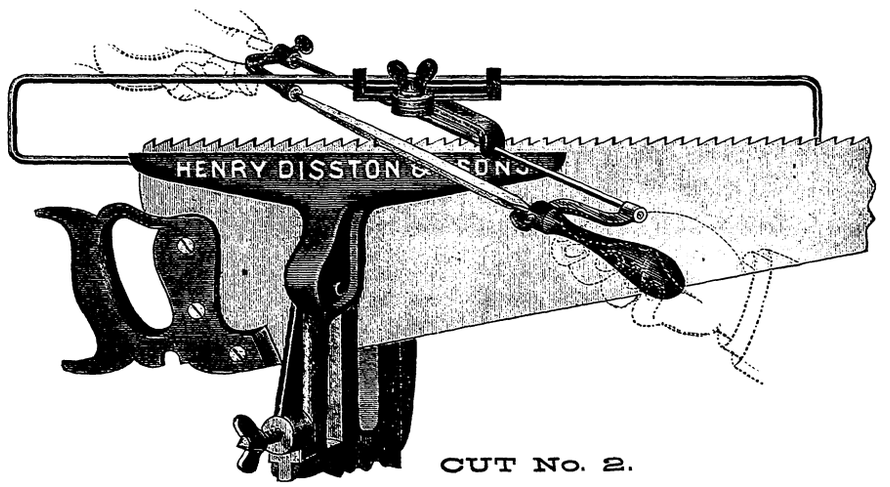
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ESPECIALLY DESIGNED TO ASSIST THOSE NOT SKILLED IN THE ART OF SAW FILING TO FILE A SAW CORRECTLY.



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Cut No. 1 shows a saw and the attachment in proper position for filing the first side; and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



CUT No. 2.

To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth. Always keep the file as nearly horizontal as possible.

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Write for price including No. 3 Clamp, Filing Guide, File and Handle complete. Packed one in a wooden box.

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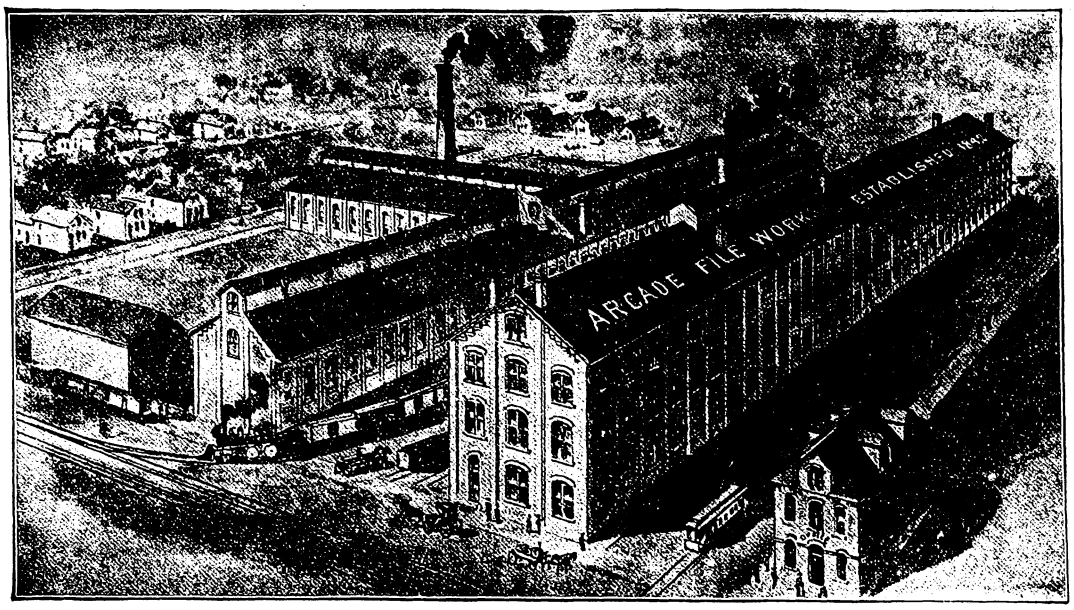
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FOR USE IN PRICE BOOKS.

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This pamphlet contains the principal standard Hardware price-lists in as clear and compact an arrangement as possible, so as to permit their being advantageously cut out and inserted in the price book. In order to make them adapted to this use they are printed on thin and tough paper of fine quality and on only one side of the paper.

The success of the effort to give the lists in small space is illustrated in many of the lists, in which a clear and condensed arrangement is secured. For instance, the wrench list occupies but 3 inches by ¼ inch, while the list of Stove Hollow Ware, in very small space, gives the list prices on a large and important line of goods which often occupy several pages in catalogues. In several lists, such as Strap and T Hinges and Butts, a new arrangement is adopted, which is regarded as presenting these lists in a very convenient as well as condensed form.

As is obvious from the lists herewith reproduced, the shape and size of the different lists varies greatly, the aim being to give each list the smallest and most convenient arrangement possible. None of the lists are, however, more than 3½ x 6 inches in size, very few of them being as large as this and most of them very much smaller. In use it is intended that they shall be trimmed closely before they are inserted in price books, when they may be attached either by one edge close to the hinge of the book, as will, perhaps, be most convenient with the larger lists, permitting the use of the entire page for memoranda, or the smaller lists may be pasted on the page in connection with the entries in regard to discounts, freights, &c. Many of the lists are so compact in arrangement as when thus inserted to leave ample room for recording quotations.

Saucepans and Round Boilers.

	Plain	Turned.	Tin'd or En'd.
Pints.			
1	$0.30	.35	.39
1½	.32	.37	.44
2	.35	.39	.48
3	.42	.47	.56
Quarts.			
2	.50	.56	.63
2½	.53	.59	.68
3	.55	.62	.73
4	.60	.68	.84
5	.65	.75	.96
6	.70	.81	1.11
7	.75	.84	1.21
Gallons.			
2	.85	.96	1.31
2½	1.05	1.18	1.56
3	1.20	1.35	1.70

Stove Hollow Ware. Ground and Unground.

POTS, KETTLES, ETC. (CAST IRON.)

No.....	6	7	8	9	10	11
Pots.....	$0.65	.75	.85	1.00	1.25	1.75
Kettles.....	.55	.65	.70	.85	1.00	1.40
T Kettles.....	.75	.80	.90	1.00	1.25	....
Spiders.....	.27	.30	.35	.40	.50	.60
Griddles Round	.22	.25	.27	.30	....	....
" Long..	.40	.50	.60	.75	....	....

SCOTCH AND YANKEE BOWLS.

No ...	1	2	3	4	5	6
Scotch Bowls..	$0.35	.40	.45	.50	.60	.70
Yankee Bowls.	.35	.45	.55	.65	.75	.90

Wrenches. Standard List.

Inches.	6	8	10	12	15	18	21
Black...	$9.00	$10.00	$12.00	$14.00	$24.00	$30.00	$36.00
Bright..	10.00	11.00	14.00	16.00	26.00	32.00	38.00

Some merchants use this pamphlet for reference, checking off invoices, etc., as it gives the leading lists in a more convenient form than they can otherwise be obtained. The lists are, however, intended primarily to be cut out and inserted in price books, and *can be used in connection with any of The Iron Age Hardware Price Books.*

Glue Pots. Tinned or Enameled

No. 4/0....	$4.50	No. 2	$8.40
3/0....	5.00	3	10.26
2/0....	5.50	4	12.42
0	6.00	5	14.58
1	6.75	6.	16.94

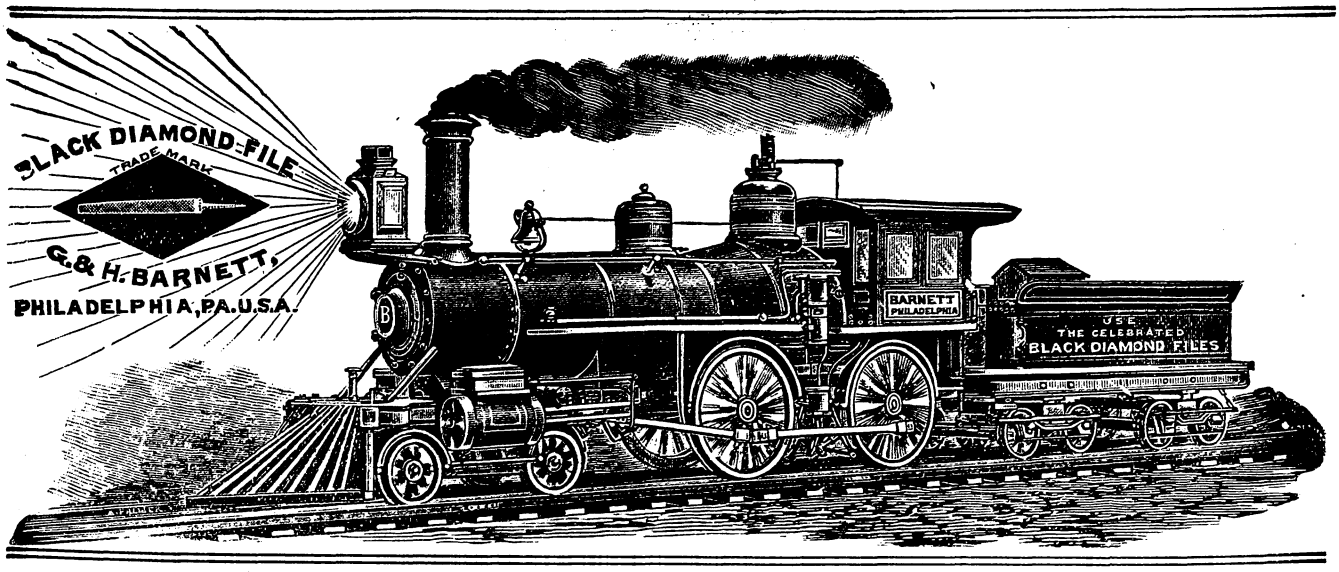
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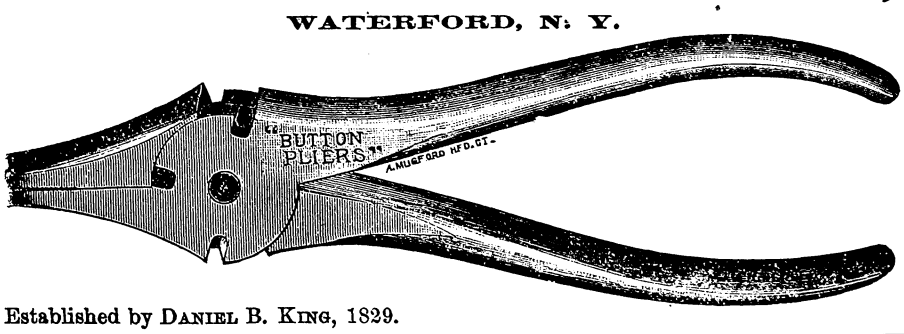
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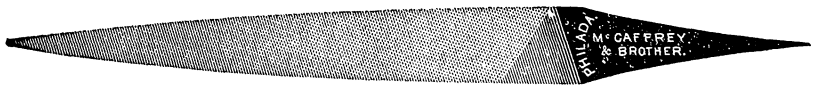
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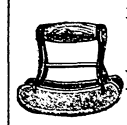
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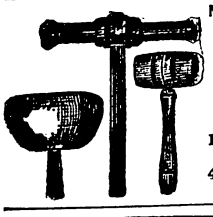
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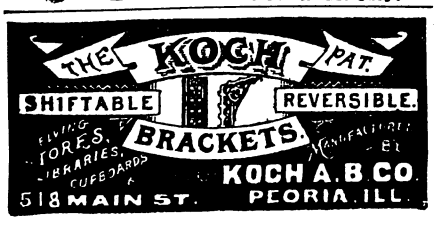
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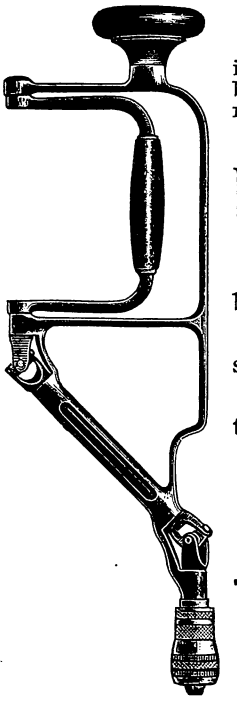
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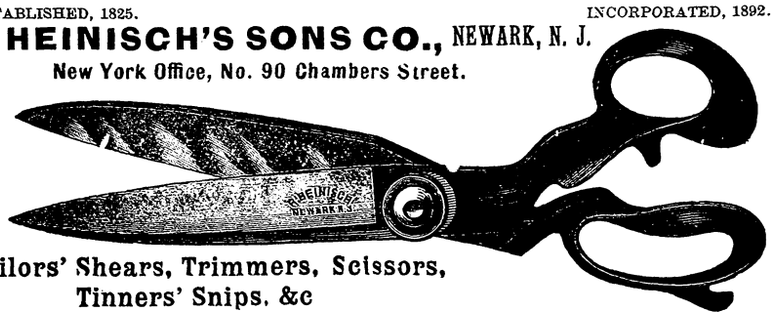
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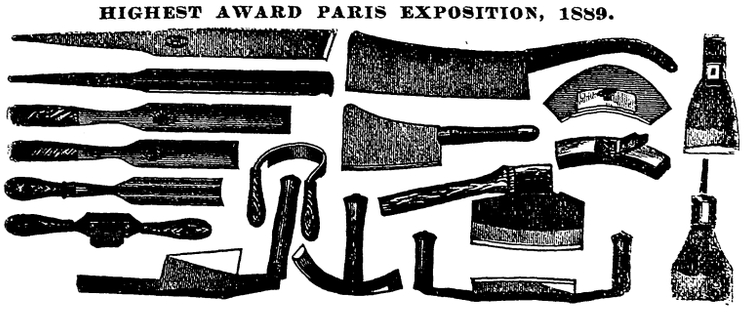
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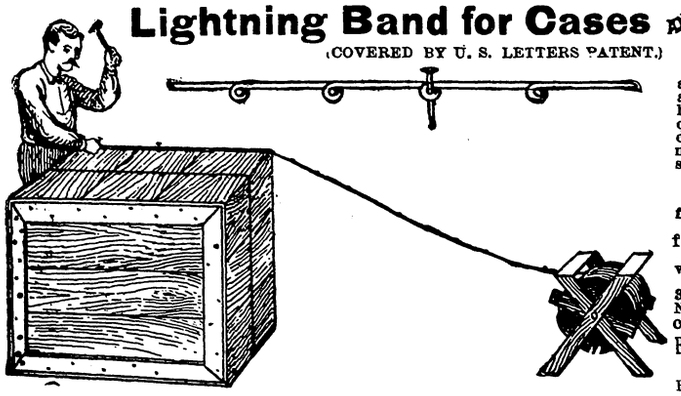
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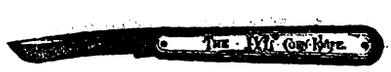
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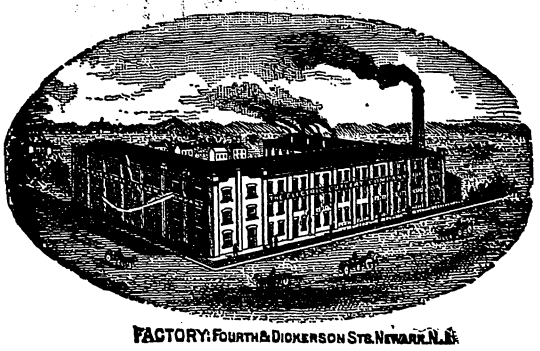
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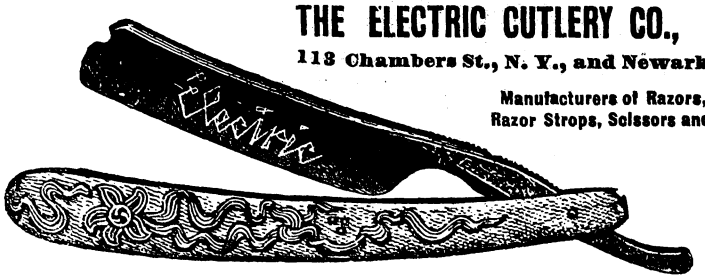
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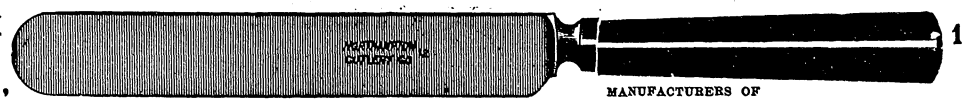


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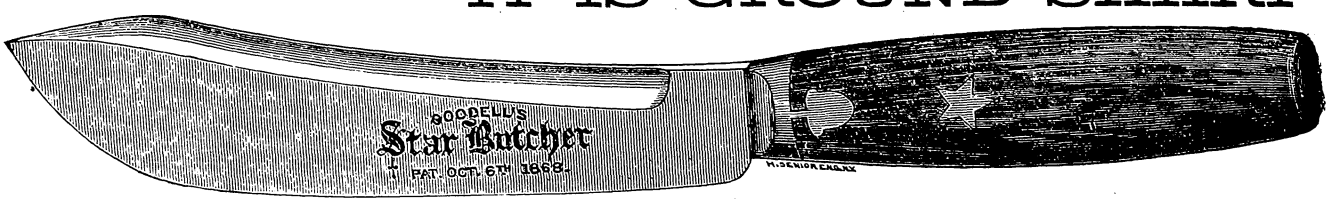
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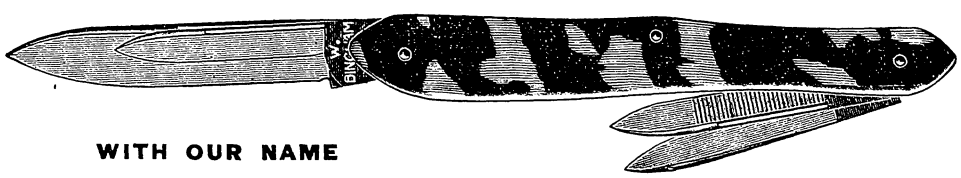
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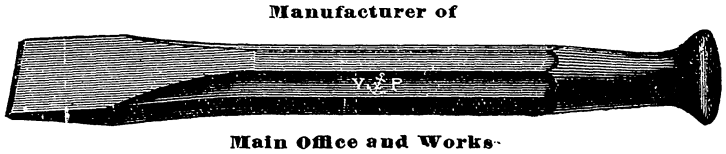
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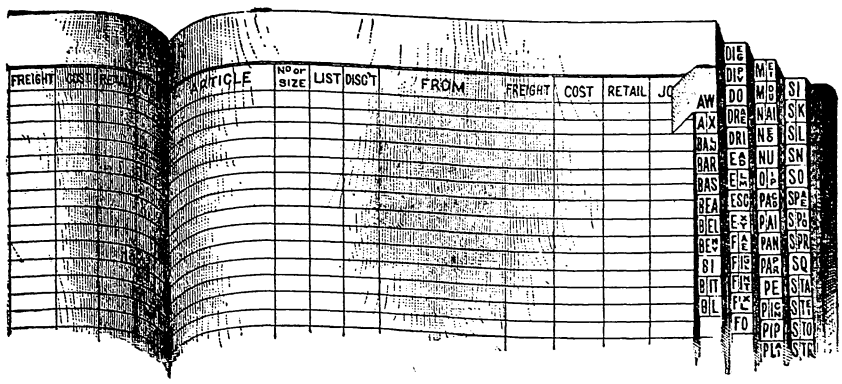
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The Iron Age Hardware Price Book F.

WITH MULTIPLE INDEX (Patent Pending).



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AN	DIP V	MO U	SK
AU	DO	NAI	SL
AW	DRA E	NE O	SN
AX	DRI	NU	SO
BAL N	EA D	O! P	SPE A
BAR	EL M	PAC D	SP! O
BAS	ESC	PAI	SPR

Fac-Simile of Indexing.

SIZE.—The book is 8¼ x 11 inches (much larger than Price Books A, B, C, D or E), 556 pages.
PAPER.—The paper is the celebrated Crane's heavy ledger paper, tough and strong, permitting frequent changes and erasures.
BINDING.—The binding is of the very best quality—flexible seal grained leather.
INDEX.—By means of the arrangement shown in the cut the four rows of index applies to every page (except Supplement) and permits reference to any article at a single motion. This greatly facilitates the use of the book, avoiding the troublesome turning from page to page which is necessary in connection with other Price Books. It has been prepared with great care, and it is believed that it provides a place for every article in the Hardware line, and gives ample space for recording prices.
Sufficient space has been provided for large lines of goods such as Axes, Bits, Springs, etc., by allowing four pages to such indices, instead of two pages, as for lines of goods requiring less space. This is accomplished, as in AX for example, in Book F by having a short tab with the letter A on the tab on the first leaf, and AX on the tab on the second leaf. The A on the first leaf is directly over the A on the lower leaf, so that the index reads AX whether looking at both leaves together, or at the lower one only.
The four rows of index tabs are printed in gold letters on black Russia leather. The tabs are securely fastened on both sides of each page, making a handsome and durable index.
ARRANGEMENT.—The book is arranged to keep a complete record of prices on a single page, the width giving sufficient room.
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THIS BOOK IS ISSUED IN ONLY ONE EDITION, PRICE, $7.50.

Advantages of Multiple Index Price Book.

A SPECIAL feature of the books is the arrangement of the index characters, which, instead of being alphabetical, are arranged with special reference to the classification of Hardware goods, each index character giving the first two or three letters of the names of Hardware articles as shown above. The ease and convenience with which the books can be used is indicated in the following examples, taken from Book F:

For Augers,	turn to	AU	For Chisels,	turn to	CH! U	For Iron,	turn to	IRO
" Parers, Apple	"	PAP R	" Cutlery,	"	CUT	" Irons,	"	IR'S
" Saws,	"	SAW	" Cartridges,	"	CAR	" Shovels,	"	SHO R
" Pumps,		PUM N	" Rules,	"	RUB L	" Grindstones,	"	GRI
" Bits,	"	BIT	" Locks,	"	LO	" Stones,	"	STO

Special care has been taken to make the classification as indicated in the index correct and comprehensive, making provision for all Hardware articles and giving sufficient space for the keeping and recording of prices. It is thought that every strictly Hardware article has its first two or three letters given, thus permitting immediate reference to it by a single motion.
It is, however, obvious if any articles are not directly designated by the index characters, that the index, being alphabetical in its arrangement, indicates the place where quotations on such articles should be recorded. The supplement, however, may be found useful for quotations on any outside goods which the Hardwareman may desire to keep prices on, while at the same time it may be used if necessary for any overflow of matter from the preceding pages, or to contain list prices or other matter relating to goods.
Hardware Classification —A pamphlet containing a classification of the leading Hardware articles is furnished with the price books.
Standard Lists —In connection with these price books a set of *The Iron Age* STANDARD HARDWARE LISTS can be used with great advantage Price 25 cents.
These price books, which have been prepared by R. R. Williams, Hardware Editor of *The Iron Age*, are presented to the attention of Hardware men in the confidence that they will be found a most valuable aid in keeping track of prices.

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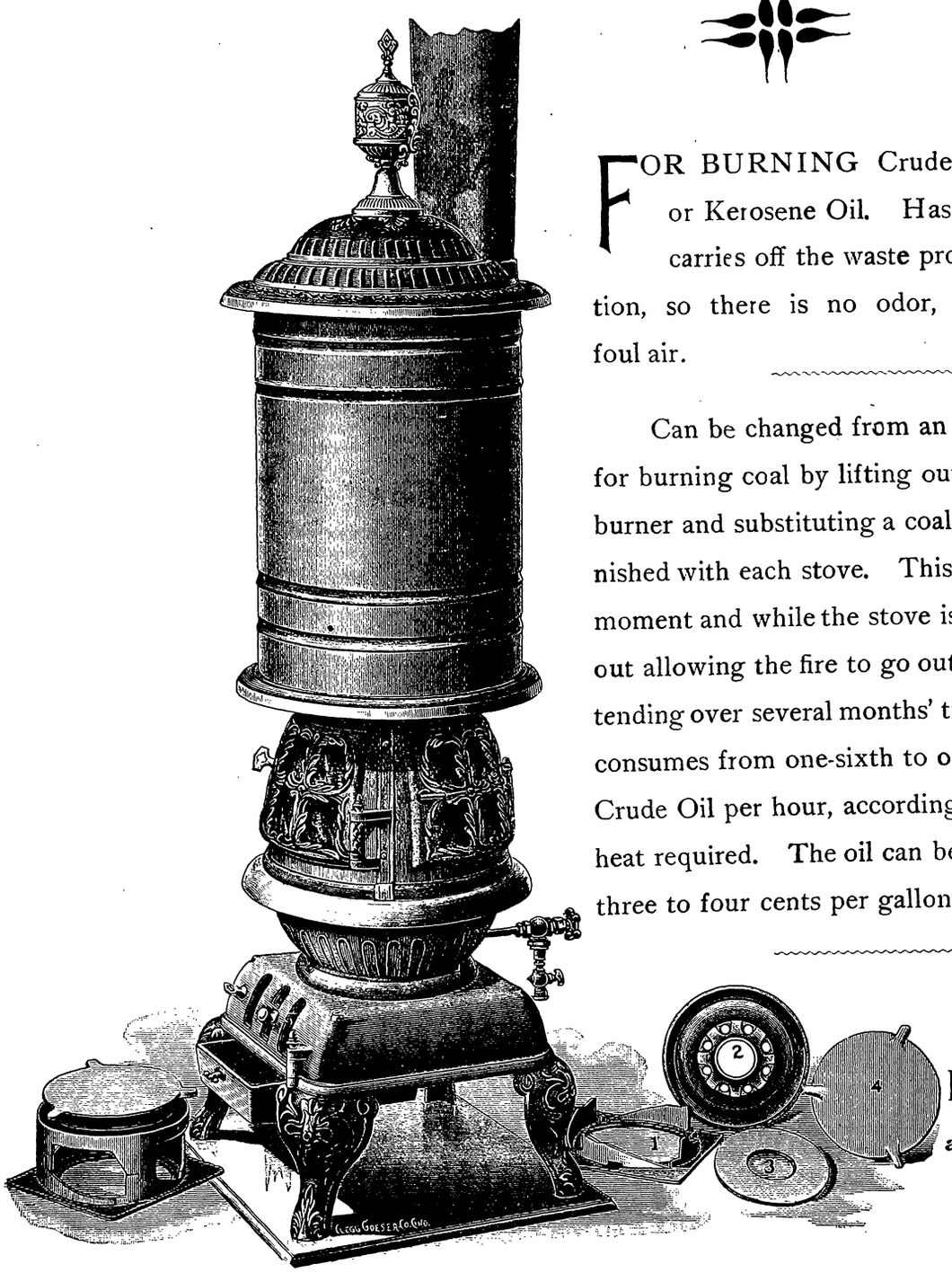
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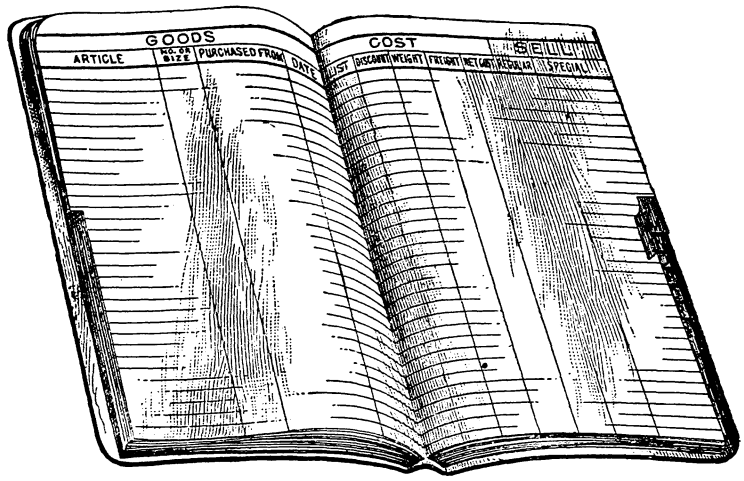
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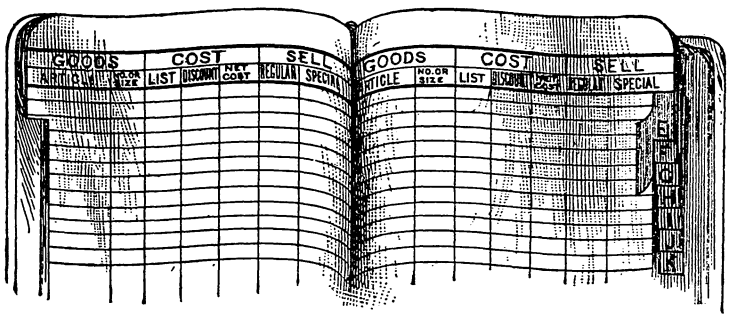
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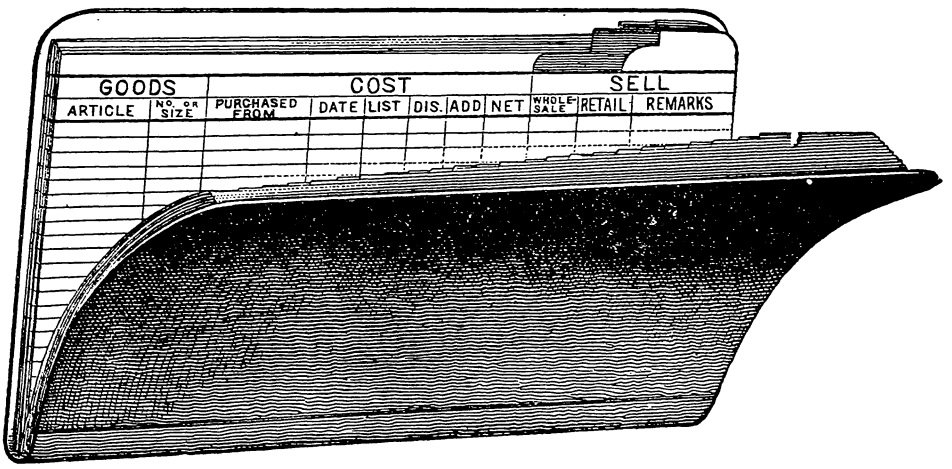
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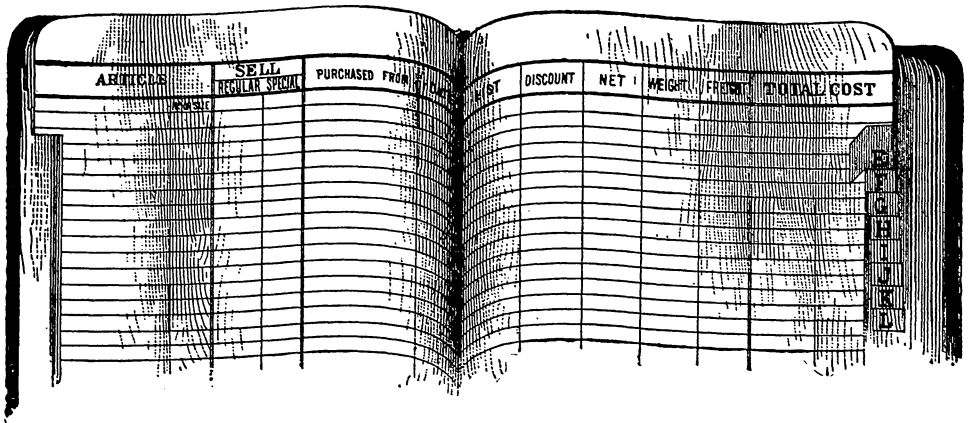
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Price Book D will recommend itself particularly for desk and store use, and for salesmen on the road.

The name of the article, its number or size and the selling price are the first to meet the eye on the left-hand page, as embodying information desired when the selling price is required. The other headings follow in convenient order, by which a detailed memorandum regarding the goods may be kept, the whole being seen at a glance. A number of pages at the back of the book are arranged for memoranda, which will be found a great convenience. This arrangement is adapted to the requirements of the trade in this direction.

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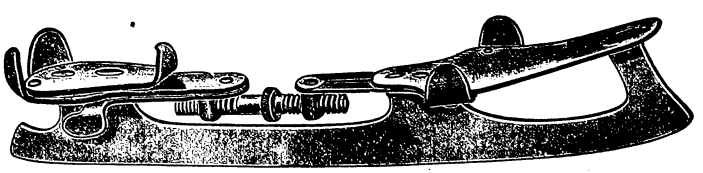
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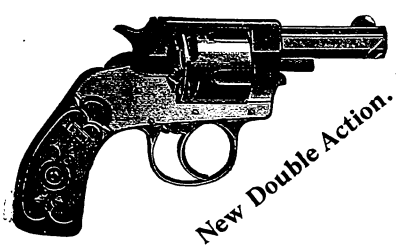
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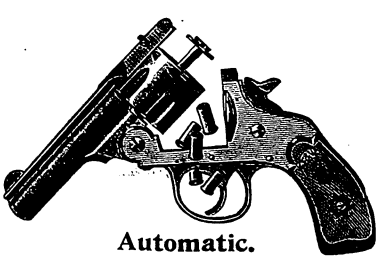


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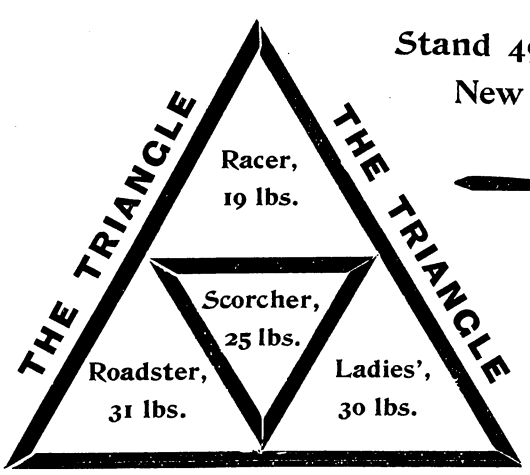


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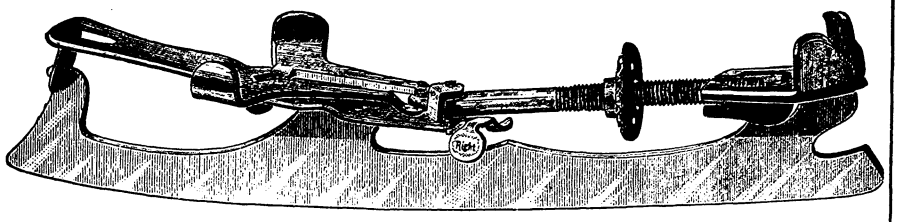
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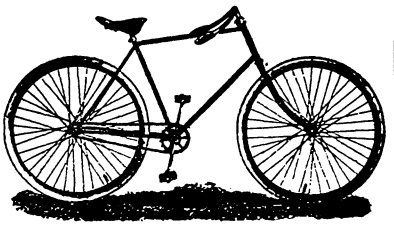
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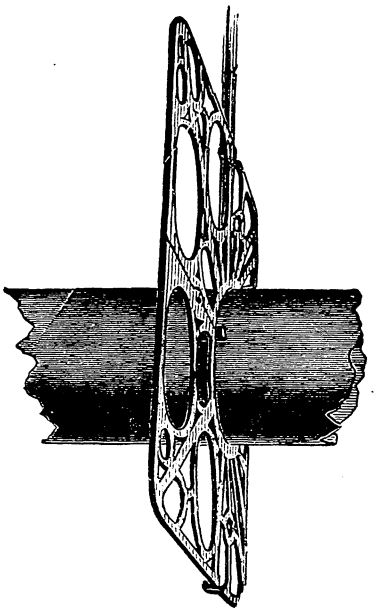
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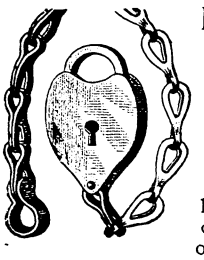
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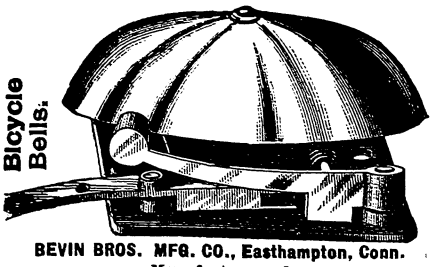


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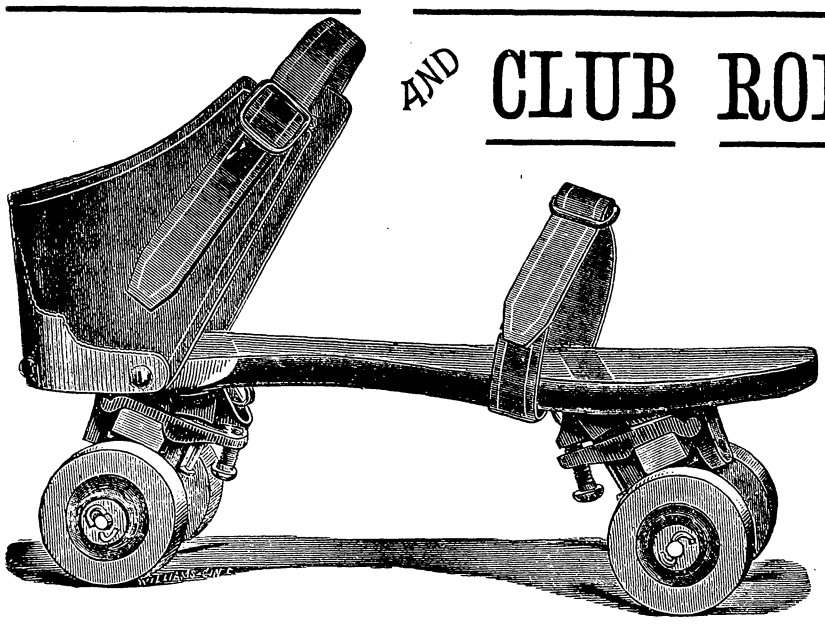
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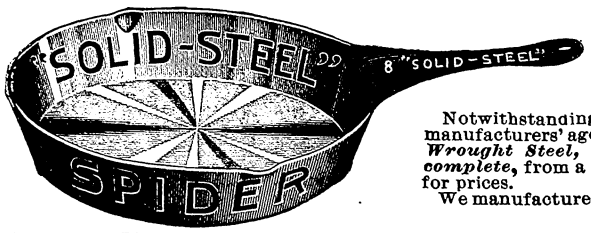


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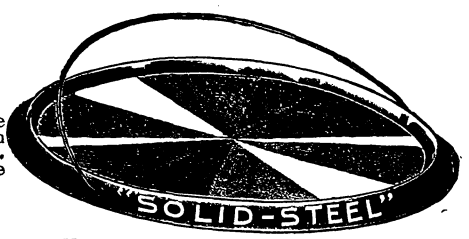
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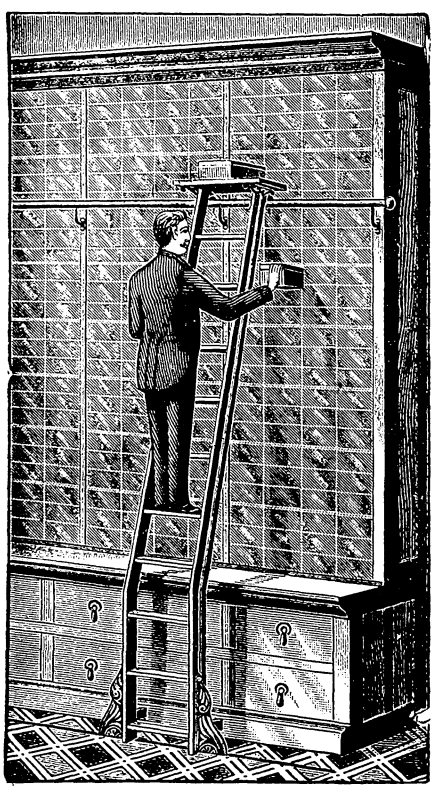
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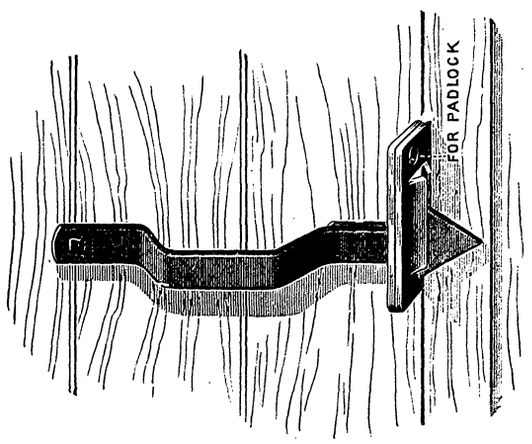
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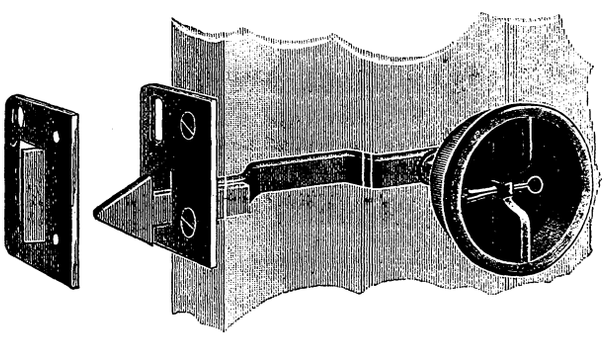
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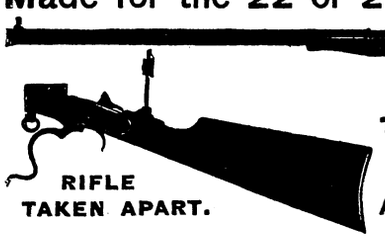
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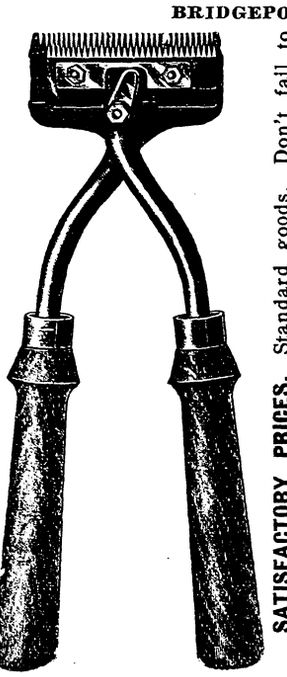
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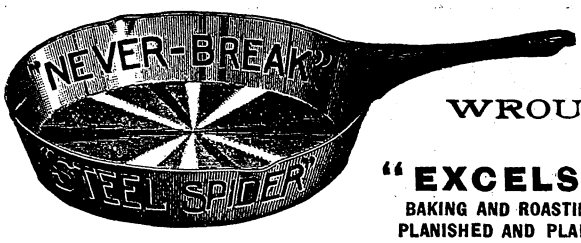
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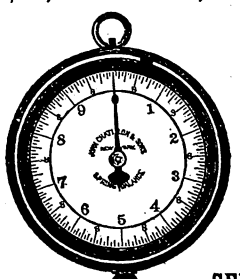
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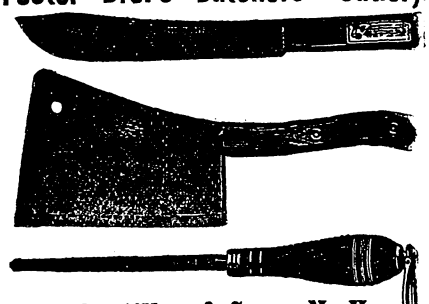
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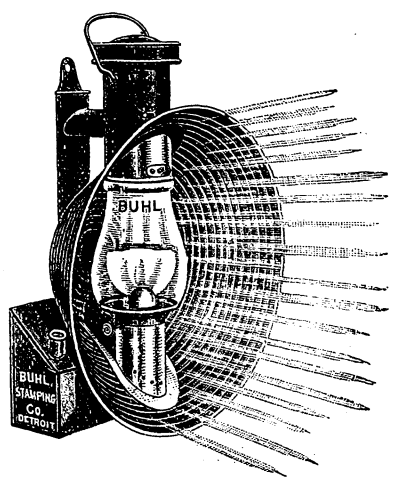
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to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

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65 Elizabeth Street,

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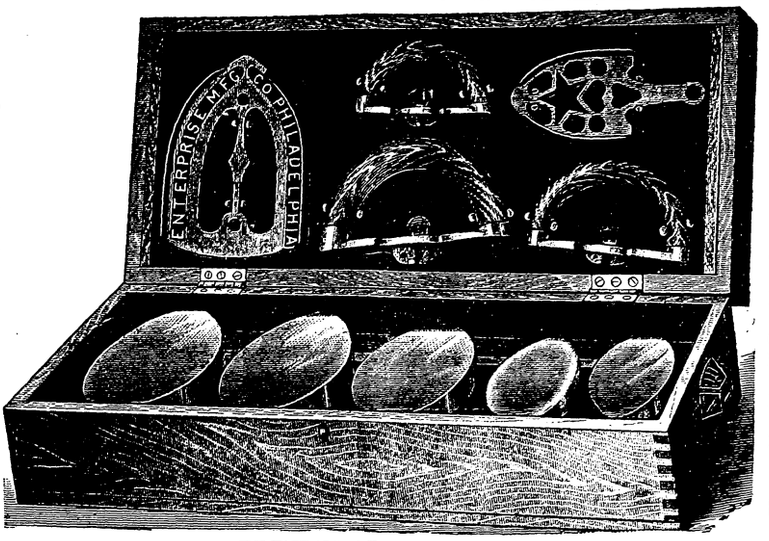
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SPECIALTIES.

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Coffee Mills,
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and Stand,
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Bung-Hole Borers,
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Sugar Augers,
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&c., &c.

For Sale by the Hardware Trade.

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FOR THANKSGIVING AND THE HOLIDAYS.

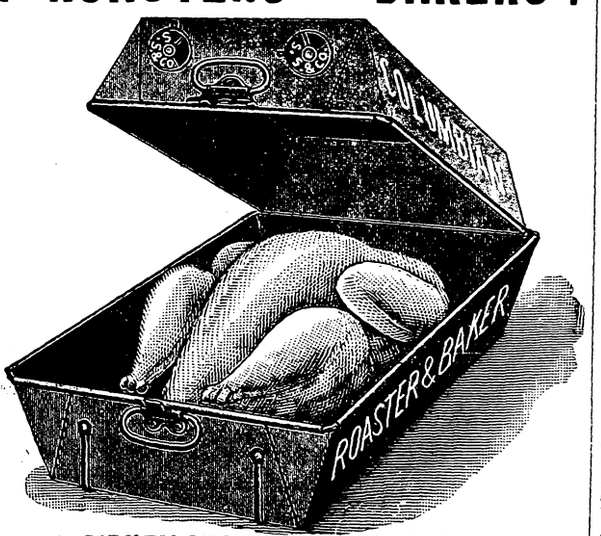
Have You a Good Stock of

COLUMBIAN ROASTERS AND BAKERS?

THEY OPEN AT EITHER END.

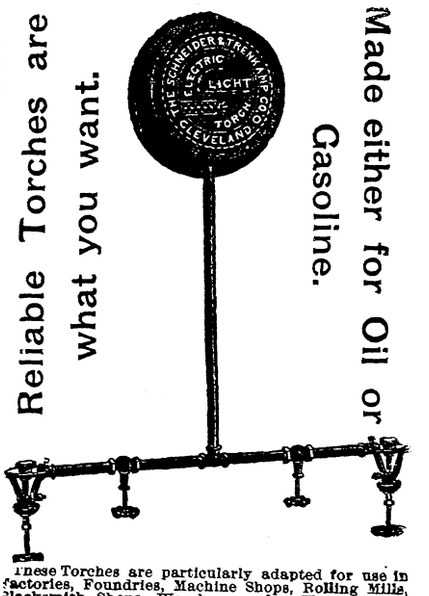
The fastenings on these pans are made of cast iron, the upper part hollowed to rest on the edge of the pan, forming a hinge. They are alike on both ends, and in combination with the handles form a simple, secure and durable lock. The wires under pan add strength and durability and allow free circulation of air underneath.

No. 5, 9 x 13½ x 6 ins., $1.50 each.
No. 10. 11½ x 15½ x 7½ ins., $2.00 each.
No. 20. 12½ x 16½ x 7½ ins., $2.25 each.
No. 30. 13 x 18 x 7½ ins., $2.50 each.
Liberal discount to the trade.



Sole Manufacturers: { SIDNEY SHEPARD & CO., Buffalo, N.Y.
C. SIDNEY SHEPARD & CO., Chicago, Ill.

Reliable Torches are what you want.



Made either for Oil or Gasoline.

These Torches are particularly adapted for use in Factories, Foundries, Machine Shops, Rolling Mills, Blacksmith Shops, Warehouses, &c. They make a strong white light, are free from smoke and are not affected by wind or rain. They are convenient and portable. These Torches can be run at an expense of about one-half cent to one cent per hour, burning a bright, steady light which is ten times greater than the light of an ordinary gas burner.
Write us for prices. A liberal discount given to the trade.
Manufactured by
THE SCHNEIDER & TRENKAMP CO.,
Nos. 479 to 497 Case Ave., Cleveland, Ohio.

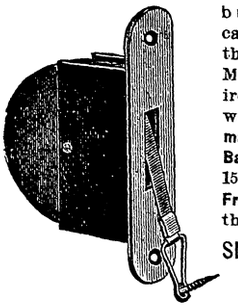


A Well Balanced Sash

IS LIKE

A Well Balanced Business Man,

gives satisfaction to those who are brought in contact with them. Don't be inveigled into buying anything called Sash Balances that have no record. Made from light cast iron. Ask your Hardware dealer for **Pullman Steel Frame Sash Balance.** Warranted 15 years. Only **Steel Frame** Sash Balance in the world.



SIMPLE, CHEAP AND DURABLE.

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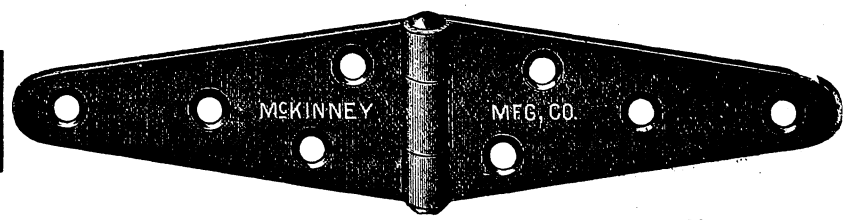
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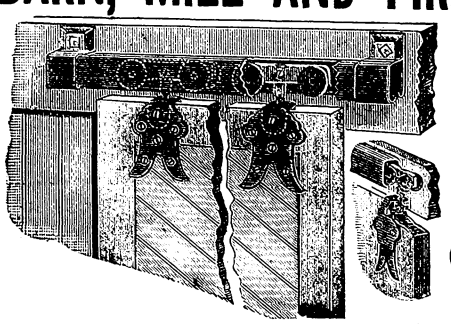
That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

McKINNEY MFG. CO., ALLEGHENY, PA.

Steel  Hinges.

SEND FOR LIST. **"NONE BETTER."**

BARN, MILL AND FIRE DOOR HANGERS.



Barn Door with Lateral Adjustable Hanger. Very simple and cheap to apply.

HIGHEST AWARD

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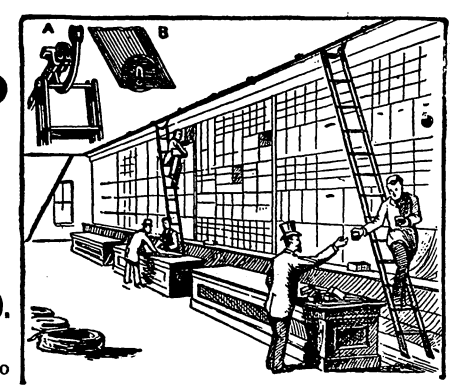
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HOLYOKE, MASS.

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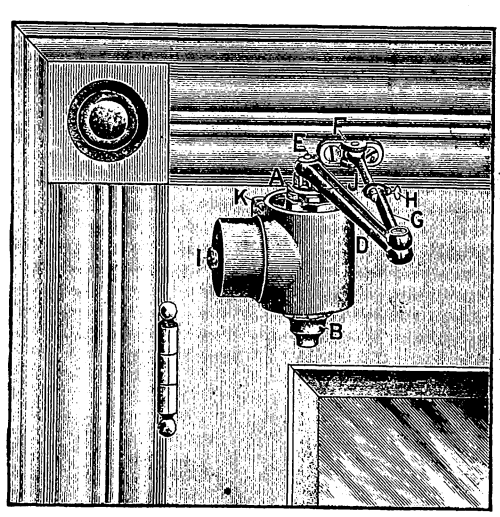


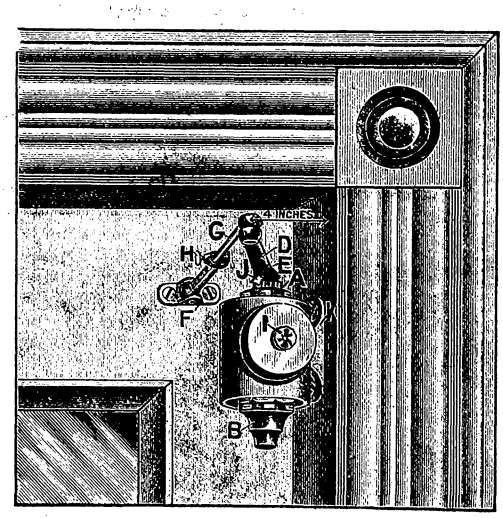
P. & F. CORBIN,

New Britain, Conn. New York. Philadelphia. Chicago.

——) MANUFACTURERS OF (——

Easily Adjusted and Adapted for all Requirements.





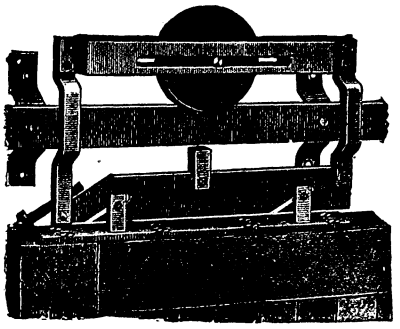
Looks Well, Acts Well, Wears Well.

LIQUID DOOR CHECKS AND SPRINGS,

Fine Builders' Hardware. Wood and Machine Screws.

Catalogues and Prices Furnished on Application.

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LANE'S PATENT NOISELESS STEEL

PARLOR DOOR HANGER.

This Hanger is made of Steel.
The Wheel is also Steel, except the filling or tread.
The Track is of Steel—a single one only.
The Hanger is Anti-Friction.
More nearly Noiseless than any other.
Ease of adjustment.

Can be erected with half the labor others require.
Track will not swell, shrink or warp out of true.
No cutting of doors.
No matching of hardware.
Simplicity in all its parts.
Durability.

ALSO LANE BARN DOOR HANGER AND TRACK. SEND FOR CIRCULARS.

Manufactured by

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He had in his possession 55 skeleton keys which the police claim would open any door. —*Chicago Tribune.*

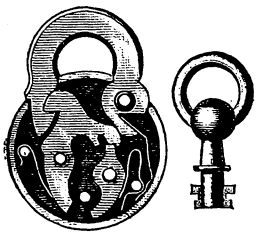
You are selling that kind of a lock every day and your customers think you are selling the best the market affords.

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The Craig Locks are guaranteed Sneak Thief Proof.

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PATENT PERFECTION PADLOCK.



Eight Tumblers, Key Turning Both Ways.

Sizes, ¾ inch to 2½ inches, of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also, ½ and ⅝ inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.
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Never before Equalled what they attained in 1892.

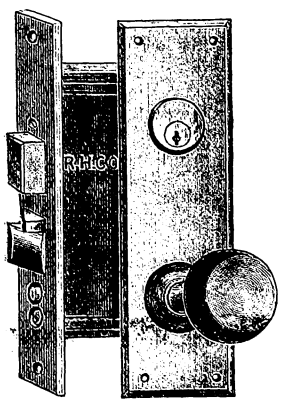
PRICE TALKS. QUALITY TALKS.

Sold by best Jobbers everywhere.

Every Dealer should have on File our Catalogue No. 11.

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Hardware Company,

BUILDERS' HARDWARE

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FINE DOOR LOCKS.

FACTORIES, READING, PA.

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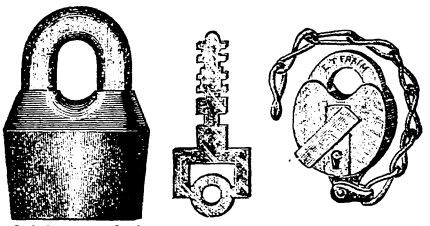
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ESTABLISHED 1879.

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E. T. FRAIM, Lancaster, Pa., U. S. A.



Originators, designers, patentees and manufacturers of all the leading popular styles of **PADLOCKS**, Key-Locking Scandinavian with our patent Inter-Locking Tumblers; the only reliable lock of this style ever made. **SELF-LOCKING** Scandinavian of the highest type of perfection. Dust Proof Railroad, Freight Car and Switch Padlocks. Brass, Bronze, Steel and Malleable Iron Padlocks for all purposes and in all finishes. 131 different kinds. Write for our new 100-page catalogue.

SURPLESS, DUNN & ALDER, General Agents, 97 Chambers St., NEW YORK.

SIMPLEST IN CONSTRUCTION.
EASIEST FITTED.



Cheapest and Best Balance Made.

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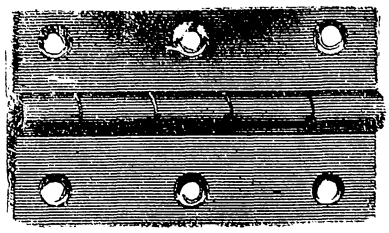
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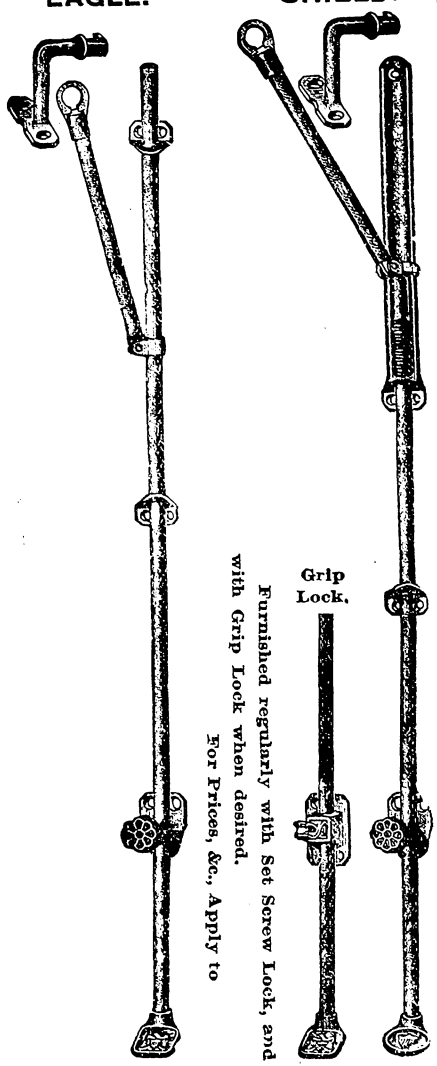
Nos. 16 & 18 Chambers Street, New York,

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BRASS, GALVANIZED & SHIP CHANDLERY HARDWARE.

TRANSOM LIFTERS

"EAGLE." "SHIELD."

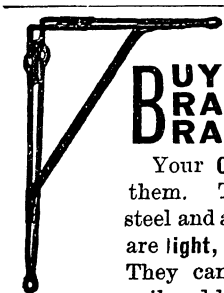


Furnished regularly with Set Screw Lock, and with Grip Lock when desired.

For Prices, &c., Apply to

J. F. WOLLENSAK, PATENTEE

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BUY BRADLEY BRACKETS!!!

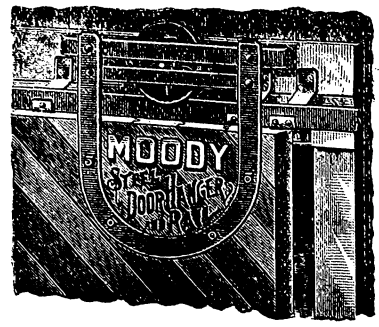
Your **Customers** will like them. They are made of steel and are **not brittle.** They are **light, strong** and **artistic.** They can be put up with nail and hammer. Write for prices.

PAT. NOV. 8, 1892.

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New Haven, - - Conn.

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Showing one-half set of hangers attached to door.

STEEL RAIL.



The Only Bracing Bracket Made.

PRICE-LIST.

	Per Doz. prs.
HANGERS.	
No. 5, to run 6 feet, 3½ in. wheel,	$10.00
No. 6, to run 10 feet, 4½ in. wheel,	15.00
No. 7, to run 15 feet, 5½ in. wheel,	22.00
RAIL, per foot	6½ cents

WHY USE WOODEN OR HEAVY STEEL BLOCKS



WHEN THE STEEL AND IRON

TACKLE BLOCKS

—MADE BY—

The Cleveland Block Co.

CLEVELAND, OHIO, U. S. A.,

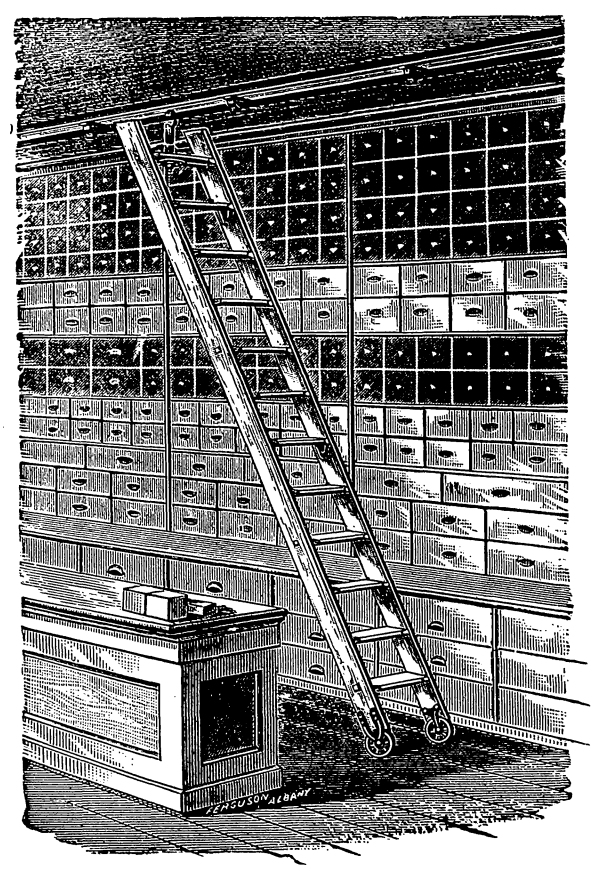
ARE BETTER IN EVERY WAY.



No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable

General Agents: Topping Brothers, 92 Chambers Street, New York.
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THE "NOISELESS" STORE LADDER.



The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by

M. CROISSANT,

ALBANY, N. Y.



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Highest Award

FOR

Supreme Excellence

TO

The PUTNAM Hot-Forged and Hammer-Pointed Horse NAILS,



At the *World's Columbian Exposition* at Chicago. A medal and diploma worded:

"Supreme excellence in material, method in manufacture, and quality of finished product; elasticity and smoothness combined with holding power in clinch.

It allows the use of very small nails."

There is nothing beyond "supreme excellence," nor is there anything comprised in a horse nail, except the "material from which it is made," "the method of manufacture," and "quality of finished product."

Putnam nails, by their "elasticity," give slightly to the expansion and contraction of the hoof while the horse is in motion; by their "smoothness," do not enlarge the nail holes in the hoof, while their "supreme excellence," in "holding power in the clinch," enables them to hold the shoe in the hardest service until worn out.

By the "use of small nails," large holes are avoided and money saved to the smith.

Thus it will be seen that the officials of the *World's Columbian Exposition* recognize what qualities go to make up a good horse nail and that only the "Putnam" contains them all.

PUTNAM NAIL CO.,

Neponset, Boston, Mass.

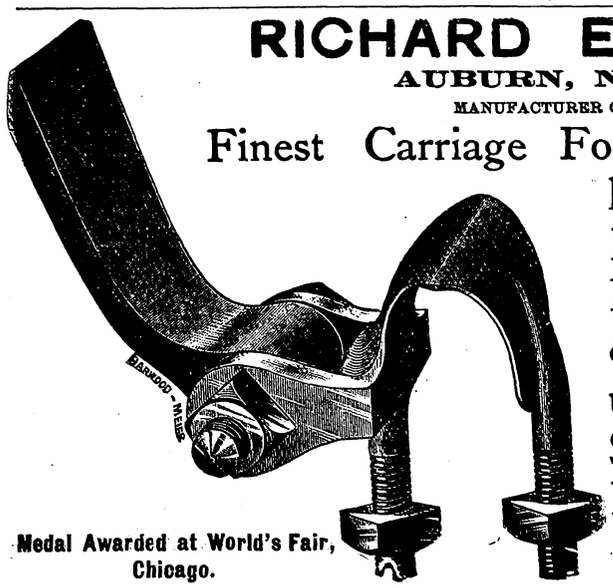


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RICHARD ECCLES,

AUBURN, N. Y.,

MANUFACTURER OF

Finest Carriage Forgings, Couplings, Clips, King Bolts, Fifth Wheels, &c. Manufacture a full line Special Drop Forgings.

Medal Awarded at World's Fair, Chicago.

Send for New Catalogue for Season 1893-94



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Pat. Jan. 20, 1880.

Cut One-half Size.

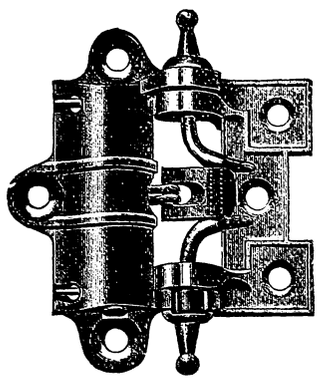
Sample pair sent to any hardware or saddlery firm by addressing

The Frost Thill Spring Co.,

Boston, Mass.

NEW IDEA SPRING HINGE

Holds the door strongest when closed.



Resistance gradually decreases in opening

and increases in closing the door.

A covered (patented) hold-back Spring Hinge. Full particulars, free Sample and Prices by mentioning this paper.

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SASH WEIGHTS

E. E. BROWN & CO.,

McKean and Meadow Sts.,

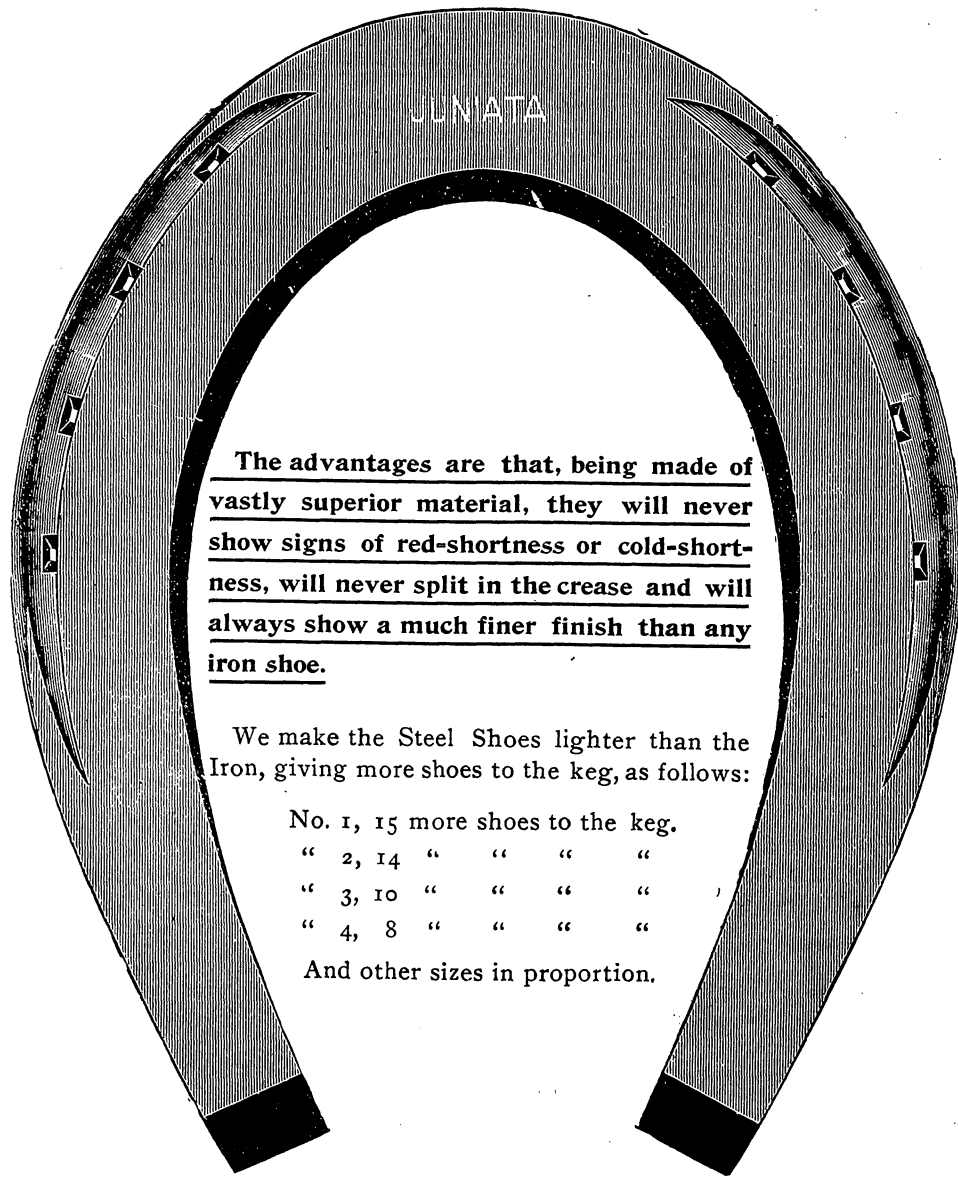
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STEEL HORSE SHOES.

SHOENBERGER & CO., PITTSBURGH, PA.,

After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes, and are now making from this steel Extra Swaged, and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors. We are at present making our Roadster Pattern Horse Shoes out of Iron, but we will make them of Steel also within a short time.



The advantages are that, being made of vastly superior material, they will never show signs of red-shortness or cold-shortness, will never split in the crease and will always show a much finer finish than any iron shoe.

We make the Steel Shoes lighter than the Iron, giving more shoes to the keg, as follows:

No. 1, 15 more shoes to the keg.
" 2, 14 " " " "
" 3, 10 " " " "
" 4, 8 " " " "

And other sizes in proportion.

No. 2 EXTRA SWAGED FRONT.

We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

We would also call your attention to our Improved Steel Toe Calk, equal to any in the market. To secure the best wearing qualities use sand or borax in welding on a calk and cool off at a dark red, or still better, cool off without plunging in water. We make sizes numbers 1, 2, 3, 4, 5 and 6, packed in 25-pound boxes.

Write to us for information and prices, or apply to jobbers and dealers, who sell them everywhere.

SHOENBERGER & CO.,

JUNIATA IRON AND STEEL WORKS, - - - PITTSBURGH, PA.

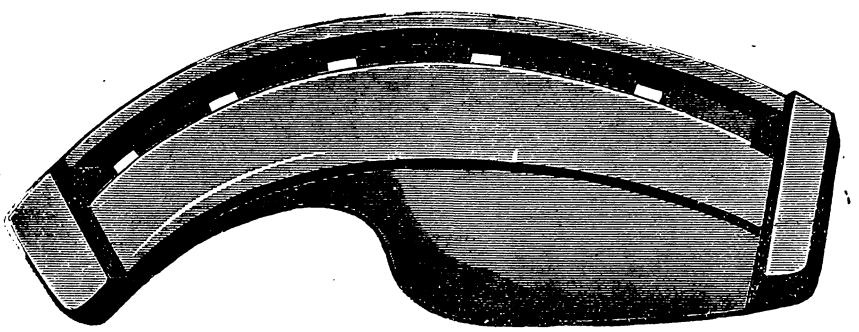
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SCRANTON FORGING CO.,

SCRANTON, PA

CARRIAGE HARDWARE AND SPECIAL DROP FORGINGS.

FORGED OX SHOES.



Made under Deeble's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

IT IS JUST RIGHT.

THE BOSS

HORSE AND MULE SHOES.

Superior Quality, Shape and Finish.

BRYDEN HORSE SHOE CO.,

CATASAUQUA, PA.

RHODE ISLAND PERKINS HORSE SHOE CO.,

MANUFACTURERS OF

Horse and Mule Shoes of the Perkins Pattern.

SPECIALTIES:—X L Steel Shoes, Toe Weight Shoes and Goodenough Shoes.

Works at Valley Falls, R. I. Office, 31 Exchange Place, Providence, R. I.

F. W. CARPENTER, Pres., C. H. PERKINS, Gen. Manager, CHARLES R. STARK, Treas. R. W. COMSTOCK, Sec'y,

J. C. McCARTY & CO., Agents - 97 Chambers Street, New York.

THE NEW DIAMOND STATE HORSE AND MULE SHOES.

JUST TRY THEM and **YOU** will say they excel all others.

MANUFACTURED BY

DIAMOND STATE IRON CO.

WILMINGTON, DELAWARE.

Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Blank Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

PHILADELPHIA OFFICE, 206 So. Fourth St. } Correspondence invited { NEW YORK OFFICE, 11 Pine St.

LE COUNT'S HEAVY STEEL CLAMP.

Extra heavy, with Button on end of screw, hung on a ball so as to accommodate itself to irregularities without bending the screw. The foot of the Clamp is planed.

The back is 2¼ inches from center of Screw

No. 1,	opening to	2	inch	$1 75
" 2,	"	3	"	2 00
" 3,	"	4	"	2 25
" 4,	"	5	"	2 50
" 5,	"	6	"	2 75
" 6,	"	8	"	3 25
" 7,	"	10	"	3 75
" 8,	"	12	"	4 25
" 9,	"	14	"	5 00
" 10,	"	16	"	6 00
" 11,	"	18	"	7 00

Full Set, 11 sizes, $40.50.

Ship or Bridge Clamp with Large Screws.

No. 12 opens 24 inches.....price, $12 00
" 13 " 30 " ..... " 16 00

The Screws of all the Clamps are made to reach the lower number.

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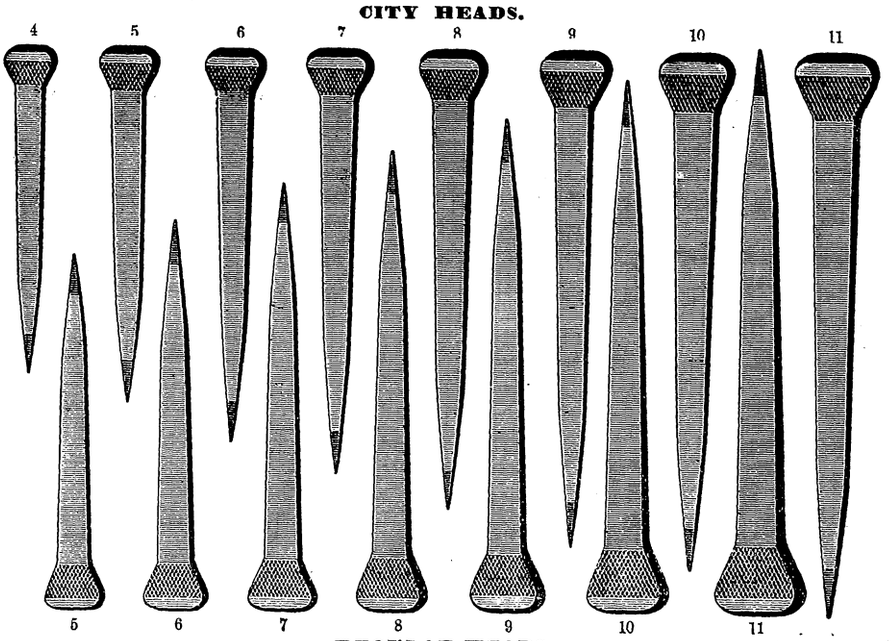
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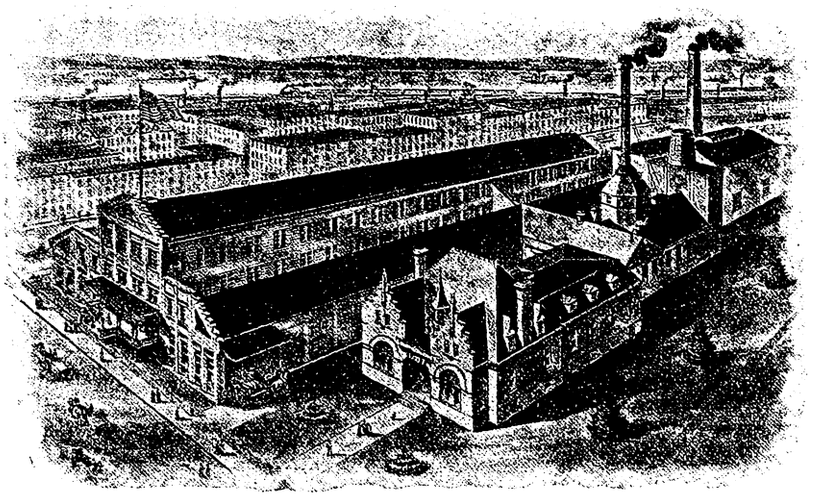
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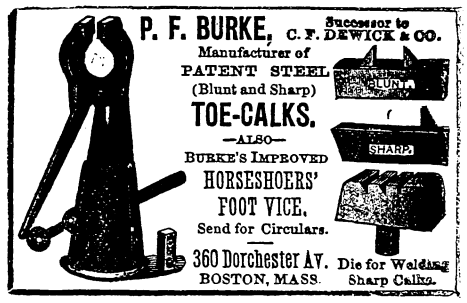
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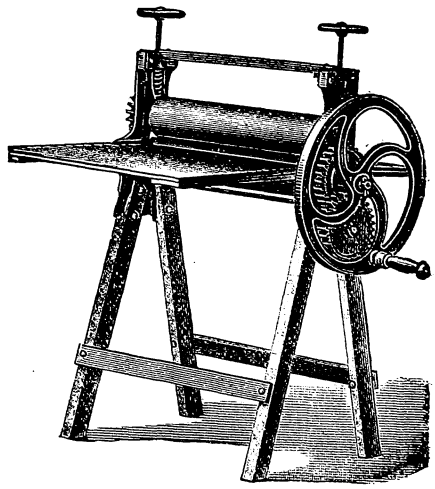
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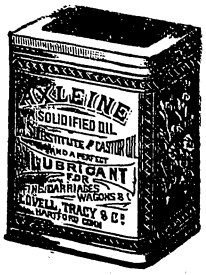
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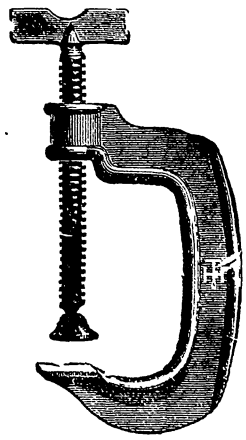
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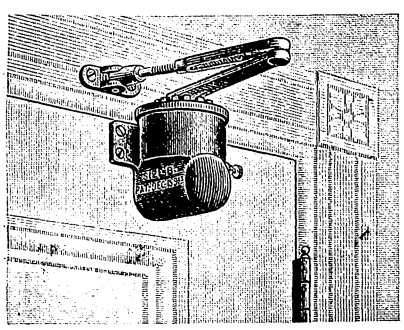
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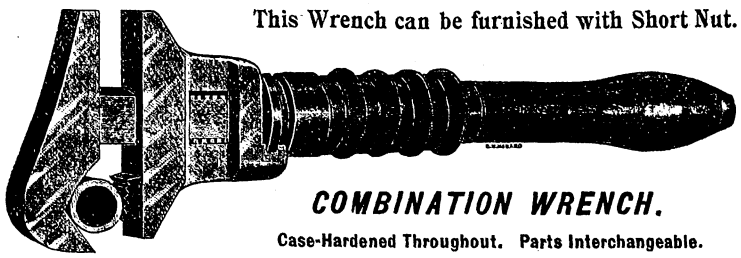


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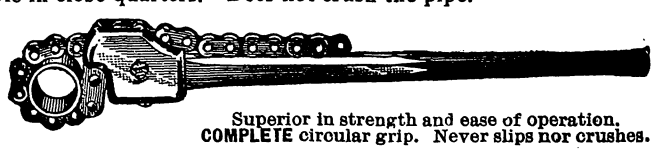
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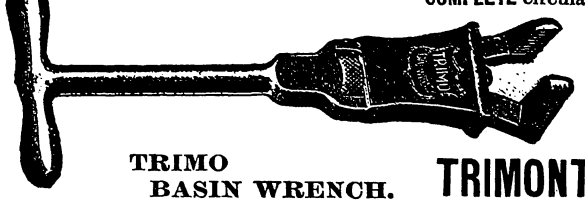
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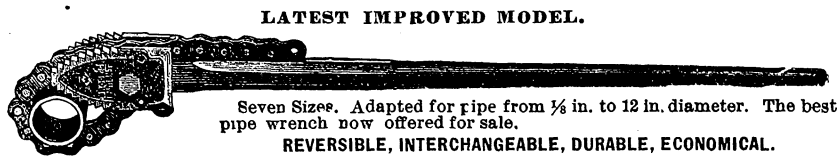


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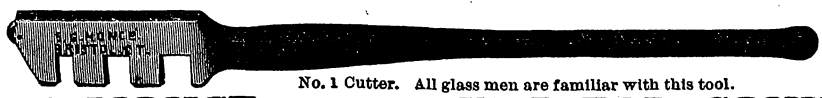
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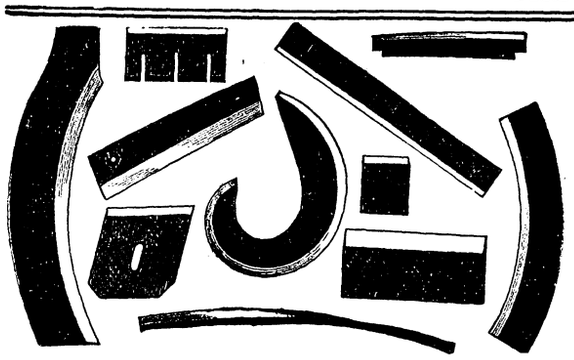
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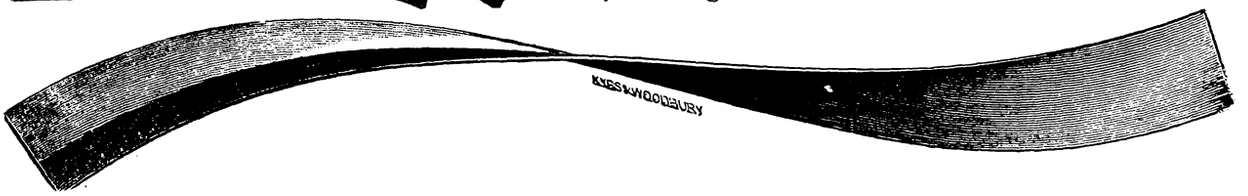
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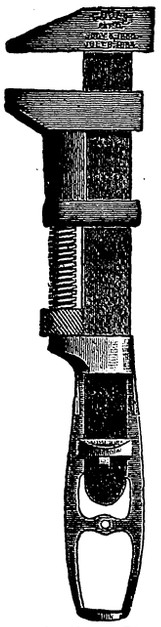
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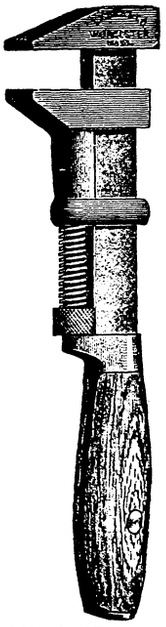
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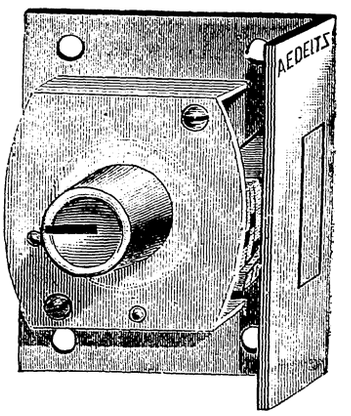
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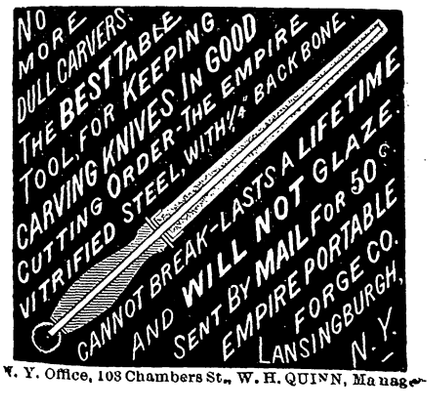


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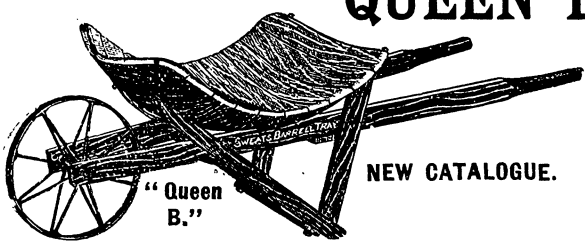
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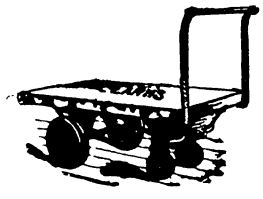
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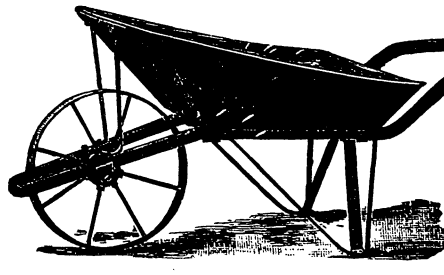
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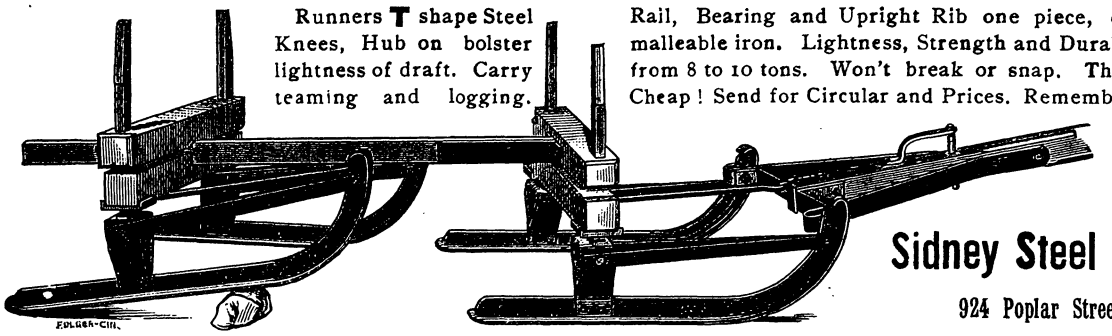
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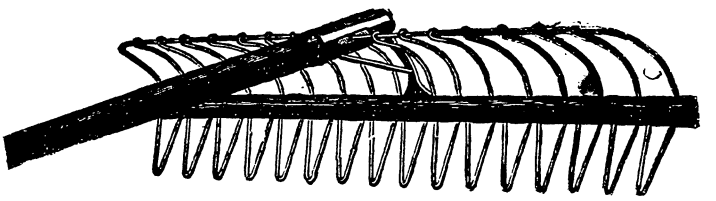
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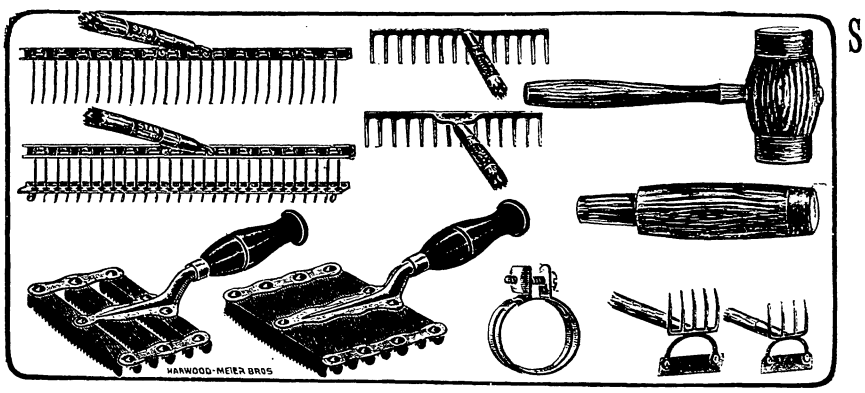
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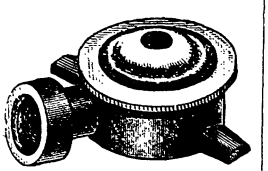
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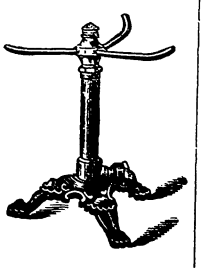


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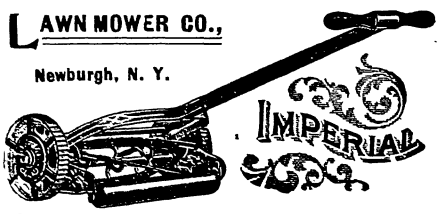
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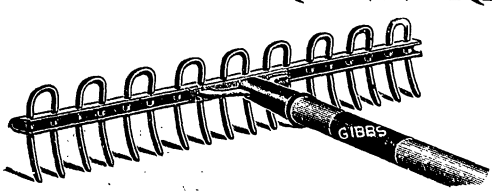
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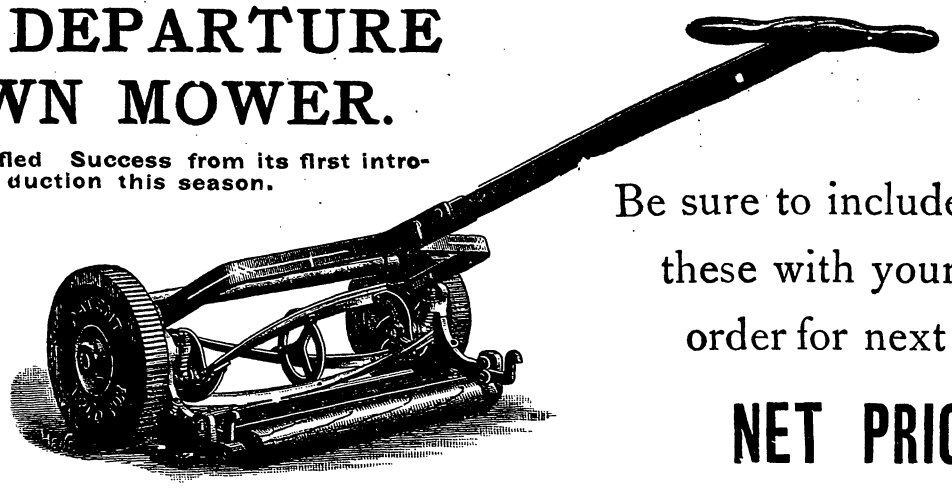
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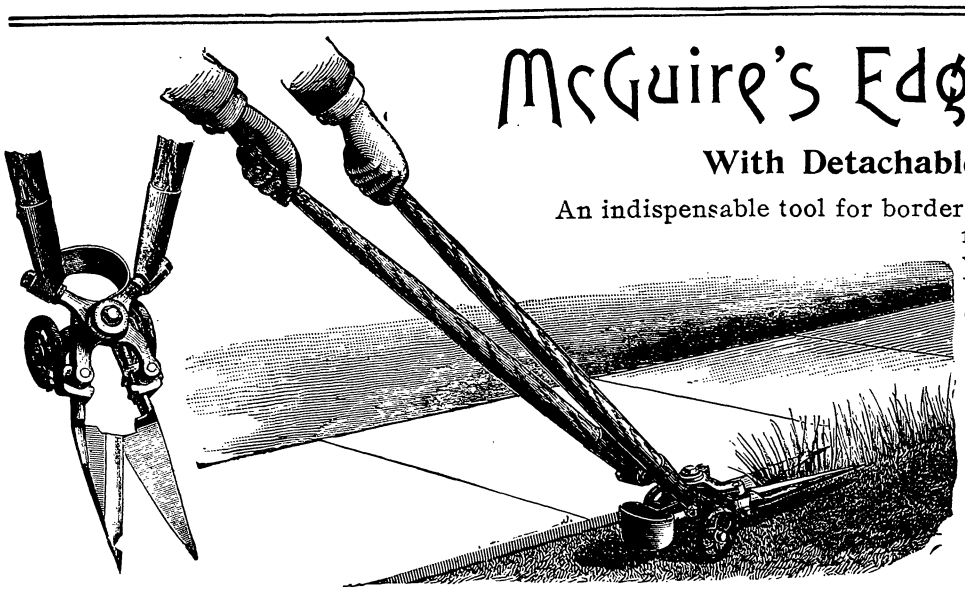
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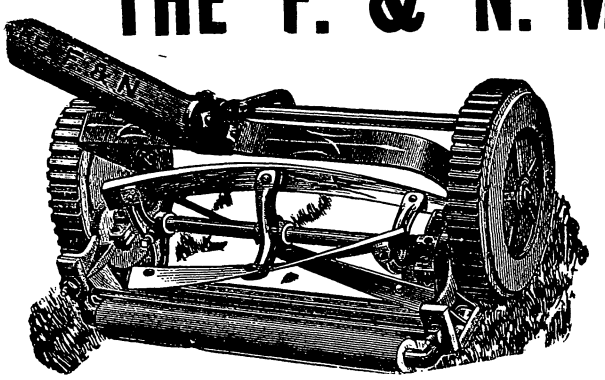
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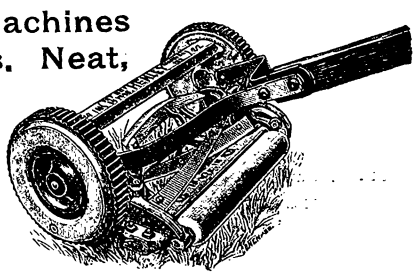
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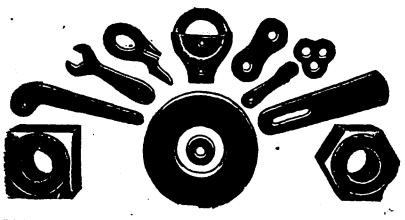
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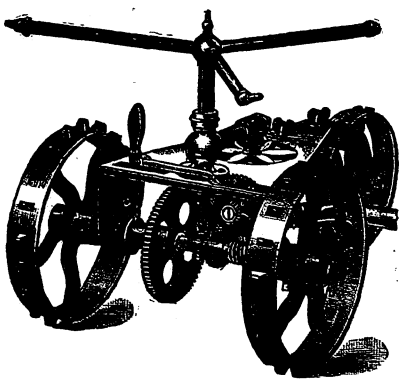
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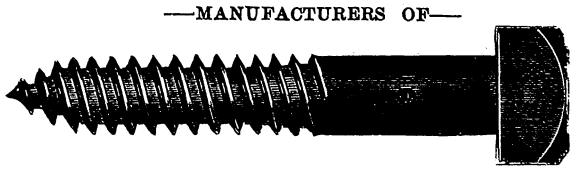
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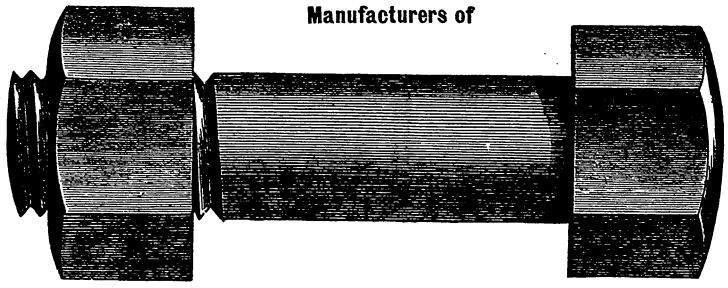
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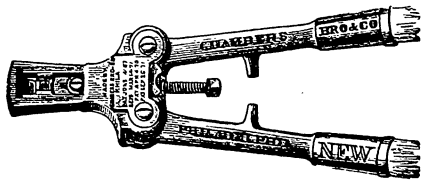


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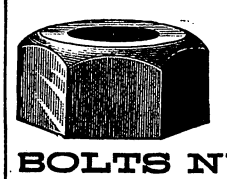
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Spiers, J. C. & Co., Worcester, Mass.
Williams, J. H. & Co., Brooklyn, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
Wyman & Gordon, Worcester, Mass.

Drop Presses.
Bliss, E. W. Co., Brooklyn, N.Y
Crosby, G. A. & Co., Chicago, Ill.

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Miner & Peck Mfg. Co., New Haven, Conn.
Stiles & Parker Press Co., Brooklyn, N. Y.
Vulcan Iron Works, Chicago, Ill.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Dumb Waiters.
Storm Mfg. Co., Newark, N. J.

Dust Beaters.
Peabody & Parks, Troy, N. Y,

Dynamite.
New York Powder Co., 62 Liberty St N. Y.

Dynamos.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Lovell Mfg. Co., Ltd., Erie, Pa.

Edge Tools. *Makers of.*
Buck Bros., Millbury, Mass.
Buffalo Edge Tool Wks., Ridgway, Pa.
Plumb, Fayette R., Philadelphia, Pa
White, L. & I. J. Co., Buffalo, N. Y.

Edging Shears.
Dille & McGuire Mfg. Co., Richmond, Ind.

Egg Beaters.
North Bros. Mfg. Co., Philadelphia

Electric Bells and Supplies.
Ostrander, W. R. & Co., 204 Fulton St., New York
Wollensak, J. F., Chicago, Ill.

Electric Dynamo Machines.
Co'burn Electric Mfg. Co., Fitchburg, Mass.

Elevators. *Makers of.*
Link-Belt Engineering Co., Phila., Pa
Morse, Williams & Co., Phila., Pa.

Emery and Emery Wheels.
Bell, Geo. E, 36 John St. N. Y.
Grant Corundum Wheel Mfg. Co. Worcester, Mass.
N. Y. Belting & Packing Co., Ltd., N. Y.
Northampton Emery Wheel Co
Leeds, Mass.
Norton Emery Wheel Co., Worcester Mass
Sterling Emery Wheel Co., 174 Fulton St., New York.
Sturtevant Mill Co., Boston, Mass.

Enamels.
Nubian Iron Enamel Co., Cragin, Ill

Engineers and Contractors.
Aiken Henry, Pittsburgh, Pa.
Artificial Gas Engineering Co., Pittsburgh, Pa.
Herrick, J. A., 284 Pearl St., N. Y,
Kennedy, Julian, Pittsburgh, Pa.
Laughlin, Alex. & Co., Pittsburgh, Pa
Lean, D. R., Co., Pittsburgh, Pa.
McClure, Amsler & Co., Pittsburgh, Pa
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.
Roberts, Frank C., Philadelphia, Pa.
Smythe, S. R. Co., Incorporated Pittsburgh, Pa.
Swindell, W. & Bros., Pittsburgh, Pa.

Engines, Gas.
Otto Gas Engine Works, Phila., Pa.
Rollason Gas Engine, Havemayer Bldg. N. Y.

Engines, Steam. *Makers of.*
Bass Foundry & Machine Works, Ft. Wayne, Ind.
Buckeye Engine Co., Salem, O.
Erie Engine Works, Erie, Pa.
Norwalk Iron Works Co., So. Norwalk, Conn.
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
Phila. Engineering Works, Phila., Pa.
Phœnix Iron Wks. Co., Meadville, Pa.
Southwark Foundry and Machine Co. Phila., Pa.
Tod, William & Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.

Exhaust Tumblers.
Sweester, W. A., Brockton, Mass

Expansion Bolts.
Boone, W. C. Mfg. Co., Boonton, N. J.
Church, Isaac, Toledo, O
Steward & Romaine Mfg. Co., Phila. Pa.

Faucets, Self-Measuring,
Lane Bros., Poughkeepsie, N. Y

Faucets, Wooden. *Makers of.*
John Sommer's Son, Newark, N. J.

Feed-Water Heaters.
Davis, I. B. & Son, Hartford, Conn.
Goubert Mfg. Co., 32 Cortlandt St., N. Y
Harrison Safety Boiler Wks, Phila, Pa.
National Pipe Bending Co., New Haven, Conn.
Webster, Warren & Co., Camden, N. J.
Whitlock Coil Pipe Co., Elmwood, Conn.

Fencing, Iron and Wire.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Clinton Wire Cloth Co., Clinton, Mass.
Gilbert & Bennett Mfg. Co., 42 Cliff St.,
Kilmer Mfg. Co., Newburgh, N. Y.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.
Reliance Wire & Iron Wks., Milwaukee

Files. *Importers of*
Moss, F. W., 80 John, N. Y.

Files and Rasps, *Manufacturers of*
Arcade File Works, Anderson, Ind.
Danker & White, Troy, N. Y.
Barnett, G. & H., 41 & 43 Richmond Phila.
McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.

Fire Brick, *Makers of.*
Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer B & Sons, foot E. Houston, St
McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro., Woodbridge.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Fishing Tackle.
Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.
Baeder, Adamson & Co., Phila., Pa.

Flue Cleaners.
Mackey, Jas. T., St. Louis, Mo.

Fodder Cutters.
Silver Mfg. Co., Salem, O.

Foreign Periodicals.
Stechert, G. E., 810 Broadway, N. Y.

Forges, Portable, &c.
Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Sturtevant, B. F. Co., Boston, Mass.

Forgings, Iron and Steel.
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel—Cambria Iron Co., Johnstown, Pa.
Eastern Forge Co., Boston, Mass.
Frankford Steel Co., Phila. Pa.
Scranton Forging Co., Scranton, Pa
U. S. Projectile Co., Brooklyn, N. Y.

Foundry Facings.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O.

Foundry Riddles.
Estey, W. S. 65 Fulton, N. Y.

Foundry Supplies.
Colliau, Victor, Detroit, Mich.
Diamond Clamp & Flask Co., Richmond, Ind.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cinn., O

Friction Clutches.
Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Friction Cone.
Evans Friction Cone Co., Boston, Mass

Fruit Presses.
Enterprise Mfg. Co. Philadelphia, Pa.

Gas Producers.
Wood, R. D. & Co. Philadelphia, Pa.

Gas & Steam Fitters' Supplies.
Pancoast, Henry B. & Co., Phila., Pa.

Gauge, Rolling Mill.
Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.
D. E. Whiton Mach. Co., New London, Conn.

Gears.
Boston Gear Works Boston, Mass.
Gleason Tool Co., Rochester, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
U. S. Projectile Co., Brooklyn, N. Y.

Glass Cutters.
Monce, S. G., Bristol, Conn.

Glass Tubes,
Ashcroft Mfg. Co., 111 Liberty St., N. Y.

Glue.
Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.
Supplee Hardware Co,, Phila., Pa.

Grinding and Polishing Machines.
Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grindstone Dressing Machinery
Blake & Johnson, Waterbury, Conn.

Grindstones.
Cleveland Stone Co., Cleveland, O.

Gunpowder, *Makers of.*
Laflin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.
Lansing Wheelbarrow Co., Lansing, Mich.

Handles.
New York Mallet and Handle Wks. 456 E. Houston St., N. Y.

Haugers, Door.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.
Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 93 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.
Hotchkiss, E. S. Bridgeport, Conn.
Stearns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn

Hardware Mfrs. Agents.
Bingham, W. Co., Cleveland, O.
Clarke Thomas, St. John, New Brunswick.
Graham, John H. & Co., 113 Chambers,
McCoy, Jos F. Co., 26 Warren St., N. Y
Sickles, Sweet & Lyon, 35 Barclay, N. Y,

Hardware Specialties.
Acme Shear Co., Bridgeport, Conn.
Belden Machine Co. New Haven, Conn.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Ette & Henger Mfg. Co., St. Louis, Mo.
Haines & Zimmerman, Phila. Pa.
Hart, H. C Mfg. Co., Detroit, Mich.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
New Britain Hdw. Mfg. Co., New Britain, Conn.
North Bros. Mfg. Co., Philadelphia, Pa
Peabody & Parks, Troy, N. Y.
Shepard, Sidney & Co., Buffalo, N. Y.
Weiland, Chas., 149 Chambers St., N. Y
Wilson, J. Fred, Worcester, Mass.

Harness Snaps.
Covert Mfg. Co., West Troy, N. Y.
Coverts' Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.
Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.
Cox, Alfred & Co., 314 Green, Phila.
Brown Hoisting & Conveying Mch. Co. Cleveland, Ohio.
Copeland & Bacon, 85 Liberty St. N. Y
Fulton Iron & Engine Wks., Detroit, Mich
Harrington, E., Son & Co., Phila.
Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 96 Liberty, N. Y.
Maris & Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speidel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.
Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.

Hollow Ware, Aluminum.
Illinois Pure Aluminum Co. Lemont, Ill

Horse and Barbers' Clippers.
Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails, *Makers of.*
Capewell Horse Nail Co., Hartford, Conn.
National Horse Nail Co., Vergennes, Vt.
Putnam Nail Co., Neponset, Boston, Mass.

Horse and Mule Shoes. *Makers of.*
Bryden Horse Shoe Co., Catasauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phœnix Horse Shoe Co., Poughkeepsie N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.

Hose.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hydrants, &c.
McLean, John, 296 & 298 Monroe, N. Y.

Hydraulic Forging.
U. S. Projectile Co., Brooklyn, N. Y.

Hydraulic Jacks.
Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.
Clement & Dunbar, Phila., Pa.
North Bros. Mfg. Co., Phila., Pa.
Packer, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Injectors.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York.

Insurance, Boiler.
Hartford Steam Boiler Inspection & Insurance Co. Hartford Conn.

Iron and Steel, Swedish.
Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y

Iron Commission Brokers.
Corning, Edw. & Co., 29 B'way, N. Y
Cotton, Barclay W.) & Co., Phila.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia Pa
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tatnall & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Wister, L. & R. & Co., Phila., Pa.

Iron Ore.
Naylor & Co., 45 Wall, N. Y.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron, *Merchants.*
Barnes, C. K. & Co., Philadelphia, Pa
Borden & Lovell, 70 West, N. Y.
Bussenius & Cunliffe, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia
Cotton, Barclay W. & Co., Phila.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 446 West St., N. Y.
Naylor & Co. 45 Wall St., N. Y.
Nicolls, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St. N. Y
Pierson & Co., 29 Broadway, N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron, *Importers.*
Abbott Wheelock & Co. N. Y. and Boston
Lundberg, Gustaf, Boston, Mass.

Iron, Sheet. *Manufacturers of.*
Cambridge Iron & Steel Co., Cambridge Ohio
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork, Ornamental.
Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foos & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.
Wollensak, J. F., Chicago, Ill.

Ladders, Rolling.
Coburn Trolley Track Mfg. Co., Holyoke, Mass.

Ladles.
Detroit Fdy. Equipment Co., Detroit Mich.

Lamp Stoves.
Glazier Stove Co., Chelsea, Mich.

Lanterns.
Buhl Stamping Co., Detroit, Mich.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.
Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls N. Y.

Lathing, Wire.
Clinton Wire Cloth Co., Clinton, Mass
N. J. Wire Cloth Co., Trenton, N. J
Wright & Colton Wire Cloth Co., Worcester, Mass.

Laundry Machines.
Johnson, S. C., Racine, Wis.

Lawn Mowers.
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Coldwell Lawn Mower Co., Newburg N. Y.
Dille & McGuire Mfg. Co., Richmond Ind.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Mast, Foos & Co., Springfield, O.
Stearns, E. C. & Co., Syracuse, N. Y.
Supplee Hdw. Co., Phila. Pa.

Lawn Rakes.
Gibbs Mfg. Co, Canton, Ohio.
Konler, F. E. & Co., Canton, O.
Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse, N. Y.

Lawn Sprinklers.
Ette & Henger Mfg. Co., St. Louis,
Gibbs Mfg. Co., Canton, Ohio.
McGowan, John H. Co., Cincinnati, O
Portland Lawn Sprinkler Co., Portland, Me.

Lemon Squeezers.
Ripley Mfg. Co., Unionville, Conn.

Letters and Figures, Metallic
White, A. A. & Co., Providence, R. I.

Letters, Paper.
Tablet & Ticket Co., Chicago, Ill.

Levels.
Davis & Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.

Locks & Knobs, *Manufacturers of*
Deits, A. E., 97 Chambers, N. Y
Keyless Lock Co., Chicago, Ill.
Reading Hdw. Co., Reading, Pa.
Smith & Egge Mfg Co. Bridgeport, Conn
Yale & Towne Mfg. Co., Stamford, Conn

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Machinery.
Am. Tool Works, Cleveland, Ohio.
Barnes, W. F. & John, Rockford, Ill.
Bement, Miles & Co., Philadelphia, Pa.
Bigelow, C. E., 45 Dey, N.Y.
Bignall & Keeler Mfg. Co., St. Louis.
Birmingham Iron Foundry, Birmingham, Conn.
Bliss, E. W. Co., Brooklyn, N. Y.
Bogert, Jno. L., Flushing, N. Y.
Briggs, Marvin, 12 Broadway, N. Y.
Carlin's Sons, Thos., Allegheny, Pa.
Cinn. Milling Mch. Co., Cincinnati Ohio.
Clapp, Geo. M., agt., 74 Cortlandt, N.Y.
Coulter & McKenzie Mch. Co., Bridgeport, Conn.
Detrick & Harvey Mch. Co., Baltimore, Md.
Fitchburg Mch. Works, Fitchburg, Mass.
Garvin Mch. Co., Laight & Canal Sts.
Gould & Eberhardt, Newark, N. J.
Hamilton Mch. Tool Co., Hamilton, O.
Harrington, E. Son & Co., Phila. Pa.
Henderer, A. L., Wilmington, Del.
Hendey Machine Co., Torrington, Ct.
Hill, Clarke & Co., Boston, Mass.
Howard & Morse, 45 Fulton St., N. Y.
Johnson, Israel H., Jr., & Co., Phila.
Jones & Lamson Mch. Co., Springfield, Vt.
Lovegrove & Co., Philadelphia, Pa.
McCabe, J. J., 68 Cortlandt, N. Y.
Machinists Supply Co., Rochester, N. Y.
Manville, E. J. Mch. Co., Waterbury Conn.
Newark Mch. Tool Works, Newark, N.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Wks., 138 Liberty St., N. Y.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Place, Geo., 120 Broadway, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.
Powell Planer Co., Worcester, Mass.
Pratt & Whitney Co., Hartford, Conn.
Prentiss Tool & Supply Co., N. Y.
Scranton Supply & Mchry. Co., Scranton, Pa.
Sellers, Wm. & Co., Phila.
Seyfert's Sons L. F., Philadelphia, Pa.
Steptoe, J. & Co., Cincinnati, O.
Stow Flexible Shaft Co., Ld., Phila.
Toomey, Frank, Philadelphia, Pa.
Wetherill, Robert & Co., Chester, Pa.
Wickes Bros., Saginaw, Mich.
Wilson, W. A., Rochester, N. Y.

Machinery for Hardware Manufacture.
Adt, Jno. & Son, New Haven, Conn

Machine Knives.
Loring Coes & Co., Worcester, Mass

Machine Screws.
New Britain Hdw. Mfg. Co., New Britain, Conn.

Machine Tools.—*See Machinery,*

Machine Work.
Papping, J., 58th St., & 11th Ave., N.Y. City.

Machinists' Scales.
Coffin & Leighton, Syracuse, N. Y.
Starrett, L. S., Athol, Mass.
Vallentine Tool Co., Hartford, Conn.

Machinists' Tools and Supplies.
King, J. M. & Co., Waterford, N. Y.
Sellers, Wm. & Co., Inc., Phila.

Mallets.
N. Y. Mallet & Handle Works, N. Y

Mangles.
Johnson, S. C., Racine, Wis.

Measuring Tapes.
Keuffel & Esser Co., 127 Fulton St., N.Y.
Lufkin Rule Co., Saginaw, Mich.

Meat Cutters and Stuffers.
Enterprise Mfg. Co., Philadelphia, Pa.

Mechanical Instruction.
Correspondence School of Mechanics Scranton, Pa.

Metals.
Fearing, Wm. S., 100 Chambers, N.
Hendricks Bros., 49 Cliff, N. Y.
Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
American Metal Co., N. Y.

Metallurgists.
Britton J. Blodgett, Phila.

Milling Machines.
Cin. Milling Mch. Co., Cincinnati Ohio.

Mincing Knives.
Palmer Hdw. Mfg. Co., Troy, N. Y

Mine Lamps.
Darby, Edw. & Sons Phila. Pa
Leonard, B. E., Scranton, Pa.

Mining Screens.
Harrington & King Perforating Co Chicago, Ill.
Howard & Morse, 45 Fulton, N. Y

Models, *Makers of*
Franklin, H. H. Mfg. Co., Syracuse, N. Y.

Molding Sand.
Obermayer, S. Co., Cincinnati, O.

Motors, Water and Electric.
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.
Dallett, Thos. H. & Co., Phila., Pa.

Nail Machinery.
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.
Borden & Lovell, 70 West, N. Y.
Cumberland Nail & Iron Co., Phila.
Oxford Iron Co., 81 Washington,
Pottstown Iron Co., Pottstown, Pa.
Riverside Iron Wks, Wheeling, W. Va.

Nickel Platers' Supplies.
Colburn Electric Mfg. Co., Fitchburg, Mass.

Norway Shapes, *Rollers of.*
Rowland, William & Harvey, Frankford, Philadelphia

Novelty Manufacturers.
Franklin, H. H. Mfg., Syracuse, N. Y.

Nut Machines.
Dunham Nut Mch. Co., Unionville, Ct

Nuts, Bolts, &c., *Makers of.*
American Bolt Co., Lowell, Mass.
American Screw Co., Providence, R.
Blake & Johnson, Waterbury, Conn.
Haskell, Wm. H. Co., Pawtucket, R.I.
Mt. Carmel Bolt Co., Mt. Carmel, Conn.
Port Chester Bolt and Nut Co., Port Chester, N. Y.
Russell, Burdsall & Ward, Port Chester
Sternbergh, J. H. & Son, Reading, Pa
Wilson, J. Fred., Worcester, Mass.
Wm. H. Haskell Co., Pawtucket, R. I.

Oilers.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Oil Stones.
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
Foster Stove Co., Ironton, O.
Glazier Stove Co., Chelsea, Mich.

Ores.
Wister, Francis, Philadelphia, Pa.

Ox Shoes.
Scranton Forging Co., Scranton, Pa.

Packing.
Morrison, Robt., St. Louis, Mo.
N. Y. Belting & Packing Co. Ltd., N.Y.

Padlocks.
Ames Sword Co., Chicopee, Mass.
Fraim, E. T., Lancaster, Pa.
Hillebrand & Wolf, Phila., Pa.
Miller Lock Co., Philadelphia, Pa.

Paint.
Dixon, Jos. Crucible Co., Jersey City, N.J

Paint Burners.
Dangler Stove & Mfg. Co., Cleveland, O

Paint Cans.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pants Stretcher.
Covert Mfg. Co., West Troy, N. Y.

Patent Solicitors.
Howson & Howson, Phila. & Wash'gton.
Jenner, H. W. T., Washington, D. C.
Stocking, E. B., Washington, D. C.

Perforated Metal.
Clinton Wire Cloth Co., Clinton, Mass.
Harrington & King Perforating Co. Chicago, Ill.
Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.
Crescent Phosphorized Metal Co., Philadelphia, Pa.
Haik & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
Houston, C. B. & Co., Philadelphia, Pa
Montour Iron & Steel Co., Danville, Pa.
Naylor & Co., 45 Wall, N. Y.
Pilling & Crane, Philadelphia, Pa.
Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

Pile Drivers.
Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
Bignall & Keeler Mfg. Co., St. Louis, Mo.
Merrill Mfg. Co., Toledo, O.
Pancoast Henry B. & Co., Philadelphia.
Saunder's Sons, D., Yonkers, N. Y.

Pipe Grips.
Prentiss Vise Co., 44 Barclay, N. Y,

Pipes, Fittings, &c., *Makers of.*
McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas, *Makers of.*
Cumberland Nail & Iron Co., Phila, Pa
Donaldson Iron Co., Emaus, Pa.
Riverside Iron Works, Wheeling, W Va.
Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, *Manufacturers of.*
Buck Bros., Millbury, Mass.

Planes, *Manufacturers of.*
Stanley Rule & Level Co., N. Y.

Plated Ware.
Boardman H. & Son, New Haddam, Ct.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, Wm. Mfg. Co., Hartford, Ct.

Plate, Iron and Steel, *Mfrs of*
Ætna-Standard Iron & Steel Co., Bridgeport, O.
Lukens Iron & Steel Co., Coatesville, Pa.
Mahoning Valley Iron Co., Youngstown, Ohio.
Moorhead-McLean Co., Pittsburgh, Pa.
McIlvain & Sons, Reading, Pa.
Pottstown Iron Co., Pottstown, Pa.
Pottsville Iron & Steel Co., Pottsville, Pa.
Singer, Nimick & Co., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Wellman Iron & Steel Co., Thurlow, Pa
Wood Alan Co., Philadelphia.

Plating, Nickel, Brass and Silver.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Pokers and Lifters.
Troy Nickel Works, Troy, N. Y.

Polishing Machines.
Watson & Stillman, 204 E. 43d, N. Y.

Post Hole Diggers.
Gibbs Mfg. Co., Canton, Ohio.
Wister, L. & R. & Co., Philadelphia, Pa.

Poultry Nettings.
Barnum, E. T., Detroit, Mich.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y
N. J. Wire Cloth Co., Trenton, N. J.
"Silver Finish."
Tyler Wire Wks. Co., W. S., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Powder.
Laflin & Rand Powder Co., 29 Murray
New York Powder Co., 62 Liberty St., N. Y.

Power Hack Saws.
Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.
Belden Mach. Co., New Haven, Conn.
Dienelt & Eisenhardt, Philadelphia.
Jenkins & Lingle, Bellefonte, Pa.
Long & Allstatter Co., Hamilton, Ohio

Presses, Dies, &c.
E. W. Bliss Co., Brooklyn, N. Y.
Crosby, G. A. & Co., Chicago, Ill.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Mch. Co., Waterbury, Conn

Presses, Power, *Makers of.*
Bliss, E. W. Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct,
Merriman, A. H., Meriden.
Stark Mch. & Tool Co., Buffalo, N. Y.
Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
Keystone Clutch Mch. Wks., Phila., Pa.
Lane, J. H. & D. Co., Massillon, Ohio,

Pumping Machinery.
Dean Bros. Steam Pump Works, Indianapolis, Ind.
Hooker-Colville Steam Pump Co., Chicago, Ill.
McGowan, J. H. & Co., Cincinnati, O.
Maslin, J. & Son, Jersey City, N. J.
Norwalk Iron Wks. Co., So. Norwalk, Conn.
Southwark Fdy. & Mch. Co., Phila., Pa
Valley Pump W'ks, Easthampton, Mass
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, *Makers of.*
Bellevue Pump Co., Bellevue, Iowa.
Deming Co., Salem, O.
Douglas, W. & B., Middletown, Conn.
Mast, Foos & Co., Springfield, O.
Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.
E. W. Bliss Co., Brooklyn, N. Y.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Crosby, G. A. & Co., Chicago, Ill.
Henderer, A. L., Wilmington, Del.
Long & Allstatter Co., Hamilton, Ohio.
Stark Mch. & Tool Co., Buffalo, N. Y.
Stiles & Parker Press Co., Brooklyn, N. Y.
Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
Perry, W. H. & Co., Providence, R. I.

Rat and Mouse Traps.
Burditt & Williams, Boston, Mass.
Estey, W. S. 65 Fulton, N. Y.
Ripley Mfg. Co., Unionville, Conn.

Razors.
Electric Cutlery Co., 113 Chambers, N. Y
J. R. Torrey Razor Co., Worcester, Mass

Reels.
Hendryx, A. B. Co., New Haven, Conn

Refrigerator Door Fasteners.
Conroy, P. J. & Co., Philadelphia.

Rivets.
Blake & Johnson, Waterbury, Conn.
Boyce Rivet Co., Muncie, Ind.
Burden Iron Co., Troy, N. Y.
Cobb & Drew, Plymouth, Mass.
Sternbergh, J. H. & Son, Reading, Pa.
Townsend, W. P. & Co., New Brighton Pa.

Riveting Machines.
Adt, Jno. & Sons, New Haven, Conn.

Rock Drills.
Sand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery
Birmingham Iron F'dry, Birmingham, Conn.
Booth, The Lloyd, Co., Youngstown, O.
Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
Mahoning F'dry & Mch. Co., Danville, Pa.
Morgan Construction Co., Worcester, Mass.
Robinson-Rea Mfg. Co., Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
Trethewey Mfg. Co., Pittsburgh, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
Totten & Hogg Iron & Steel Fdry. Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
Booth, The Lloyd, Co., Youngstown, O.
Garrison, A. Fdry. Co., Pittsburgh, Pa.
Seaman, Sleeth & Black, Pittsburgh.
Totten & Hogg Iron and Steel Fdry Co., Pittsburgh Pa.

Roofing.
Berlin Iron Bridge Co., E. Berlin, Conn
Boston Bridge Works, Boston, Mass.
Cambridge Roofing Co., Cambridge, O.
Johns, H. W Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y

Rope Wheels.
Cresson, Geo. V. Co., Philadelphia, Pa

Rubber Goods.
Canfield, H. O., Bridgeport, Conn.

Rules, *Manufacturers of.*
Keuffel & Esser Co., 127 Fulton St., N.Y
Lufkin Rule Co., Saginaw, Mich.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers.

Rust Preventive.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.

Sad Irons.
Enterprise Mfg. Co., Philadelphia, Pa.

Sand Paper.
Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
Pullman Sash Balance Co., Rochester, N. Y.
Vanderbilt Sash Balance Co., Canandaigua, N. Y.

Sash Cords and Chains.
Morton, Thos., 65 Elizabeth, N. Y.
Ossawan Mills Co., Norwich, Conn.
Samson Cordage Works, Boston, Mass.
Smith & Egge, Mfg. Co., Bridgeport.

Sash Locks.
Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
Empire Portable Forge Co., Lansingburgh, N. Y.
Palmer Hardware Mfg. Co., Troy, N. Y

Sash Weights.
Brown, E. E. & Co., Philadelphia, Pa.

Saw Filing Machines.
Disston, Henry & Sons, Philadelphia, Pa.

Saws, *Makers of.*
Disston, Henry & Sons, Phila., Pa.
National Saw Co., 96 Reade St., N. Y
Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
Taintor Mfg. Co., 84-86 Chambers, N. Y.

Scales, *Manufacturers of.*
Buffalo Scale Co., Buffalo, N. Y.
Chatillon, John & Sons, 85-89 Cliff, N. Y

Scrapers, Road.
Am. Steel Scraper Co., Sidney, Ohio.
Kilbourne & Jacobs Mfg. Co., Columbus, O.
Sidney Steel Scraper Co., Sidney, O.

Screens, Coal and Ore.
Hendrick Mfg. Co., Ltd., Carbondale Pa.

Screens, Door and Window.
Queen Anne Screen Co., Burlington, Vt

Screw Cutting Machinery.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Screw Drivers.
Brown, R. H. & Co., New Haven, Conn.
Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
Jarecki Mfg. Co., Erie, Pa.

Screws, *Makers of.*
American Screw Co., Providence, R. I.
Blake & Johnson, Waterbury, Conn.
Wm. H. Haskell Co., Pawtucket.
Miles, F. S., 205 Quarry, Philadelphia.
Reynolds & Co., New Haven, Conn.
Worcester Machine Screw Co., Worcester, Mass.

Scroll Saws.
Barnes, W. F. & John, Rockford, Ill.
Seneca Falls Mfg. Co., Seneca Falls N. Y

Scythe Stones and Whetstones.
Pike Mfg. Co., Pike Stat'n, N. H.
Cleveland Stone Co., Cleveland, O.

Shafting, *Makers of.*
Cresson, Geo. V., Co., Philadelphia, Pa
Fairmount Mch. Co., Philadelphia, Pa
Fitzsimons & Co., Cleveland, Ohio.
Sellers, Wm. & Co., Inc. Phila. Pa.
Stow. Co. Mfg, Binghamton, N. Y.

Shaped Iron and Steel,—*Manufacturers of.*
Ætna-Standard Iron & Steel Co, Bridgeport, O.

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Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville Pa.
Roberts, A. & P. & Co., Phila., Pa.
The Phœnix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.

Shears and Scissors.
Acme Shear Co., Bridgeport, Conn
Heinischs, R. Sons Co., Newark, N. J.

Sheet Iron and Steel, *Manufacturers of.*
Ætna-Standard Iron and Steel Co., Bridgeport, O.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh,
Pierson & Co., 29 Broadway, N. Y.
Singer, Nimick & Co., Ld., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.

Sheet Metal Work.
Clark & Cowles, Plainville, Conn.

Sheet Zinc.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Shelf Brackets.
Koch. A. B. & Co., Peoria, Ill.

Sinks.
Douglas, W. & B., Middletown, Conn.

Skates, Ice.
Dame, Stoddard & Kendall, Boston, Mass.
Lovell, Jno. P. Arms Co., Boston, Mass.
Sickels, Sweet & Lyon, 35 Barclay St., N. Y.
Winslow, Saml, Skate Mfg. Co. Worcester, Mass.

Skates, Roller.
Henley, M. C., Richmond, Ind.
Winslow, Saml., Skate Mfg. Co., Worcester, Mass

Smelting Works.
Reeves, Paul S., 760 S. Broad, Phila.

Soldering Coppers.
Clendenin Bros., Baltimore, Md.
Covert Mfg Co., West Troy, N. Y.

Speaking Tubes.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.

Specialties, Pat. Articles.
Konigslow, O., Cleveland, O.
Rhodes, L. E. Co., Hartford, Conn.

Spelter.
Matthiessen & Hegeler Zinc Co., La Salle, Ill.

Spoons and Forks.
Boardman, L. & Son, New Haddam, Conn.
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.

Sporting Goods.
Hartley & Graham, 313-315 B'way, N.Y

Springs.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y
Morgan Spring Co,, Worcester, Mass
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt
Tuck Mfg. Co., Brockton, Mass
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.

Spring Hinges.
Pullman Sash Balance Co., Rochester N. Y.
Stover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Stamped Ware.
Am. Stamping Co., 104 & 106 John St. New York

Stamping Works.
Cleveland Stamping & Tool Co., Cleveland, O.

Staples.
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co. Binghamton N.Y

Steam Gauges.
Ashcroft Mfg. Co., 111 Liberty St., N.Y
Bristols Mfg. Co., Waterbury, Conn.

Steam Hammers, &c., *Makers of*
Dienelt & Eisenhardt, Philadelphia.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.

Steam Heating.
Webster Warren & Co., Camden, N.J.

Steam Separators.
Gouvert Mfg. Co., 32 Cortland St N. Y.
Harrison Safety Boiler Wks. Phila. Pa

Steel, Cold Rolled Strip.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn.

Steel Figures and Alphabets.
Hoefig, C. W., 52 Fulton St., N. Y.
Leonard, W., 61 Fulton, N. Y.
Wolff, C. H., 177 William St., N. Y.

Steel Importers.
Abbott, Wheelock & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y
Whitney, A. R. & Co., B'dway, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.

Steel (Mushet's Special).
Jones, B. M. & Co., Boston.

Steel Manufacturers.
Ætna-Standard Iron & Steel Co., Bridgeport, O
Bethlehem Iron Co., S. Bethlehem, Pa
Boker, Hermnan & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Elken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburg Pa
Moss, F. W., 83 John N. Y
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co. High Bridge, N.J
Wardlaw, S. & C., Sheffield, Eng
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn

Steel, *Manufacturers' Agents.*
Barnes, C. K. & Co., Philadelphia, Pa
Corning, Edw, & Co., 29 B'way, N. Y
Frasse Co., 19 Warren St., New York.
Lindsay, Jas. G. & Co., Phila., Pa.
Pierson & Co., 29 Broadway, N. Y.

Steel Rails, *Manufacturers of.*
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Montour Iron & Steel Co., Danville Pa
Riverside Iron Wks., Wheeling, W. Va

Steel, Tool.
Frankford Steel Co., Philadelphia. Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston. Mass.
La Belle Steel Co., Pittsburgh, Pa.

Step Ladders.
Bicycle Step Ladder Co., Chicago, Ill,
Croissant, M., Albany, N. Y.

Stocks and Dies.
Armstrong Mfg. Co., Bridgeport, Conn
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunder's Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield Mass.

Stove Linings.
Ostrander Fire Brick Co., Troy, N. Y

Stove Pipe Thimbles.
Cheney, S. & Son Manlius, N. Y

Stove Trimmings.
Troy Nickel Works, Troy, N. Y.

Street Lamps.
Steam Gauge & Lantern Co., Syracuse N. Y.

Strops.
Electric Cutlery Co. 113 Chambers, N.Y
J. R. Torrey & Co., Worcester, Mass.

Structural Iron Work.
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.

Sulphuric Acid.
Matthiessen & Hegeler Zinc Co. La Salle, Ill.

Tacks, Brads, Staples, &c.
Atlas Tack Corporation. Boston, Mass
Clendenin Bros., Baltimore, Md.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.

Taps and Dies.
Butterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Testing Laboratories.
Riehle Bros. Testing Mch. Co., Philadelphia.

Testing Machines.
Riehle Bros. Testing Mch. Co., Phila.

Theatrical Hardware.
Wollensak, J. F., Chicago, Ill.

Thill Springs.
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.

Time Record.
Scattergood, H. W., Phila., Pa.

Tinners' Hardware.
Berger Bros., Philadelphia, Pa.

Tinning Process.
Sands, Thomas, Nashua, N. H.

Tin Plate Machinery.
Lloyd Booth Co., Youngtown, Ohio.

Tinware.
Am. Stamping Co., 104 & 106 John St.,

Tire Upsetters.
Butts & Ordway, Boston, Mass,

Toe Calks, Steel.
Burke, P. F., Boston, Mass.

Tool Chests.
Am. Tool Co., 200 W. Houston St., N.Y.

Tools.
Brown, R. H. & Co., New Haven, Conn.
Frasse Co., 19 Warren St., New York.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers,
Starrett, L. S., Athol, Mass.

Tools, Blacksmith and Wheelwrights.
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway Boston, Mass.
Champion Blower & Forge Co., Lancaster, Pa.
Plumb, Fayette R. Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.

Tools, Steam and Gas Fitters'
Saunders' Sons, D., Yonkers, N. Y.

Torches, Oil and Gasolene.
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.

Transom Lifters.
Wollensak, J. F. Chicago, Ill.

Trucks. *Manufacturers of.*
Berger Bros., Philadelphia, Pa.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co. Lansing Mich.

Tubes, Seamless Drawn Copper.
Ansonia Brass & Copper Co., 19 and 21 Cliff. N. Y.
Randolph & Clowes. Waterbury, Conn.

Tubes, Steel.
Ellwood Shafting & Tube Co., Ellwood City, Pa.
Leng's John S. Son & Co., 4 Fletcher St., New York.
U. S. Projectile Co., Brooklyn, N.Y.

Tumbling Barrels.
Henderson Bros., Waterbury, Conn.

Turnbuckles.
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.

Twist Drills. *Makers of.*
Cleveland Twist Drill Co., Cleveland.
Morse Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.

Valves, Gas, Water and Steam.
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 56 John N. Y.
Mason Regulator Co., Boston, Mass.

Ventilator Appliances.
Howard & Morse, 45 Fulton, N. Y.

Vise Jaws.
Newark Mch. Tool Co., Newark, N. J.

Vises.
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.

Wagon Jacks.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y

Washers.
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.

Water Meters.
Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Water Wheels.
Poole, Robt. & Son Co., Baltimore, Md.

Wheelbarrows.
Amer. Steel Scraper Co., Sidney, Ohio.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
Lansing Wheelbarrow Co., Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Sweatt Mfg. Co., Minneapolis, Minn.

Window Cord, *Makers of.*
Samson Cordage Works, Boston, Mass

Wire, *Manufacturers of.*
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Prentiss, Geo. W. & Co., Holyoke, Mass.
Salem Wire Nail Co., Salem, O.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester
Wetherell Bros., 93 Liberty St., N. Y.
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co. Worcester, Mass

Wire Cloth.
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Wks. Milwaukee Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.

Wire Cutters.
King., J. M. & Co., Watertown, N. Y.

Wire Dies.
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.

Wire Fences.—*See Fencing, Iron and Wire.*

Wire Goods, *Manufacturers of.*
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St. N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossawan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros, Cortland, N. Y.
Williamson, C. T. Wire Novelty Co. Newark, N. J.

Wire Machinery.
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester Mass.
Waterbury Mch. Co., Waterbury, Conn

Wire Straightening and Cutting Machinery.
Adt, John & Son, New Haven, Conn

Wire Nails.
Bond Nail Co., Raynham, Mass.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle Pa.
Phillips, Townsend & Co., Phil., Pa.
Salem Wire Nail Co., Salem, O.
Whitney, A. R. & Co., New York City

Wire Rods, Steel.
New Castle Wire Nail Co., New Castle Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y

Wire Rope, Iron and Steel *Makers.*
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco
Hazard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester Mass.
Williamsport Wire Rope Co., Williamsport, Pa.

Wood-Working Machinery.
Fay, J. A. & Egan Co., Cincinnati, O.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Wrenches, *Manufacturers of.*
Bemis & Call Hardware & Tool Co Springfield, Mass.
Billings, Spencer & Co., Hartford. Conn
Coes Wrench Co., Worcester, Mass.
Keystone Mfg. Co., Buffalo, N. Y.
Trimont Mfg. Co., Roxbury, Mass
Williams, J. H., Brooklyn, N. Y.

Wringers.
Colby Wringer Co., Montpelier.

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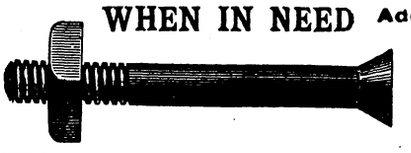
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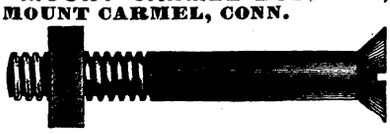
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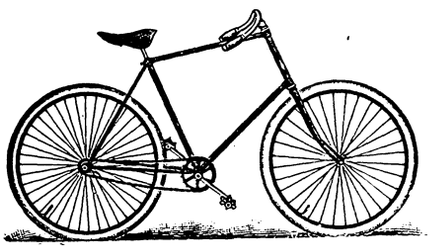
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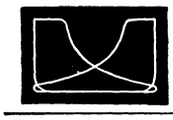
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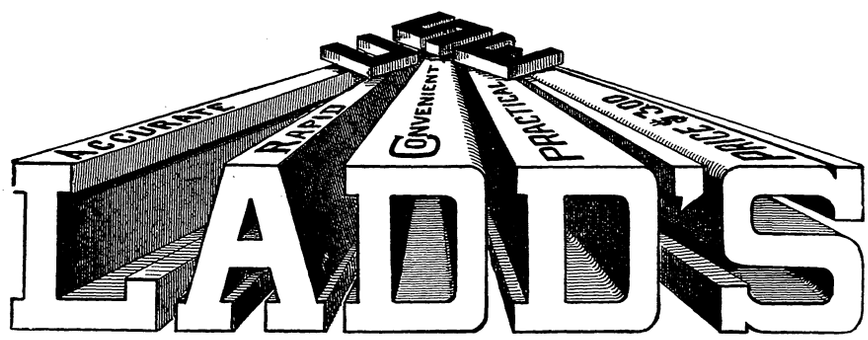
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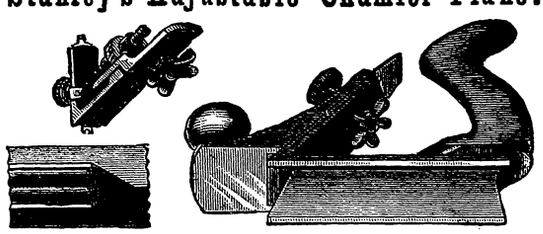
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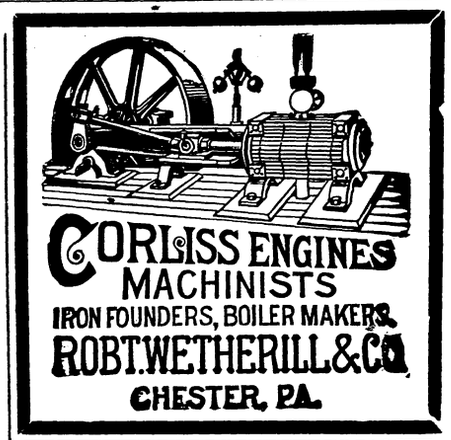
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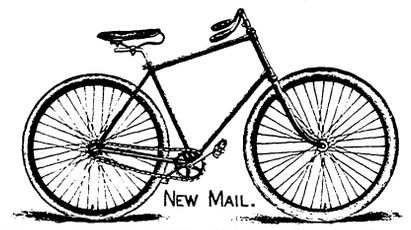


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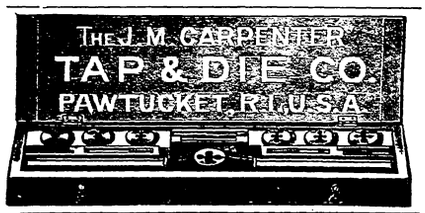
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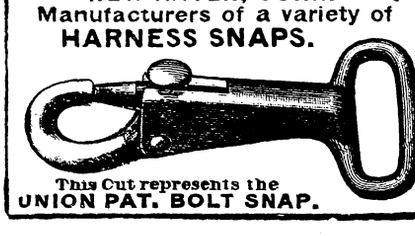
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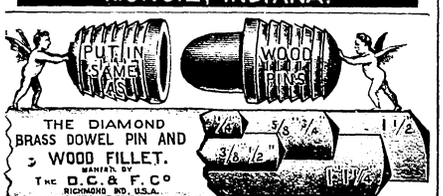
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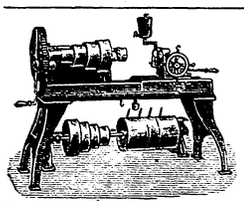
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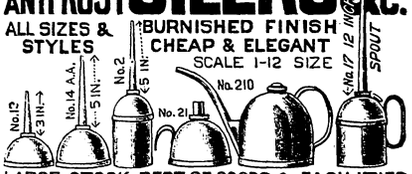
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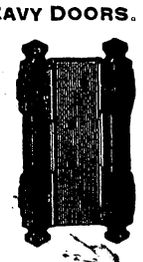
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